Alabama Power

600 North 18th Street
Hydro Services 16N-8180
Birmingham, AL 35203
205 257 2251 tel
arsegars@southernco.com

July 27, 2020

VIA ELECTRONIC FILING

Project No. 2628-065
R.L. Harris Hydroelectric Project
Transmittal of the Final Downstream Release Alternatives Phase 1 Report

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

Dear Secretary Bose,

Alabama Power Company (Alabama Power) is the Federal Energy Regulatory Commission (FERC or Commission) licensee for the R.L. Harris Hydroelectric Project (Harris Project) (FERC No. 2628-065). On April 12, 2019, FERC issued its Study Plan Determination[1] (SPD) for the Harris Project, approving Alabama Power's ten relicensing studies with FERC modifications. On May 13, 2019, Alabama Power filed Final Study Plans to incorporate FERC's modifications and posted the Final Study Plans on the Harris relicensing website at www.harrisrelicensing.com.

Consistent with FERC's April 12, 2019 SPD, Alabama Power filed the Draft Downstream Release Alternatives Phase 1 Report (Draft Report) on April 10, 2020. Stakeholders were to submit their comments to Alabama Power on the Draft Report by June 11, 2020. Comments on the Draft Report were submitted by FERC staff, the Alabama Rives Alliance, Alabama Department of Conservation and Natural Resources, and the U.S. Environmental Protection Agency. These comments are included in the updated consultation record (May 2019 through July 2020) for this study (Attachment 1) and responses to these comments are provided in Attachment 2. Also included in the consultation record for this study are several stakeholder comments regarding downstream flows and downstream erosion. While these comments do not pertain specifically to the Draft Report, they have been included in the consultation record for this study because they do pertain to operations. Alabama Power is addressing downstream erosion through the Erosion/Sedimentation Study Plan and through completion of Phase 2 of this study (Downstream Release Alternatives) and Phase 2 of the Operating Curve Change Feasibility Analysis.

[1] Accession No. 20190412-3000

The major comments submitted generally suggested that Alabama Power analyze more downstream release alternatives than those specified in the study plan. As indicated in its July 10, 2020 filing, Alabama Power has agreed to analyze additional downstream releases.[2] However, due to the timing of receiving the requests to evaluate these alternatives, impacts to operational parameters, including reservoir levels, hydropower generation, flood control, navigation, and drought operations, are not included in the final Downstream Release Alternatives Phase 1 Report (Attachment 3).[3] The impacts to operational parameters from these alternatives will be included in the Phase 2 Report.

If there are any questions concerning this filing, please contact me at arsegars@southernco.com or 205-257-2251.

Sincerely,

Angie Anderegg
Harris Relicensing Project Manager

Attachment 1 – Downstream Release Alternatives Consultation Record (May 2019-July 2020)
Attachment 2 – Comments and Responses on the Draft Downstream Release Alternatives Phase 1 Report
Attachment 3 – Final Downstream Release Alternatives Phase 1 Report

cc: Harris Stakeholder List

[2] Accession No. 20200710-5122

[3] Please note that the look and format of Harris relicensing study reports has changed since submittal of the Draft Report; however, the content of the report has not changed except for the edits made based on stakeholder comments.

Attachment 1
Downstream Release Alternatives Consultation Record
(May 2019-July 2020)

Benjamin M Bennett, Wadley, AL.
I have spent most of my life on the river. But it is sad to see the banks and the old trees falling in the river. 25 foot of the banks gone in some places . Places where the water was 10 to 20 foot deep now 5 foot . And I know there are a lot of Native American burial grounds up and down the river either gone or will be within 2 years because of erosion. Something has to be done soon. Why cant we let what water comes in the lake come out ?

HAT 1 meeting - September 11, 2019

Anderegg, Angela Segars

Tue 8/13/2019 6:18 PM

To: 'harrisrelicensing@southernco.com' <harrisrelicensing@southernco.com>
Bcc damon.abernethy@dcnr.alabama.gov <damon.abernethy@dcnr.alabama.gov>; steve.bryant@dcnr.alabama.gov <steve.bryant@dcnr.alabama.gov>; stan.cook@dcnr.alabama.gov <stan.cook@dcnr.alabama.gov>; taconya.goar@dcnr.alabama.gov <taconya.goar@dcnr.alabama.gov>; chris.greene@dcnr.alabama.gov <chris.greene@dcnr.alabama.gov>; keith.henderson@dcnr.alabama.gov <keith.henderson@dcnr.alabama.gov>; mike.holley@dcnr.alabama.gov <mike.holley@dcnr.alabama.gov>; evan.lawrence@dcnr.alabama.gov <evan.lawrence@dcnr.alabama.gov>; nick.nichols@dcnr.alabama.gov <nick.nichols@dcnr.alabama.gov>; brian.atkins@adeca.alabama.gov <brian.atkins@adeca.alabama.gov>; tom.littlepage@adeca.alabama.gov <tom.littlepage@adeca.alabama.gov>; jhaslbauer@adem.alabama.gov <jhaslbauer@adem.alabama.gov>; cljohnson@adem.alabama.gov <cljohnson@adem.alabama.gov>; mlen@adem.alabama.gov <mlen@adem.alabama.gov>; fal@adem.alabama.gov <fal@adem.alabama.gov>; djmoore@adem.alabama.gov <djmoore@adem.alabama.gov>; arsegars@southernco.com <arsegars@southernco.com>; dkanders@southernco.com <dkanders@southernco.com>; jefbaker@southernco.com <jefbaker@southernco.com>; jcarlee@southernco.com <jcarlee@southernco.com>; kechandl@southernco.com <kechandl@southernco.com>; mcoker@southernco.com <mcoker@southernco.com>; cggoodma@southernco.com <cggoodma@southernco.com>; sgraham@southernco.com <sgraham@southernco.com>; ammcvica@southernco.com <ammcvica@southernco.com>; tlmills@southernco.com <tlmills@southernco.com>; cmnix@southernco.com <cmnix@southernco.com>; kodom@southernco.com <kodom@southernco.com>; alpeeple@southernco.com <alpeeple@southernco.com>; dpreston@southernco.com <dpreston@southernco.com>; scsmith@southernco.com <scsmith@southernco.com>; twstjohn@southernco.com <twstjohn@southernco.com>; dawhatle@southernco.com <dawhatle@southernco.com>; cchaffin@alabamarivers.org <cchaffin@alabamarivers.org>; clowry@alabamarivers.org <clowry@alabamarivers.org>; gjobsis@americanrivers.org <gjobsis@americanrivers.org>; kmo0025@auburn.edu <kmo0025@auburn.edu>; devridr@auburn.edu <devridr@auburn.edu>; irwiner@auburn.edu <irwiner@auburn.edu>; wrighr2@aces.edu <wrighr2@aces.edu>; lgallen@balch.com <lgallen@balch.com>; jhancock@balch.com <jhancock@balch.com>; allan.creamer@ferc.gov <allan.creamer@ferc.gov>; rachel.mcnamara@ferc.gov <rachel.mcnamara@ferc.gov>; sarah.salazar@ferc.gov <sarah.salazar@ferc.gov>; monte.terhaar@ferc.gov <monte.terhaar@ferc.gov>; gene@wedoweelakehomes.com <gene@wedoweelakehomes.com>; kate.cosnahan@kleinschmidtgroup.com <kate.cosnahan@kleinschmidtgroup.com>; colin.dinken@kleinschmidtgroup.com <colin.dinken@kleinschmidtgroup.com>; amanda.fleming@kleinschmidtgroup.com <amanda.fleming@kleinschmidtgroup.com>; chris.goodell@kleinschmidtgroup.com <chris.goodell@kleinschmidtgroup.com>; henry.mealing@kleinschmidtgroup.com <henry.mealing@kleinschmidtgroup.com>; jason.moak@kleinschmidtgroup.com <jason.moak@kleinschmidtgroup.com>; kelly.schaeffer@kleinschmidtgroup.com <kelly.schaeffer@kleinschmidtgroup.com>; jessecunningham@msn.com <jessecunningham@msn.com>; mdollar48@gmail.com <mdollar48@gmail.com>; drheinzen@charter.net <drheinzen@charter.net>; sforehand@russelllands.com <sforehand@russelllands.com>; 1942jthompson420@gmail.com <1942jthompson420@gmail.com>; nancyburnes@centurylink.net <nancyburnes@centurylink.net>; sandnfrench@gmail.com <sandnfrench@gmail.com>; lgarland68@aol.com <lgarland68@aol.com>; rbmorris222@gmail.com <rbmorris222@gmail.com>; Ira Parsons (irapar@centurytel.net) <irapar@centurytel.net>; mitchell.reid@tnc.org <mitchell.reid@tnc.org>; richardburnes3@gmail.com <richardburnes3@gmail.com>; eilandfarm@aol.com <eilandfarm@aol.com>; athall@fujifilm.com <athall@fujifilm.com>; ebt.drt@numail.org <ebt.drt@numail.org>; georgettraylor@centurylink.net <georgettraylor@centurylink.net>; beckyrainwater1@yahoo.com <beckyrainwater1@yahoo.com>; dbronson@charter.net <dbronson@charter.net>; wmcampbell218@gmail.com <wmcampbell218@gmail.com>; jec22641@aol.com <jec22641@aol.com>; sonjaholloman@gmail.com <sonjaholloman@gmail.com>; butchjackson60@gmail.com <butchjackson60@gmail.com>; donnamat@aol.com <donnamat@aol.com>; goxford@centurylink.net <goxford@centurylink.net>; mhpwedowee@gmail.com <mhpwedowee@gmail.com>; jerrelshell@gmail.com <jerrelshell@gmail.com>; bsmith0253@gmail.com <bsmith0253@gmail.com>; inspector_003@yahoo.com

<inspector_003@yahoo.com>; paul.trudine@gmail.com <paul.trudine@gmail.com>; lindastone2012@gmail.com <lindastone2012@gmail.com>; granddadth@windstream.net <granddadth@windstream.net>; trayjim@bellsouth.net <trayjim@bellsouth.net>; straylor426@bellsouth.net <straylor426@bellsouth.net>; robert.a.allen@usace.army.mil <robert.a.allen@usace.army.mil>; randall.b.harvey@usace.army.mil <randall.b.harvey@usace.army.mil>; james.e.hathorn.jr@sam.usace.army.mil <james.e.hathorn.jr@sam.usace.army.mil>; lewis.c.sumner@usace.army.mil <lewis.c.sumner@usace.army.mil>; jonas.white@usace.army.mil <jonas.white@usace.army.mil>; gordon.lisa-perras@epa.gov <gordon.lisa-perras@epa.gov>; holliman.daniel@epa.gov <holliman.daniel@epa.gov>; jennifer_grunewald@fws.gov <jennifer_grunewald@fws.gov>; jeff_powell@fws.gov <jeff_powell@fws.gov>; jeff_duncan@nps.gov <jeff_duncan@nps.gov>

HAT 1,

Alabama Power Company will be hosting a series of HAT meetings on **Wednesday, September 11, 2019 at the Oxford Civic Center,** 401 Mccullars Ln, Oxford, AL 36203. The HAT 1 meeting will be from **9:00 to 11:00**. The purpose of the HAT 1 meeting is to review the models, model assumptions, inputs and scenarios, and to review the schedule for deliverables and respond to stakeholder questions on the models. This is for both the Operating Curve Change Feasibility Analysis and the Downstream Release Alternatives studies. Note that Alabama Power will not be presenting results of any of the modeling efforts at this meeting; however we will be explaining how the analyses will provide results.

Please RSVP by Friday, September 6, 2019. Lunch will be provided (~11:45) so please indicate any food allergies or vegetarian preferences on or before September 6, 2019. I encourage everyone to attend in person. If this is not feasible, we are also offering a Skype option (info below). It would be ideal to join on your computer as we will be viewing presentations and maps.

If you have any questions about the agenda or meeting, please email or call me at ARSEGARS@southernco.com or (205) 257-2251.

Join Skype Meeting [meet.lync.com]

Trouble Joining? Try Skype Web App [meet.lync.com]

Join by phone

Toll number: +1 (207) 248-8024

Find a local number [dialin.lync.com]

Conference ID: 892052380

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

HAT 1 (Project Operations) Stakeholder Meeting Summary
September 11, 2019
9 am to 11 am
Oxford Civic Center, Oxford, AL

Participants:
See Attachment A

Participants by Phone:
Chuck Denman – Downstream Property Owner
Sarah Salazar – FERC
Monte TerHaar – FERC
Kyrstin Wallach – FERC

Action Items:

- Alabama Power will post the HAT 1 meeting summary and all meeting materials to the Harris Relicensing website (www.harrisrelicensing.com)

Summary
The following summarizes the September 11, 2019 Harris Action Team (HAT) 1 (Project Operations) meeting. The meeting presentation is included in Attachment B; therefore, this meeting summary focuses on the overall meeting purpose, highlights of the presentation, and stakeholders' questions/comments and Alabama Power's responses.

Introduction – Angie Anderegg (Alabama Power)
Angie introduced the HAT 1 meeting purpose, reviewed the safety procedures, and introduced participants in the meeting room and by phone. The purpose of the HAT 1 meeting was to discuss all the models, the methods, and the model inputs and outputs (how the model will be used) for the Operating Curve Change Feasibility Analysis and the Downstream Release Alternatives Studies.

Operating Curve Change Feasibility Analysis – Kenneth Odom (Alabama Power)
Kenneth presented a detailed overview of the three models: Hydrologic Engineering Center (HEC) – Statistical Software Package (SSP) (HEC-SSP) and the Flood Frequency Analysis (HEC-FFA); the HEC-Reservoir Simulation (HEC-RES-Sim); and HEC-River Analysis System (HEC-RAS). Kenneth explained how each of the tools were used in the process and how Alabama Power will use these tools in evaluating the baseline condition (existing winter pool elevation) and the four alternative winter pool elevations (raising the winter curve by 1, 2, 3, and 4 feet). Kenneth also explained that the 100-year flood is a high streamflow event that has a 1 percent chance of being equaled or exceeded in any year. Barry Morris (Lake Wedowee Property Owners Association-LWPOA) asked Kenneth to explain the difference between peak and inflow volume. Kenneth responded that the peak inflow is the maximum inflow – like the instantaneous peak. Inflow volume is the volume (acre-feet) that occurs over the full duration of the storm, which provides a better picture of the area occupied in the reservoir. This volume is cumulative over a flow event.

Barry asked about other data inputs in addition to the U.S. Geological Survey (USGS) that Alabama Power would consider during a flood event. Kenneth noted that Alabama Power uses a

network of rainfall gages in addition to the stream flow gages. Additionally, Alabama Power knows the amount of water going through the forebay and spillway, which allows inflow as well as outflow to be calculated.

Barry Morris asked about the forebay water quality modeling. Jason Moak (Kleinschmidt) noted that the forebay water quality modeling would be used to address effects of the alternative winter pool elevations on water quality and temperature in the reservoir. Barry asked if the forebay modeling focused on temperature and dissolved oxygen; Kenneth stated that while the focus of the study is evaluating impacts to DO and temperature, the Environmental Fluid Dynamics Code (EFDC) model does incorporate other water quality/chemistry data.

Downstream Release Alternatives Study – Kenneth Odom

Kenneth also reviewed the tools for the Downstream Alternatives Study. Taconya Goar (Alabama Department of Conservation and Natural Resources – ADCNR) asked if this study would also include flood flows downstream. Angie Anderegg clarified that Alabama Power would review high, normal, and low flow operations in the Downstream Release Alternatives Study.

FERC staff asked if Alabama Power had determined what the modified Green Plan would entail. Jason Moak responded that Alabama Power is working to complete the habitat study and, based on the results of that study, Alabama Power will better define modifications to the existing Green Plan. A stakeholder asked about the difference between the continuous minimum flow alternative and the Green Plan and whether the Green Plan would have a minimum flow. Angie Anderegg responded that the Green Plan does not have a continuous minimum flow; however, the minimum flow alternative is the same daily volume (150 cfs) as the Green Plan pulses and the modified Green Plan would likely include changes to the timing of those pulses. Angie provided an example of how Alabama Power could modify the Green Plan to include shifting the pulses to occur in the early morning hours (e.g., 3 am) to support kayaking/boating activity later in the day.

Alabama Power discussed the cross-section data used to develop the HEC-RAS model. Jason Moak noted that this data will be available as x, y, and z points, and currently there are over 200 between the dam and Jaybird Landing. Donna Matthews asked if any of the 200 transects were monitoring real time data. Jason Moak responded that the transects are not monitors but are necessary to build the downstream HEC-RAS model. Alabama Power has deployed 20 level logger monitors in the Tallapoosa River below Harris Dam that are collecting data (elevation and temperature). Jason also noted that the USGS has recently installed a gage at Malone. Albert Eiland (downstream property owner) shared his experience with the high flow events in the Tallapoosa River and its effect on his property. He is concerned that raising the winter curve at Lake Harris will reduce any flood protection he may have on his property downstream of the Harris Dam. Barry Morris asked at what point in a rain event does the U.S. Army Corps of Engineers (USACE) intervene. Alan Peeples (Alabama Power) noted that Alabama Power and the USACE are in constant communication during high flow events and that Alabama Power's flood control operations are dictated by the USACE Harris Reservoir Regulation Manual. Barry asked if Alabama Power can override the Harris Reservoir Regulation Manual. Alan noted that it is possible to ask the USACE for a variance; however, Alabama Power would be required to do additional modeling prior to that variance request. Mr. Eiland asked about operations in 2003, including why Alabama Power did not release water when they knew a rain event was coming to the Harris area. Alabama Power does not pre-evacuate the reservoir because weather forecasts

are often inaccurate, and Alabama Power must abide by the USACE flood control procedures specified in the Harris Reservoir Regulation Manual.

Angie Anderegg reviewed the next steps for the Operating Curve Change Feasibility Analysis and the Downstream Release Alternatives studies. Alabama Power will file a Progress Update on all the studies before the end of October 2019. Between October and the first quarter (Q1) of 2020, Alabama Power will be modeling the alternatives in each study plan and will prepare an Initial Study Report that must be filed with FERC in April 2020. The Phase 1 Modeling report will be part of the Initial Study Report and will include effects on downstream flooding, generation, navigation, and drought management. Phase 2 of these studies will address effects on other resources. Additional HAT 1 meetings will be held in Q1 2020.

ATTACHMENT A
HARRIS ACTION TEAM 1 MEETING ATTENDEES

HARRIS PROJECT RELICENSING

HAT 1 SIGN-IN SHEET

September 11, 2019 9:00 AM

	Name/ Affiliation or Organization	Email
1	*John Smith/ Stakeholder*	*jsmith@email.com*
2	Kelly Yates, Env. Affairs	kayates@southernco.com
3	Stacy Thompson APC Env. Affairs	sthompso@Southernco.com
4	DAVID Smith	inspector_003@yahoo.com
5	Glenell Smith	gardenergirl07@yahoo.com
6	Trey Stevens	trsteven@southernco.com
7	Joel Stevens	tjsteven@southernco.com.
8	Jason Moak	jason.moak@kleinschmidtgroup.com
9	Kelly Schaeffer	Kelly.Schaeffer@Kleinschmidtgroup.com
10	Barry Morris	rbmorris333@gmail.com
11	Mike Holley	mike.holley@dcnr.alabama.gov
12	Tina Freeman	tpfreema@southernco.com

HARRIS DAM
RELICENSING

HARRIS PROJECT RELICENSING

HAT 1 SIGN-IN SHEET

September 11, 2019 9:00 AM

	Name/ Affiliation or Organization	Email
13	Sheila Smith APC	Scsmith@southernco.com
14	ALBERT EILAND	EILANDFARM@ADL.COM
15	Nathan Aycock	Nathan.Aycock@dcnr.alabama.gov
16	Butch Jackson	~~Kotter~~ lakebutch@kw.com
17	Taconya Goar	taconya.goar@dcnr.alabama.gov
18	Sylvia French	sandnfrench@gmail.com
19	TOM GARLAND	jfcrew@southernco.com
20	JIM CREW	
21	Alan Peeples	alpeeple@Southernco.com
22	Kenneth Odom	kodom@southernco.com
23	Mitch Reed	mitchell.reed@tu.org
24	TINA L MILLS	TMills@SOUTHERNCO.COM

HARRIS DAM
RELICENSING

HARRIS PROJECT RELICENSING

HAT 1 SIGN-IN SHEET

September 11, 2019 9:00 AM

	Name/ Affiliation or Organization	Email
25	Fred Leslie/ADEM Field Ops	fal@adem.alabama.gov
26	Chris Goodman	cggoodma@southernco.com
27	Keith Crandles	
28	Carl Chaffin	cchaffin@alabama.org
29	Jason Carlee	jcarlee@southernco.com
30	Ashley McVicar	ammcvica@southernco.com
31	Donna Matthews	donnamat@aol.com
32	Kristie Coffman / ALCFWRU	kmo0025@auburn.edu
33	Jennifer Rasberry / APC	
34	HARRY E. MERRILL	HARRY.MERRILL47@gmail.com
35	FERC Staff on phone	Sarah Salazar
36		

ATTACHMENT B
SEPTEMBER 11, 2019 HAT 1 PRESENTATION

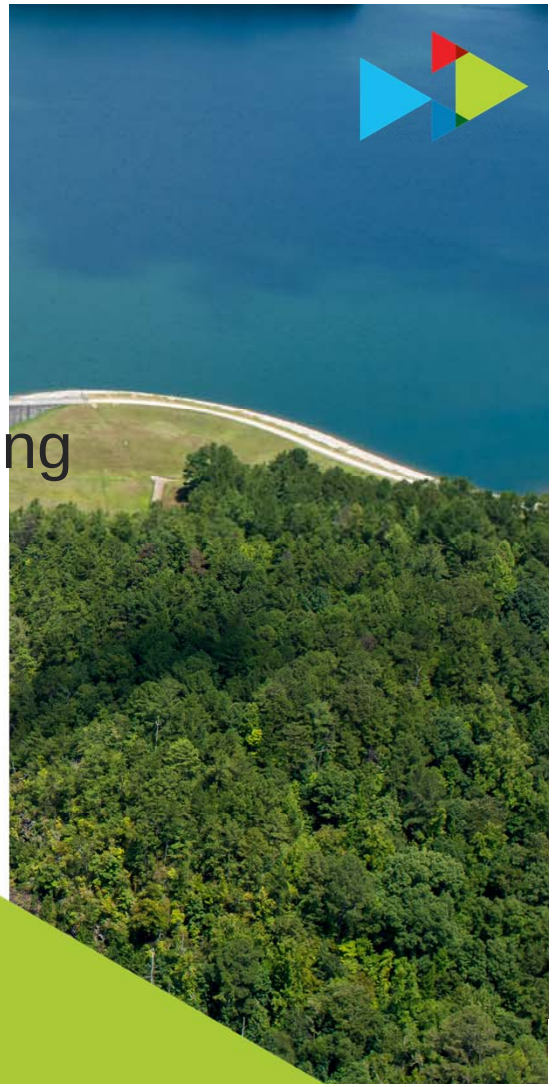
Alabama Power

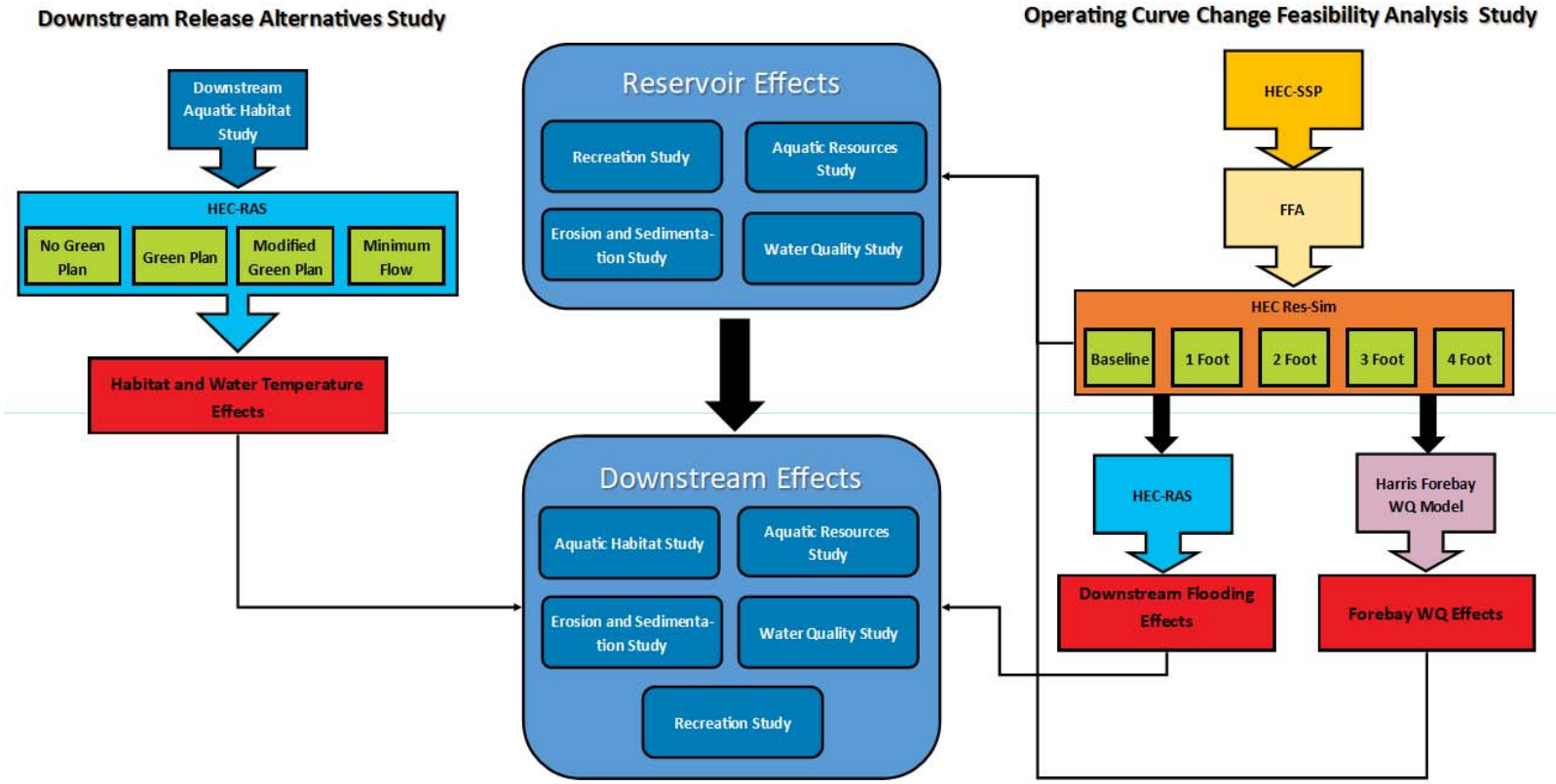
R.L. Harris Project Relicensing

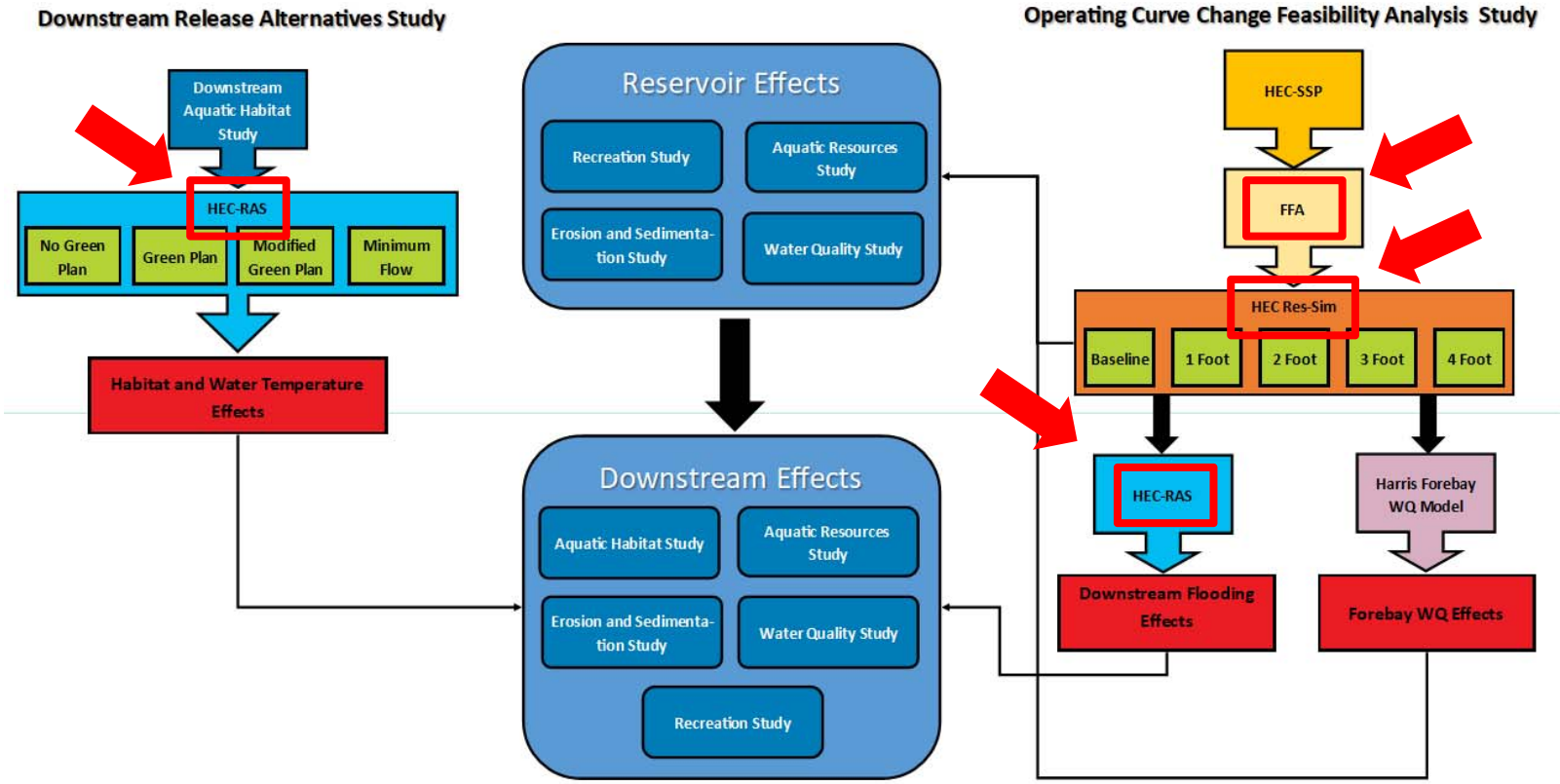
Project Operations – HAT 1

Model Inputs and Methodologies for Operating Curve Change Analysis and Downstream Release Alternatives

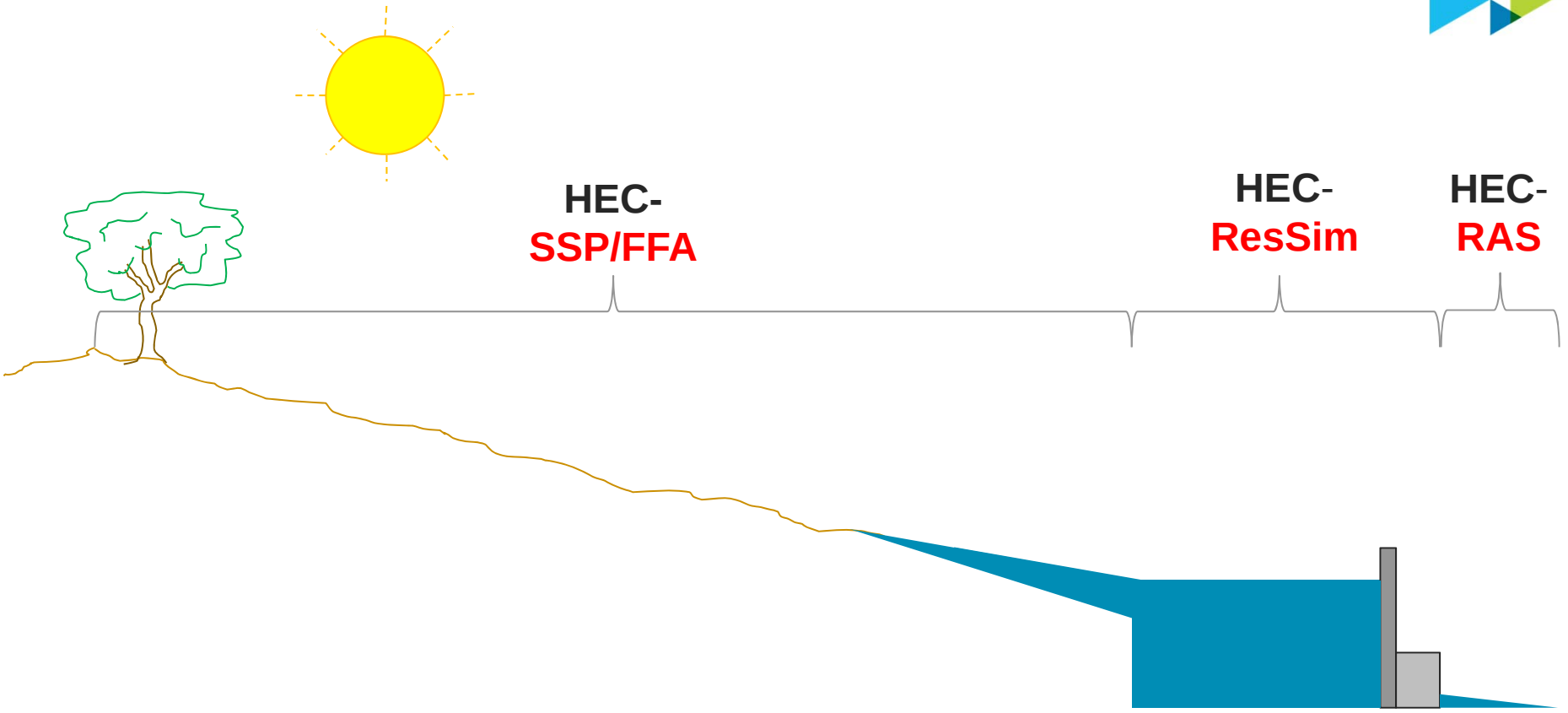
September 11, 2019



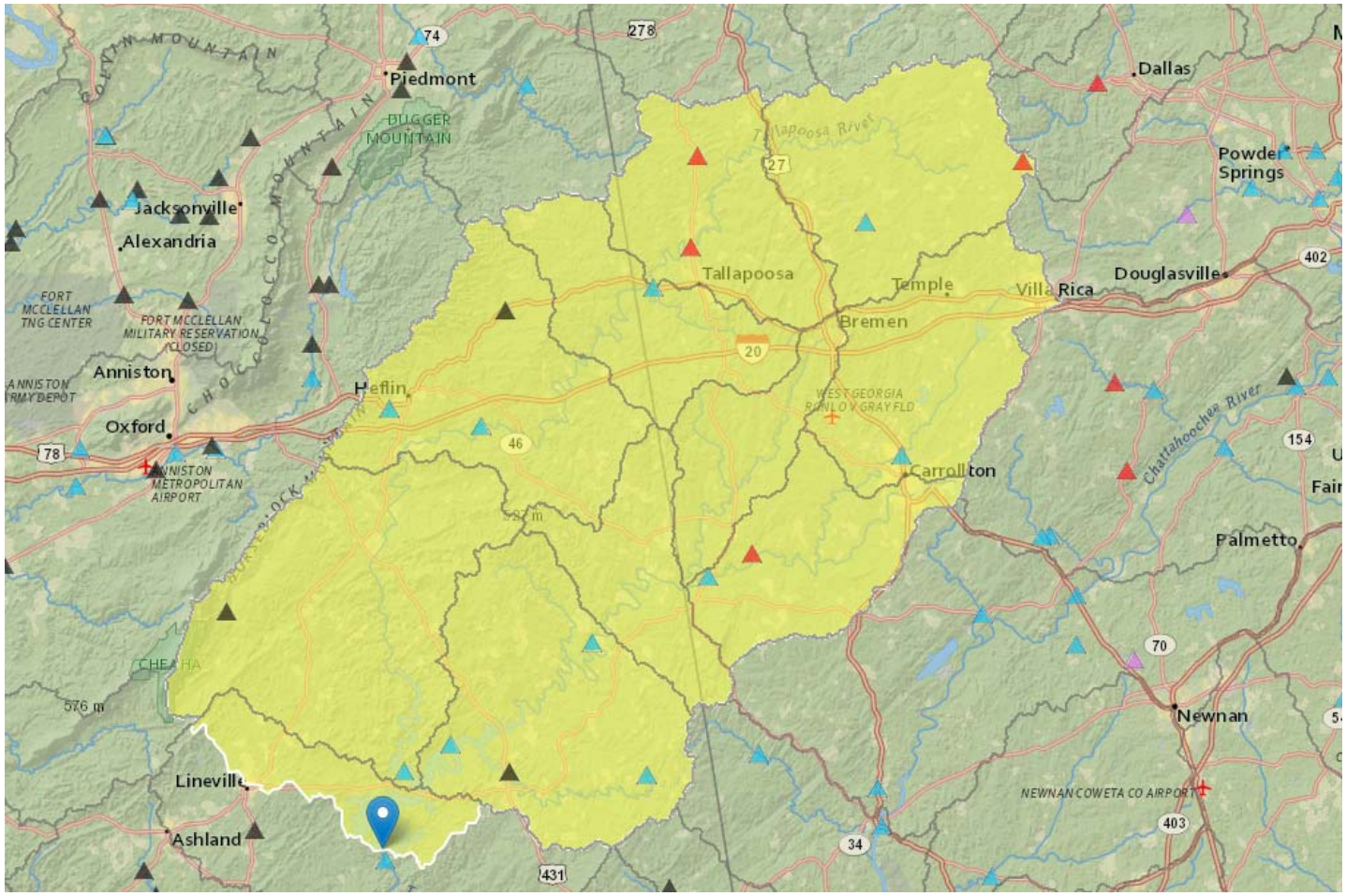

Downstream Release Alternatives Study
Downstream Aquatic Habitat Study
HEC-RAS
No Green Plan
Green Plan
Modified Green Plan
Minimum Flow
Habitat and Water Temperature Effects
Reservoir Effects
Recreation Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Downstream Effects
Aquatic Habitat Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Recreation Study
Operating Curve Change Feasibility Analysis Study
HEC-SSP
FFA
HEC Res-Sim
Baseline
1 Foot
2 Foot
3 Foot
4 Foot
HEC-RAS
Harris Forebay WQ Model
Downstream Flooding Effects
Forebay WQ Effects


Downstream Release Alternatives Study
Downstream Aquatic Habitat Study
HEC-RAS
No Green Plan
Green Plan
Modified Green Plan
Minimum Flow
Habitat and Water Temperature Effects
Reservoir Effects
Recreation Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Downstream Effects
Aquatic Habitat Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Recreation Study
Operating Curve Change Feasibility Analysis Study
HEC-SSP
FFA
HEC Res-Sim
Baseline
1 Foot
2 Foot
3 Foot
4 Foot
HEC-RAS
Harris Forebay WQ Model
Downstream Flooding Effects
Forebay WQ Effects

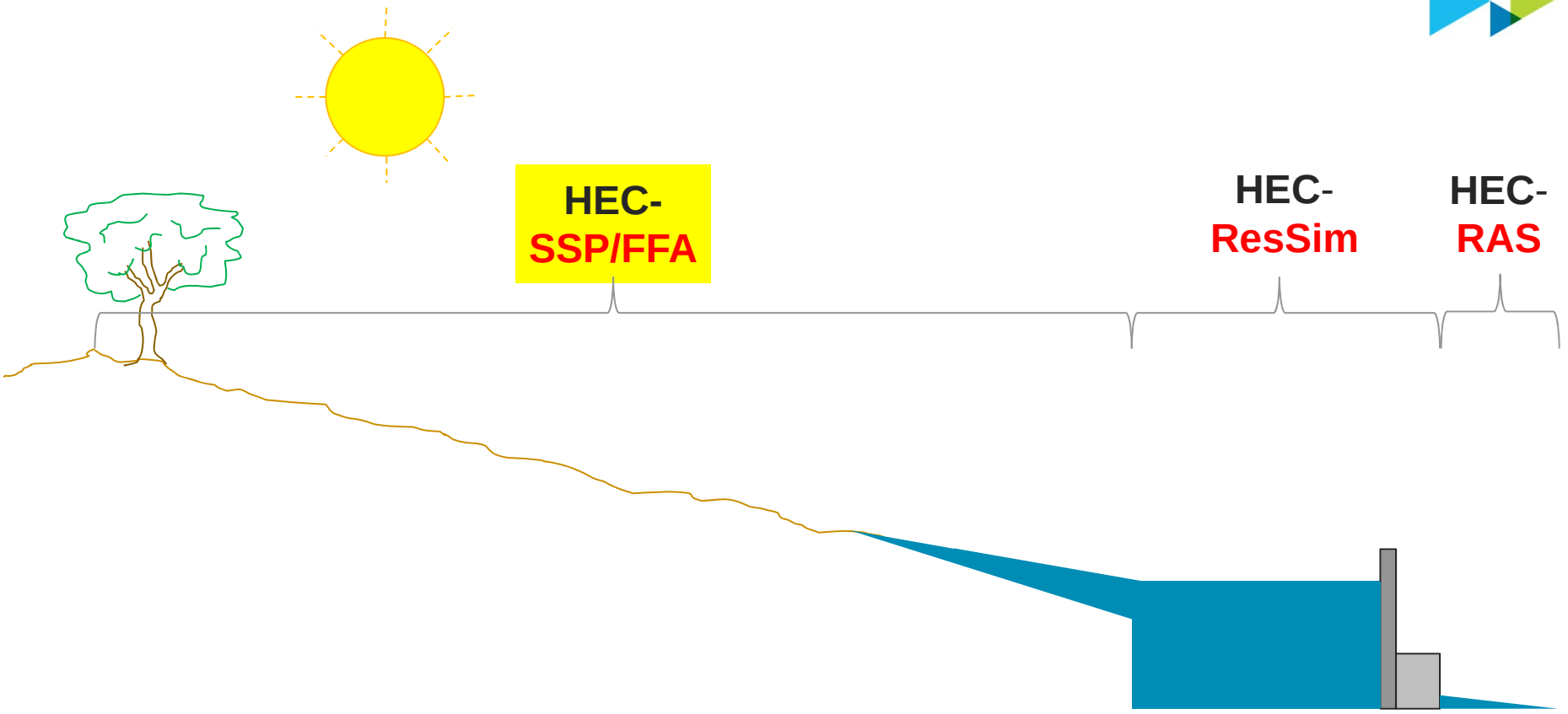
Where the models are used…



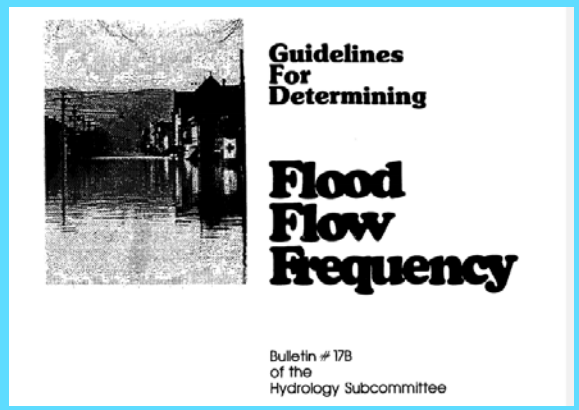
Harris Watershed Boundary



Where the models are used…



HEC-SSP (Statistical Software Package)



FFA

Flood Frequency Analysis for the Coosa and Tallapoosa Rivers

100-year flood

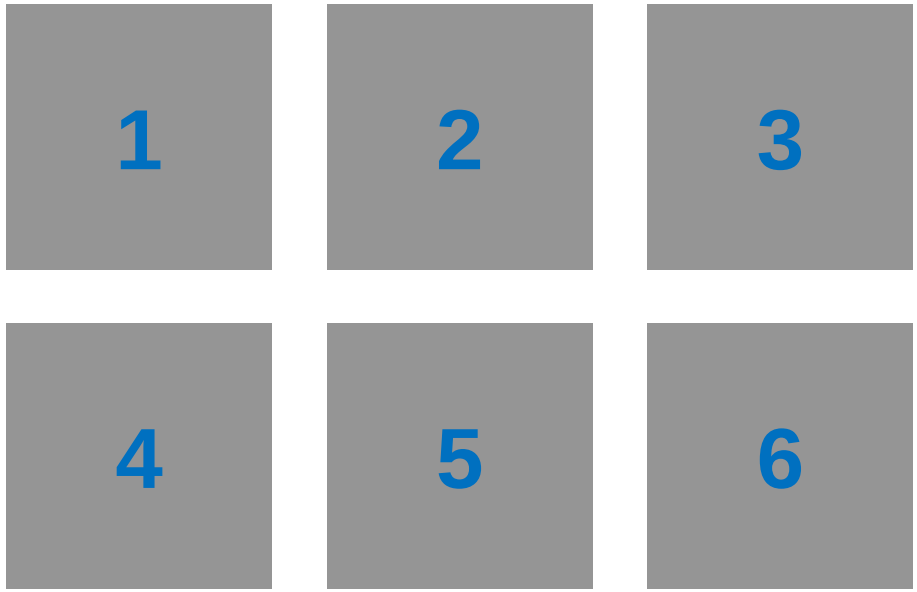
Why the 100-year flood?

- U.S. Government in the 1960’s decided the 100-year flood would be the basis for the National Flood Insurance Program, and it has been the standard since
- This makes the 100-year flood event the base of what MUST be studied

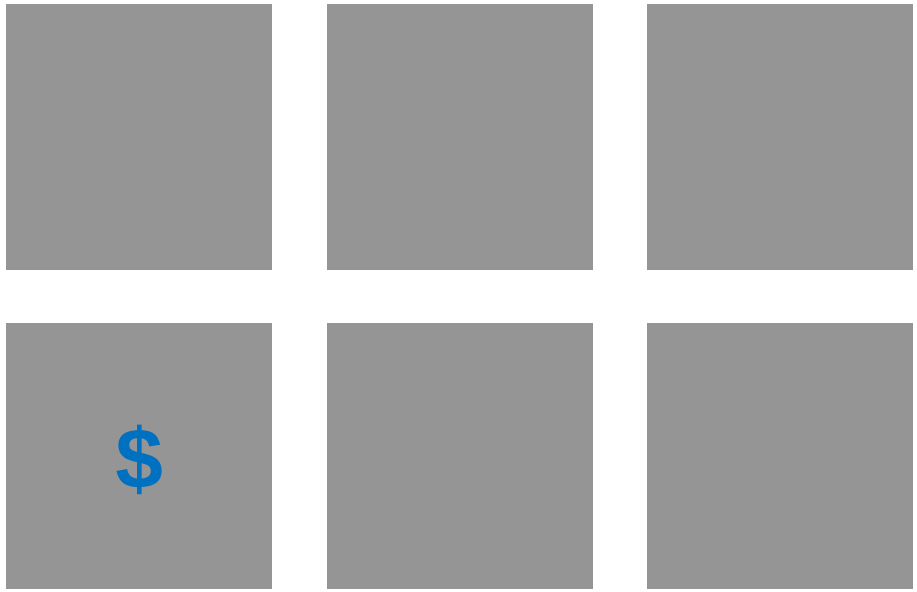
Exactly what do you mean by the “100-year” flood event?

- **It is a high streamflow event that has a 1-percent chance of being equaled or exceeded in any year.**
- The keyword here is “chance”
- Consider the following: if we had 1000 years of annual streamflow data, we would expect to see ten 100-year floods (1-percent chance floods) over the 1000-year record. These ten events could occur at any time during the 1000-year period.

Let’s play a game of “chance.” Pick a number. One card has a dollar sign under it.
What are your chances of picking the right one?

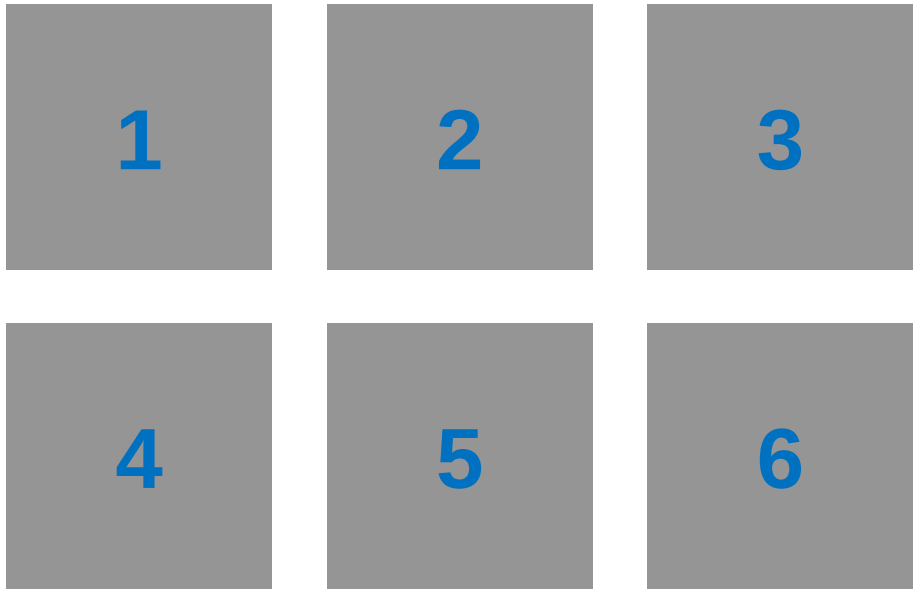


Let’s play a game of “chance.” Pick a number. One card has a dollar sign under it.
What are your chances of picking the right one?



What if we turned the cards back over and shuffled the dollar sign to randomly land on any card and then I, once again, ask you to pick a number?

How many would pick the 4-Card again? Why or Why not?



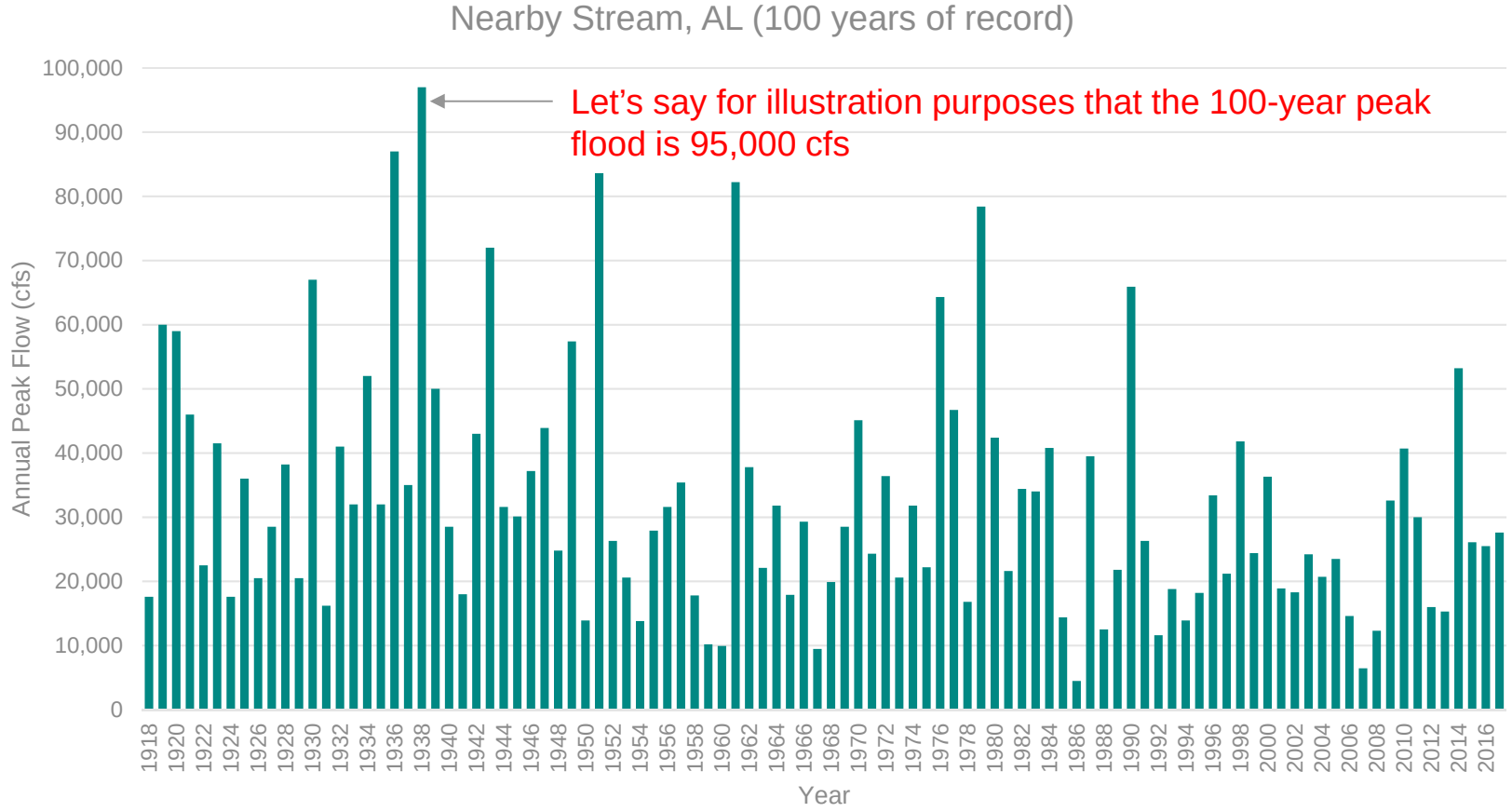
How many would pick a different card because you think that 1, 2, 3, 5, and 6 will have the $ before it can come back around to the 4-Card?

Very Common Misconception

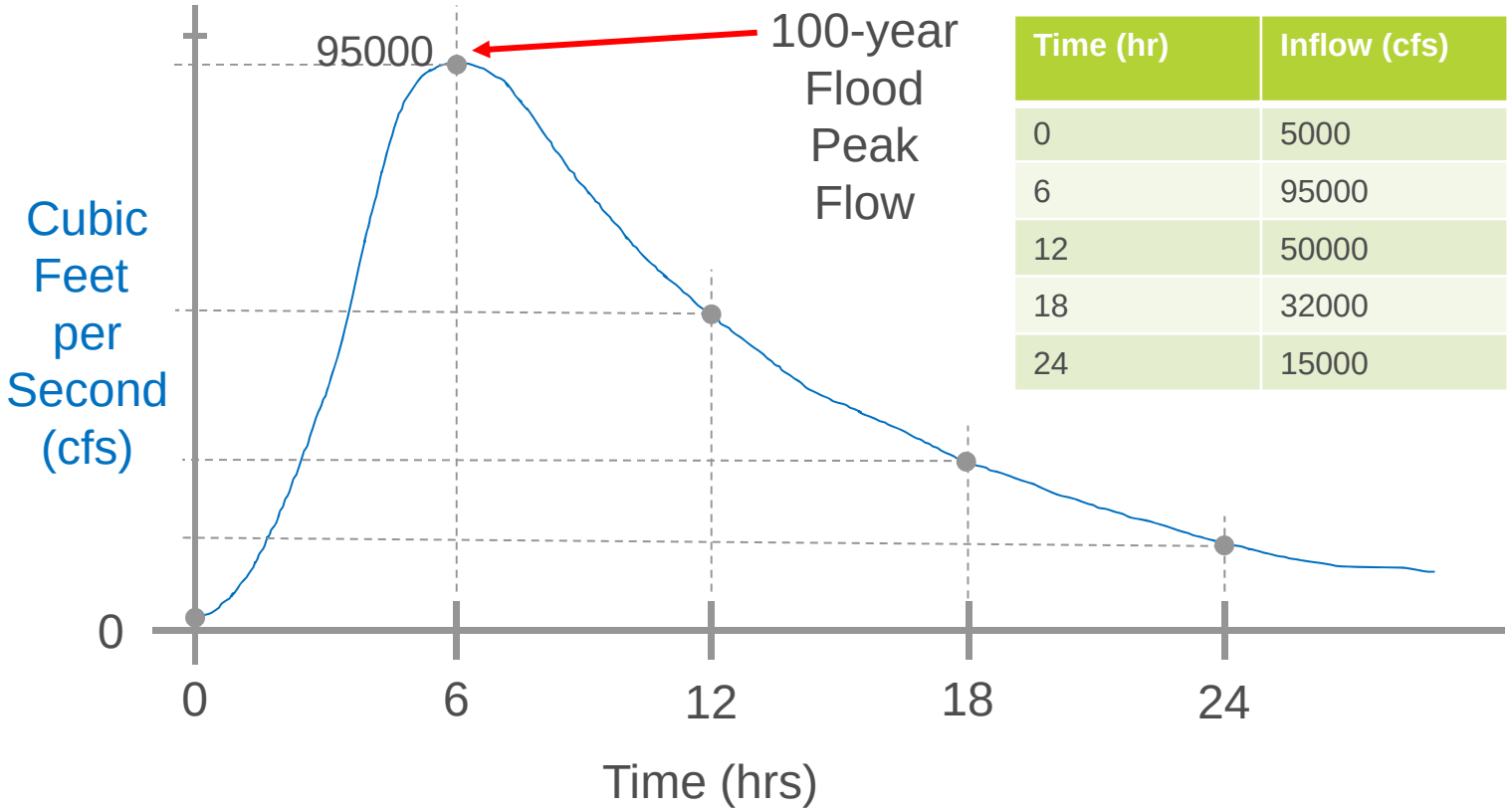
"If the 100-year flood just occurred, then we don't have to worry about another flood like that for the next 99 years."

WRONG!!!

(**For Illustration Purposes Only**)

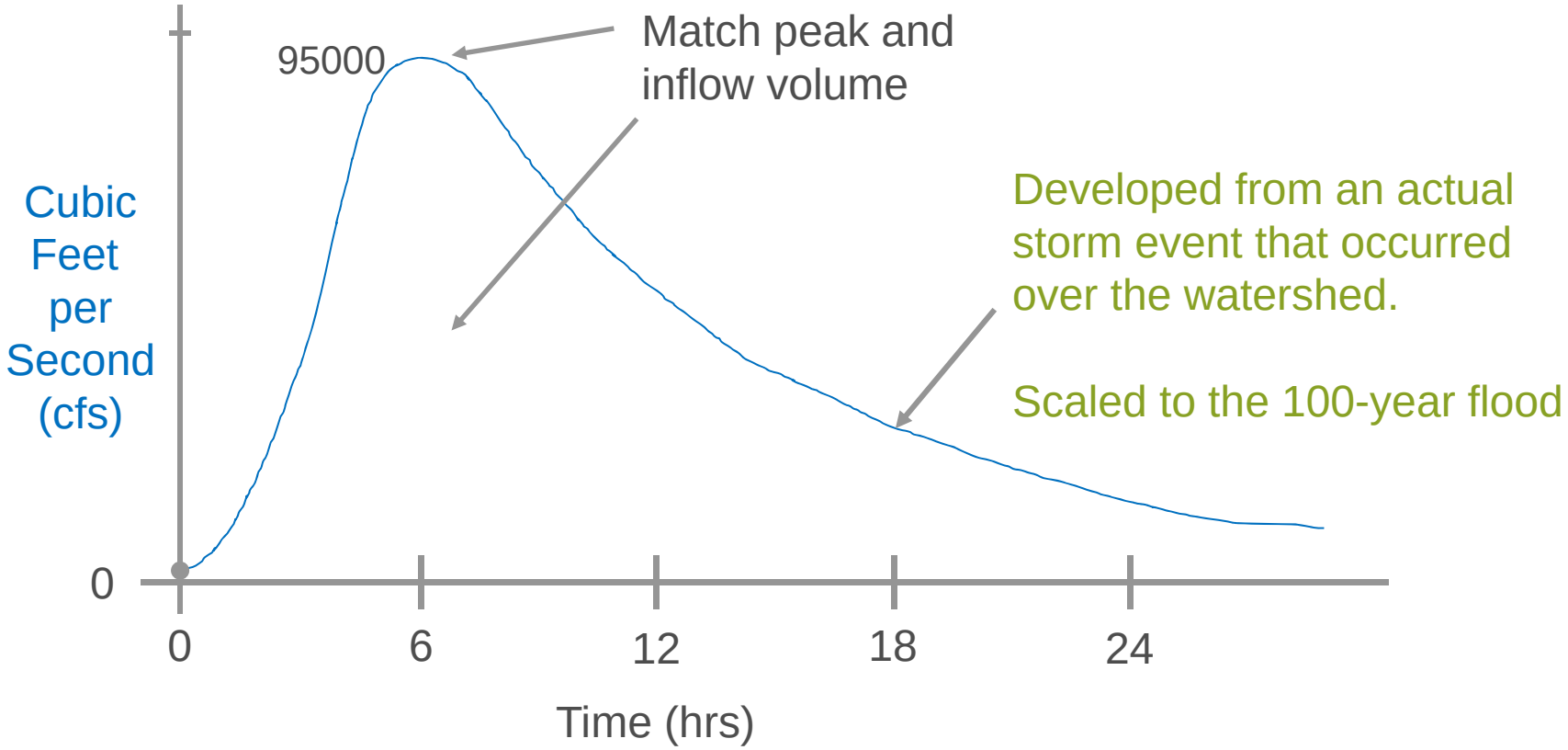


Inflow Hydrograph for Nearby Stream, AL (**For Illustration Purposes Only)**

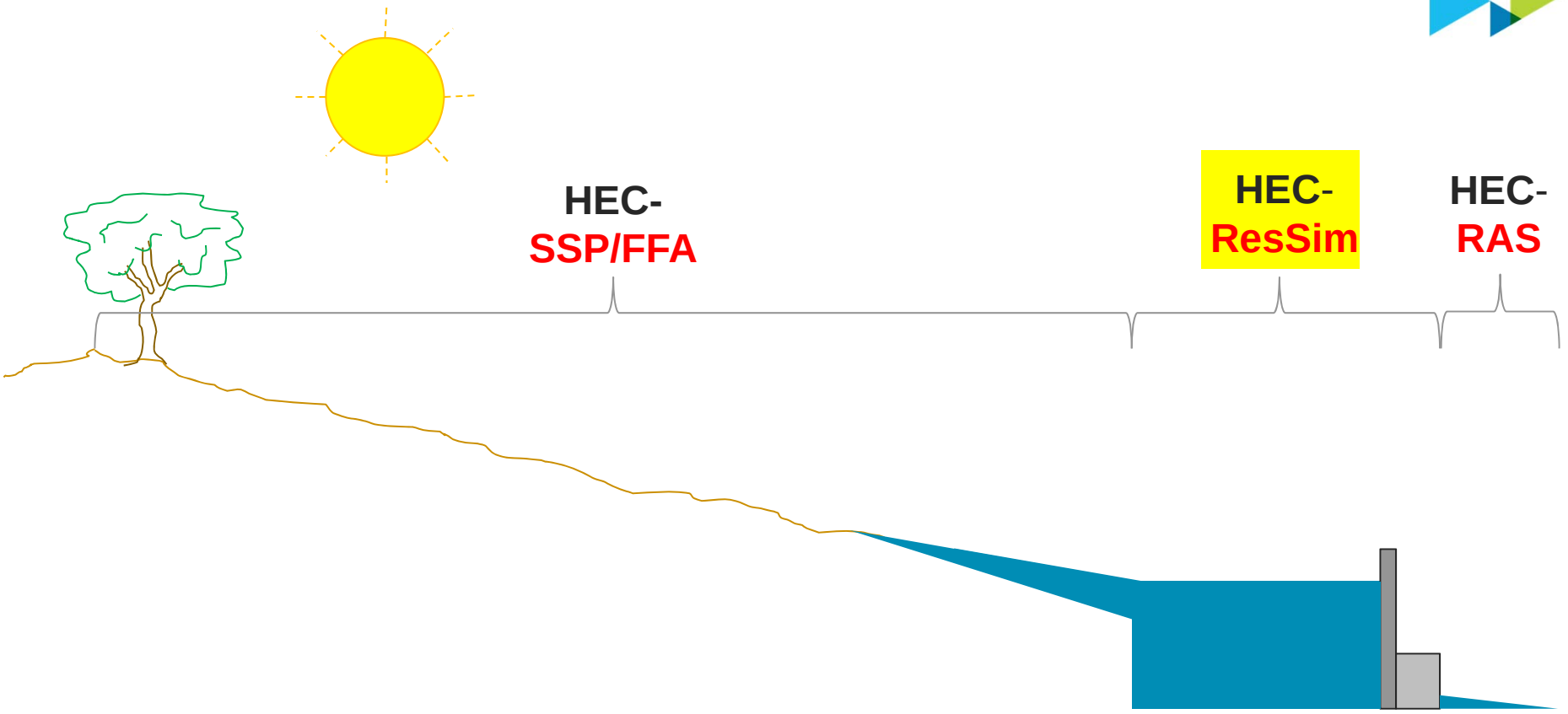


Time (hr)	Inflow (cfs)
0	5000
6	95000
12	50000
18	32000
24	15000

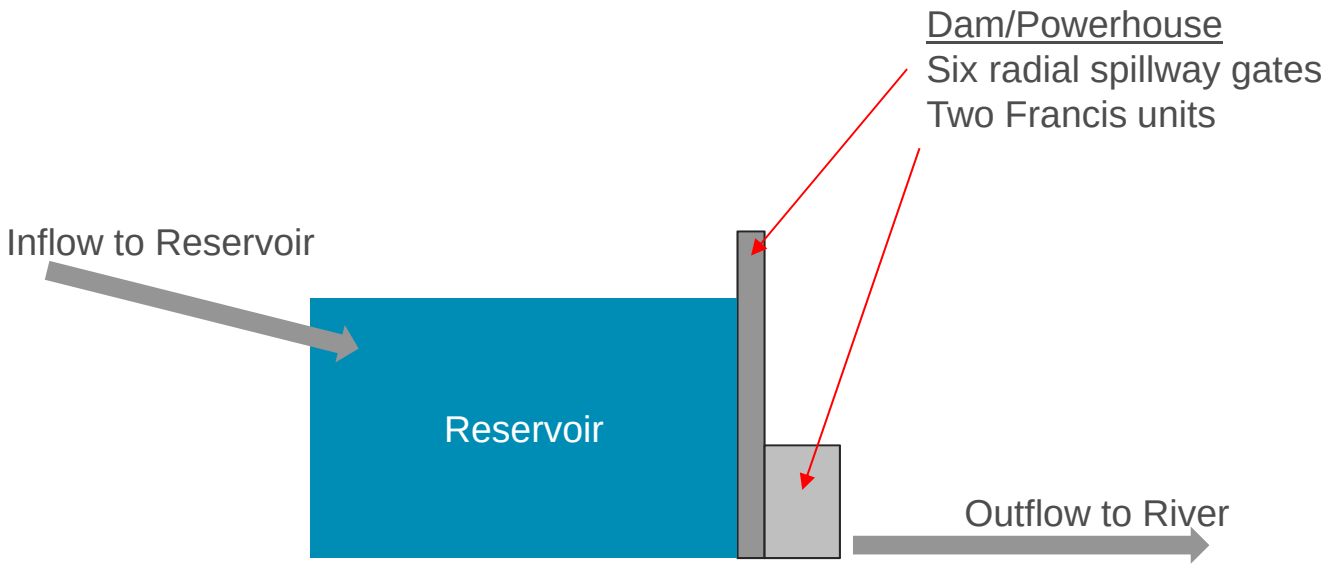
Inflow Hydrograph for Nearby Stream, AL **(For Illustration Purposes Only)**



Where the models are used…

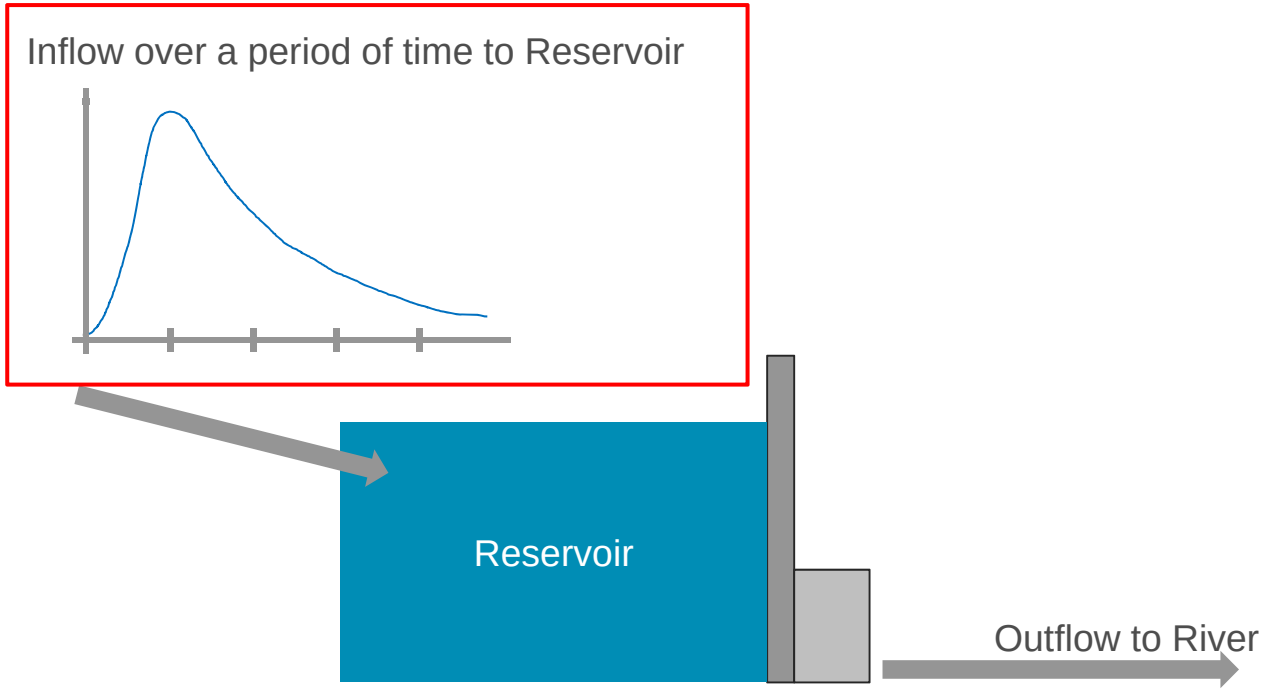


Schematic used to discuss HEC-ResSim



How **HEC-ResSim** sees the Reservoir

1. FFA and ”scaled” actual event

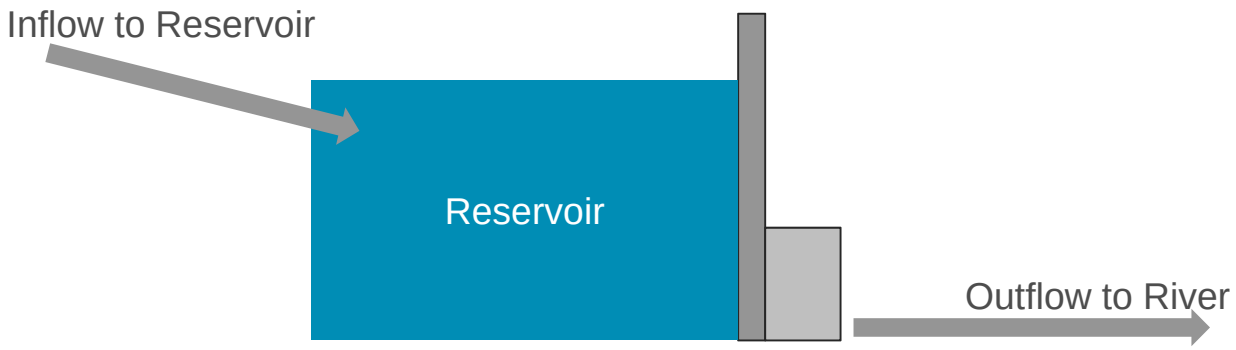


HEC-ResSim

2.

Elevation-Volume Table

Res. Elevation	Volume (ac-ft)
790	394724
791	404840
792	415170
793	425721
794	436495



HEC-ResSim

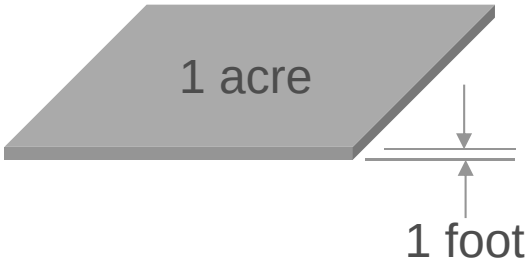
2.

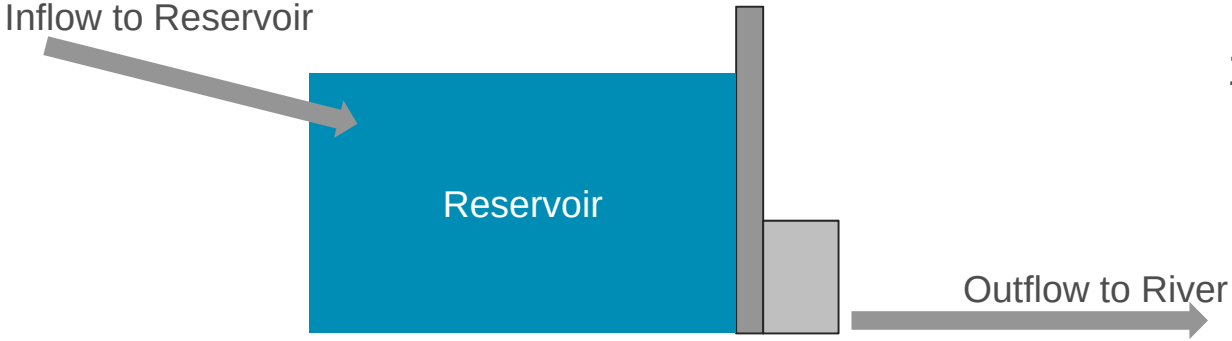
Elevation-Volume Table

Res. Elevation	Volume (ac-ft)
790	394724
791	404840
792	415170
793	425721
794	436495

What is an ac-ft (or acre-foot)?

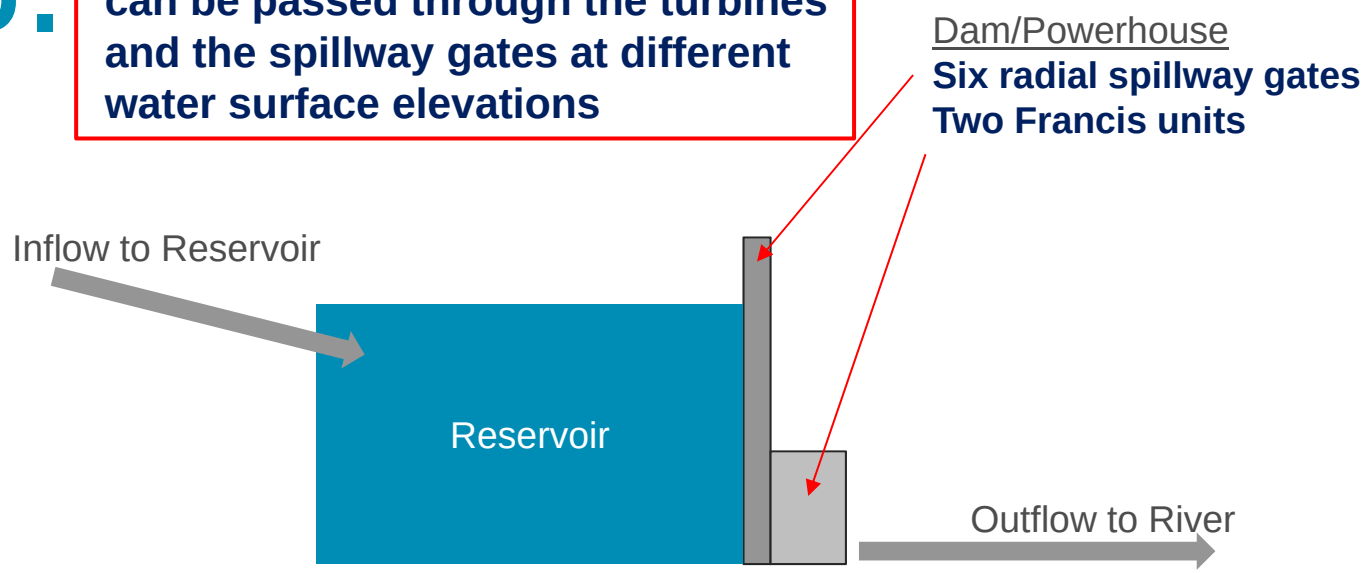
It is a measure of volume where one acre-foot
is an area of one acre covered with one foot of water





HEC-ResSim

3. **Information about how much water can be passed through the turbines and the spillway gates at different water surface elevations**



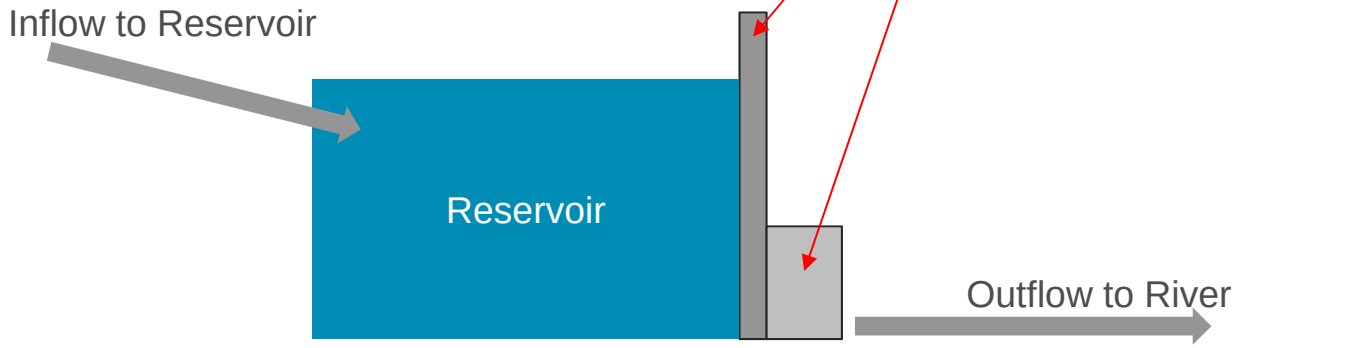
HEC-ResSim

4.

Reservoir Regulation Manual

This tells us how the reservoir must be operated.

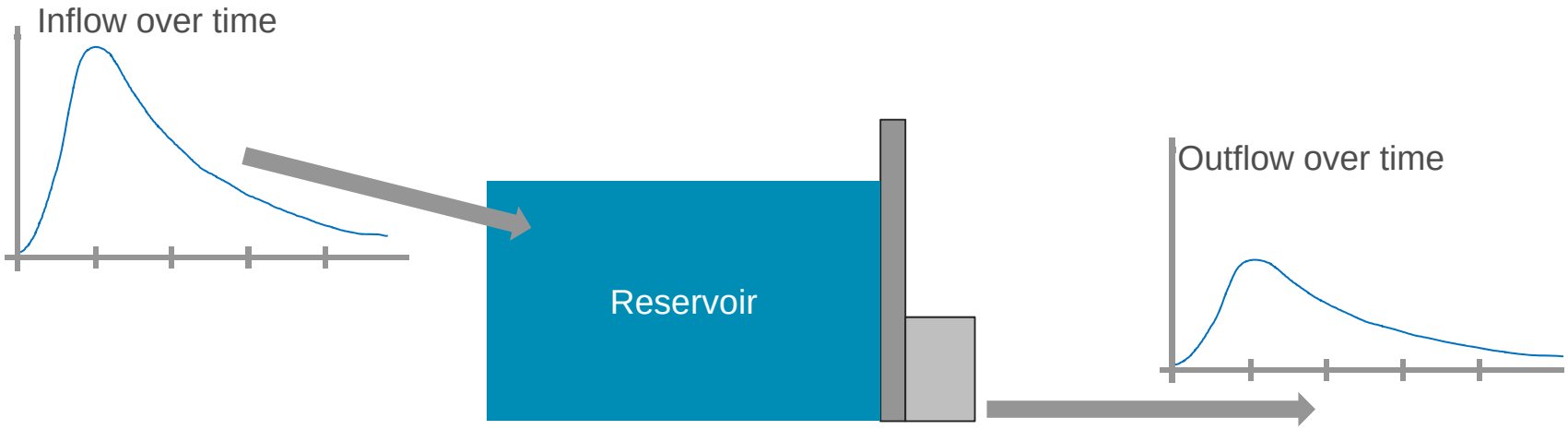
For high flows, the manual mandates how we must operate the **turbines and spillway gates** in accordance with approved **U.S. Army Corps of Engineers rules** called **Flood Control Regulation Schedule**

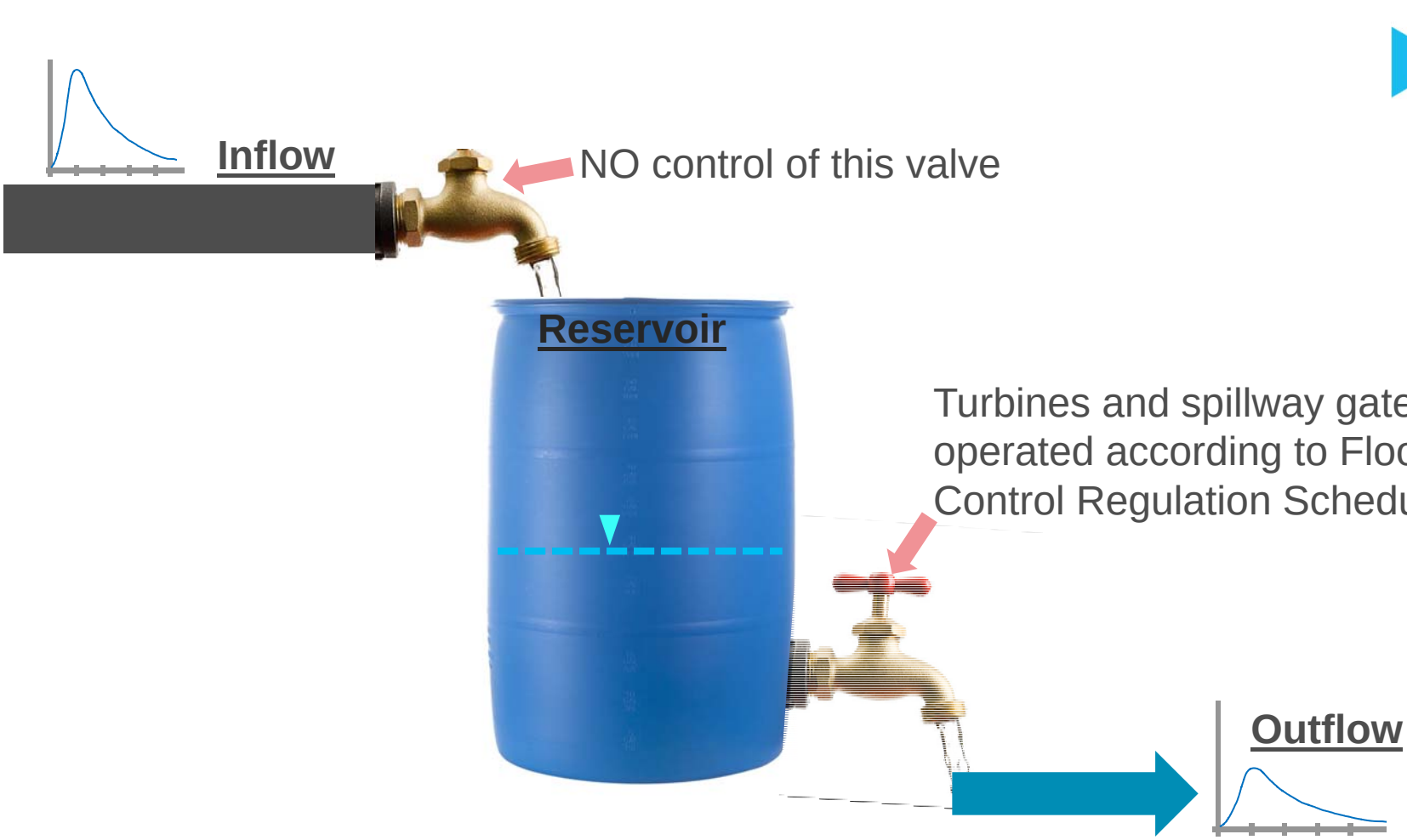


If **INFLOW** is higher than **OUTFLOW**: **ELEVATION** ↑

If **INFLOW** is less than **OUTFLOW**: **ELEVATION** ↓

If **INFLOW** is equal to **OUTFLOW**: No Change in ELEVATION




Inflow
NO control of this valve
Reservoir
Turbines and spillway gates operated according to Flood Control Regulation Schedule
Outflow

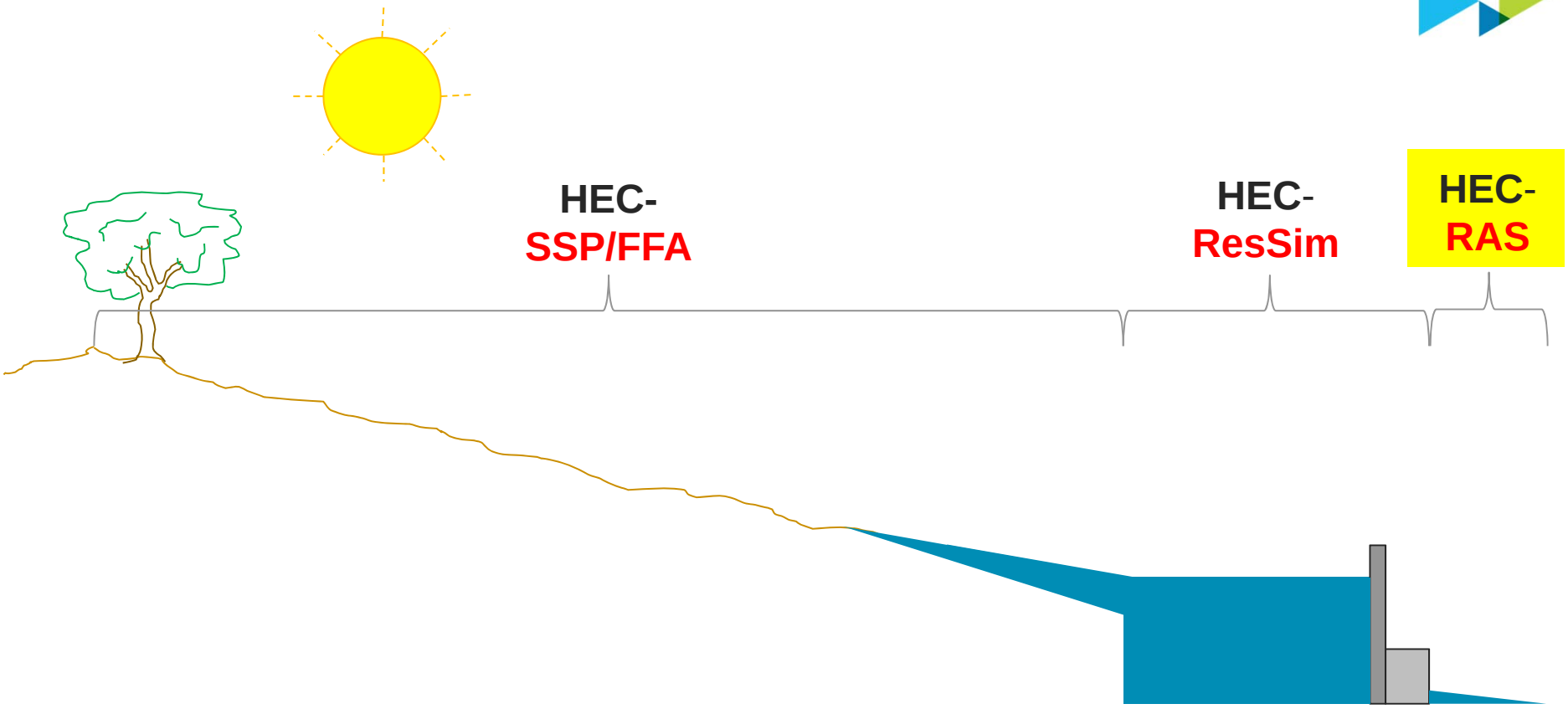
Outputs from HEC-ResSim

- How the reservoir elevation changes over time during a flood event

- The outflow hydrograph (turbines + spillway) to be used in **HEC-RAS**

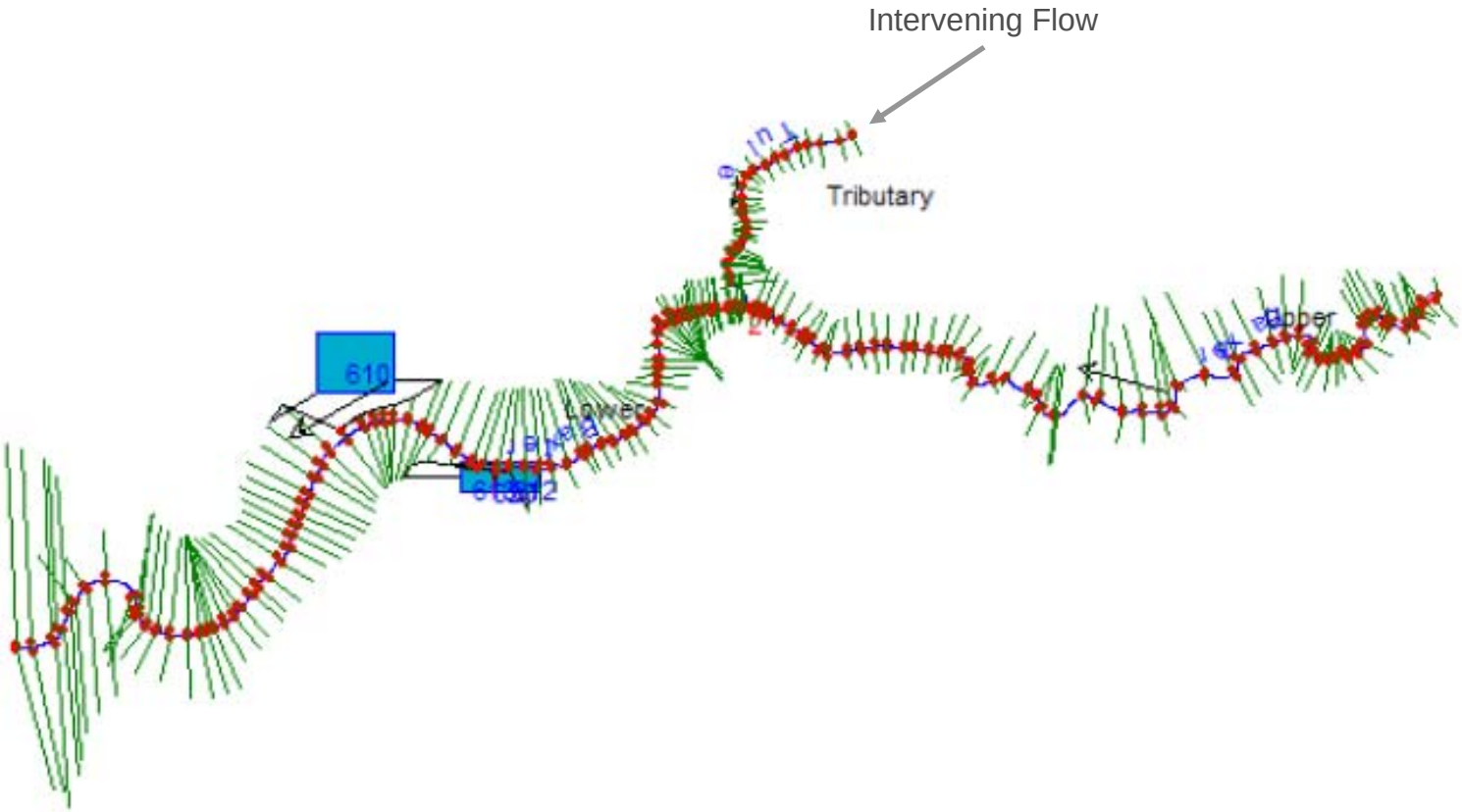
***Both controlled by the Flood Control Regulation Schedule**

Where the models are used…



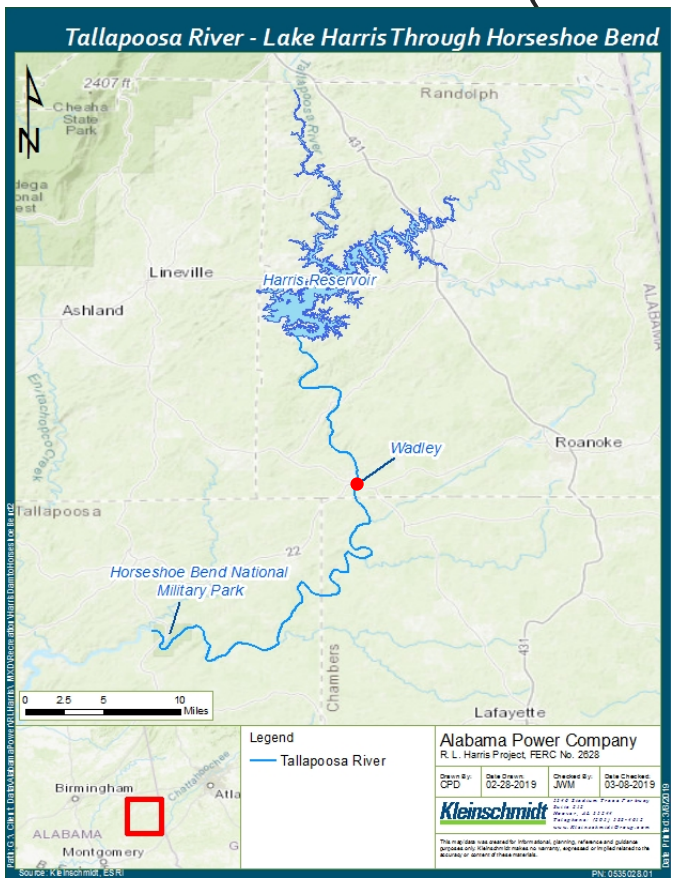
HEC-RAS cross-sections on a river

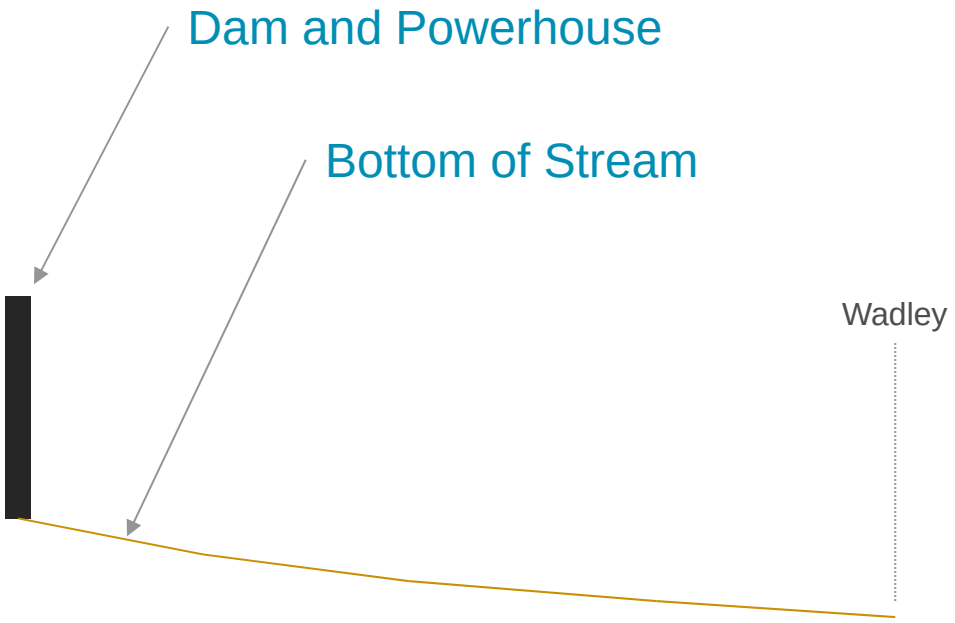
(For Illustration Purposes Only)



Schematic used to discuss HEC-RAS

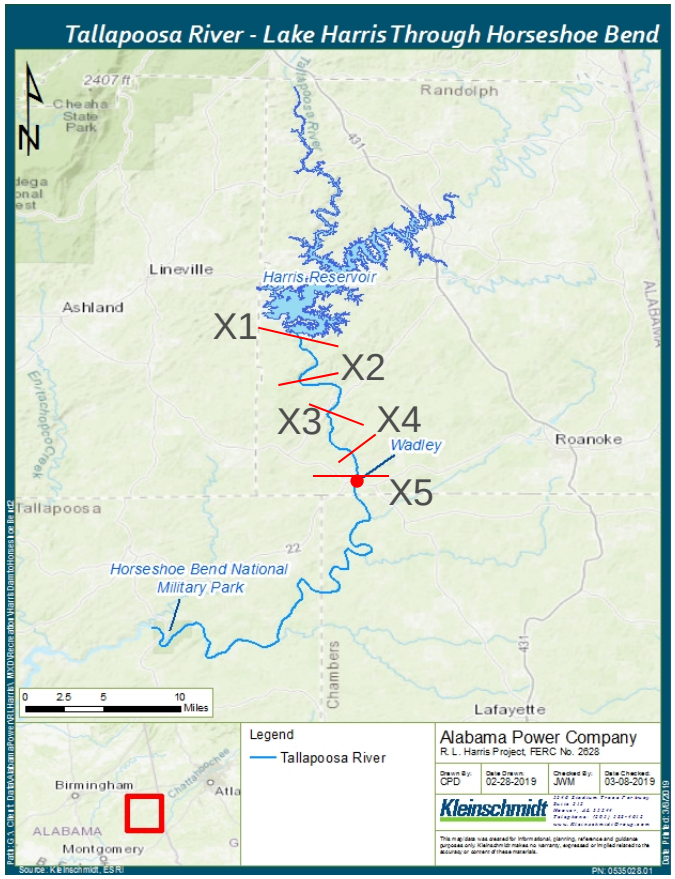
(For Illustrations Purpose Only)



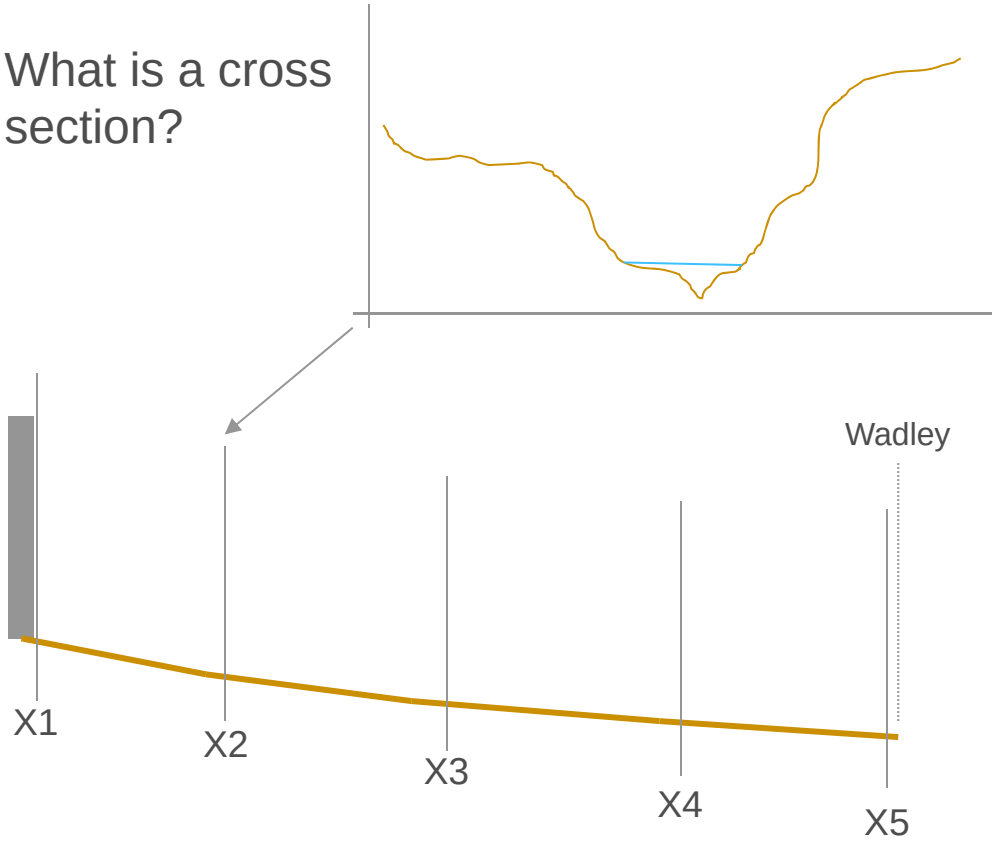


HEC-RAS Stream Cross Sections

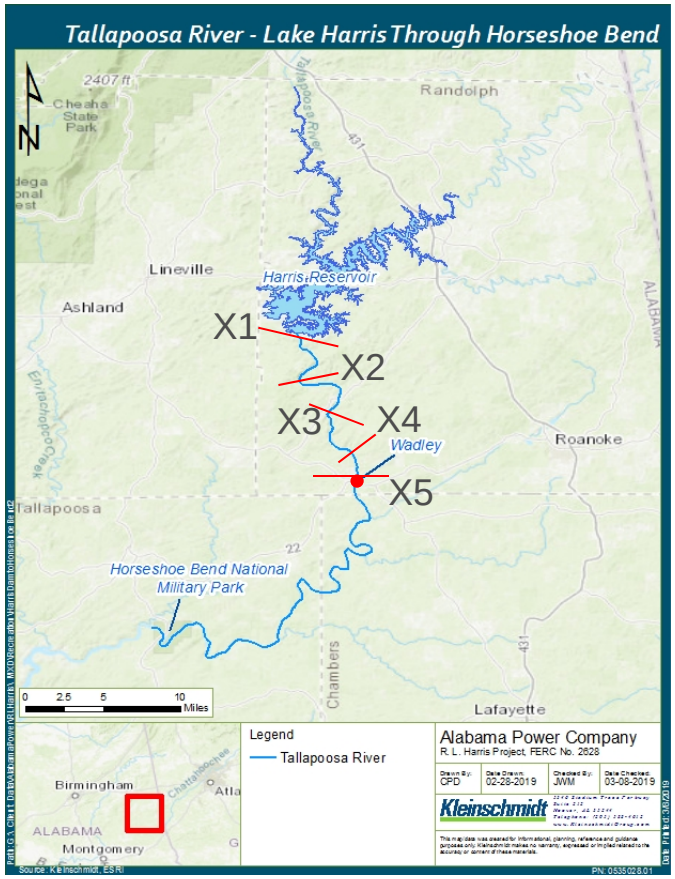
(For Illustration Purposes Only)

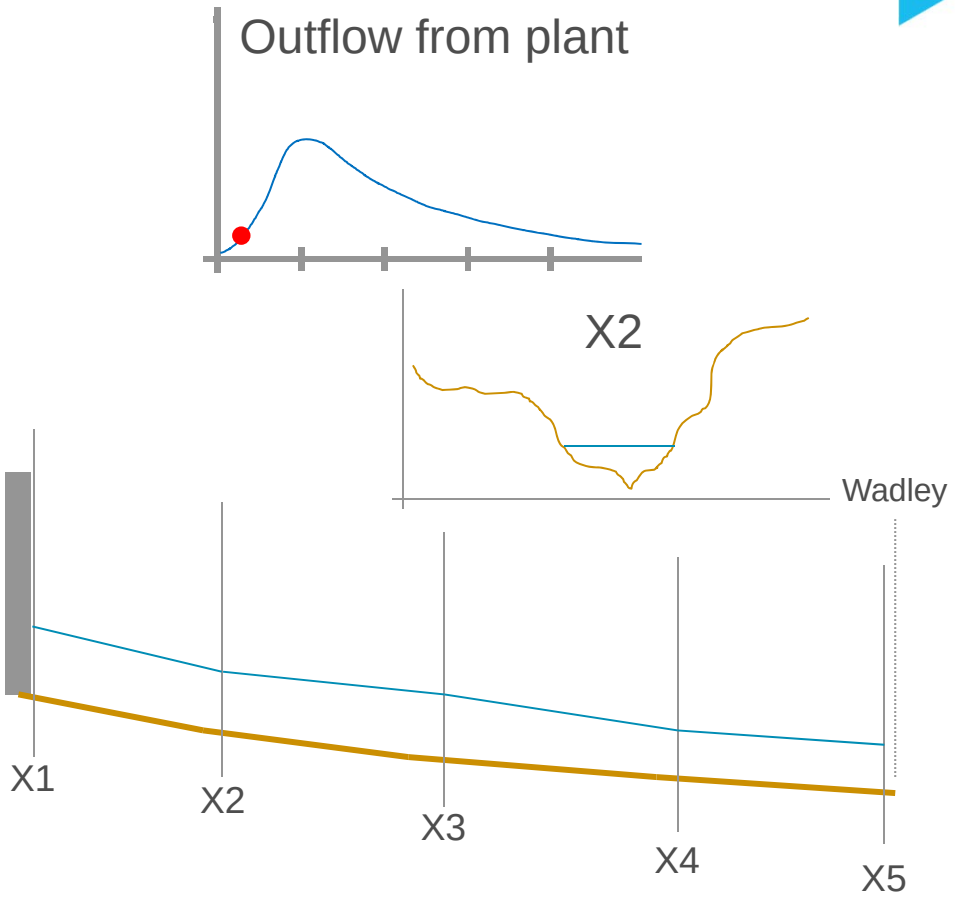


What is a cross section?

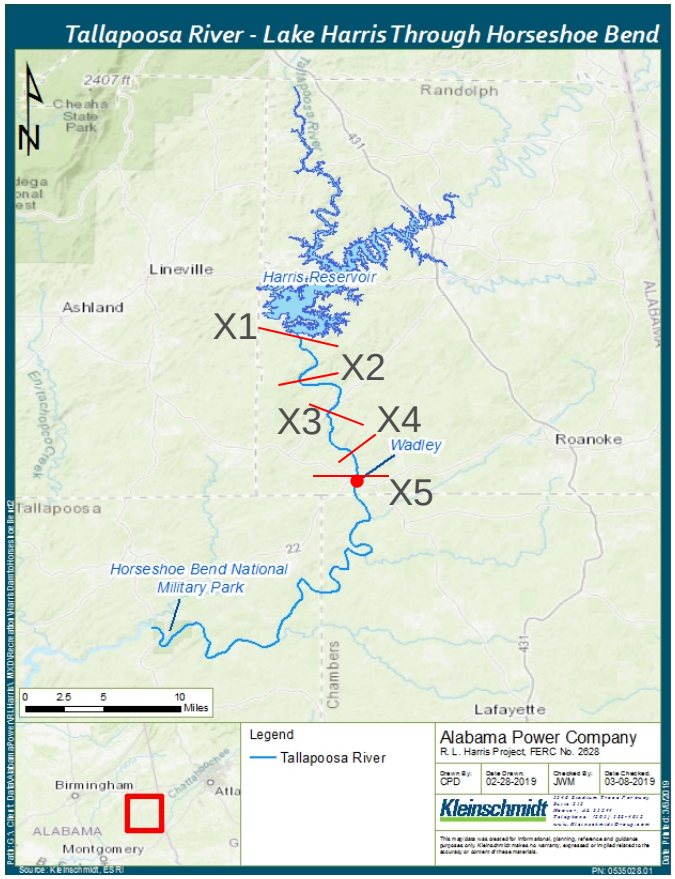


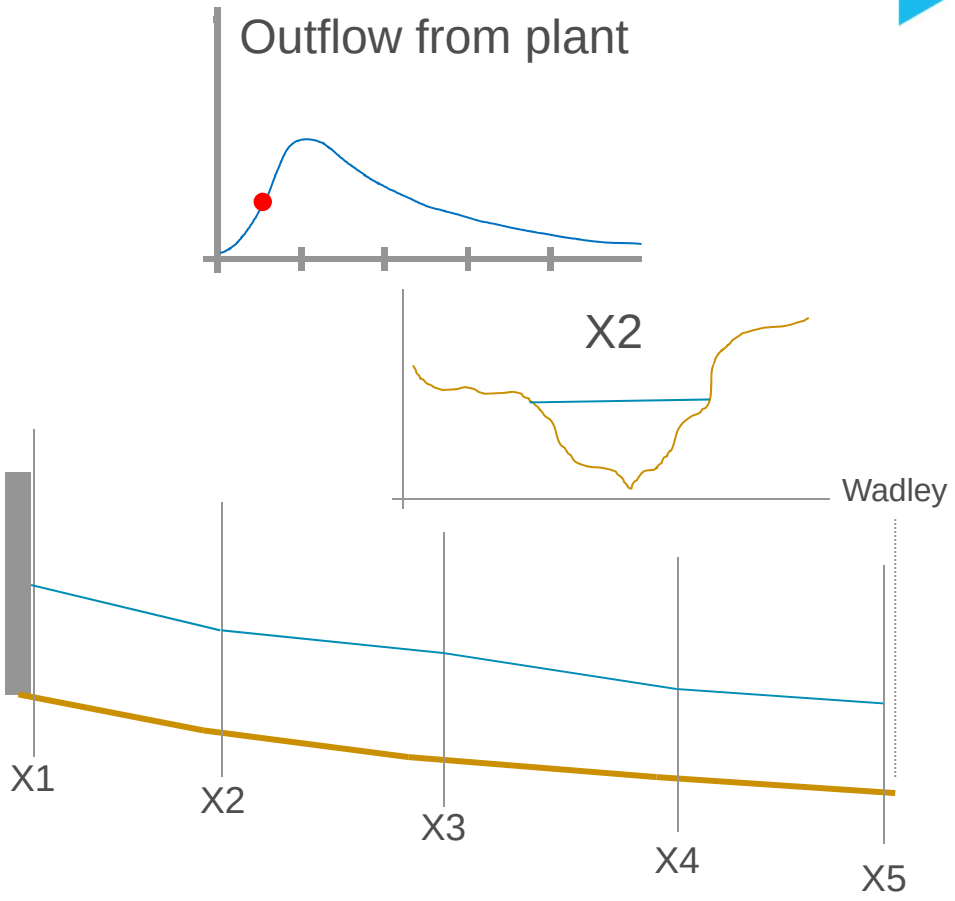
HEC-RAS (For Illustration Purposes Only)



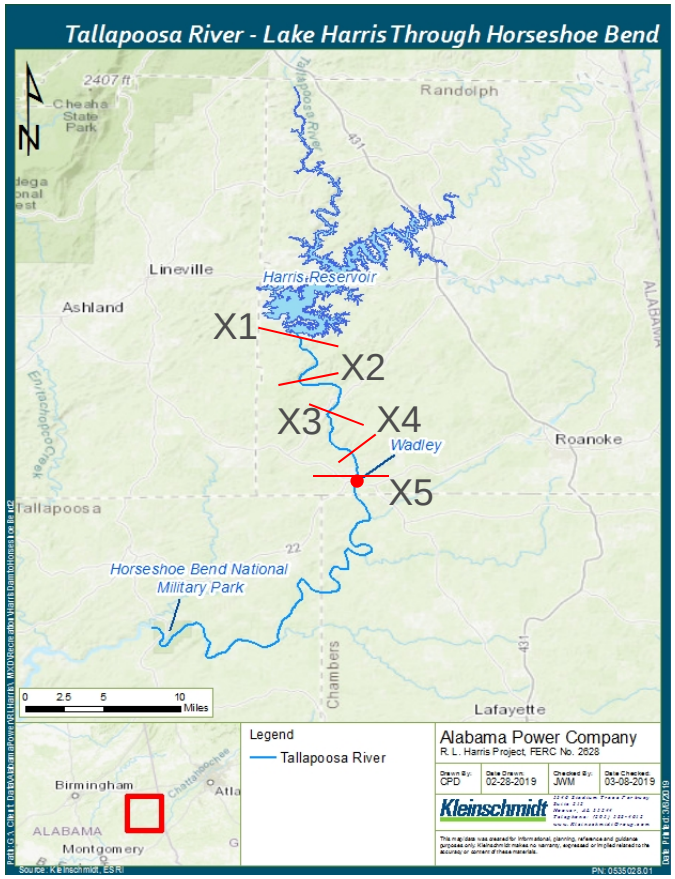


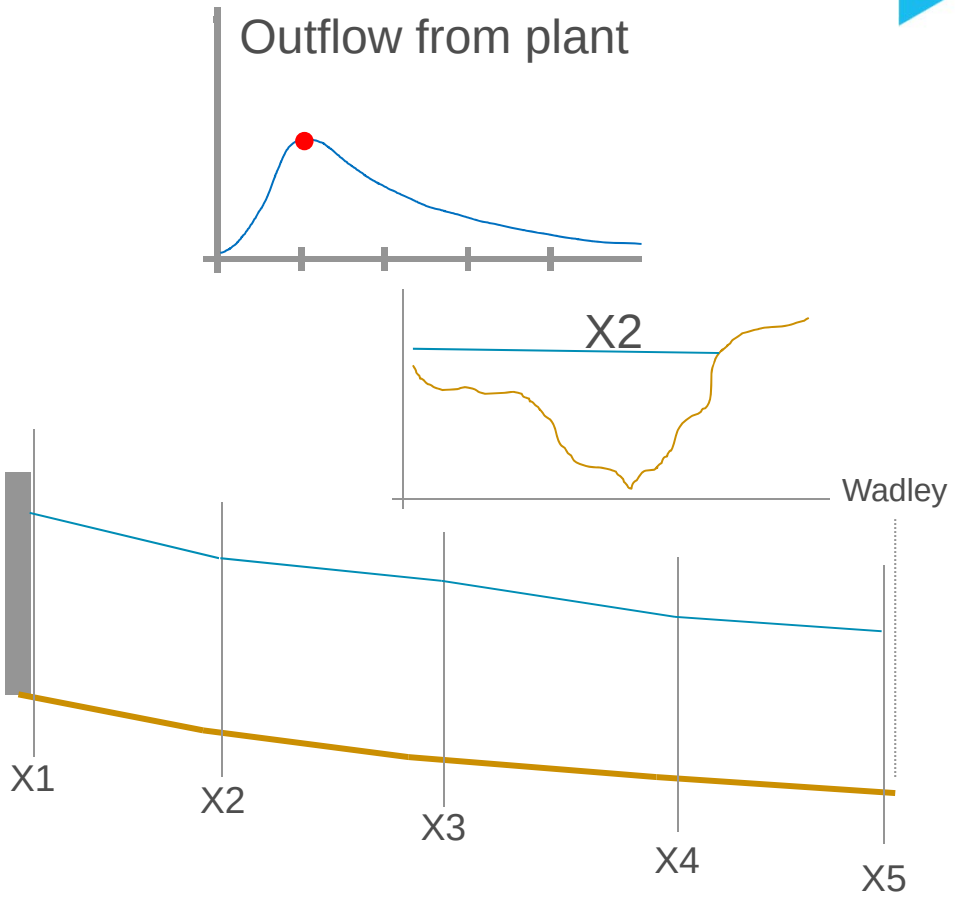
HEC-RAS (For Illustration Purposes Only)



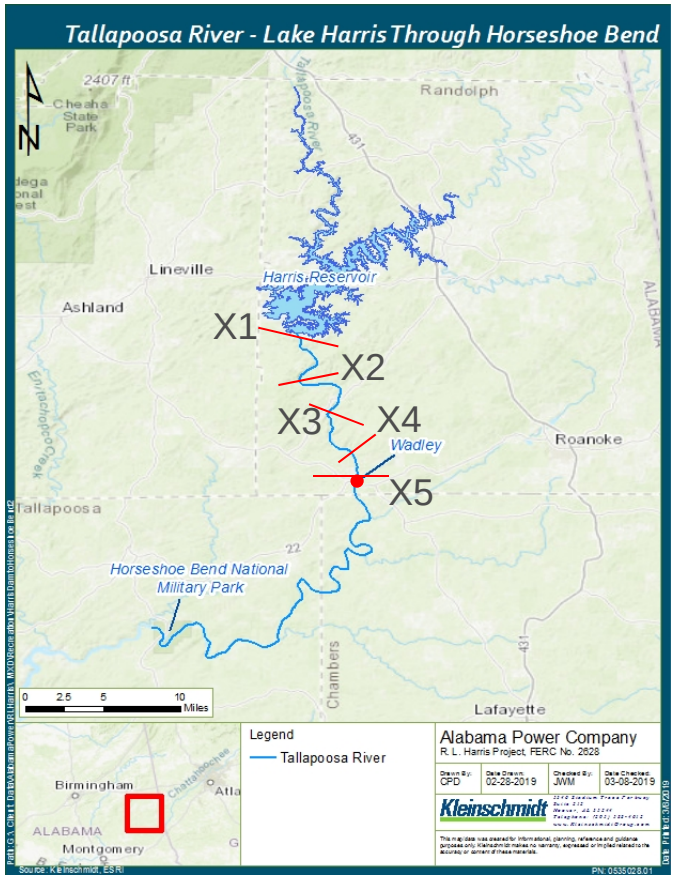


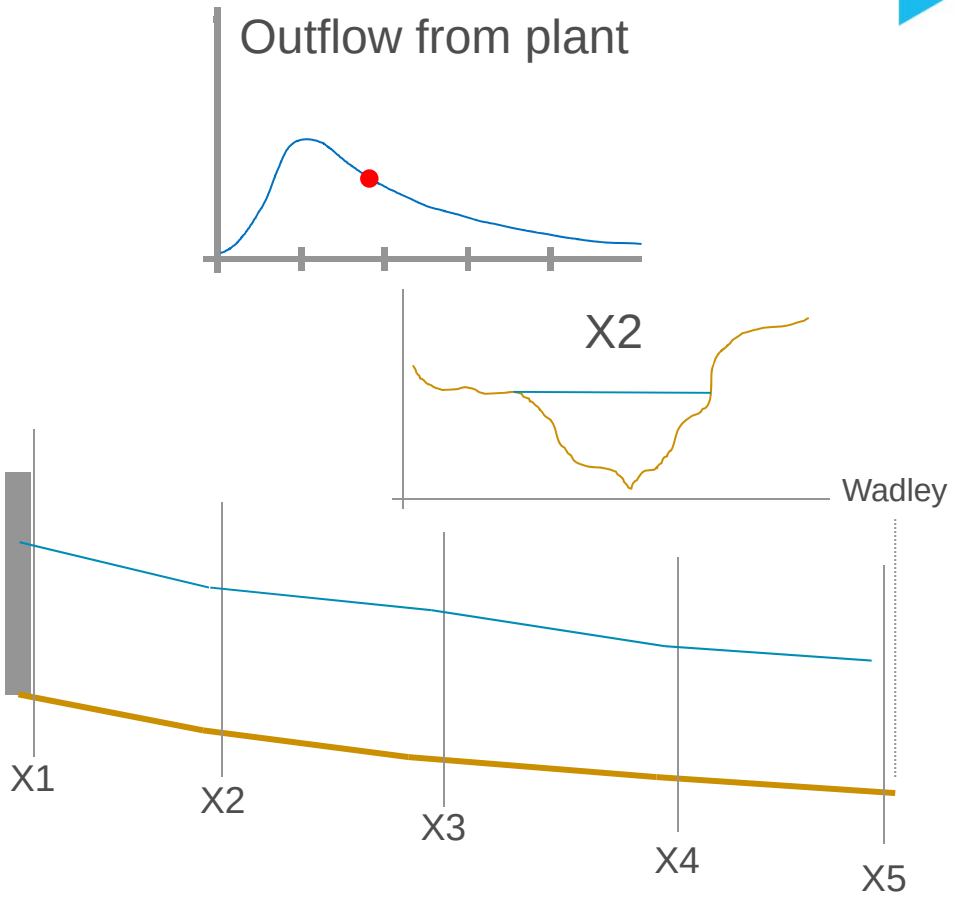
HEC-RAS (For Illustration Purposes Only)



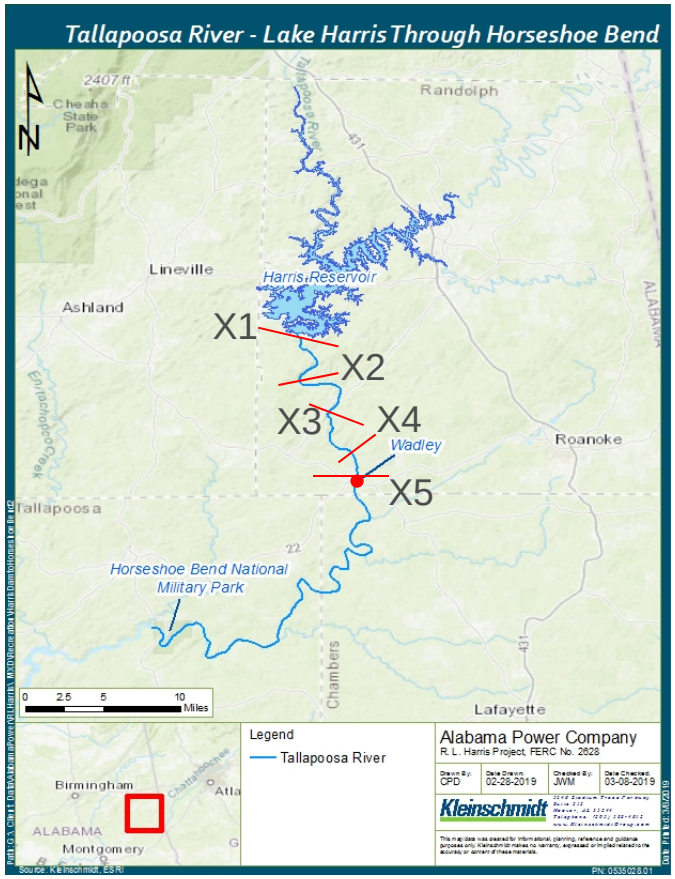


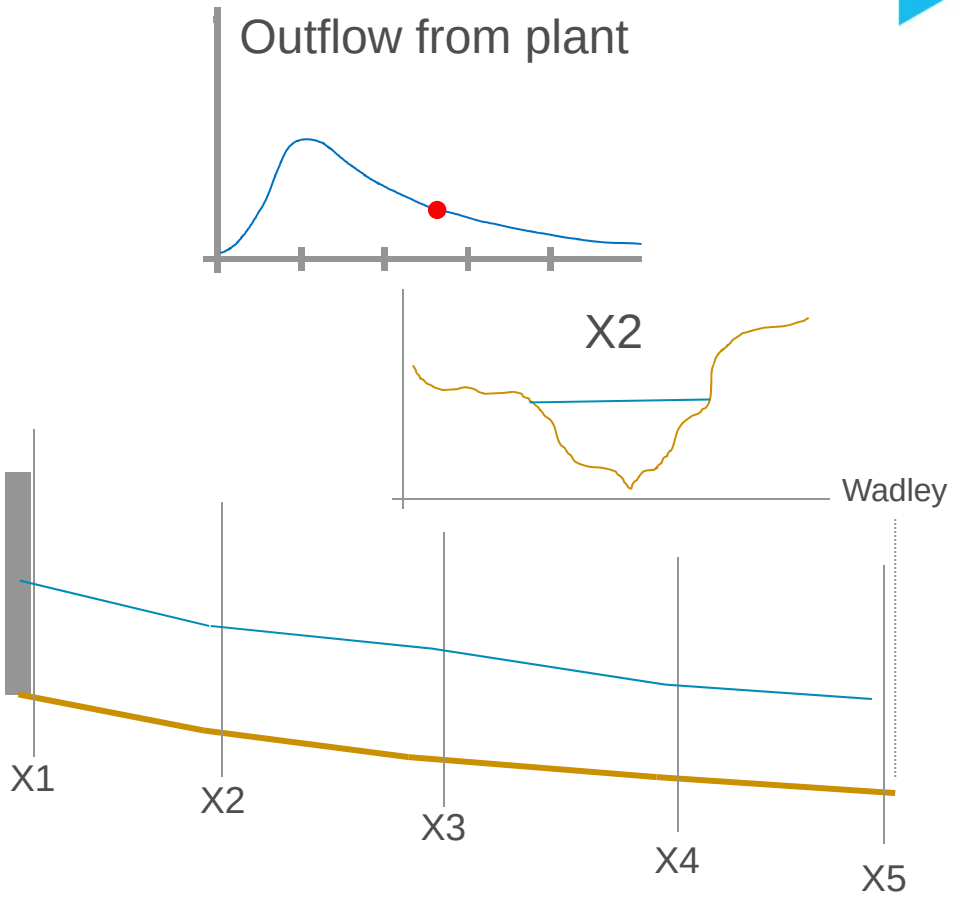
HEC-RAS (For Illustration Purposes Only)



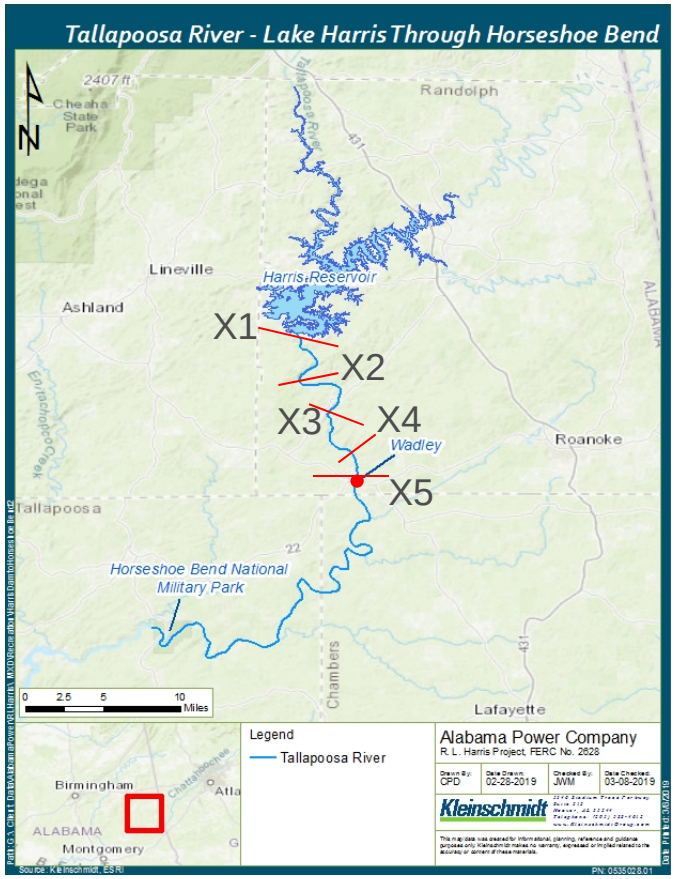


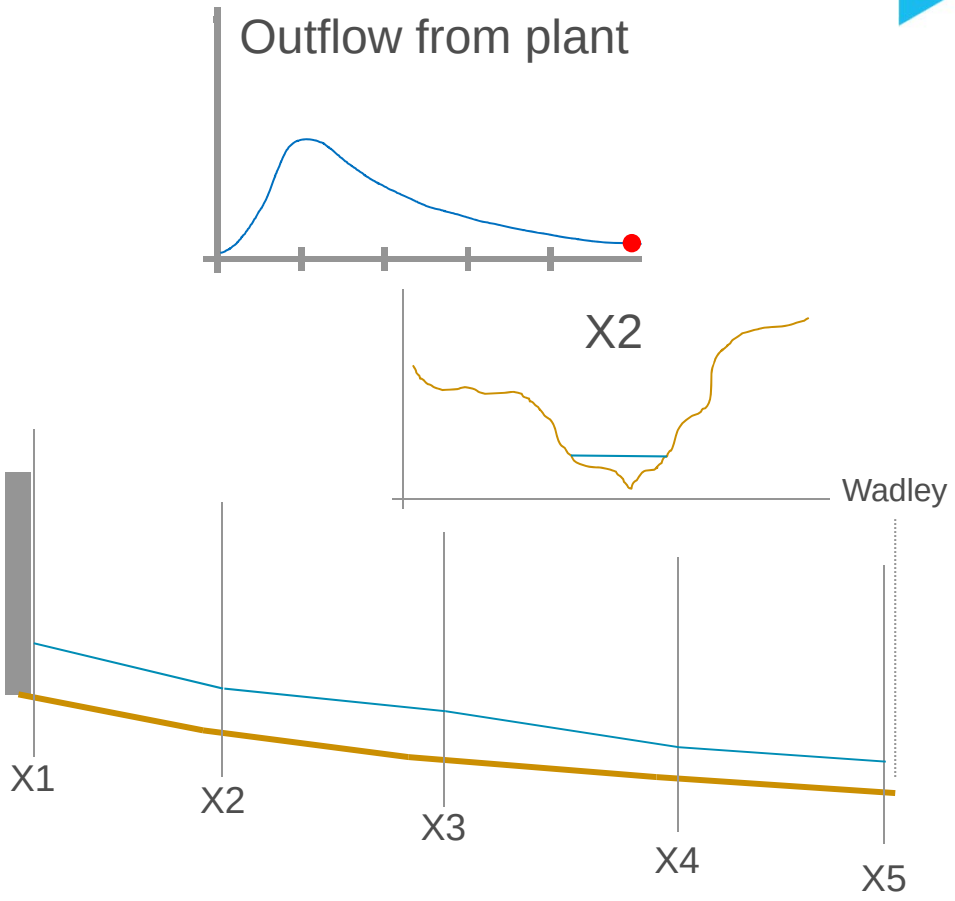
HEC-RAS (For Illustration Purposes Only)



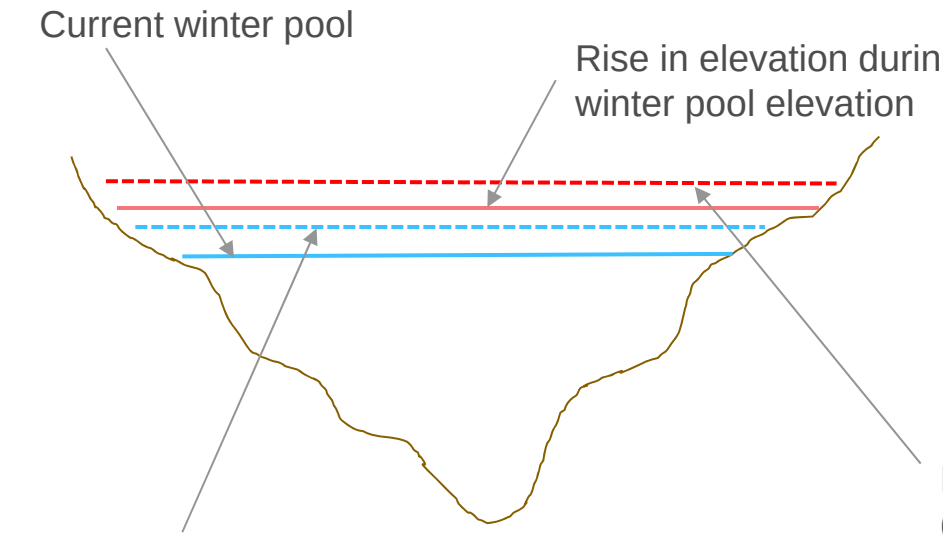


HEC-RAS (For Illustration Purposes Only)



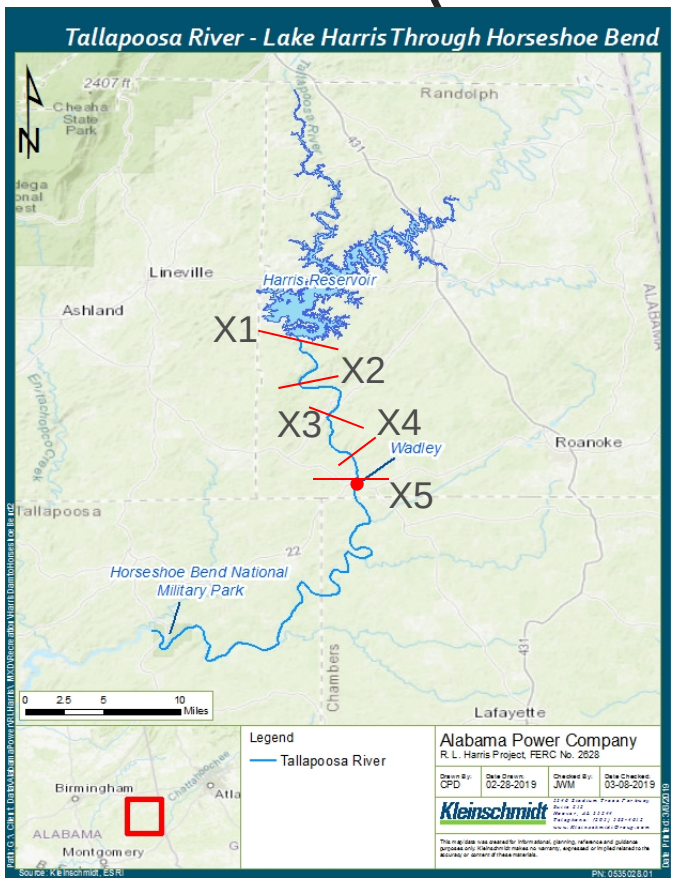


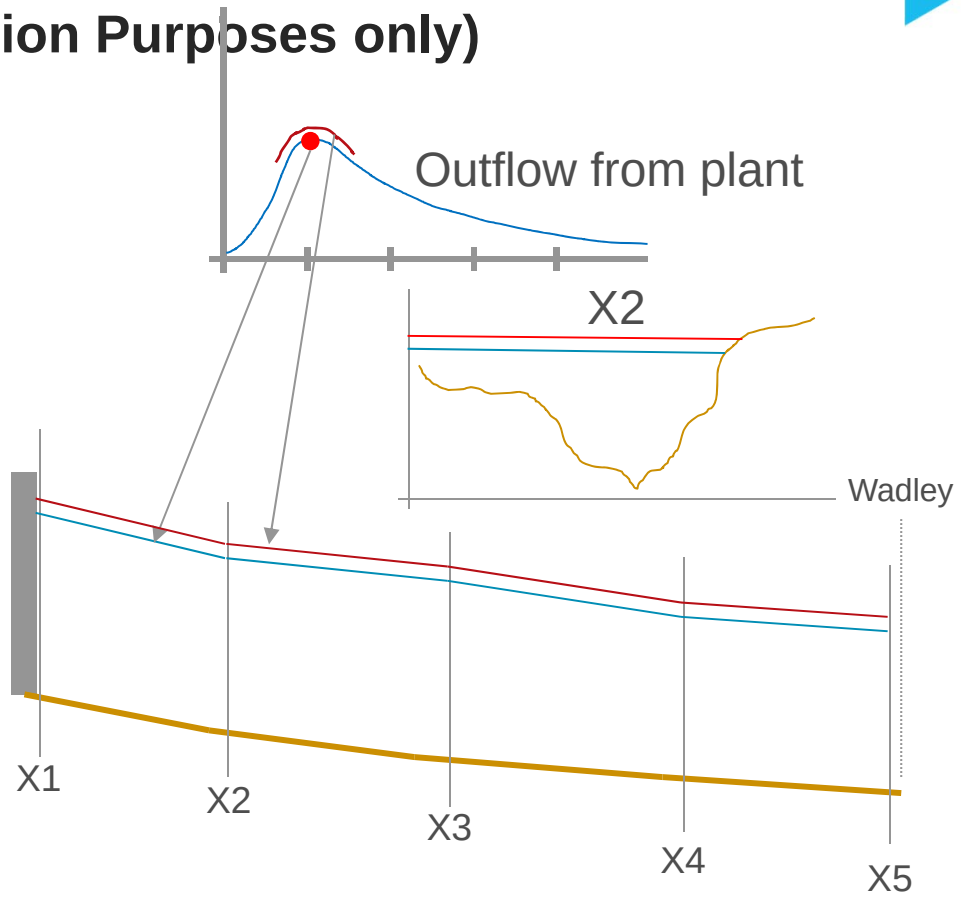
If the winter pool is increased, what happens during a high-flow event?



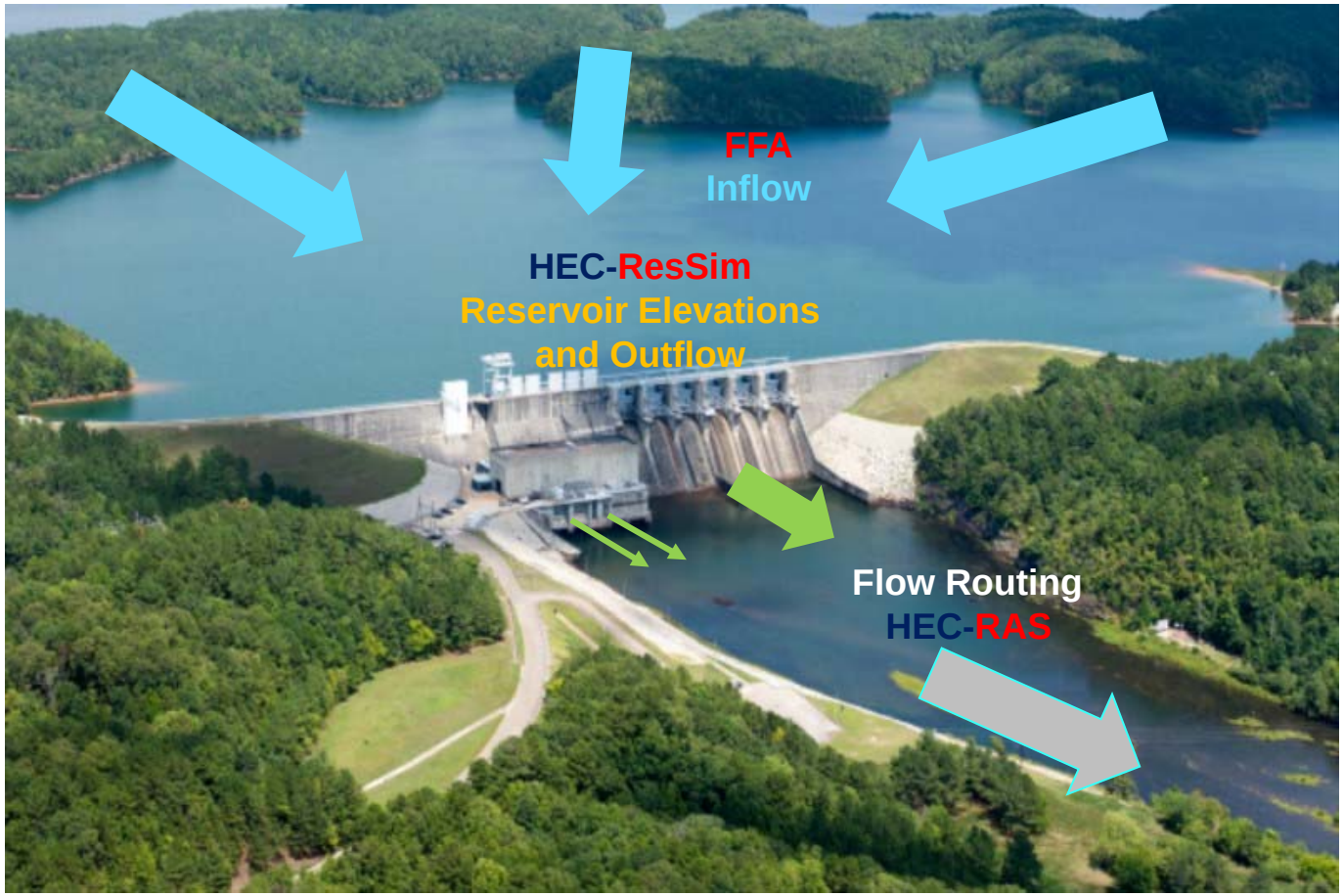
AND…

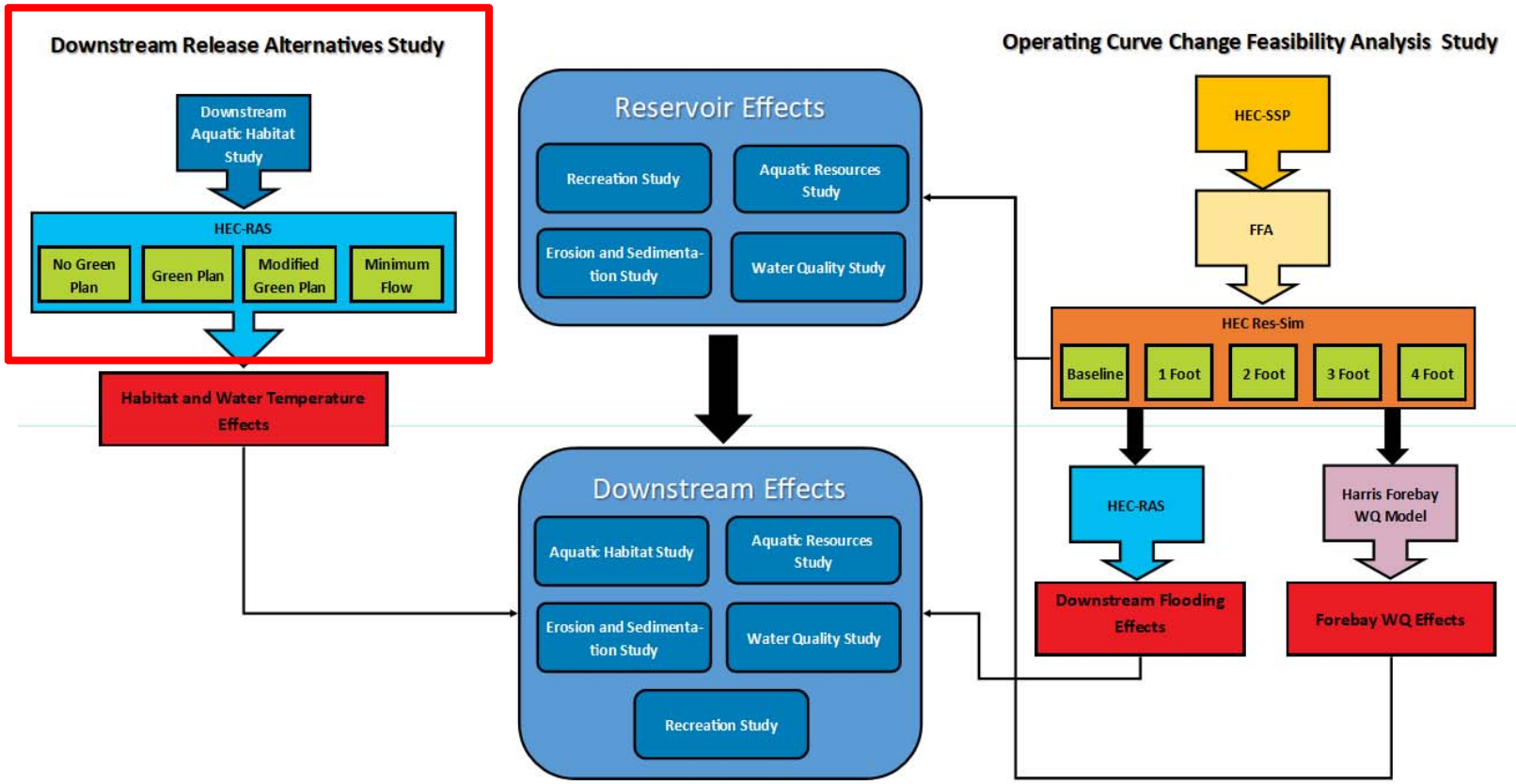
What happens when more water is released?
(For Illustration Purposes only)





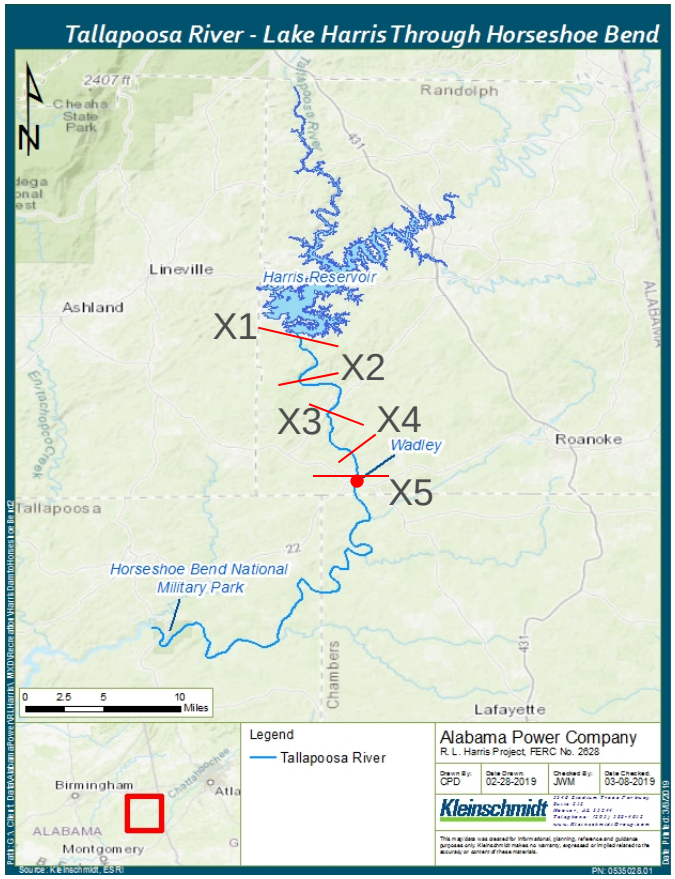
To summarize with a picture…




Downstream Release Alternatives Study
Downstream Aquatic Habitat Study
HEC-RAS
No Green Plan
Green Plan
Modified Green Plan
Minimum Flow
Habitat and Water Temperature Effects
Reservoir Effects
Recreation Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Downstream Effects
Aquatic Habitat Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Recreation Study
Operating Curve Change Feasibility Analysis Study
HEC-SSP
FFA
HEC Res-Sim
Baseline
1 Foot
2 Foot
3 Foot
4 Foot
HEC-RAS
Harris Forebay WQ Model
Downstream Flooding Effects
Forebay WQ Effects

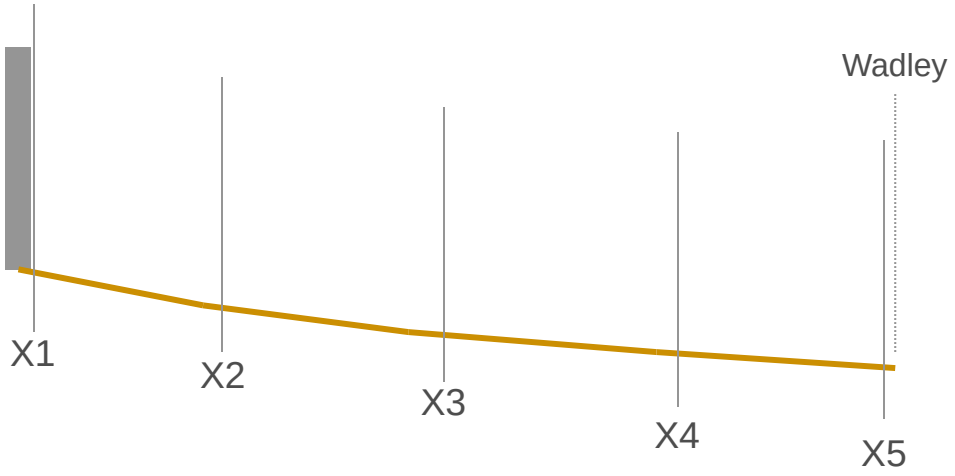
Downstream Release Alternatives Study

HEC-RAS model



Alternatives Studied

- Green Plan
- No Green Plan
- Modified Green Plan
- 150 cfs continuous minimum flow

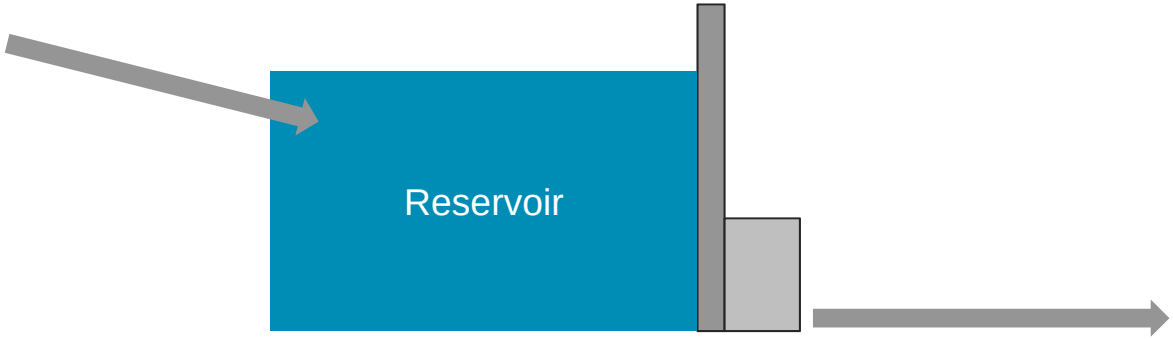


Downstream Release Alternatives Study

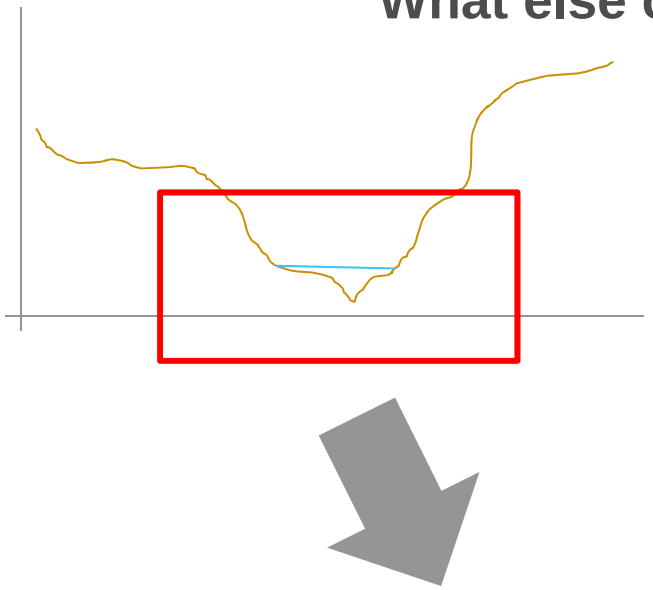
HEC-ResSim model

Alternatives Studied

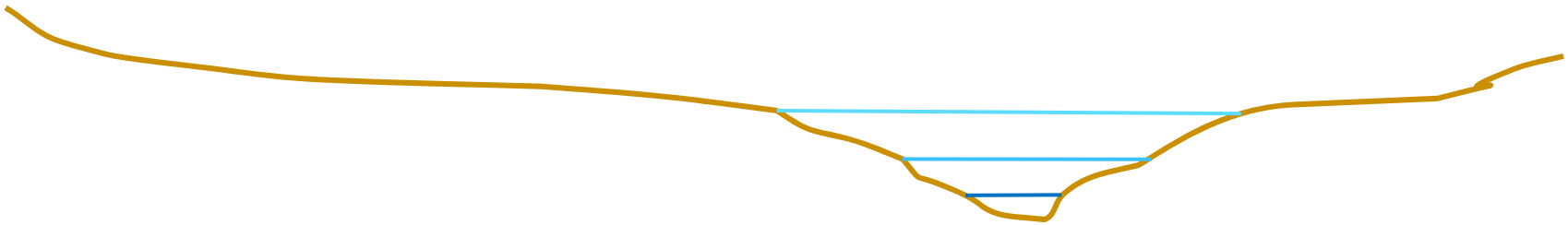
- Green Plan
- No Green Plan
- Modified Green Plan
- 150 cfs continuous minimum flow



What else can HEC-RAS be used for?

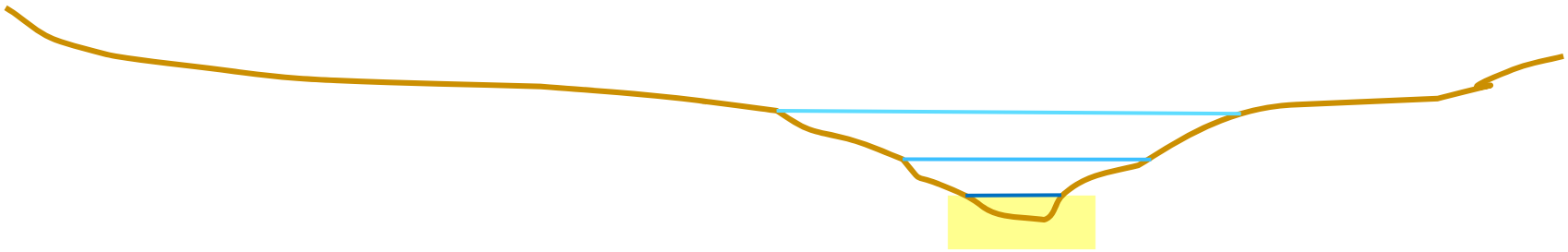


- Downstream release alternatives
- Water quality
- Water Use
- Erosion
- Aquatic Resources
- Wildlife and Terrestrial Resources
- Recreation Resources
- Cultural Resources



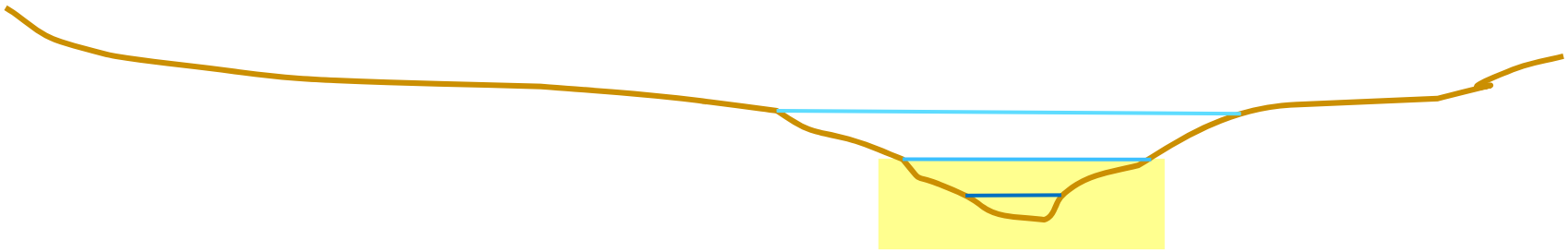
What else can HEC-RAS be used for?

Measure wetted perimeter during low flow scenarios



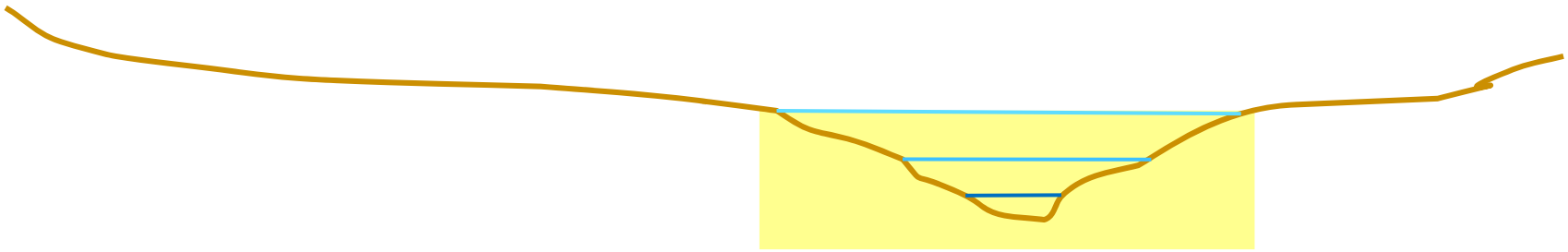
What else can HEC-RAS be used for?

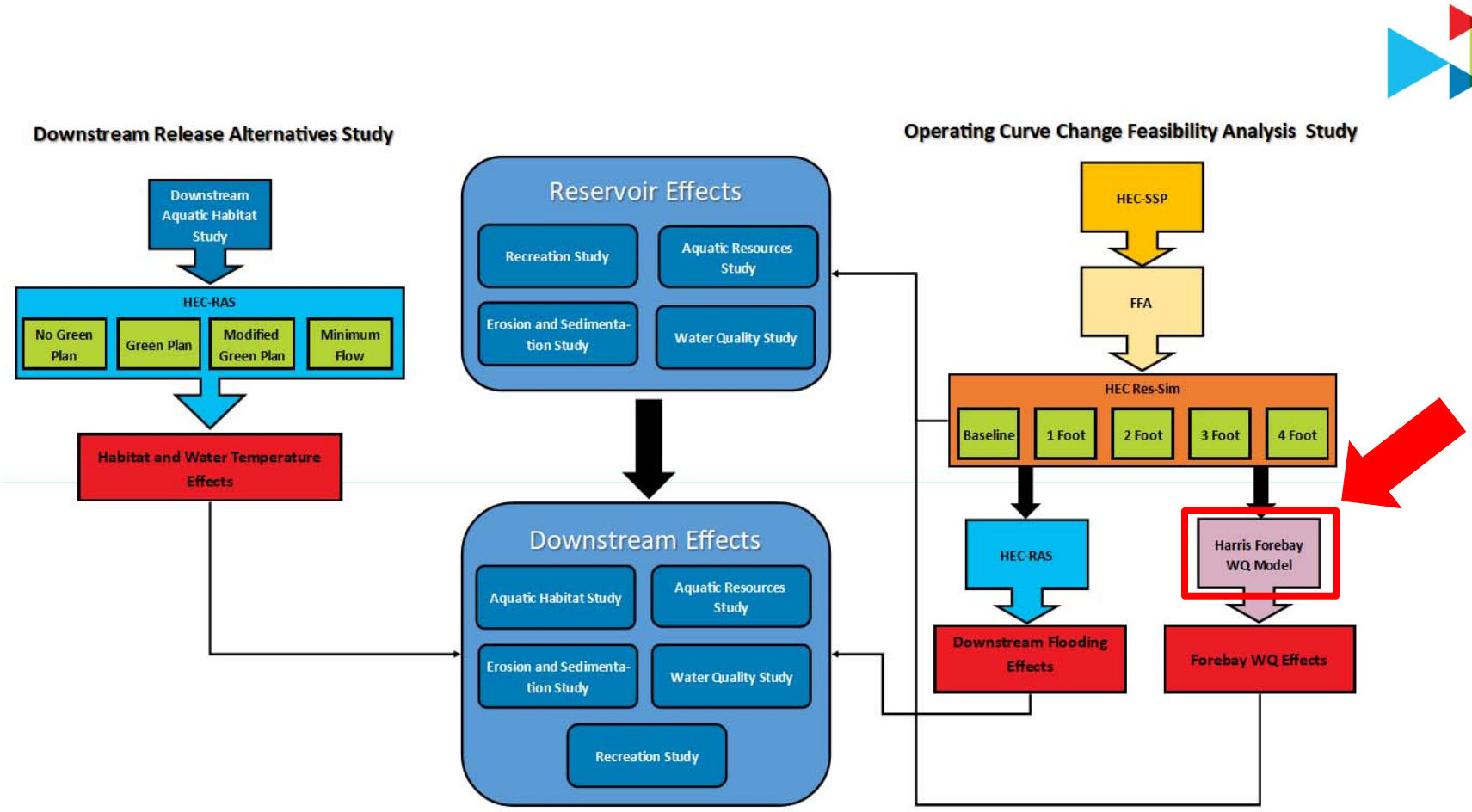
Measure wetted perimeter during low flow scenarios



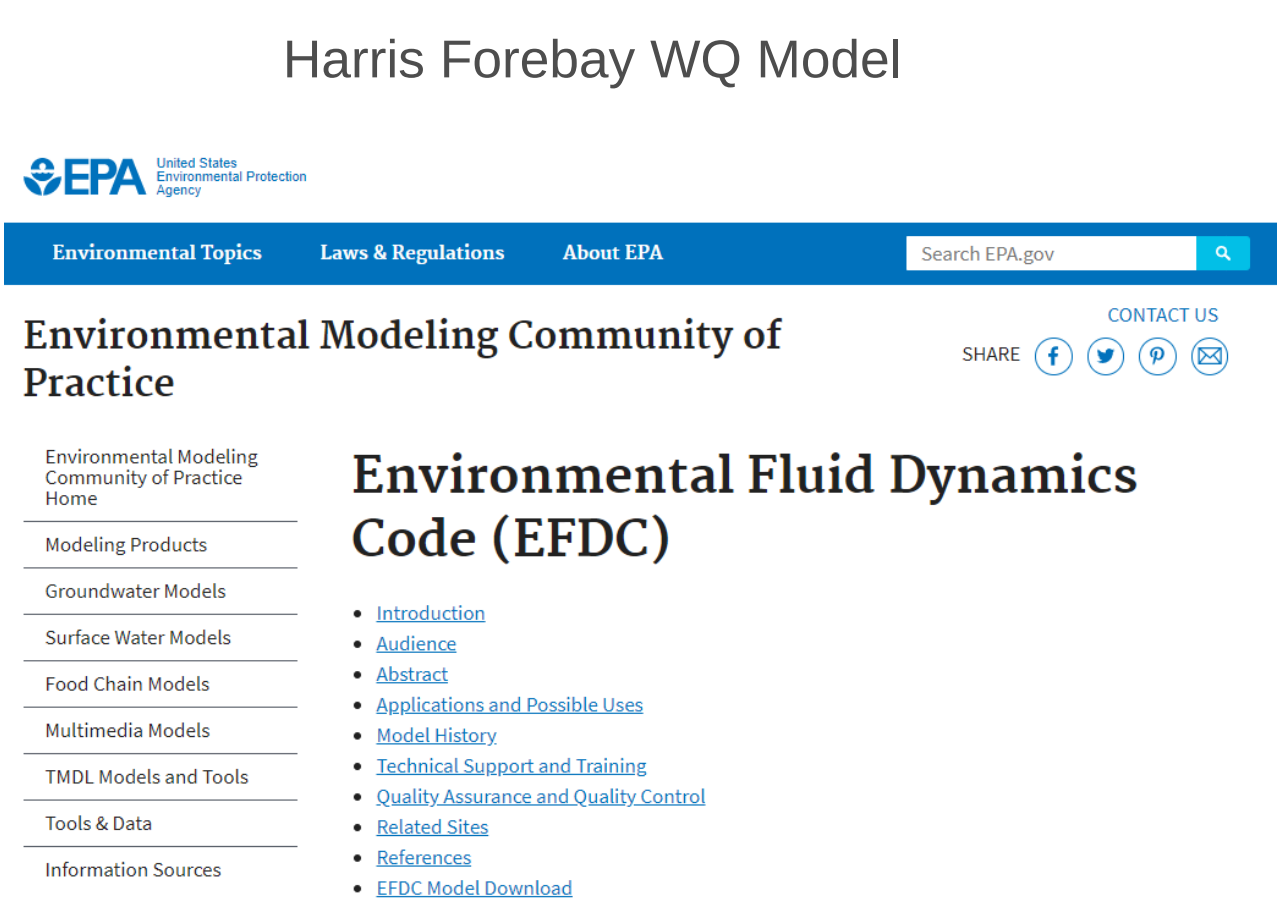
What else can HEC-RAS be used for?

Measure wetted perimeter during low flow scenarios




Downstream Release Alternatives Study
Downstream Aquatic Habitat Study
HEC-RAS
No Green Plan
Green Plan
Modified Green Plan
Minimum Flow
Habitat and Water Temperature Effects
Reservoir Effects
Recreation Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Downstream Effects
Aquatic Habitat Study
Aquatic Resources Study
Erosion and Sedimenta-tion Study
Water Quality Study
Recreation Study
Operating Curve Change Feasibility Analysis Study
HEC-SSP
FFA
HEC Res-Sim
Baseline
1 Foot
2 Foot
3 Foot
4 Foot
HEC-RAS
Harris Forebay WQ Model
Downstream Flooding Effects
Forebay WQ Effects

Harris Forebay WQ Model



From: APC Harris Relicensing
To: "harrisrelicensing@southernco.com"
Bcc: damon.abernethy@dcnr.alabama.gov; steve.bryant@dcnr.alabama.gov; stan.cook@dcnr.alabama.gov; taconya.goar@dcnr.alabama.gov; chris.greene@dcnr.alabama.gov; keith.henderson@dcnr.alabama.gov; mike.holley@dcnr.alabama.gov; evan.lawrence@dcnr.alabama.gov; brian.atkins@adeca.alabama.gov; tom.littlepage@adeca.alabama.gov; jhaslbauer@adem.alabama.gov; cljohnson@adem.alabama.gov; mlen@adem.alabama.gov; fal@adem.alabama.gov; djmoore@adem.alabama.gov; arsegars@southernco.com; dkanders@southernco.com; jefbaker@southernco.com; jcarlee@southernco.com; kechandl@southernco.com; mcoker@southernco.com; cggoodma@southernco.com; sgraham@southernco.com; ammcvica@southernco.com; tlmills@southernco.com; cmnix@southernco.com; kodom@southernco.com; alpeeple@southernco.com; dpreston@southernco.com; scsmith@southernco.com; twstjohn@southernco.com; cchaffin@alabamarivers.org; clowry@alabamarivers.org; gjobsis@americanrivers.org; kmo0025@auburn.edu; devridr@auburn.edu; irwiner@auburn.edu; wrighr2@aces.edu; lgallen@balch.com; jhancock@balch.com; allan.creamer@ferc.gov; rachel.mcnamara@ferc.gov; sarah.salazar@ferc.gov; monte.terhaar@ferc.gov; gene@wedoweelakehomes.com; kate.cosnahan@kleinschmidtgroup.com; colin.dinken@kleinschmidtgroup.com; amanda.fleming@kleinschmidtgroup.com; chris.goodell@kleinschmidtgroup.com; henry.mealing@kleinschmidtgroup.com; jason.moak@kleinschmidtgroup.com; kelly.schaeffer@kleinschmidtgroup.com; jessecunningham@msn.com; mdollar48@gmail.com; drheinzen@charter.net; sforehand@russelllands.com; 1942jthompson420@gmail.com; nancyburnes@centurylink.net; sandnfrench@gmail.com; lgarland68@aol.com; rbmorris222@gmail.com; Ira Parsons (irapar@centurytel.net); mitchell.reid@tnc.org; richardburnes3@gmail.com; eilandfarm@aol.com; athall@fujifilm.com; ebt.drt@numail.org; georgettraylor@centurylink.net; beckyrainwater1@yahoo.com; dbronson@charter.net; wmcampbell218@gmail.com; jec22641@aol.com; sonjaholloman@gmail.com; butchjackson60@gmail.com; donnamat@aol.com; goxford@centurylink.net; mhpwedowee@gmail.com; jerrelshell@gmail.com; bsmith0253@gmail.com; inspector_003@yahoo.com; paul.trudine@gmail.com; lindastone2012@gmail.com; granddadth@windstream.net; trayjim@bellsouth.net; straylor426@bellsouth.net; robert.a.allen@usace.army.mil; randall.b.harvey@usace.army.mil; james.e.hathorn.jr@sam.usace.army.mil; lewis.c.sumner@usace.army.mil; jonas.white@usace.army.mil; gordon.lisa-perras@epa.gov; holliman.daniel@epa.gov; jennifer_grunewald@fws.gov; jeff_powell@fws.gov; jeff_duncan@nps.gov
Subject: HAT 1 - September 11 meeting notes
Date: Tuesday, October 1, 2019 1:04:00 PM

HAT 1,

The meeting notes and materials from the HAT 1 meeting held September 11, 2019 can be found on the Harris relicensing website (www.harrisrelicensing.com) under HAT 1 – Project Operations.

Thanks,

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

Level logger information

APC Harris Relicensing

Mon 10/14/2019 6:34 PM

To: 'harrisrelicensing@southernco.com' <harrisrelicensing@southernco.com>
Bcc damon.abernethy@dcnr.alabama.gov <damon.abernethy@dcnr.alabama.gov>; steve.bryant@dcnr.alabama.gov <steve.bryant@dcnr.alabama.gov>; stan.cook@dcnr.alabama.gov <stan.cook@dcnr.alabama.gov>; taconya.goar@dcnr.alabama.gov <taconya.goar@dcnr.alabama.gov>; chris.greene@dcnr.alabama.gov <chris.greene@dcnr.alabama.gov>; keith.henderson@dcnr.alabama.gov <keith.henderson@dcnr.alabama.gov>; mike.holley@dcnr.alabama.gov <mike.holley@dcnr.alabama.gov>; evan.lawrence@dcnr.alabama.gov <evan.lawrence@dcnr.alabama.gov>; brian.atkins@adeca.alabama.gov <brian.atkins@adeca.alabama.gov>; tom.littlepage@adeca.alabama.gov <tom.littlepage@adeca.alabama.gov>; jhaslbauer@adem.alabama.gov <jhaslbauer@adem.alabama.gov>; cljohnson@adem.alabama.gov <cljohnson@adem.alabama.gov>; mlen@adem.alabama.gov <mlen@adem.alabama.gov>; fal@adem.alabama.gov <fal@adem.alabama.gov>; djmoore@adem.alabama.gov <djmoore@adem.alabama.gov>; arsegars@southernco.com <arsegars@southernco.com>; dkanders@southernco.com <dkanders@southernco.com>; jefbaker@southernco.com <jefbaker@southernco.com>; jcarlee@southernco.com <jcarlee@southernco.com>; kechandl@southernco.com <kechandl@southernco.com>; mcoker@southernco.com <mcoker@southernco.com>; cggoodma@southernco.com <cggoodma@southernco.com>; sgraham@southernco.com <sgraham@southernco.com>; ammcvica@southernco.com <ammcvica@southernco.com>; tlmills@southernco.com <tlmills@southernco.com>; cmnix@southernco.com <cmnix@southernco.com>; kodom@southernco.com <kodom@southernco.com>; alpeeple@southernco.com <alpeeple@southernco.com>; dpreston@southernco.com <dpreston@southernco.com>; scsmith@southernco.com <scsmith@southernco.com>; twstjohn@southernco.com <twstjohn@southernco.com>; cchaffin@alabamarivers.org <cchaffin@alabamarivers.org>; clowry@alabamarivers.org <clowry@alabamarivers.org>; gjobsis@americanrivers.org <gjobsis@americanrivers.org>; kmo0025@auburn.edu <kmo0025@auburn.edu>; devridr@auburn.edu <devridr@auburn.edu>; irwiner@auburn.edu <irwiner@auburn.edu>; wrighr2@aces.edu <wrighr2@aces.edu>; lgallen@balch.com <lgallen@balch.com>; jhancock@balch.com <jhancock@balch.com>; allan.creamer@ferc.gov <allan.creamer@ferc.gov>; rachel.mcnamara@ferc.gov <rachel.mcnamara@ferc.gov>; sarah.salazar@ferc.gov <sarah.salazar@ferc.gov>; monte.terhaar@ferc.gov <monte.terhaar@ferc.gov>; gene@wedoweelakehomes.com <gene@wedoweelakehomes.com>; kate.cosnahan@kleinschmidtgroup.com <kate.cosnahan@kleinschmidtgroup.com>; colin.dinken@kleinschmidtgroup.com <colin.dinken@kleinschmidtgroup.com>; amanda.fleming@kleinschmidtgroup.com <amanda.fleming@kleinschmidtgroup.com>; chris.goodell@kleinschmidtgroup.com <chris.goodell@kleinschmidtgroup.com>; henry.mealing@kleinschmidtgroup.com <henry.mealing@kleinschmidtgroup.com>; jason.moak@kleinschmidtgroup.com <jason.moak@kleinschmidtgroup.com>; kelly.schaeffer@kleinschmidtgroup.com <kelly.schaeffer@kleinschmidtgroup.com>; jessecunningham@msn.com <jessecunningham@msn.com>; mdollar48@gmail.com <mdollar48@gmail.com>; drheinzen@charter.net <drheinzen@charter.net>; sforehand@russelllands.com <sforehand@russelllands.com>; 1942jthompson420@gmail.com <1942jthompson420@gmail.com>; nancyburnes@centurylink.net <nancyburnes@centurylink.net>; sandnfrench@gmail.com <sandnfrench@gmail.com>; lgarland68@aol.com <lgarland68@aol.com>; rbmorris222@gmail.com <rbmorris222@gmail.com>; Ira Parsons (irapar@centurytel.net) <irapar@centurytel.net>; mitchell.reid@tnc.org <mitchell.reid@tnc.org>; richardburnes3@gmail.com <richardburnes3@gmail.com>; eilandfarm@aol.com <eilandfarm@aol.com>; athall@fujifilm.com <athall@fujifilm.com>; ebt.drt@numail.org <ebt.drt@numail.org>; georgettraylor@centurylink.net <georgettraylor@centurylink.net>; beckyrainwater1@yahoo.com <beckyrainwater1@yahoo.com>; dbronson@charter.net <dbronson@charter.net>; wmcampbell218@gmail.com <wmcampbell218@gmail.com>; jec22641@aol.com <jec22641@aol.com>; sonjaholloman@gmail.com <sonjaholloman@gmail.com>; butchjackson60@gmail.com <butchjackson60@gmail.com>; donnamat@aol.com <donnamat@aol.com>; goxford@centurylink.net <goxford@centurylink.net>; mhpwedowee@gmail.com <mhpwedowee@gmail.com>; jerrelshell@gmail.com <jerrelshell@gmail.com>; bsmith0253@gmail.com <bsmith0253@gmail.com>; inspector_003@yahoo.com <inspector_003@yahoo.com>; paul.trudine@gmail.com <paul.trudine@gmail.com>; lindastone2012@gmail.com

<lindastone2012@gmail.com>; granddadth@windstream.net <granddadth@windstream.net>; trayjim@bellsouth.net <trayjim@bellsouth.net>; straylor426@bellsouth.net <straylor426@bellsouth.net>; robert.a.allen@usace.army.mil <robert.a.allen@usace.army.mil>; randall.b.harvey@usace.army.mil <randall.b.harvey@usace.army.mil>; james.e.hathorn.jr@sam.usace.army.mil <james.e.hathorn.jr@sam.usace.army.mil>; lewis.c.sumner@usace.army.mil <lewis.c.sumner@usace.army.mil>; jonas.white@usace.army.mil <jonas.white@usace.army.mil>; gordon.lisa-perras@epa.gov <gordon.lisa-perras@epa.gov>; holliman.daniel@epa.gov <holliman.daniel@epa.gov>; jennifer_grunewald@fws.gov <jennifer_grunewald@fws.gov>; jeff_powell@fws.gov <jeff_powell@fws.gov>; jeff_duncan@nps.gov <jeff_duncan@nps.gov>; amy.silvano@dcnr.alabama.gov <amy.silvano@dcnr.alabama.gov>; chris.greene@dcnr.alabama.gov <chris.greene@dcnr.alabama.gov>; damon.abernethy@dcnr.alabama.gov <damon.abernethy@dcnr.alabama.gov>; evan.lawrence@dcnr.alabama.gov <evan.lawrence@dcnr.alabama.gov>; keith.henderson@dcnr.alabama.gov <keith.henderson@dcnr.alabama.gov>; mike.holley@dcnr.alabama.gov <mike.holley@dcnr.alabama.gov>; stan.cook@dcnr.alabama.gov <stan.cook@dcnr.alabama.gov>; steve.bryant@dcnr.alabama.gov <steve.bryant@dcnr.alabama.gov>; taconya.goar@dcnr.alabama.gov <taconya.goar@dcnr.alabama.gov>; ken.wills@jcdh.org <ken.wills@jcdh.org>; arsegars@southernco.com <arsegars@southernco.com>; ammcvica@southernco.com <ammcvica@southernco.com>; dkanders@southernco.com <dkanders@southernco.com>; jcarlee@southernco.com <jcarlee@southernco.com>; jefbaker@southernco.com <jefbaker@southernco.com>; kechandl@southernco.com <kechandl@southernco.com>; tlmills@southernco.com <tlmills@southernco.com>; cggoodma@southernco.com <cggoodma@southernco.com>; clowry@alabamarivers.org <clowry@alabamarivers.org>; cchaffin@alabamarivers.org <cchaffin@alabamarivers.org>; gjobsis@americanrivers.org <gjobsis@americanrivers.org>; devridr@auburn.edu <devridr@auburn.edu>; irwiner@auburn.edu <irwiner@auburn.edu>; kmo0025@auburn.edu <kmo0025@auburn.edu>; wrighr2@aces.edu <wrighr2@aces.edu>; jhancock@balch.com <jhancock@balch.com>; lgallen@balch.com <lgallen@balch.com>; chrisoberholster@birminghamaudubon.org <chrisoberholster@birminghamaudubon.org>; sarah.salazar@ferc.gov <sarah.salazar@ferc.gov>; allan.creamer@ferc.gov <allan.creamer@ferc.gov>; rachel.mcnamara@ferc.gov <rachel.mcnamara@ferc.gov>; monte.terhaar@ferc.gov <monte.terhaar@ferc.gov>; amanda.fleming@kleinschmidtgroup.com <amanda.fleming@kleinschmidtgroup.com>; colin.dinken@kleinschmidtgroup.com <colin.dinken@kleinschmidtgroup.com>; henry.mealing@kleinschmidtgroup.com <henry.mealing@kleinschmidtgroup.com>; jason.moak@kleinschmidtgroup.com <jason.moak@kleinschmidtgroup.com>; kate.cosnahan@kleinschmidtgroup.com <kate.cosnahan@kleinschmidtgroup.com>; kelly.schaeffer@kleinschmidtgroup.com <kelly.schaeffer@kleinschmidtgroup.com>; sforehand@russelllands.com <sforehand@russelllands.com>; lgarland68@aol.com <lgarland68@aol.com>; pace.wilber@noaa.gov <pace.wilber@noaa.gov>; mitchell.reid@tnc.org <mitchell.reid@tnc.org>; donnamat@aol.com <donnamat@aol.com>; trayjim@bellsouth.net <trayjim@bellsouth.net>; mhpwedowee@gmail.com <mhpwedowee@gmail.com>; straylor426@bellsouth.net <straylor426@bellsouth.net>; triciastearns@gmail.com <triciastearns@gmail.com>; wmcampbell218@gmail.com <wmcampbell218@gmail.com>; holliman.daniel@epa.gov <holliman.daniel@epa.gov>; decker.chris@epa.gov <decker.chris@epa.gov>; bill_pearson@fws.gov <bill_pearson@fws.gov>; evan_collins@fws.gov <evan_collins@fws.gov>; jeff_powell@fws.gov <jeff_powell@fws.gov>; jennifer_grunewald@fws.gov <jennifer_grunewald@fws.gov>; jeff_duncan@nps.gov <jeff_duncan@nps.gov>

Good afternoon,

There have several questions at recent HAT meetings about the location of the level loggers that are collecting elevation and temperature data that will be used in several of the relicensing studies. For your information, here is a link to a map that shows the locations of the 20 level logger monitors: Level Logger Locations. This link will also be placed under HATs 1 and 3 on the Harris relicensing website, www.harrisrelicensing.com.

Thanks,

Angie Anderegg
Hydro Services
(205)257-2251

arsegars@southernco.com

From: Cindy Lowry
To: Anderegg, Angela Segars
Subject: Re: Question about Harris dam operations
Date: Wednesday, February 12, 2020 2:57:58 PM

EXTERNAL MAIL: Caution Opening Links or Files

Yes, I have told Martha that y'alls operations are pretty much prescribed in your license and operations manuals from the ACoE. I didn't know for sure if there was anything new in light of the significant rainfall we have seen lately. I will pass along this link as a reminder. If there are more specifics that this doesn't answer, I'll let you know. Thanks!
Cindy

On Wed, Feb 12, 2020 at 2:32 PM Anderegg, Angela Segars <ARSEGARS@southernco.com> wrote:

> Hi Cindy
>
> As always in high flow events, we are just following our prescribed flood control procedures from the USACE. What people are seeing now is no different than what they have seen historically. We've discussed flood control operations at a few of the relicensing meetings to-date, but one in particular that may be helpful is the Operations presentation from January 31, 2018. There is a ppt and a video on our website: http://www.harrisrelicensing.com/_layouts/15/start.aspx#/HAT%201%20%20Project%20Operations/Forms/AllItems.aspx [harrisrelicensing.com].
>
> Can you give me a list of what the specific concerns are, I can certainly ask our water management folks to respond.
>
> Thanks,
>
> **Angie Anderegg**
>
> Hydro Services
>
> (205)257-2251
>
> arsegars@southernco.com
>
> ---
>
> **From:** Cindy Lowry <clowry@alabamarivers.org>
> **Sent:** Wednesday, February 12, 2020 12:38 PM
> **To:** Anderegg, Angela Segars <ARSEGARS@southernco.com>
> **Cc:** Martha Hunter (mhunter@alabamarivers.org) <mhunter@alabamarivers.org>
> **Subject:** Question about Harris dam operations
>
> EXTERNAL MAIL: Caution Opening Links or Files
>
> Hi Angie,
>
> We are getting called about concerns from the downstream landowners regarding flooding issues coming from Harris dam. They are very concerned with all the recent rains that the lake levels/dam releases, etc...is not being done as well as it could be to help manage downstream flooding problems. Would you be willing to talk with us and perhaps some downstream landowners about this issue to explain the operations currently? Obviously, we will be talking about this as we go through the relicensing process, but if there is anything you can do to help us better understand and give the

downstream landowners some relief, that would be appreciated.

Thank you,

Cindy

--

Cindy Lowry, MPA

Executive Director

Alabama Rivers Alliance

2014 6th Ave N, Suite 200

Birmingham, AL 35203

205-322-6395 ext. 106

www.alabamarivers.org [alabamarivers.org]

Celebrating more than 20 years of protecting Alabama's 132,000 miles of rivers and streams!

--
Cindy Lowry, MPA
Executive Director
Alabama Rivers Alliance
2014 6th Ave N, Suite 200
Birmingham, AL 35203
205-322-6395 ext. 106
www.alabamarivers.org [alabamarivers.org]

Celebrating more than 20 years of protecting Alabama's 132,000 miles of rivers and streams!

From: Anderegg, Angela Segars
To: james traylor
Subject: RE: Tallapoosa River Flooding
Date: Thursday, February 13, 2020 2:42:04 PM

Hey Jimmy, I've asked our water management folk to give you a call.

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

-----Original Message-----
From: james traylor <trayjim@bellsouth.net>
Sent: Thursday, February 13, 2020 1:18 PM
To: Anderegg, Angela Segars <ARSEGARS@southernco.com>
Subject: Re: Tallapoosa River Flooding

EXTERNAL MAIL: Caution Opening Links or Files

I'll review the presentation and let you know. As of now APC has opened a flood gate and we are under water within 10 minutes of the water reaching us. The reason I asked the question was for a warning. Why can't APC give advanced warning?

Jimmy Traylor
Sent from iPhone

> On Feb 13, 2020, at 12:54 PM, Anderegg, Angela Segars <ARSEGARS@southernco.com> wrote:
>
> Hi Jimmy,
>
> We've discussed flood control operations at a few of the relicensing meetings to-date, but one in particular that may be most helpful in understanding the flood operations is the Operations presentation from January 31, 2018. There is a ppt and a video on our website: https://urldefense.proofpoint.com/v2/url?u=http-3A__www.harrisrelicensing.com_-5Flayouts_15_start.aspx-23_HAT-25201-2520-2520Project-2520Operations_Forms_AllItems.aspx&d=DwIFaQ&c=AgWC6Nl7Slwpc9jE7UoQH1_Cvyci3SsTNfdLP4V1RCg&r=3qWv32MayddUzrbqJnBFwNmttMUUbdCuXZrVDKTC5gg&m=h5_aBVHbDHM0rPAGqe5H9oF-QBys5ibVUggXnd59vAk&s=lgZvsDPWw6AK7r3H9VW2GDhehdcGJyDvNnh42SsihXY&e= .
>
> If you have some specific questions, I can ask our water management folks to get in touch with you.
>
> Angie Anderegg
> Hydro Services
> (205)257-2251
> arsegars@southernco.com
>
> -----Original Message-----
> From: James Traylor <trayjim@bellsouth.net>
> Sent: Thursday, February 13, 2020 9:47 AM
> To: Anderegg, Angela Segars <ARSEGARS@southernco.com>
> Subject: Tallapoosa River Flooding
>
> EXTERNAL MAIL: Caution Opening Links or Files
>
> _____
>
> Angela,
>
> In reference to flooding on the Tallapoosa River below Harris Dam, Can you please tell us what the criteria is for flood gate operations? Before the dam, the river was predictable. We always knew after "x" amount of rain what to expect. Since the dam, when the flood gates open, there is no time to prepare. The river will rise 10-12 feet in a half of an hour. The flooding is very rapid and violent.
>
> Thanks,
>
> Jimmy Traylor
>
>
> Sent from my iPad

From:	APC Harris Relicensing
To:	"harrisrelicensing@southernco.com"
Bcc:	damon.abernethy@dcnr.alabama.gov; steve.bryant@dcnr.alabama.gov; todd.fobian@dcnr.alabama.gov; chris.greene@dcnr.alabama.gov; keith.henderson@dcnr.alabama.gov; mike.holley@dcnr.alabama.gov; evan.lawrence@dcnr.alabama.gov; matthew.marshall@dcnr.alabama.gov; brian.atkins@adeca.alabama.gov; tom.littlepage@adeca.alabama.gov; jhaslbauer@adem.alabama.gov; cljohnson@adem.alabama.gov; mlen@adem.alabama.gov; fal@adem.alabama.gov; djmoore@adem.alabama.gov; arsegars@southernco.com; dkanders@southernco.com; jefbaker@southernco.com; jcarlee@southernco.com; kechandl@southernco.com; mcoker@southernco.com; cggoodma@southernco.com; sgraham@southernco.com; ammcvica@southernco.com; tlmills@southernco.com; cmnix@southernco.com; kodom@southernco.com; alpeeple@southernco.com; scsmith@southernco.com; twstjohn@southernco.com; wtanders@southernco.com; Rasberry, Jennifer S.; mhunter@alabamarivers.org; clowry@alabamarivers.org; gjobsis@americanrivers.org; kmo0025@auburn.edu; devridr@auburn.edu; irwiner@auburn.edu; wrighr2@aces.edu; lgallen@balch.com; jhancock@balch.com; allan.creamer@ferc.gov; rachel.mcnamara@ferc.gov; sarah.salazar@ferc.gov; monte.terhaar@ferc.gov; gene@wedoweelakehomes.com; kate.cosnahan@kleinschmidtgroup.com; colin.dinken@kleinschmidtgroup.com; amanda.fleming@kleinschmidtgroup.com; chris.goodell@kleinschmidtgroup.com; henry.mealing@kleinschmidtgroup.com; jason.moak@kleinschmidtgroup.com; kelly.schaeffer@kleinschmidtgroup.com; jessecunningham@msn.com; mdollar48@gmail.com; drheinzen@charter.net; sforehand@russelllands.com; 1942jthompson420@gmail.com; nancyburnes@centurylink.net; sandnfrench@gmail.com; lgarland68@aol.com; rbmorris222@gmail.com; Ira Parsons (irapar@centurytel.net); mitchell.reid@tnc.org; richardburnes3@gmail.com; eilandfarm@aol.com; athall@fujifilm.com; ebt.drt@numail.org; georgettraylor@centurylink.net; beckyrainwater1@yahoo.com; dbronson@charter.net; wmcampbell218@gmail.com; jec22641@aol.com; sonjaholloman@gmail.com; butchjackson60@gmail.com; donnamat@aol.com; goxford@centurylink.net; mhpwedowee@gmail.com; jerrelshell@gmail.com; bsmith0253@gmail.com; inspector_003@yahoo.com; paul.trudine@gmail.com; lindastone2012@gmail.com; granddadth@windstream.net; trayjim@bellsouth.net; straylor426@bellsouth.net; robert.a.allen@usace.army.mil; randall.b.harvey@usace.army.mil; james.e.hathorn.jr@sam.usace.army.mil; lewis.c.sumner@usace.army.mil; jonas.white@usace.army.mil; gordon.lisa-perras@epa.gov; holliman.daniel@epa.gov; jennifer_grunewald@fws.gov; jeff_powell@fws.gov; jeff_duncan@nps.gov
Subject:	Harris relicensing - March 19th HAT 1 meeting
Date:	Friday, February 21, 2020 12:40:41 PM
Attachments:	2020-03-19 HAT Meeting Agenda.doc

HAT 1,

Alabama Power Company will be hosting a series of HAT meetings on **Thursday, March 19, 2020 at the Oxford Civic Center,** 401 McCullars Ln, Oxford, AL 36203. The HAT 1 meeting will be from **9:00 to 12:45 (see attached agenda)**. The purpose of the HAT 1 meeting is to review initial results and progress to date for the Operating Curve Change Feasibility Analysis and the Downstream Release Alternatives studies.

Please RSVP by Friday, March 13, 2020. Lunch will be provided (~11:15) so please indicate any food allergies or vegetarian preferences on or before March 13, 2020. I encourage everyone to attend in person. If this is not feasible, we are also offering a Skype option (info below). It would be ideal to join on your computer as we will be viewing presentations.

If you have any questions about the agenda or meeting, please email or call me at ARSEGARS@southernco.com or (205) 257-2251.

Join Skype Meeting

+1 (205) 257-2663

Conference ID: 3660816

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

Meeting Agenda
March 19, 2020
9:00 AM – 3:30 PM
Oxford Civic Center: 401 McCullars Lane, Oxford, AL 36203

Meeting Purpose: Update stakeholders on Harris Action Teams' (HATs) progress on Project Operations (HAT 1), Recreation (HAT 5), and Fish and Wildlife (HAT 3).

9:00 AM	**Welcome, Safety Message, and Meeting Purpose**
9:15 AM	**HAT 1: Project Operations** Operating Curve Feasibility Analysis Downstream Release Alternatives
11:15 AM	Lunch
12:00 PM	**HAT 1 Phase 2: Qualitative and Quantitative Evaluations of the Effect(s) of an Operating Curve Change on Resources** Recreation Structure Usability at Winter Pool Alternatives
12:45 PM	**HAT 5: Recreation** Recreation Evaluation
1:30 PM	**HAT 3: Fish and Wildlife** Threatened and Endangered Species Downstream Aquatic Habitat Aquatic Resources
3:30 PM	**Wrap-up, Questions, and Adjourn**

From:	APC Harris Relicensing
To:	"harrisrelicensing@southernco.com"
Bcc:	damon.abernethy@dcnr.alabama.gov; nathan.aycock@dcnr.alabama.gov; steve.bryant@dcnr.alabama.gov; todd.fobian@dcnr.alabama.gov; chris.greene@dcnr.alabama.gov; keith.henderson@dcnr.alabama.gov; mike.holley@dcnr.alabama.gov; evan.lawrence@dcnr.alabama.gov; matthew.marshall@dcnr.alabama.gov; brian.atkins@adeca.alabama.gov; tom.littlepage@adeca.alabama.gov; jhaslbauer@adem.alabama.gov; cljohnson@adem.alabama.gov; mlen@adem.alabama.gov; fal@adem.alabama.gov; djmoore@adem.alabama.gov; arsegars@southernco.com; dkanders@southernco.com; wtanders@southernco.com; jefbaker@southernco.com; jcarlee@southernco.com; kechandl@southernco.com; mcoker@southernco.com; cggoodma@southernco.com; sgraham@southernco.com; ammcvica@southernco.com; tlmills@southernco.com; cmnix@southernco.com; kodom@southernco.com; alpeeple@southernco.com; scsmith@southernco.com; twstjohn@southernco.com; Rasberry, Jennifer S.; mhunter@alabamarivers.org; clowry@alabamarivers.org; jwest@alabamarivers.org; gjobsis@americanrivers.org; kmo0025@auburn.edu; devridr@auburn.edu; irwiner@auburn.edu; wrighr2@aces.edu; lgallen@balch.com; jhancock@balch.com; allan.creamer@ferc.gov; rachel.mcnamara@ferc.gov; sarah.salazar@ferc.gov; monte.terhaar@ferc.gov; gene@wedoweelakehomes.com; kate.cosnahan@kleinschmidtgroup.com; colin.dinken@kleinschmidtgroup.com; amanda.fleming@kleinschmidtgroup.com; chris.goodell@kleinschmidtgroup.com; henry.mealing@kleinschmidtgroup.com; jason.moak@kleinschmidtgroup.com; kelly.schaeffer@kleinschmidtgroup.com; jessecunningham@msn.com; mdollar48@gmail.com; drheinzen@charter.net; sforehand@russelllands.com; 1942jthompson420@gmail.com; nancyburnes@centurylink.net; sandnfrench@gmail.com; lgarland68@aol.com; rbmorris222@gmail.com; irapar@centurytel.net; mitchell.reid@tnc.org; richardburnes3@gmail.com; eilandfarm@aol.com; athall@fujifilm.com; ebt.drt@numail.org; georgettraylor@centurylink.net; beckyrainwater1@yahoo.com; dbronson@charter.net; wmcampbell218@gmail.com; jec22641@aol.com; sonjahollomon@gmail.com; butchjackson60@gmail.com; donnamat@aol.com; goxford@centurylink.net; mhpwedowee@gmail.com; jerrelshell@gmail.com; bsmith0253@gmail.com; inspector_003@yahoo.com; paul.trudine@gmail.com; lindastone2012@gmail.com; granddadth@windstream.net; trayjim@bellsouth.net; straylor426@bellsouth.net; robert.a.allen@usace.army.mil; randall.b.harvey@usace.army.mil; james.e.hathorn.jr@sam.usace.army.mil; lewis.c.sumner@usace.army.mil; jonas.white@usace.army.mil; gordon.lisa-perras@epa.gov; holliman.daniel@epa.gov; jennifer_grunewald@fws.gov; jeff_powell@fws.gov; jeff_duncan@nps.gov
Subject:	UPDATE - Harris relicensing - HAT 1 meeting
Date:	Friday, March 13, 2020 12:52:47 PM
Attachments:	2020-03-19 HAT Meeting Agenda.doc
Importance:	High

HAT 1,

Due to the ongoing situation with the spread of COVID-19 (the "coronavirus"), Southern Company has directed its employees to use virtual meetings, when possible. Therefore, the HAT 1 meeting scheduled for Thursday, March 19th will **only be held via the Skype link below and call-in number below**. If you are able to join via Skype, we will be sharing the presentation. If you are not, we will provide the presentation in a PDF document the morning of the meeting and the presenter will help you follow along with the slides.

The Skype link will be available beginning at 8:30 am. I suggest you join early to make sure that your computer is capable of joining (has all the necessary software). We will be muting and unmuting the phones from the control center, so please don't worry about announcing that you joined. **At 9 am, the meeting will begin**, and we will conduct a roll call to make sure we have a record of who attended the meeting. Also, if you use your computer's microphone and speaker to join the call, there is no need to use the phone number.

If you have any questions, please let me know.

From: APC Harris Relicensing
Sent: Friday, February 21, 2020 12:41 PM
To: 'harrisrelicensing@southernco.com' <harrisrelicensing@southernco.com>
Subject: Harris relicensing - March 19th HAT 1 meeting

HAT 1,

Alabama Power Company will be hosting a series of HAT meetings on **Thursday, March 19, 2020 at the Oxford Civic Center,** 401 McCullars Ln, Oxford, AL 36203. The HAT 1 meeting will be from **9:00 to 12:45 (see attached agenda)**. The purpose of the HAT 1 meeting is to review initial results and progress to date for the Operating Curve Change Feasibility Analysis and the Downstream Release Alternatives studies.

Please RSVP by Friday, March 13, 2020. Lunch will be provided (~11:15) so please indicate any food allergies or vegetarian preferences on or before March 13, 2020. I encourage everyone to attend in person. If this is not feasible, we are also offering a Skype option (info below). It would be ideal to join on your computer as we will be viewing presentations.

If you have any questions about the agenda or meeting, please email or call me at ARSEGARS@southernco.com or (205) 257-2251.

Join Skype Meeting

+1 (205) 257-2663

Conference ID: 3660816

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

From:	APC Harris Relicensing
To:	APC Harris Relicensing
Bcc:	"damon.abernethy@dcnr.alabama.gov"; nathan.aycock@dcnr.alabama.gov; "steve.bryant@dcnr.alabama.gov"; todd.fobian@dcnr.alabama.gov; "chris.greene@dcnr.alabama.gov"; "keith.henderson@dcnr.alabama.gov"; "mike.holley@dcnr.alabama.gov"; "evan.lawrence@dcnr.alabama.gov"; "matthew.marshall@dcnr.alabama.gov"; "brian.atkins@adeca.alabama.gov"; "tom.littlepage@adeca.alabama.gov"; "jhaslbauer@adem.alabama.gov"; "cljohnson@adem.alabama.gov"; "mlen@adem.alabama.gov"; "fal@adem.alabama.gov"; "djmoore@adem.alabama.gov"; Anderegg, Angela Segars; Anderson, Dave; Anderson, Wesley Taylor; Baker, Jeffery L.; Carlee, Jason; Chandler, Keith Edward; Coker, Mary Paulette; Goodman, Chris G.; Graham, Stacey A.; McVicar, Ashley M; Mills, Tina L.; Nix, Christy M.; Odom, Kenneth; Peeples, Alan L.; Smith, Sheila C.; St. John, Thomas W.; Rasberry, Jennifer S.; "mhunter@alabamarivers.org"; "clowry@alabamarivers.org"; jwest@alabamarivers.org; "gjobsis@americanrivers.org"; "kmo0025@auburn.edu"; "devridr@auburn.edu"; "irwiner@auburn.edu"; "wrighr2@aces.edu"; Allen, Leslie G. (Balch); Hancock, Jim (Balch); allan.creamer@ferc.gov; rachel.mcnamara@ferc.gov; "sarah.salazar@ferc.gov"; monte.terhaar@ferc.gov; "gene@wedoweelakehomes.com"; "kate.cosnahan@kleinschmidtgroup.com"; "colin.dinken@kleinschmidtgroup.com"; "amanda.fleming@kleinschmidtgroup.com"; "chris.goodell@kleinschmidtgroup.com"; "henry.mealing@kleinschmidtgroup.com"; "jason.moak@kleinschmidtgroup.com"; "kelly.schaeffer@kleinschmidtgroup.com"; "jessecunningham@msn.com"; "mdollar48@gmail.com"; "drheinzen@charter.net"; "sforehand@russelllands.com"; "1942jthompson420@gmail.com"; "nancyburnes@centurylink.net"; "sandnfrench@gmail.com"; "lgarland68@aol.com"; "rbmorris222@gmail.com"; "irapar@centurytel.net"; "mitchell.reid@tnc.org"; "richardburnes3@gmail.com"; eilandfarm@aol.com; "athall@fujifilm.com"; "ebt.drt@numail.org"; "georgettraylor@centurylink.net"; "beckyrainwater1@yahoo.com"; "dbronson@charter.net"; wmcampbell218@gmail.com; "jec22641@aol.com"; sonjahollomon@gmail.com; "butchjackson60@gmail.com"; "donnamat@aol.com"; "goxford@centurylink.net"; "mhpwedowee@gmail.com"; "jerrelshell@gmail.com"; "bsmith0253@gmail.com"; "inspector_003@yahoo.com"; "paul.trudine@gmail.com"; "lindastone2012@gmail.com"; "granddadth@windstream.net"; "trayjim@bellsouth.net"; "straylor426@bellsouth.net"; "robert.a.allen@usace.army.mil"; "randall.b.harvey@usace.army.mil"; "james.e.hathorn.jr@sam.usace.army.mil"; "lewis.c.sumner@usace.army.mil"; "jonas.white@usace.army.mil"; "gordon.lisa-perras@epa.gov"; "holliman.daniel@epa.gov"; "jennifer_grunewald@fws.gov"; "jeff_powell@fws.gov"; "jeff_duncan@nps.gov"
Subject:	CANCELLED - Harris relicensing - HAT 1 meeting
Date:	Monday, March 16, 2020 12:51:10 PM

HAT 1,

First, I apologize for the multiple emails regarding this week's meeting and I appreciate you bearing with us. Because we are all in such a state of flux with schools closing and more and more of us being asked to telecommute, and the uncertainty of how well our technology is going to work when we're all trying to use it at once, we have decided to cancel this Thursday's stakeholder meeting. The information we were going to cover will be included in the Initial Study Report filing, along with several draft reports, in April.

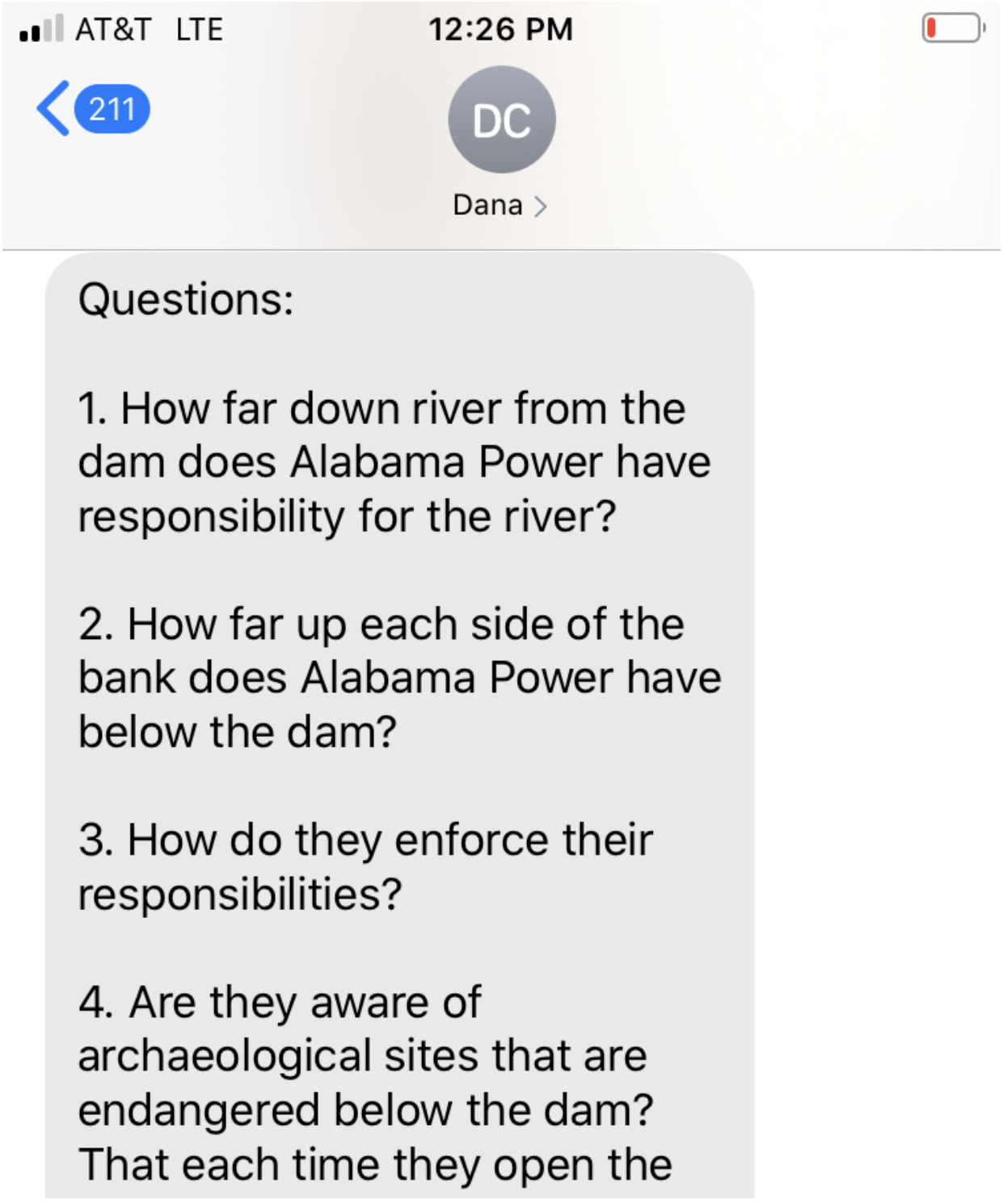
Again, thank you for bearing with us. Stay well!

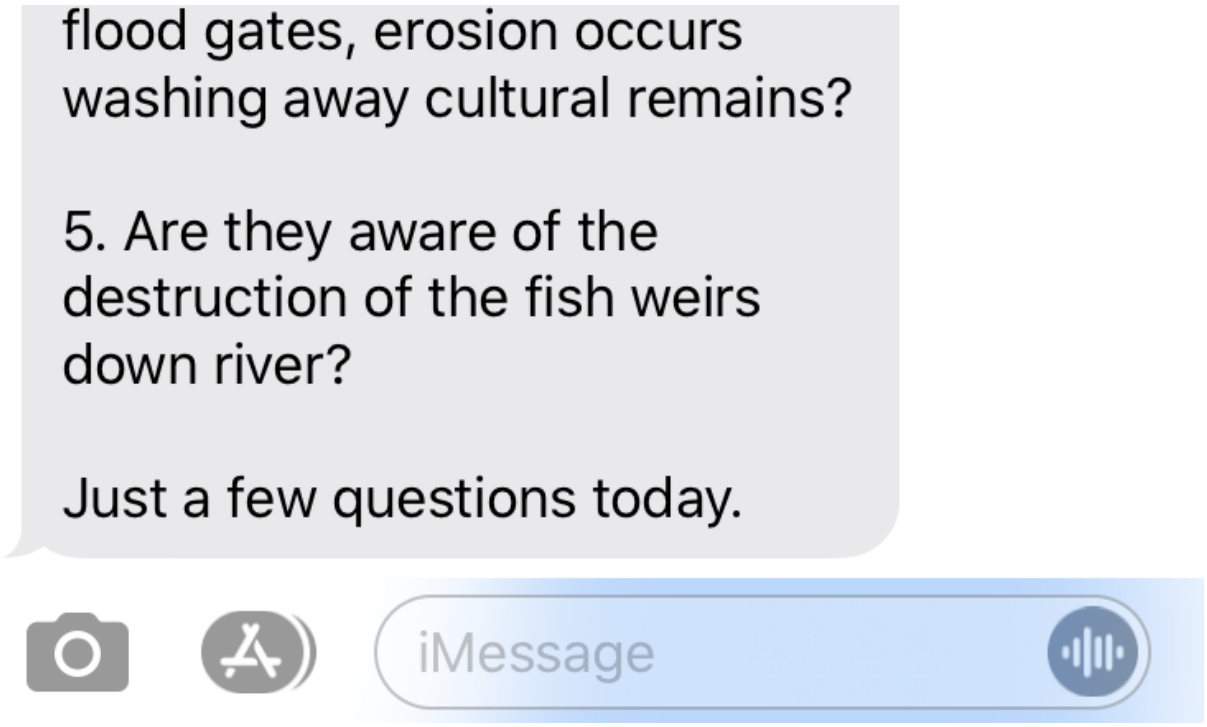
Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

From: Carol Knight
To: APC Harris Relicensing
Subject: Questions for April 28
Date: Monday, April 27, 2020 2:07:04 PM
Attachments: IMG_4600.PNG

I am submitting the following questions for our meeting tomorrow. Thank you so very much!

Carol Knight





Sent from my iPhone

From:	Jack West
To:	APC Harris Relicensing
Subject:	Questions for Tomorrow"s Meeting
Date:	Monday, April 27, 2020 4:05:29 PM
Attachments:	Questions for ISR Meeting.docx

Hi Angie,

Please see attached for questions regarding tomorrow's meeting.

Thanks, and I look forward to seeing you tomorrow.

--

Jack West, Esq.
Policy and Advocacy Director
Alabama Rivers Alliance
2014 6th Ave N, Suite 200
Birmingham, AL 35203
205-322-6395
www.alabamarivers.org [alabamarivers.org]

Celebrating more than 20 years of protecting Alabama's 132,000 miles of rivers and streams!

Draft Water Quality Study Report

1. Previous data from 2017-2019 mentioned in Table 1-1 is not continuous, year-round data. Is Alabama Power now collecting continuous, year-round data at multiple locations?
2. The Alabama Power data listed on Table 1-1 shows monitoring during generation only. Is data during non-generation periods available prior to 2019?
3. The report states that a continuous monitor was "recently installed" at Malone. Was it installed on March 12, 2019 corresponding to the "Downstream Monitor 2019" tab of the WQ data excel spreadsheet?
4. Is there only the one continuous monitoring station downstream from Harris Dam at Malone?
5. The Draft Water Quality Study Report contains significant water temperature data, but the discussion and conclusions focus almost exclusively on dissolved oxygen levels, and do not discuss temperature. Will the effects of temperature be discussed in the final report or reported on in the Aquatic Habitat or Aquatic Resources study reports?
6. Is Alabama Power studying, or planning to study, methods to account for low water temperatures, including using an alternative intake structure that would allow for mixing of warmer and cooler water to raise average temperatures or withdrawing water from a higher depth in the reservoir to allow for warmer releases?

Draft Erosion and Sedimentation Study Report

1. Will we have access to the High Definition Stream Survey video created by Trutta Environmental Solution as part of the Downstream Bank Stability Report?
2. Table 3-2 shows streambank scored for the 15 most impaired areas downstream of Harris Dam. How was the Average Combination Bank Condition score (final column) computed? It does not appear to be an average of the "Average Left Bank Condition" and "Average Right Bank Condition" scores, which would yield a lower average scored. The averages showing for the left and right banks are mostly 3.0 or higher while the average combined bank condition scores are mostly below 3.0.
3. The report concludes in Section 5.0 that "None of the erosion sites surveyed were the result of fluctuations due to project operations." This conclusion seems in conflict with the assessment in the HDSS that impairment areas "were due to the fluctuating flows eroding the streambank within a few feet of the water surface and streambank interface." (Pg. 43 of Trutta Report).
4. Is Alabama Power completing a total suspended sediment analysis during the pre-pulse, pulse, and post-pulse time periods to see what sediment is getting moved from and to various locations?
5. Is Alabama Power conducting a historical, cumulative effects study of erosion since the dam's construction?
6. Is Alabama Power assessing whether having a continuous minimum flow downstream may help with erosion and sedimentation problems?

Draft Downstream Release Alternatives Phase I Report

1. Why is the only continuous minimum flow regime being studied a 150 cfs flow? Why was this particular value chosen? Previous commenters have encouraged the study of a wide variety of

flow conditions and operational scenarios. Does Alabama Power plan to study a broader range of continuous minimum flows?

2. The study report states that with full power storage available, Harris is programmed to generate 3.84 hours per day. Is all of that peaking generation, or is some percentage of the programmed operation for non-peaking generation?
3. In the Green Plan Release Criteria attached as Exhibit B, item 4 concerns Spawning Windows and states that "Spring and Fall spawning windows will be scheduled as conditions permit. The operational criteria during spawning windows will supersede the above criteria." Can you elaborate on when "conditions permit" for scheduling spawning windows?

<u>T&E Species Desktop Assessment</u>

Is the additional fieldwork to identify mussels scheduled for May being pushed back or proceeding on schedule

From:	Donna Matthews
To:	APC Harris Relicensing
Subject:	Considerations for Apr 28 Harris Relicensing Meeting
Date:	Monday, April 27, 2020 4:06:25 PM
Attachments:	Apr 28 Harris Relicensing Comments.docx

P-2628

April 27, 2020

Questions regarding Downstream (below the dam) Recreation

1. ***Increased downstream, APC managed, public access.*** An impediment to public use of the river to swim, fish or float is lack of access. What plans are underway to correct this omission?

2. ***Safety from Rapid Water Level Rises.*** Over the last 40 years, even locals have been dissuaded from using their river because of erratic and dramatic variations in water levels. Completely aside from the issue of, how unnaturally the river is distended from pre-dam normals on an hour by hour basis, remains the unaddressed danger to humans recreating in/on the river during episodes of rapid water level rise. The potential threat is created by water release at the dam. APC must alert downstream subscribers of planned and imminent water release. Current cell phone technology is well suited to send safety alerts.

3. ***Better Visualization of Erosion over the Past 50 Years*** Do the erosion studies conducted during this permitting period compare pre-dam (baseline) river shape/contour with the current status of the river? Pre-dam analog photographs exist for comparison to current satellite imagery.

Donna Matthews
PO Box 1054
105 Woodland Ave
Wedowee, AL 36278

P-2628
April 27, 2020
Questions regarding Downstream (below the dam) Recreation

1. ***Increased downstream, APC managed, public access.*** An impediment to public use of the river to swim, fish or float is lack of access. What plans are underway to correct this omission?
2. ***Safety from Rapid Water Level Rises.*** Over the last 40 years, even locals have been dissuaded from using their river because of erratic and dramatic variations in water levels. Completely aside from the issue of, how unnaturally the river is distended from pre-dam normals on an hour by hour basis, remains the unaddressed danger to humans recreating in/on the river during episodes of rapid water level rise. The potential threat is created by water release at the dam. APC must alert downstream subscribers of planned and imminent water release. Current cell phone technology is well suited to send safety alerts.
3. ***Better Visualization of Erosion over the Past 50 Years*** Do the erosion studies conducted during this permitting period compare pre-dam (baseline) river shape/contour with the current status of the river? Pre-dam analog photographs exist for comparison to current satellite imagery.

Donna Matthews
PO Box 1054
105 Woodland Ave
Wedowee, AL 36278

From:	Sarah Salazar
To:	Anderegg, Angela Segars
Cc:	Allan Creamer; Rachel McNamara; Monte Terhaar (CTR)
Subject:	RE: Harris Relicensing - Initial Study Report meeting agenda and call-in details
Date:	Monday, April 27, 2020 5:21:04 PM
Attachments:	FERC-prelim-ISR-Comments+Questions_4-27-20.docx

EXTERNAL MAIL: Caution Opening Links or Files

Hi Angie,

Thanks for the information below about the Skype option for the meeting and for the call back today. As I mentioned, I'm forwarding the attached list of some preliminary (informal) questions we put together for the ISR mtg. tomorrow. We didn't label whose questions they were, but they are generally grouped by study report/topic. So for the most part the questions originate from our team member who is covering that resource area during relicensing. Feel free to call me tomorrow before the meeting if you have any follow-up questions or concerns.

Thanks again,

Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863* ***Please consider the environment before printing this email.***

From: APC Harris Relicensing <g2apchr@southernco.com>
Sent: Monday, April 27, 2020 10:51 AM
To: APC Harris Relicensing <g2apchr@southernco.com>
Subject: FW: Harris Relicensing - Initial Study Report meeting agenda and call-in details

Good morning,

Attached is the presentation for tomorrow's Initial Study Report meeting. This presentation can also be found on the relicensing website: www.harrisrelicensing.com [harrisrelicensing.com].

Thanks,

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

From: APC Harris Relicensing
Sent: Friday, April 24, 2020 10:24 AM
To: 'harrisrelicensing@southernco.com' <harrisrelicensing@southernco.com>
Subject: Harris Relicensing - Initial Study Report meeting agenda and call-in details

Good morning

Please join us for the Initial Study Report (ISR) meeting on **April 28, 2020, starting at 9 am central time**. The agenda for the meeting is attached. On Monday April 27th, the presentation will be made available on our website (www.harrisrelicensing.com [harrisrelicensing.com]) and distributed to stakeholders as a pdf.

If you have questions regarding the ISR that you would like Alabama Power to address during the meeting, please send your questions to harrisrelicensing@southernco.com by 4 pm on April 27th. There will also be an opportunity to ask questions during the meeting.

Below is the Skype link and call in instructions. Participating via the Skype link is preferred in order to reduce audio issues. However, if you don't have access to Skype, you can call the number below and follow along with the presentation we'll send out on April 27th.

Join Skype Meeting

To join the ISR Meeting via phone, please call (205) 257-2663 OR (404) 460-0605. At the prompt, enter conference ID 489472 followed by the pound (#) sign.

When you join the call, you will be in the virtual lobby and directed that you are waiting on the leader to admit you. As you are admitted, you will be instructed that you are now joining the meeting and that the meeting has been locked. As soon as everyone has joined, we will conduct a roll call of attendees by organization (for example, I will ask who is on the call from the Alabama Department of Conservation and Natural Resources, etc.). If you do not belong to an organization, you will be given a chance at the end of the roll call to state your name and affiliation. Once the roll call is over, your phone will be muted and the first presentation will begin. As noted above, Alabama Power will take questions following each study review and will unmute participants during that time. Once the phones are unmuted, you will have to press star 6 (*6) in order to be heard.

Please let me know if you have any questions.

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

4/27/20

R.L. Harris Initial Study Report (ISR):

FERC Licensing Team's Preliminary Comments and Questions

General Comments and Questions:

1. Comments on all the studies should be filed with the Commission by 6/11/20, as stated in the cover letter of the ISR, and not (solely) sent directly to Alabama Power via email, as stated in the cover letters of the Draft Downstream Release Alternatives Phase 1 Report, Draft Operating Curve Change Feasibility Analysis Phase 1 Report, Draft Erosion and Sedimentation Study Report, Draft Water Quality Study Report, Draft T&E Species Assessment, Draft Phase 1 Project Lands Evaluation Study Report, and the Traditional Cultural Properties Identification Plan and Inadvertent Discovery Plan.

2. Several of the studies reference the use of Geographic Information System (GIS) data. To facilitate stakeholder review and analysis of the study results it would be helpful if all GIS data collected or developed as part of the studies is filed with the study reports.

3. Please describe whether you have experienced or anticipate any delays to studies as a result of COVID-19 related closures or social distancing measures.

Draft Operating Curve Change Feasibility Analysis (Phase 1) Report:

1. As we understand it, downstream effects with regard to flooding were assessed for a 100-year design flood. However, the relationship between the downstream flow alternative analysis and the Harris Reservoir winter flood pool analysis is not clear under alternative flood scenarios. What would happen in a scenario other that a 100-year flood? Would operations at Harris Dam under the alternative flood scenario, including different flow release scenarios, have any impact on the Harris Reservoir winter pool analysis, or vice versa?

2. Table 5-2, page 51 of the report…What is it about RM 115.7 that appears to create a hydraulic control, such that the maximum increase in depth under any winter pool elevation scenario occur about mid-way down the Tallapoosa River?

3. Figures 5-20 and 5-21 appear incomplete, as they only show the results for one alternative…baseline (? based on color). Please address this apparent omission.

Draft Downstream Release Alternatives (Phase 1) Report:

1. Modeling scenarios…as it stands now, the report presents the results for three downstream release alternatives: Pre-Green Plan operation, Green Plan operation, and Pre-Green Plan operation with a 150 cfs continuous minimum flow. Why was modelling of minimum flow limited to 150 cfs? Also, have you considered modeling Green Plan releases with continuous minimum flow scenarios? On what basis did you choose not to do so?

Draft Erosion and Sedimentation Report:

1. Section 5.0, Discussion and Conclusions states that at some sites, "land clearing and landscaping, and other construction activities affecting runoff towards the reservoir" cause erosion. Is it possible to provide areal images showing the areas of active erosion in relation to the project boundary as part of the final study report?

2. Appendix D – photos…it would be helpful if the captions for the photos included better location descriptors (e.g., Harris Reservoir, Harris Reservoir-?? Embayment, Harris Reservoir-?? River Arm, Tallapoosa River, etc.). For the Harris Reservoir sites, it would be helpful if the contours within which peaking operations occur (lake fluctuation zone) could be identified.

3. Could you make the video footage that was collected as part of this study available for stakeholders to view?

4. Will the nuisance aquatic vegetation surveys still be possible to conduct in Lake Harris this summer?

5. On page 24, in section 3.2, the report includes the following statement: "A total of 20 sites, rather than 15 sites, were provided for the left bank segments as many segments were tied with a score of (slightly impaired)." Please explain what is meant by many of the streambank segments being "tied with a score of (slightly impaired" and clarify the relationship between the number of streambank segments/sites and the bank condition score.

6. On page 25, in Table 3-2, shouldn't the heading/label of the first column of the table be "Site Number" instead of "Rank" given that the rank options are only 1 through 5 (according to Table 3-1) and there appear to be 20 sites?

7. On page 11, of the Tallapoosa River High Definition Stream Survey Final Report (Appendix E of the Erosion and Sedimentation Study Report), it states that prior to the survey, flows were monitored to ensure relatively normal flow conditions

during the survey. For clarity, what were the "relatively normal flow conditions" during the survey? Were they slightly higher or lower than average?

8. In Figures 13 and 16 of the Tallapoosa River High Definition Stream Survey Final Report, the scale is small and so it appears that most of the riverbanks are unmodified and the modified banks identified on the individual site surveys are not visible. It would be helpful if the figures in the report showed labeled points for the erosion/sedimentation sites that are identified in the report.

9. Page 20 of Tallapoosa River High Definition Stream Survey Final Report states that a confidence rating was used to indicate the clarity of the streambanks in the video and figures 14 and 17 of that report show areas where the video clarity was impaired and therefore the confidence in the accuracy of the streambank conditions/classifications is lower. As stated above, it would be helpful if the figures in the report showed labeled points for the erosion/sedimentation sites that are identified in the report. Do any of the areas with impaired video clarity coincide with areas that stakeholders identified as erosion/sedimentation sites or other sites that Alabama Power identified as part of this study? Do you intend to take any steps to deal with the impaired clarity data? Is so, how?

10. In Figure 18 of the Tallapoosa River High Definition Stream Survey Final Report, there appears to be a missing ranking at river mile 37 for the right streambank. Could you explain this gap in the ranking?

11. For Figures 20 through 23 of the Tallapoosa River High Definition Stream Survey Final Report, please label the river mile ranges on the maps to help reviewers understand the starting and ending points of the study area and which segments of river are included.

12. In Figure 26 of the Tallapoosa River High Definition Stream Survey Final Report, please move the scale bar and sources so that they are not covering the river segment and bank conditions at the bottom of the map.

13. Can you identify where peaking pulses are attenuated downstream from Harris Dam under the current operating regime and volume of typical downstream releases? If so, are there any patterns in the downstream streambank conditions and observed levels of erosion along the segments of streambanks within the attenuation zone? Where are the identified erosion sites in relation to the length of the attenuation zone?

Draft Water Quality Report:

1. Page 18…figure 3-8…please explain what is happening with the vertical DO profiles where DO increases in May, June, July, and August, where otherwise the DO should be declining.

2. Page 23 discusses Alabama DEM monitoring data for the Harris Dam tailrace (i.e., immediately downstream from Harris Dam). Was this data collected during generation, or does it also reflect non-generation periods?

3. Pages 39-41 present DO and temperature data for downstream continuous water quality monitoring station. On page 16 of the ISR, Alabama Power is not proposing any additional monitoring beyond what was approved in the Commission's SPD. Why is there not a second year of monitoring for the downstream continuous monitoring station? How confident are Alabama Power and the HAT2 members that 1 year of monitoring at the downstream station includes a worst-case scenario?

Draft T&E Species Report:

1. Have the GIS overlays of T&E species habitat information and maps been completed (i.e., the map figures in Appendix B of the draft T&E species study report)? Or are there still steps to complete this component of the study?

   We suggest including project features, recreation areas, and other managed areas (e.g., timber harvest areas, wildlife management areas, etc.) on the T&E species maps in order to help determine the proximity of species ranges/habitats to project-related activities and identify the need for species-specific field surveys.

2. While the draft T&E species study report indicates that additional field surveys for the fine-lined pocketbook freshwater mussel are planned for May 2020, the report does not include a description of the criteria used to determine which of the species on FWS's official (IPaC) list of T&E species would be surveyed in the field. Please describe which species will be surveyed in the field and explain how and why they were selected. In addition, please describe any correspondence Alabama Power has had with FWS and state agencies regarding the T&E species selected for additional field surveys.

3. Page 7 lists the sources for the ESA species information. The sources included FWS's Environmental Conservation Online System (ECOS) but did not include IPaC. The official list is obtained through the IPaC report. Has an IPaC report been downloaded or are you using the IPaC report filed to the record by FERC staff?

4. Page 8 states that the existing land use data is not specific enough to determine if the 3,068 acres of coniferous forest within the project boundary at Lake Harris would be suitable for red cockaded woodpecker. How do you propose assess the suitability for red cockaded woodpecker?

5. On pages 3, 10, and 26 there is mention of additional fieldwork planned for two mussel species (i.e., fine-lined pocketbook and Southern pigtoe) for May 2020. Please elaborate on the details of the additional survey work (e.g., survey location(s), sampling protocols and methodologies employed, and clarify which species will be included in the May 2020 assessment, etc.).

6. The descriptions of Alabama lampmussel and rabbitsfoot mussel on pages 11, 13, and 14 do not provide these species' host fish species. Are the host fish species currently unknown, or was this an inadvertent omission?

7. There appears to be a typo on page 16, in the description of southern pigtoe mussel. The middle of the first paragraph refers to the glochidia of the finelined pocketbook mussel. Is this sentence misplaced, or does the information pertain to the southern pigtoe mussel (the subject of section 3.12)? Please clarify.

8. On page 19, in the first paragraph about the northern long-eared bat (NLEB), it is unclear why the discussion includes the statement about a low occurrence of this species in the "…southwestern region of Alabama" given that the project areas are located in the northeastern and mid-eastern portions of Alabama. Please clarify or correct this statement.

9. The draft T&E species study report states that there are no known NLEB hibernacula or maternity roost trees *within the project boundary*. However, it does not include information on known NLEB hibernacula *within 0.25 mile of the project boundary* and known NLEB maternity roosts *within 150 feet of the project boundary* (i.e., at Harris Lake and Skyline). In addition, the report mentions a couple of best management practices (BMPs), protective of some bat species, that Alabama Power implements during timber harvest activities and states that the BMPs have been expanded but not incorporated in the existing license. However, the report does not include the locations of Alabama Power's timber harvesting and other tree removal activities, or detailed descriptions of timber harvesting protocols and BMPs currently implemented within the project boundary. This information is important to understanding the affected environment for Indiana bat, NLEB, and/or other T&E species. This information could also be used for the streamlined consultation option for analyzing the potential project effects on NLEB (including within the buffer areas for hibernacula and maternity roost trees).

Please complete the FWS's NLEB streamlined consultation form and include it in the final T&E species study report. This form can be found at: https://www.fws.gov/southeast/pdf/guidelines/northern-long-eared-bat-streamlined-checklist.pdf. We recommend using FWS's definition of "tree removal" to guide your responses on the form (i.e., "cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bats").[1]

Also, please update figures 3.14-1, 3.14-2, 3.14-3, 3.15-1, 3.15-2, and 3.15-3 which currently show "forested area" or "karst landscape" in relation to NLEB and Indiana bat habitats, to show Alabama Power's timber management areas within the project boundary, and other proposed managed areas (e.g., new/improved recreation areas, new quail management areas). This type of information is needed to meet another component of this study (i.e., "determine if [T&E species habitat at the project] are potentially impacted by Harris Project operations", as described on slide 5 of the Aug. 27, 2019, HAT 3 meeting).

10. On page 21 and 22, in section 3.17, the discussion mentions an occurrence of little amphianthus within the project boundary at Lake Harris (Flat Rock Park) that was documented in 1995 and may be extirpated. Did the botanical surveys in that area of the project target that species? The top of page 22, states that "Vernal pools were not identified due to a lack of available data." Did the botanical surveys identify vernal pools in this area?

11. On page 22, in section 3.18, the report states that the National Wetland Inventory data is not detailed enough to identify wetlands within the project area that contain white fringeless orchid's unique wetland habitat characteristics. Do you propose collecting more data on this subject?

12. On page 23, in section 3.19, the report states that the 16 extant populations of Prices' potato bean in Jackson County, occur on Sauta Cave National Wildlife Refuge, and near Little Coon Creek in the Skyline WMA. Please clarify whether or not any of the 16 populations occur within the project boundary at Skyline WMA.

13. In Appendix B, figure 3.19, showing Price's potato-bean habitat range, there is a 100-foot Stream Buffer within the Limestone Landscape layer shown on the map and legend. Please explain the significance of this buffer, including any regulatory

[1] 81 Fed. Reg. 1902 (January 14, 2016).

requirements associated with this buffer. Please include this information in the final T&E species study report.

14. In the August 27, 2019, HAT 3 meeting summary, please clarify the following:
    a. How does Alabama Power define terms such as "sensitive time periods" in the context of timber harvesting?
    b. Evan Collins, of FWS, stated that the palezone shiner may be present in some of the lower reaches of the Tennessee River tributaries. Please clarify where these tributaries are located in relation to the project boundary.

Draft Lands Evaluation (Phase 1) Report:

1. On page 9, the proposed definition for the "Recreation" classification includes a reference to permitting processes for various types of recreations activities. Will the permitting processes be updated as part of the revised SMP?

2. On page 9, the proposed definition of the "Hunting" classification includes a reference to the existing Harris Project Wildlife Mitigation Plan. How do you envision the existing Project Wildlife Mitigation Plan relating to the proposed Wildlife Management Plan that is to be developed as part of Phase 2 of the Lands Evaluation?

3. On page 9, the proposed definition of the "Natural/Undeveloped" classification mentions that one of the allowable uses would be "normal forestry management practices." Please clarify what these practices would include.

4. On page 10, there are descriptions of two new proposed land use classifications, including "Flood Storage" which would include lands between the 793 ft and 795 ft msl contours, and "Scenic Buffer Zone" which would include lands between the 795 ft and 800 ft msl contours. Would these classifications overlap with other land use classifications? Also, are there any buildings/structures currently within these elevation bands around Lake Harris?

5. Page 11 discusses the results of the desktop evaluation and site visit to identify any suitable bobwhite quail habitat within the project boundary at Skyline WMA. Could you elaborate on the methods for evaluating the availability of bobwhite quail habitat and how it was determined that no suitable habitat occurred within the project boundary at Skyline WMA? Also, could the report include a figure showing a map of the 7 locations in the Skyline WMA where Alabama DCNR conducts spring/fall quail call surveys, and has documented quails, relative to the project boundary at Skyline WMA?

6. Appendix B provides maps and general descriptions of proposed changes in land use classifications at Lake Harris that were also discussed during the 9/11/19 HAT 4 meeting. It would be helpful if the maps of the proposed changes in land use classifications included legends to identify the various classifications, as well as north arrows and scale bars to facilitate orientation and review.

   In addition, during the 9/11/19 HAT 4 meeting, we (FERC staff) asked if terrestrial and cultural resource surveys were being conducted on lands proposed for removal from the project boundary and Alabama Power staff responded that they were. Could you provide descriptions of the terrestrial and riparian habitat types for areas that you are proposing to remove from the project boundary. Could you also describe the terrestrial and riparian habitat types for area "RC4" that you propose to reclassify from "Recreation" to "Commercial Recreation"? Do these areas contain suitable habitat for any of the T&E species that may occur at the Harris Lake portion of the project? What were the results of the cultural resource surveys for areas proposed to be removed from the project boundary?

   Also, it would be helpful if the map of area A6 included the existing birding trail and the proposed extension of the trail.

7. Appendix C provides the Anniston Museum of Natural History's Flat Rock Botanical Inventory (inventory) report and the consultation record includes the Anniston Museum of Natural History's letter transmitting the report, Ken Wills' (Coordinator of the Alabama Glade Conservation Coalition) emails, along with several additional observations and recommendations from them.

   Approximately 365 plant species, including some rare species were documented at the site during the botanical inventory. The surveyors, Ken Wills, and FERC staff observed damages caused by vehicles traversing the site (SUV observed by surveyors; ATVs tire marks on granite outcrops observed by Ken Wills and FERC staff during scoping/environmental site review). The consultation record for this study includes recommendations from Anniston Museum of Natural History and Ken Wills' to manage/preserve/restore the site. The proposed definition of the "Natural/Undeveloped" classification, proposed for the rare plant site, does not indicate what types of recreation activities/vehicle access would be prohibited or how Alabama Power would manage such a site. Considering all of this, do you think that Alabama Power's proposed definition of "Natural/Undeveloped" would be effective in protecting this site? Could the definition of this classification be expanded/more detailed, or would you consider another, more protective land use classification type/designation for this site?

   Also, what has Alabama Power done to protect the rare plants that were identified during the inventory and were subsequently damaged by ongoing ATV use

observed by Ken Wills? Can vehicles be excluded from these sensitive areas to protect rare plants while the relicensing process proceeds?

8. Has the request from Randolph County regarding the proposed water treatment intake/plant been resolved/processed?

Draft Inadvertent Discovery Protocol (IDP)

1. Section 2.3.1 of the IDP includes provisions for previously unidentified human remains and or historic properties.

    a. Staff recommend changing the term "historic properties" to "cultural resources" because at the time a previously-undocumented resource is discovered, it has not been assessed for eligibility for the National Register of Historic Places, and cannot, by definition, be considered a "historic property" until its eligibility is determined.

    b. Item 2.3.1(b) seems to indicate that at some point after discovery, an evaluation of eligibility for a newly discovered cultural resource will occur. The process for determining National Register-eligibility should be outlined in the plan.

Draft Traditional Cultural Property Identification Plan

2. No specific comments.

From: Chuck Denman
To: APC Harris Relicensing
Subject: Comments on draft study meeting Tuesday April 28
Date: Thursday, April 30, 2020 9:09:29 AM

My name is Charles Denman and I am a land owner downstream of the Harris Dam. Thank you for including me in the Relicensing process and the discussion on Tuesday of the Initial study report. I listened in by cell phone and was not in a location that I was able to participate.
My comments follow.
Regarding erosion : I agree with other participants that a comparison of historical photos with current conditions of the river would help to understand the flushing effects operations of the dam have on downstream erosion.

Regarding hydrographic modeling:
I believe a comparison of historical (pre-dam) and recent flooding downstream of the dam would help stakeholders understand the effectiveness of the Dam for flood control. Also include a model with same parameters (land use,storm intensity and duration,etc) but with out the dam attenuation. This would help downstream stakeholders understand what effects the Dam has on flooding downstream.

Question regarding current license. Are the original studies and permitting materials available for stakeholders to review?

Thanks again for the opportunity to participate and comment on the initial study report. I apologized for being unable to comment during the Skype meeting.

Chuck Denman

Sent from my iPad

20200609-3003 FERC PDF (Unofficial) 06/09/2020

FEDERAL ENERGY REGULATORY COMMISSION
MEMORANDUM

DATE: June 9, 2020

FROM: Sarah Salazar, Environmental Biologist
Division of Hydropower Licensing
Office of Energy Projects

TO: Public Files for the R.L. Harris Hydroelectric Project
(FERC Project No. 2628-065)

SUBJECT: Email communication with the Alabama Rivers Alliance regarding the comment period for the Initial Study Report for the R.L. Harris Hydroelectric Project.

On June 5, 2020, Jack West (Alabama Rivers Alliance) emailed Commission staff to inquire about the comment period for the Initial Study Report for the R.L. Harris Hydroelectric Project. Commission staff responded on June 8, 2020.

A copy of the email correspondence is attached.

Sarah Salazar

From: Sarah Salazar
Sent: Monday, June 08, 2020 12:52 PM
To: Jack West
Cc: Allan Creamer; Rachel McNamara
Subject: RE: Question Re: Harris Relicensing

Good afternoon Jack,

Yes, we strongly recommend filing any comments you have on the Initial Study Report, including the draft study reports, by June 11, 2020.

To the extent that you think that any of the approved study plans and schedules should be modified to address your concerns, we recommend that you file, by June 11, 2020, a request for study plan modification(s) using the criteria in the Commission's regulations at 18 C.F.R. § 5.15(d) (2019). The approved study plans can be found in the applicant's Revised Study Plan that was filed on March 13, 2019. Updates to the study schedules, as required in the Commission's April 12, 2019 Study Plan Determination, were filed in an updated Revised Study Plan on May 13, 2019. If you would like to request any new studies, you would need to file, by June 11, 2020, such a request using the criteria in the Commission's regulations at 18 C.F.R. §5.9(b) and 5.15(e) (2019). I'm including excerpts of the cited regulations below.

Excerpt from 18 C.F.R. § 5.15

(d) *Criteria for modification of approved study*. Any proposal to modify an ongoing study . . . must be accompanied by a showing of good cause why the proposal should be approved, and must include, as appropriate to the facts of the case, a demonstration that:
  (1) Approved studies were not conducted as provided for in the approved study plan; or
  (2) The study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way.

(e) *Criteria for new study*. Any proposal for new information gathering or studies . . . must be accompanied by a showing of good cause why the proposal should be approved, and must include, as appropriate to the facts of the case, a statement explaining:
  (1) Any material changes in the law or regulations applicable to the information request;
  (2) Why the goals and objectives of any approved study could not be met with the approved study methodology;
  (3) Why the request was not made earlier;
  (4) Significant changes in the project proposal or that significant new information material to the study objectives has become available; and
  (5) Why the new study request satisfies the study criteria in § 5.9(b).

Excerpt from 18 C.F.R. § 5.9(b)

(b) *Content of study request*. Any information or study request must:
  (1) Describe the goals and objectives of each study proposal and the information to be obtained;
  (2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
  (3) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
  (4) Describe existing information concerning the subject of the study proposal, and the need for additional information;

(5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
(6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
(7) Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.

Thanks again for your inquiry. I hope this response answers your question. Please let me know if you have additional questions.

Note, I will be filing this email to our record for the project.

Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863*
Please consider the environment before printing this email.

From: Jack West <jwest@alabamarivers.org>
Sent: Saturday, June 06, 2020 2:19 PM
To: Sarah Salazar <Sarah.Salazar@ferc.gov>
Cc: Allan Creamer <Allan.Creamer@ferc.gov>; Rachel McNamara <Rachel.McNamara@ferc.gov>
Subject: Re: Question Re: Harris Relicensing

Sarah,

No problem at all. Thanks for the response, and have a great weekend.

On Fri, Jun 5, 2020 at 4:54 PM Sarah Salazar <Sarah.Salazar@ferc.gov> wrote:

> Hi Jack,
>
> Thanks for your message and inquiry. Sorry for the delay in responding. I was actually off today, but I will get back to you first thing next week.
>
> Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863*
> ***Please consider the environment before printing this email.***
>
> **From:** Jack West <jwest@alabamarivers.org>
> **Sent:** Friday, June 05, 2020 11:56 AM
> **To:** Sarah Salazar <Sarah.Salazar@ferc.gov>; Allan Creamer <Allan.Creamer@ferc.gov>; Rachel McNamara <Rachel.McNamara@ferc.gov>
> **Subject:** Question Re: Harris Relicensing

Hi Sarah, Allan, and Rachel:

Thank you for encouraging stakeholder input during the Harris relicensing. I'm writing with a procedural question regarding the timing of stakeholder requests for additional modeling of downstream release alternatives.

During the ISR meeting in April and during some HAT meetings, stakeholders have been asked by Licensee to suggest any additional flow release alternatives we would like to see modeled as soon as possible. We believe that modeling a wider variety of flows will strengthen the studies and inform future adaptive management, and we do plan to suggest other downstream release alternatives to model.

However, without at least draft reports of the Aquatic Resources Study and the Aquatic Habitat study, we feel it is premature to ask stakeholders to put forth all alternatives. Flows, thermal impacts on aquatic resources, water quality, and aquatic habitat reports are all deeply interrelated. Flows and the thermal regime, in particular, should be considered together, but analysis of the impacts of temperature on aquatic life is still forthcoming.

Licensee itself acknowledges that the results from the Aquatic Resources Study are needed to design the fourth flow scenario it plans to model (an alternative Green Plan). Those same results will help stakeholders, as well, to make the most informed flow recommendations for study.

We understand that the modeling of additional flows takes time and effort, and we have no desire to unnecessarily delay, but to be of the most value, requests for additional flow modeling should be informed by the results of the fisheries studies.

Which brings me to the question: Do absolutely all requests for modeling of additional flows need to be submitted by the comment period ending June 11, or will there be an opportunity for stakeholders to put forth additional release alternatives once the draft fisheries studies are available?

I can certainly include these thoughts in our comments to be filed next week. Again, my thanks for incorporating stakeholders in this process, and I look forward to continuing to participate in the relicensing.

I hope you're staying safe and well.

--

Jack West, Esq.

Policy and Advocacy Director

Alabama Rivers Alliance

2014 6th Ave N, Suite 200

Birmingham, AL 35203

205-322-6395

www.alabamarivers.org

Celebrating more than 20 years of protecting Alabama's 132,000 miles of rivers and streams!

--
Jack West, Esq.
Policy and Advocacy Director
Alabama Rivers Alliance
2014 6th Ave N, Suite 200
Birmingham, AL 35203
205-322-6395
www.alabamarivers.org

Celebrating more than 20 years of protecting Alabama's 132,000 miles of rivers and streams!

20200610-3059 FERC PDF (Unofficial) 06/10/2020

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
June 10, 2020

OFFICE OF ENERGY PROJECTS

Project No. 2628-065 – Alabama
R.L. Harris Hydroelectric Project
Alabama Power Company

VIA FERC Service

Ms. Angie Anderegg
Harris Relicensing Project Manager
Alabama Power Company
600 North 18th Street Birmingham,
AL 35203

Subject: Staff Comments on the Initial Study Report and Initial Study Report Meeting Summary for the R.L. Harris Hydroelectric Project

Dear Ms. Anderegg:

Staff have reviewed Alabama Power Company's (Alabama Power) Initial Study Report (ISR) and associated draft study reports for the R.L. Harris Hydroelectric Project (Harris Project) filed on April 10, 2020, attended the ISR Meeting held via teleconference on April 28, 2020, and reviewed the ISR Meeting Summary filed on May 12, 2020. Alabama Power filed its ISR two days earlier than the published deadline of April 12, 2020. However, staff is maintaining the original deadline posted in previously issued process plans, June 11, 2020, for filing: comments on the ISR and draft study reports; comments on the ISR Meeting summary; requests for modifications to the approved study plan; and proposals for new studies.

Any stakeholder requests for study plan modifications or new studies should follow the Commission's regulations at 18 C.F.R. § 5.9(b) and 5.15 (2019), which are attached for stakeholder convenience (Attachment B). A copy of the Commission's Integrated Licensing Process (ILP) schedule for the Harris Project pre-filing milestones is attached as a reminder (Attachment C).

Based on a review of the ISR, associated draft study reports, discussions at the ISR Meeting, and a review of the ISR Meeting Summary, staff provide comments and recommended updates on Alabama Power's filings in Attachment A. Unless otherwise noted, please address the comments in Attachment A in the Updated Study Report or the

20200610-3059 FERC PDF (Unofficial) 06/10/2020

preliminary licensing proposal and license application, as appropriate. Alabama Power's requests for variances to their approved schedules for the Water Quality Study, the Draft Recreation Evaluation Study Report, and the Cultural Resources Study[1] will be addressed after the close of the ISR comment period.

If you have questions please contact Sarah Salazar at (202) 502-6863, or at sarah.salazar@ferc.gov.

Sincerely,

Allan E. Creamer

for Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

Enclosures: Attachment A
Attachment B
Attachment C

[1] Alabama Power intends to submit its Clean Water Act section 401 Water Quality Certification application to the Alabama Department of Environmental Management in April 2021 instead of in 2020, as originally proposed. Alabama Power proposes to file its Draft Recreation Evaluation Study Report in August 2020 instead of June 2020 to allow time to complete two new recreation surveys, the Tallapoosa River Downstream Landowner Survey and the Tallapoosa River Recreation User Survey. Alabama Power also proposes to finalize the Area of Potential Effect (APE) for its Cultural Resources Study and file it with documentation of consultation in June 2020.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

Attachment A

Staff comments on the Initial Study Report (ISR) and Initial Study Report Meeting Summary

Draft Operating Curve Change Feasibility Analysis (Phase 1) Study Report

1. Figure 5-3, on page 39 of the Draft Operating Curve Change Feasibility Analysis (Phase 1) Study Report, shows how changing the winter pool elevation from the current project operating curve to the +1, +2, +3, and +4-foot winter operating curves could affect reservoir elevations in Lake Harris throughout the year. Moreover, the figure documents the interaction between higher winter pool levels and low-inflow periods. During the period between 2006 and 2008, which encompasses two low-flow periods, the model showed that increasing the winter pool elevation can result in higher reservoir elevations during low-flow years, compared to the existing operating curve. However, Figure 5-3 shows that from about July 2007 through mid-February 2008, modeled reservoir levels for the +2 and +3-foot winter pool curve alternatives were lower than that of the other operating curve alternatives for the same operating period. Please explain what appears to be an anomaly in the modeling result in the final report.

Draft Downstream Release Alternatives (Phase 1) Study Report

2. During the ISR Meeting, Alabama Power requested that stakeholders provide downstream flow alternatives for evaluation in the models developed during Phase 1 of the Downstream Release Alternatives Study. Stakeholders expressed concerns about their ability to propose flow alternatives without having the draft reports for the Aquatic Resources and Downstream Aquatic Habitat Studies, which are scheduled to be available in July 2020 and June 2020, respectively. It is our understanding that during Phase 2 of this study, Alabama Power would run stakeholder-proposed flow alternatives that may be provided with ISR comments, as well as additional flow alternatives that stakeholders may propose after the results for the Aquatic Resources and Downstream Aquatic Habitat Studies are available. Please clarify your intent by July 11, 2020, as part of your response to stakeholder comments on the ISR.

3. According to the approved study plan, the goal of the Downstream Release Alternatives Study is to evaluate the effects of four downstream flow release alternatives on project resources. The four release alternatives are: (1) the Green Plan, or Alabama Power's current pulsing operation; (2) the Pre-Green Plan, or Alabama Power's historic peaking operation; (3) the Pre-Green Plan with a continuous baseflow of 150 cubic feet per second (cfs); and (4) a modified Green Plan. The Phase 1 Report, filed on April 10, 2020, presented complete results for Pre-Green Plan operation and Green Plan operation, partial results for the Pre-Green Plan with a 150-cfs baseflow, and no results for the modified Green-Plan alternative.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

During the ISR Meeting, Alabama Power requested that stakeholders identify and propose downstream flow release alternatives so that the proposed alternative's effects on environmental resources can be assessed during Phase 2 of the study. To facilitate modelling of downstream flow release alternatives, we recommend that Alabama Power run base flows of 150 cfs, 350 cfs, 600 cfs, and 800 cfs through its model for each of the three release scenarios (i.e., the Pre-Green Plan, the Green Plan, and the modified Green Plan flow release approach). The low-end flow of 150 cfs was proposed by Alabama Power as equivalent to the daily volume of three 10-minute Green Plan pulses. This flow also is about 15 percent of the average annual flow at the United States Geological Survey's flow gage (#02414500) on the Tallapoosa River at Wadley, Alabama, and represents "poor" to "fair" habitat conditions.[1] We recommend 800 cfs as the upper end of the base flow modeling range because it represents "good" to "excellent" habitat,[2] and is nearly equivalent to the U.S. Fish and Wildlife Service's Aquatic Base Flow guideline for the Tallapoosa River at the Wadley gage.[3] The proposed base flows of 350 cfs and 600 cfs cover the range between 150 cfs and 800 cfs.

In addition, we recommend that the modeling for Alabama Power's Aquatic Resources Study and Downstream Aquatic Habitat Study,[4] as well as any Phase 2

---

[1] *See* Tennant, D.L. 1976. Instream flow regimens for fish, wildlife, recreation, and related environmental resources. in Instream flow needs, Volume II: Boise, ID, Proceedings of the symposium and specialty conference on instream flow needs, May 3-6, American Fisheries Society, p. 359-373. Tennant (1976) defines habitat quality (measured by average depth and velocity of flow) as a percentage of the average annual flow. Poor habitat is represented by 0.1 (10 percent of the average annual flow), fair habitat is represented by 0.1 to 0.3 (10 to 30 percent of the average annual flow), and good habitat is represented by 0.3 to 0.4 (30 to 40 percent of the average annual flow), depending on season.

[2] *Id*.

[3] For purposes of this analysis, we assumed an aquatic base flow of 0.5 cubic feet per second per square mile (or cfsm) of drainage area (1,675 square miles at the Wadley gage). *See* U.S. Fish and Wildlife Service. 1981. Interim Regional Policy for New England Streams Flow Recommendations. Region 5. Boston, Massachusetts.

[4] The Aquatic Resources Study involves the use of a bioenergetics model to conduct simulations needed to test potential influence of water temperature and flow on growth rates of fish species downstream from Harris Dam. The Downstream Aquatic Habitat Study involves using a HEC-RAS model to evaluate the effect of alternative operations on the amount and persistence of wetted aquatic habitat in the Tallapoosa River downstream from Harris Dam.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

assessment(s) include all the downstream flow release alternatives identified and evaluated as part of the Downstream Flow Release Alternatives Study. The results of all the modeling for the Aquatic Resources Study and Downstream Aquatic Habitat Study should be included in the final study reports and filed with the Updated Study Report, due by April 12, 2021.

4. The Draft Downstream Release Alternatives (Phase 1) Study Report refers to data sets (e.g., topographic and geometric data on pages 12-13 and 17-19) that were used to develop the models. To assist us in interpreting the models, we recommend including in the final study report a table and/or figure that summarizes all of the data sets used in the models and identifies their spatial extents in terms such as watershed segments, river miles (RMs), and square miles covered by each dataset (as appropriate), with reference to other geographic landmarks (e.g., nearest city, dam, bridge, etc.). Please incorporate into the table and/or figure, the stakeholder- and Alabama Power-identified erosion areas of concern. In addition, please provide the metadata for each data set used.

5. Page 14 of the Draft Downstream Release Alternatives (Phase 1) Study Report includes a description of the HEC-ResSim model that was developed for the project. Harris Dam was modeled in HEC-ResSim with both a minimum release requirement and maximum constraint at the downstream gage at Wadley. The draft report states that the minimum release requirement is based on the flow at the upstream Heflin gage, which is located on the Tallapoosa River arm of Harris Reservoir and has 68 years of discharge records. Page 5 of the draft report indicates that there is also a gage (Newell) on the Little Tallapoosa River Arm of the reservoir, which has 45 years of discharge records. It appears that only the Heflin gage was used in developing the minimum release requirement. As part of your response to stakeholder comments on the ISR, please explain the rationale for basing the minimum releases in the HEC-ResSim model only on the flows at the Heflin gage and not also on the flows at the Newell gage.

6. Pages 15 and 16 of the Draft Downstream Release Alternatives (Phase 1) Study Report, state that the drought indicator thresholds, or triggers, are only evaluated on the 1st and the 15th of every month in the model and that once a drought operation is triggered, the drought intensity level can only recover from drought condition at a rate of one level per "period." Please clarify in the final report if one "period" is equal to 15 days (i.e., the interval for evaluating drought triggers) and if this protocol is used for managing reservoir operations currently, or if it is only a parameter used in the model.

Draft Erosion and Sedimentation Study Report

7. The Erosion and Sedimentation Study in the approved study plan states that Alabama Power would analyze its existing lake photography and Light Detection and Ranging (LIDAR) data using a geographic information system (GIS) to identify elevation or contour changes around the reservoir from historic conditions and quantify changes in

20200610-3059 FERC PDF (Unofficial) 06/10/2020

lake surface area to estimate sedimentation rates and volumes within the reservoir. In addition, the approved study plan states that Alabama Power will verify and survey sedimentation areas for nuisance aquatic vegetation. According to the study schedule, Alabama Power will prepare the GIS overlay and maps from June through July 2019 and conduct field verification from fall 2019 through winter 2020.

The Draft Erosion and Sedimentation Study Report does not include a comparison of reservoir contour changes from past conditions or the results of nuisance aquatic vegetation surveys. The report states that limited aerial imagery of the lake during winter draw down and historic LIDAR data for the reservoir did not allow for comparison to historic conditions and that Alabama Power will conduct nuisance aquatic vegetation surveys during the 2020 growing season.

It is unclear why the existing aerial imagery and Alabama Power's LIDAR[5] data did not allow for comparison with past conditions or why the nuisance aquatic vegetation surveys will be conducted during the 2020 growing season instead of during the approved field verifications from fall 2019 to winter 2020. As part of your response to stakeholder comments on the ISR, please clarify what existing aerial imagery and LIDAR data was used and why it was not suitable for comparison with past conditions. Also, please explain the change in timing for conducting the nuisance aquatic vegetation surveys.

Draft Water Quality Report

8. Figure 3-8, on page 18 of the Draft Water Quality Study Report shows dissolved oxygen (DO) profiles for the Harris Project forebay. While much of the data is typical of the DO stratification pattern in a southern reservoir, the figure also shows that in June, July, and August of 2017 and 2019, there was a 2.0 to 3.0 milligram per liter increase in DO concentration at a depth of about 20 to 25 meters in Lake Harris, which is uncommon in such reservoirs. Please include Alabama Power's interpretation of this DO anomaly in the final Water Quality Study Report.

Draft Threatened and Endangered (T&E) Species Study Report

9. The goals of Alabama Power's T&E Species Study are to assess the probability of T&E species populations and/or their critical habitat occurring within the Harris Project boundary or project area and determine if there are project related impacts (i.e., lake fluctuations, downstream flows, recreation and shoreline management activities, timber

[5] During the June 4, 2020 Harris Action Team #1 and #5 meeting, Alabama Power stated it has LIDAR data sets from different years and would check its records to confirm the number of LIDAR data sets, and for which years the LIDAR data were collected.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

management, etc.) to those species and critical habitats. According to the study schedule, Alabama Power would develop the GIS overlays and maps from April through July 2019, and conduct field verifications, if required, from October 2019 through September 2020.

The Draft T&E Species Study Report does not provide information on the presence or absence of potentially suitable habitat within the project boundary for all of the T&E species (e.g., red cockaded woodpecker,[6] northern long-eared bat,[7] pool sprite,[8] and white fringeless orchid[9]) on the official species list for the project.[10] Therefore, Alabama Power was unable to determine whether or not these species are likely to occur within the project boundary or identify a complete list of T&E species that require field surveys.

---

[6] Page 8 the report states that land use data is not specific enough to determine if the 3,068 acres of coniferous forest in the project boundary at Lake Harris has the specific habitat characteristics suitable for red-cockaded woodpeckers.

[7] Page 19 of the report states that the Lake Harris and Skyline project boundaries fall within the range of the northern long eared bat and that there are no known hibernacula or summer roost trees within the project boundaries. However, as discussed in the ISR meeting, the report does not state whether any known northern long-eared bat hibernacula occur within a 0.25-mile radius of the project boundaries, or whether known summer roost trees occur within a 150-foot radius of the project boundaries. The report also does not provide information about timber/vegetation management practices within the project boundary. This information is needed in order to determine known occurrences of northern long-eared bats within or adjacent to the project boundaries and to determine potential project effects to this species.

[8] Page 21 of the reports states that pool sprite was documented at Lake Harris in Flat Rock Park in 1995. While subsequent surveys have not detected pool sprite, the report indicates that there are 138.4 acres of granite geology within the project boundary at Lake Harris. However, this species' vernal pool habitat was not identified at the project due to "a lack of available data."

[9] Page 22 the report states that National Wetland Inventory data is not detailed enough to identify potentially suitable habitat for white fringeless orchid within the project boundary.

[10] See FWS's official lists of T&E species within the Harris Project boundaries (i.e., at Lake Harris and Skyline) that were accessed on July 27, 2018, by staff using the FWS's Information for Planning and Conservation website (https://ecos.fws.gov/ipac/) and filed on July 30, 2018.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

As part of your response to stakeholder comments on the ISR, please provide: (1) the maps and assessment of the availability of potentially suitable habitat within the project boundary for all of the T&E species on the official species list for the project; (2) documentation of consultation with FWS regarding the species-specific criteria for determining which T&E species on the official species list will be surveyed in the field; (3) a complete list of T&E species that will be surveyed during the 2nd study season as part of the T&E Species Study; and (4) confirmation that Alabama Power will complete the field verification scheduled by September 2020.

Draft Project Lands Evaluation (Phase 1) Report

10. The goals of the Project Lands Evaluation include: (1) identifying and classifying lands at the project that are needed for Harris Project purposes; (2) evaluating existing land use classifications at Lake Harris and determining if any changes are needed to conform to Alabama Power's current land classification system and other Alabama Power Shoreline Management Plans; and (3) identifying lands to be added to, or removed from the current project boundary.

Appendix B of the Draft Project Lands Evaluation (Phase 1) Report includes a small scale map of Lake Harris and the existing shoreline classifications, as well as larger scale maps showing parcels of land within the project boundary for which Alabama Power is considering either changing the existing land use classification, adding parcels to the project boundary, or removing parcels from the project boundary. However, the report does not include large scale maps showing the land use classifications for all of the existing shoreline. To facilitate review of the existing shoreline land use classifications, please file larger scale maps of all the shoreline areas as a supplement to the Draft Project Lands Evaluation Report, as part of your response to stakeholder comments on the ISR. Please include land use classifications on the maps. In addition, if available, please file the GIS data layers of the existing and proposed shoreline land use classifications.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

Attachment B

Excerpt from 18 C.F.R. § 5.15

(d) *Criteria for modification of approved study*. Any proposal to modify an ongoing study . . . must be accompanied by a showing of good cause why the proposal should be approved, and must include, as appropriate to the facts of the case, a demonstration that:

(1) Approved studies were not conducted as provided for in the approved study plan; or

(2) The study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way.

(e) *Criteria for new study*. Any proposal for new information gathering or studies . . . must be accompanied by a showing of good cause why the proposal should be approved, and must include, as appropriate to the facts of the case, a statement explaining:

(1) Any material changes in the law or regulations applicable to the information request;

(2) Why the goals and objectives of any approved study could not be met with the approved study methodology;

(3) Why the request was not made earlier;

(4) Significant changes in the project proposal or that significant new information material to the study objectives has become available; and

(5) Why the new study request satisfies the study criteria in § 5.9(b).

Excerpt from 18 C.F.R. § 5.9(b)

(b) *Content of study request*. Any information or study request must:

(1) Describe the goals and objectives of each study proposal and the information to be obtained;

(2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;

(3) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;

(4) Describe existing information concerning the subject of the study proposal, and the need for additional information;

(5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how

20200610-3059 FERC PDF (Unofficial) 06/10/2020

the study results would inform the development of license requirements;

(6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and

(7) Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.

20200610-3059 FERC PDF (Unofficial) 06/10/2020

Attachment C

R.L. Harris Process Plan and Schedule for the Integrated Licensing Process (ILP)

(shaded milestones are unnecessary if there are no study disputes; if due date falls on a weekend or holiday, the due date is the following business day)

18 C.F.R.	Lead	Activity	Timeframe	Deadline
§ 5.5(a)	Alabama Power	Filing of NOI and PAD	Actual filing date	6/1/2018
§ 5.7	FERC	Initial Tribal Consultation Meeting	No later than 30 days from NOI and PAD	7/1/2018
§5.8	FERC	FERC Issues Notice of Commencement of Proceeding and Scoping Document (SD1)	Within 60 days of NOI and PAD	7/31/2018
§5.8 (b)(3)(viii)	FERC/ Stakeholders	Public Scoping Meetings and Environmental Site Review	Within 30 days of NOI and PAD notice and issuance of SD1	8/28/2018 - 8/29/2018
§ 5.9	Stakeholders/ FERC	File Comments on PAD, SD1, and Study Requests	Within 60 days of NOI and PAD notice and issuance of SD1	9/29/2018
§5.10	FERC	FERC Issues Scoping Document 2 (SD2), if necessary	Within 45 days of deadline for filing comments on SD1	11/13/2018
§5.11(a)	Alabama Power	File Proposed Study Plans	Within 45 days of deadline for filing comments on SD1	11/13/2018
§5.11(e)	Alabama Power/ Stakeholders	Study Plan Meetings	Within 30 days of deadline for filing proposed Study Plans	12/13/2018
§5.12	Stakeholders	File Comments on Proposed Study Plan	Within 90 days after proposed study plan is filed	2/11/2019
§5.13(a)	Alabama Power	File Revised Study Plan	Within 30 days following the deadline for filing comments on proposed Study Plan	3/13/2019
§5.13(b)	Stakeholders	File Comments on Revised Study Plan (if necessary)	Within 15 days following Revised Study Plan	3/28/2019
§5.13(c)	FERC	FERC Issues Study Plan Determination	Within 30 days following Revised Study Plan	4/12/2019
§5.14(a)	Mandatory Conditioning Agencies	Notice of Formal Study Dispute (if necessary)	Within 20 days of Study Plan determination	5/2/2019
§5.14(l)	FERC	Study Dispute Determination	Within 70 days of notice of formal study dispute	7/11/2019
§5.15(a)	Alabama Power	Conduct First Season Field Studies	Spring/Summer 2019	

20200610-3059 FERC PDF (Unofficial) 06/10/2020

18 C.F.R.	Lead	Activity	Timeframe	Deadline
§5.15(c)(1)	Alabama Power	File Initial Study Reports	No later than one year from Study Plan approval	4/12/2020
§5.15(c)(2)	Alabama Power	Initial Study Results Meeting	Within 15 days of Initial Study Report	4/28/2020
§5.15(c)(3)	Alabama Power	File Study Results Meeting Summary	Within 15 days of Study Results Meeting	5/12/2020
§5.15(c)(4)	Stakeholders/ FERC	File Meeting Summary Disagreements/Modifications to Study/Requests for New Studies	Within 30 days of filing Meeting Summary	6/11/2020
§5.15(c)(5)	Alabama Power	File Responses to Disagreements/Modifications/ New Study Requests	Within 30 days of disputes	7/11/2020
§5.15(c)(6)	FERC	Resolution of Disagreements/ Study Plan Determination (if necessary)	Within 30 days of filing responses to disputes	8/10/2020
§5.15	Alabama Power	Conduct Second Season Field Studies	Spring/Summer 2020	
§5.15 (f)	Alabama Power	File Updated Study Reports	No later than two years from Study Plan approval	4/12/2021
§5.15(c)(2)	Alabama Power	Second Study Results Meeting	Within 15 days of Updated Study Report	4/27/2021
§5.15(c)(3)	Alabama Power	File Study Results Meeting Summary	With 15 days of Study Results Meeting	5/12/2021
§5.15(c)(4)	Stakeholders/ FERC	File Meeting Summary Disagreements/ Modifications to Study Requests/Requests for New Studies	Within 30 days of filing Meeting Summary	6/11/2021
§5.15(c)(5)	Alabama Power/ Stakeholders	File Responses to Disagreements/Modifications/ New Study Requests	Within 30 days of disputes	7/11/2021
§5.15(c)(6)	FERC	Resolution of Disagreements/ Study Plan Determination (if necessary)	Within 30 days of filing responses to disagreements	8/10/2021
§5.16(a)	Alabama Power	File Preliminary Licensing Proposal (or Draft License Application) with the FERC and distribute to Stakeholders	Not later than 150 days before final application is filed	7/3/2021
§5.16 (e)	FERC/ Stakeholders	Comments on Alabama Power's Preliminary Licensing Proposal, Additional Information Request (if necessary)	Within 90 days of filing Preliminary Licensing Proposal (or Draft License Application)	10/1/2021
§5.17 (a)	Alabama Power	License Application Filed		11/30/2021

20200611-5049 FERC PDF (Unofficial) 6/11/2020 10:17:17 AM

Dear Secretary Bose,

Our property is located on the Tallapoosa River, in Tallapoosa County, between Bibby's Ferry and Germany's Ferry. Over the past 20+ years the banks have drastically eroded and it has gotten even worse in the past 4 years. When the dam is let off the water level gets so high, to the top of the banks. There have been numerous trees along the bank that have fallen into the river. In one area alone the bank has eroded so much that 2 trees have already fallen and a 3rd tree is on the verge of falling. These trees were not "side by side" along the river bank. The 3rd tree that is on the verge of falling was several feet behind the other 2 trees that fell.

There is an island on the property as well. This use to be 1 acre – now it's much less than that. Several trees on that island have also fallen. There is a slue that goes between the riverbank and the island. The water in the slue is normally anywhere from ankle high to knee high. However when the dam is let off the water is up to the top of the bank – well over 7 feet deep. This has caused several trees along the slue to fall and block the water flow in the slue. When the water is down there is very little water, or no water, going down the slue. When the water is up the slue looks like a river.

The falling trees worry me, but what worries me the most is where the banks have not only washed away but caused "caves". In the past we had a small fence several feet from the bank to keep kids from running and falling in the river. A lot of the fence posts have now fallen down the banks and there are huge drop off's that the fence no longer protects the kids from falling down. Approximately 10 years ago we noticed a huge hole, like a cave, in the bank that is close to our picnic area and it is getting larger every year and closer to our picnic area. We are afraid the picnic area will eventually cave in unless something is done about this. Please note this picnic area was not even close to the bank when it was built. Now there are huge drop off's close to the picnic area.

Just this year we noticed a big cave in on the bank of the slue. The only time the water is high enough in the slue to reach the top of the bank is when the water is let off. The cave in is now approx. 2 feet into the bank and getting close to the road we use.

We have repeatedly asked for help from various sources for ideas or help to keep the banks from eroding. So far we have received no help or ideas. I'm afraid we will be enjoying a day on the river and a bank will cave in and cause harm or even death to someone. I have pictures from 2016 as well as pictures from 2020 that will show the erosion.

Thanks,

Michele Waters

256-397-0214
Watermf@auburn.edu

13765 Bibby's Ferry Road
Wadley, AL 36276

20200611-5076 FERC PDF (Unofficial) 6/11/2020 12:37:53 PM

6/11/2020

Dear Secretary Bose,

I am writing in regard to FERC project number P-2628-065 as it pertains to our property on the Tallapoosa River, in Tallapoosa County, between Bibby's Ferry and Germany's Ferry.

My grandmother farmed this property as a youth and it has been a part of our lives over the past 50 plus years growing up. Over the years, I have seen the drastic changes to the beautiful river and our land that borders its banks. I know there are natural changes to a river's edge, but there has to be ways to preserve the land so that it doesn't just completely erode away become part of the river and no more a place where we can fish, camp and play.

Over the past four years it has become increasingly worse and we are losing more and more trees in addition to the soil that keeps them a root! When the water is released from the dam the water level quickly tops our banks gushing and washing away our land and our trees.

We have an island on the property as well that use to be one acre and it continues to erode away along with its vegetation. We use to be able to walk the slue that's between the riverbank and the island, but the fast moving high waters have taken down so many trees it is almost completely closed off.

The banks of the river are becoming dangerous as the water erodes them away taking our land and the beauty they retain. There is a responsibility that comes with those who regulate the dam that causes these changes. We have repeatedly asked for help from various sources for ideas or help to keep the banks from eroding. Please let us know what can be done to preserve our beautiful river land so that our children and our children's children can enjoy for years to come.

Thank you,

Sharon Holland

Skholland23@gmail.com
678-699-7303

Where I live
3219 Southridge
Stockbridge, GA 30281

Where I love to play
Bibby's Ferry Road on the Tallapoosa River
Wadley, AL 36276

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

Alabama Rivers Alliance
Water Is Life

June 11, 2020

VIA ELECTRONIC FILING

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

RE: Comments on Initial Study Reports, Study Modification Requests, and New Study Proposal for R.L. Harris Hydroelectric Project (P-2628-065)

Dear Secretary Bose:

Enclosed for filing in the above-referenced docket are comments, study modification requests, and a new study proposal submitted by Alabama Rivers Alliance for the R.L. Harris Hydroelectric Project.

Thank you for your assistance in this matter. If you have any questions or need additional information, please call me at 205-322-6395.

Sincerely,

Jack K. West

Jack K. West, Esq.

Alabama Rivers Alliance
Policy and Advocacy Director
2014 6th Avenue North
Suite 200
Birmingham, AL 35203

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Alabama Power Company	)	R.L. Harris Hydroelectric Project
	)	
	)	Project No. 2628-065

ALABAMA RIVER ALLIANCE'S COMMENTS ON INITIAL STUDY REPORTS, STUDY MODIFICATION REQUESTS, AND NEW STUDY PROPOSAL

The Alabama Rivers Alliance (ARA) submits the following comments on the currently available draft study reports as part of the Federal Energy Regulatory Commission's Integrated Licensing Procedure (ILP) for the R.L. Harris Hydroelectric Project, FERC Project No. P 2628-065 ("Harris" or "Harris Project"). Study modification requests for the Water Quality Study and Downstream Release Alternatives Study are contained in Sections I and II, and a new study proposal for a Battery Storage Feasibility Study comprises Section IV. Drafts of the Downstream Aquatic Habitat Study Report, Aquatic Resources Study Report, and the Recreation Study Report will be filed by Licensee over the summer, and the results of the forthcoming fisheries studies will likely inform future comments on the study reports currently available and commented upon here.

I. DRAFT WATER QUALITY REPORT

A. Request for Water Quality Study Modification

The caliber and usefulness of the studies conducted pursuant to the ILP will only be as good as the quality and quantity of data collected. ARA recommends that each opportunity to gather relevant data be taken during the relicensing process. The Draft Water Quality Study Report gathers data from three sources: Alabama Power Company (Licensee), the Alabama Department of Environmental Management (ADEM), and Alabama Water Watch.[1]

Of primary concern for downstream ecological health are the two monitors collecting data closest to the dam, both of which are operated and monitored by Licensee. Continuous, 15-minute interval data for dissolved oxygen levels and water temperature has been collected from a monitor in the tailrace (approximately 800 feet from the dam) during the months of June - October in 2017, 2018, and 2019 ("Tailrace Monitor"). A second continuous, 15-minute interval monitor operated by Licensee was placed roughly 0.5 miles downstream of the dam ("Downstream Monitor") and collected dissolved oxygen and temperature data from March 12 through October 31 of 2019, excluding approximately a week's worth of data due to problems with the monitor.[2]

[1] Draft Water Quality Study Report (Mar. 2020), Accession No. 20200410-5095, at 5.
[2] *See* Appendix B (Excel spreadsheet) of the Draft Water Quality Report, "Downstream Monitor 2019" and "Notes" tabs.

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

Data collected by these two monitors, in particular, are essential to understanding the quality of water being discharged by Harris because they are closest to the dam and are the only continuous samplings included in the study. The ILP process allows for two seasons of study and data collection; however, Licensee is only collecting one season's worth of water quality data under the current study plan.[3] While the 2019 dissolved oxygen levels from the Downstream Monitor met or exceeded 5mg/L 99.9% of the time,[4] this is but one year's worth of data collected during a non-drought year. Data from the Tailrace Monitor for 2017 and 2018—closer in time to actual drought conditions in late 2016—shows "numerous events" where dissolved oxygen levels did not meet 5mg/L.[5] Due to flooding events, the Downstream Monitor could not be deployed until March 12, 2019, and was inoperable for approximately another week due to a dead battery and washing ashore.[6] Combined, roughly three weeks of data (or ~10% of the total) scheduled to be collected in the Water Quality Study Plan was not collected because of equipment failure and environmental conditions.

To bolster the studies being performed, and to provide the most useful reports to stakeholders and FERC, pursuant to 18 C.F.R. § 5.15(d), ARA proposes a second year of water quality monitoring at the Downstream Monitor to collect dissolved oxygen and water temperature data in 15-minute intervals from July1 – October 31, 2020, and from March 1 – June 30, 2021. While 2020 has been a wet year thus far, conditions later in the year and early next year may provide an opportunity to collect data during drier, potentially drought, periods.

Additionally, we request that discharge data be included along with the dissolved oxygen and temperature data collected by the Downstream Monitor in 2020-21 to enable stakeholders to better understand the relationship between releases and water quality. The Tailrace Monitor data included in Appendix B to the Water Quality Report for 2017-2019 includes 15-minute interval discharge data for "Turbine 1," "Turbine 2," and "Total Discharge," and such data should be included with the continued monitoring data.

Finally, an assessment of any aeration or aspiration devices used to boost dissolved oxygen levels should also be included in order to take into account such artificial enhancements (and to consider any declines in water quality were these devices not to function properly). Documents filed with FERC prior to Harris' operation describe "incorporating into the turbine discharge an aspiration system to provide up to a 2 ppm increase in dissolved oxygen."[7] The condition of any existing aspiration system and a comparison to current technologies used to enhance dissolved oxygen levels should be undertaken.

As FERC staff have recognized, it is difficult to draw conclusions and make decisions with only one season's worth of data from a critical monitoring location.[8] Without additional monitoring efforts, Licensee, FERC, and stakeholders will miss an opportunity to collect data more reflective

[3] *See* Final Water Quality Study Plan (May 2019), Accession No. 20190513-5093.
[4] Draft Water Quality Study Report (Mar. 2020), Accession No. 20200410-5095, at 46.
[5] *Id.*
[6] *See* Appendix B (Excel spreadsheet) of the Draft Water Quality Report, "Notes" tab.
[7] Application of Alabama Power Company for Approval of Revised Exhibit S to License (Apr. 30, 1982), Accession No. 19820504-0246, at 5.
[8] *See* Initial Study Report Meeting Summary (May 12, 2020). Accession No. 20200512-5083, at 24-27.

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

of periods where water quality is decreased and water quality criteria more difficult to meet. Gathering a second year of continuous, 15-minute interval data for dissolved oxygen and temperature (paired with discharge data) at the Downstream Monitor will provide a more robust dataset and strengthen the studies conducted during this ILP.

B. Water Temperature Concerns

There is significant stakeholder concern over the temperature of releases from Harris, and ARA understands that analysis of the effects of temperatures will be included in the forthcoming Aquatic Resources Study Report.[9] This concern stems from the scientific literature documenting the ecological consequences of cold-water pollution from hydroelectric dams[10] and decades of research on Harris indicating "thermal alteration and generation frequency negatively affect the occupancy of most fish species below the dam."[11] As additional study and analysis of the thermal regime progresses and is reported in the Aquatic Resources Study, ARA recommends that *temperature and flows be considered in tandem* during this analysis because "both discharge and temperature must be simultaneously considered for the successful implementation of environmental flow management below dams."[12]

The existing license for Harris required Licensee to work with state agencies and EPA prior to commencement of construction to come up with an "optimum design and placement of the project intake structures to permit withdrawal of water from selected levels of the reservoir to control the water quality of the discharges from the powerhouse."[13] Within four years of the issuance of the existing license, Licensee was required to file a revised (and then a re-revised) Exhibit S that included its plans to study the potential fishery resources of the reservoir and "a description of measures being taken to maintain or change the water quality of the Tallapoosa River downstream from the project."[14]

Licensee's re-revised Exhibit S filed in April of 1982 evidenced Licensee's understanding of the connection between temperatures and water quality and the need to design an intake structure to withdraw high-quality surface waters. Licensee's re-revised Exhibit S reads in part:

> "For enhancement of discharge water quality, it is desirable to withdraw water from as close to the surface as possible. At Harris Dam, which employs seasonal drawdown, the objective of surface withdrawal has been solved by incorporating into the design movable sills at the invert of each intake opening.…Location of

[9] Initial Study Report Meeting Summary (May 12, 2020). Accession No. 20200512-5083, at 26.
[10] Julian D. Olden & Robert J. Naiman, *Incorporating Thermal Regimes into Environmental Flows Assessments: Modifying Dam Operations to Restore Freshwater Ecosystem Integrity*, Freshwater Biology (2010) 55, at 88-90.
[11] Elise R. Irwin, *Adaptive Management of Flows from R.L. Harris Dam (Tallapoosa River, Alabama)—Stakeholder Process and Use of Biological Monitoring Data for Decision Making*, U.S. Geological Survey Open-File Report 2019-1026, at 22 [hereinafter "USGS Open-File Report 2019-1026"].
[12] Olden, *supra* note 10, at 87.
[13] Harris Dam License, FERC No. P-2628, Article 51, Appendix F to PAD, Accession No. 20180601-5125 [hereinafter "Harris License"].
[14] Harris License, Article 52.

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

> these sills at the highest levels possible for operation will ensure the highest quality water being drawn into the turbines."[15]

Despite early attempts to engineer an intake to accommodate epilimnetic withdrawals and "solve" the problem of cold releases with lower dissolved oxygen content, thermal pollution[16] has plagued the river downstream from Harris since it began operations.

Unfortunately, neither the Aquatic Resources Study Plan nor the Draft Water Quality Report contemplate the study of any potential remedial actions to adjust water temperatures in line with unregulated reaches of the Tallapoosa. Licensee has acknowledged that once an issue has been identified with water temperatures, it plans to study technologies that can address the thermal regime.[17] Due to the available evidence of low temperatures impacting both colonization and persistence of fishes and the downstream macroinvertebrate community[18] and the sizeable stakeholder concern, ARA urges thorough study of the infrastructure enhancements available for implementation at Harris to control release temperatures. A variety of temperature management strategies exist, including multi-level intake structures, floating intakes, and reservoir destratification approaches using pumps and submerged weirs, as well as operational adjustments in the timing and volume of releases.[19]

II. DRAFT DOWNSTREAM RELEASE ALTERNATIVES STUDY REPORT

The extent to which the Harris project has altered flows of the Tallapoosa River is reflected in comments submitted by the Alabama Department of Conservation and Natural Resources (ADCNR) in 1982, which lament the "loss of 49 percent of the last major free-flowing river habitat…in Alabama."[20] According to the ADCNR's reading of USGS data at the time, flows from the pre-dam period of 1923 to 1972 equaled or exceeded the minimum flow of 45cfs stipulated in Article 13 of the license *100% of the time*.[21] Flows of 8,000cfs due to single turbine generation at Harris were equaled or exceeded during that era only 4.4% of the time, and flows of 16,000cfs due to two-unit generation were equaled or exceeded only 1.2% of the time.[22] For decades the Tallapoosa downstream of Harris has weekly experienced flows it otherwise would have seen, on average, roughly eight days out of a given year.

This flow regime has not been without consequences. Researchers have documented as much as a 67% reduction in flows than during pre-dam periods, greater instability of day-to-day flow

---

[15] Revised Exhibit S to Harris License Article 52 (Apr. 20, 1982), Accession No. 19820504-0246, at 5.
[16] Olden, *supra* note 10, at 91.
[17] Initial Study Report Meeting Summary (May 12, 2020). Accession No. 20200512-5083, at 26.
[18] *See generally*, USGS Open-File Report 2019-1026.
[19] Olden, *supra* note 10, at 97-101; *See also* Karin Krchnak et al., *Integrating Environmental Flows into Hydropower Dam Planning, Design, and Operations*, World Bank Technical Guidance Note (Nov. 22, 2009), at 24-27, *available at* http://documents.worldbank.org/curated/en/712981468346147059/Integrating-environmental-flows-into-hydropower-dam-planning-design-and-operations.
[20] Comments filed by ADCNR (Aug. 11, 1982) Accession No. 19820813-0012, at 3.
[21] *Id.* (emphasis added).
[22] *Id.*

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

variations, and an increase in very low-flow periods.[23] The flow instability and altered thermal patterns caused by hydropeaking operations have depressed species richness, "influenced fish persistence and colonization," reconfigured the downstream macroinvertebrate community, and created "adverse effects on hydraulic variables such as water velocity, depth, and temperature."[24]

As a result of Harris operations, the 14-mile stretch of the Tallapoosa from the dam to Alabama Highway 77 is currently listed by ADEM as a Category 4C waterbody impaired due to hydrologic alteration.[25] And the U.S. Geological Survey's (USGS) Open-File Report from last year indicates "that hydrologic alteration in the river has affected various biological processes."[26]

Despite the past decades of disruption, studies performed during the ILP and a reinvigorated adaptive management approach can shape a new framework for creating positive ecological responses below Harris. As the USGS Open-File Report on adaptive management of flows from Harris states, "[i]f flow and thermal alteration from the dam can be modified toward improving natural resource objectives, adaptive management processes and long-term monitoring could further reduce uncertainty related to biotic response to new Federal Energy Regulatory Commission licensing requirements."[27]

A. A Wider Variety of Release Patterns Needs to Be Modeled and Considered

We appreciate that Licensee was willing fifteen years ago to enter into a collaborative process with stakeholders and to voluntarily operate the Harris project according to an adaptive management plan known as the Green Plan,[28] the purpose of which "was to reduce effects of peaking operations on the aquatic community downstream."[29] The Green Plan was a starting point for adaptive management, but evidence suggests it has not improved conditions for aquatic life. The most recent published literature demonstrates that although "[h]abitat availability for fishes increased under the Green Plan management…improved conditions did not improve recruitment processes for species of interest."[30] Further, "results indicate that the Green plan did not meet the stakeholder objective to restore and maintain macroinvertebrate community composition similar to unregulated reaches within the regulated portions of the river."[31]

---

[23] Elise R. Irwin & M.C. Freeman, *Proposal for Adaptive Management to Conserve Biotic Integrity in a Regulated Segment of the Tallapoosa River, Alabama, U.S.A.*, Conservation Biology (2002), 16(5): 1212-1222.
[24] USGS Open-File Report 2019-1026, at 2-3.
[25] ADEM's *2020 Alabama Integrated Water Quality Monitoring and Assessment Report* required by Clean Water Act Section 305(b), Appx. B, at 33 *available at* http://www.adem.state.al.us/programs/water/waterforms/2020AL-IWQMAR.pdf.
[26] USGS Open-File Report 2019-1026, at 9.
[27] USGS Open-File Report 2019-1026, at 3.
[28] FERC Scoping Document 2 (Nov. 16, 2018), Accession No. 20181116-3065, FN11 at 16 ("The Green Plan is an adaptive management program that began in 2005, and that consists of providing pulsing flow releases (10 to 30 minutes in length) in the Tallapoosa River to enhance aquatic habitat, fish, and other aquatic organism downstream from Harris Dam.").
[29] Downstream Release Alternatives Study Plan (May 2019), Accession No. 20190513-5093, at 2.
[30] USGS Open-File Report 2019-1026, at 22.
[31] *Id.* at 3.

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

Since beginning adaptive management and the Green Plan roughly fifteen years ago, no actual adaptation or iteration has occurred. This relicensing and the studies now underway provide an opportunity to iterate, adapt, and improve flows and subsequent impacts on downstream aquatic life, recreation opportunities, erosion and sedimentation, and water quality. In order to make the refinements contemplated by a full adaptive management process, a wide variety of flow scenarios should be studied, and "[c]ontinuing adaptive management in tandem during the FERC relicensing process would be advantageous to include a specific assessment of long-term objectives of all stakeholders."[32]

B. Until Aquatic Resources and Aquatic Habitat Study Reports Are Available, It Is Premature to Ask Stakeholders to Specify All Flow Alternatives to Model

Commenters, stakeholders, and FERC staff have encouraged Licensee to examine a broad range of flows throughout the ILP.[33] Currently, licensee is studying two possibilities other than its current flow regime and its prior flow regime. The Draft Downstream Release Alternatives Phase 1 Report filed by Licensee assesses impacts to operational parameters (*e.g.*, generation, reservoir levels, flood control) under three flow scenarios: (i) the current Green Plan pulsing regime that has been in effect since 2005 through a voluntary adaptive management process; (ii) the pre-Green Plan regime with no intermittent flows between peaks, which occurred from 1983 to 2004; and (iii) a continuous minimum flow of 150cfs, which is the equivalent daily volume of the current Green Plan pulses and has never been physically implemented and studied.

A fourth release scenario, the alternative/modified Green Plan, will be evaluated in Phase 2 of the study, once results from the Aquatic Resources Study are available to shape the design of an altered Green Plan.[34] The two alternatives that have never been implemented—a continuous minimum flow of roughly an equivalent volume and altering the timing of the existing Green Plan releases—are effectively different flavors of the existing release scheme, though studying those modifications may yield important insights into improving flows.

The summary of the Initial Study Report meeting reflects that Licensee desires "to hear from stakeholders now" regarding alternative flow scenarios stakeholders would like to have modeled,[35] despite no draft Aquatic Resources Study or Aquatic Habitat Study reports being available. The downstream release alternatives, aquatic resources, water quality, and aquatic habitat reports are *all deeply interrelated*, and without at least draft reports of the fisheries studies, stakeholders should not be required to propose alternative flow scenarios until more information is available. Indeed, Licensee itself acknowledges that the results from the Aquatic Resources Study are needed

[32] *Id.* at 19.
[33] Initial Study Report Meeting Summary (May 12, 2020), Accession No. 20200512-5083, at 40; *see also* Comments submitted by the Environmental Protection Agency (Sept. 25, 2018), at 5 ("The EPA encourages APC to consider adding as many feasible modeling scenarios as possible to determine the optimal downstream flow conditions.").
[34] Draft Downstream Release Alternatives Phase 1 Report (Apr. 2020), Accession No. 20200410-5069, at 2, FN1.
[35] Initial Study Report Meeting Summary (May 12, 2020), Accession No. 20200512-5083, at 21.

to design the fourth flow scenario it plans to model.[36] Those same results will also inform what variety of inputs stakeholders suggest.

In fact, the logical time to propose additional flow scenarios is after Licensee has "analyze[d] the effects of each downstream release alternative on other resources, including water quality… downstream aquatic resource (temperature and habitat), wildlife and terrestrial resources, threatened and endangered species, recreation, and cultural resources," which will be accomplished by Phase 2 of the study.[37] At a minimum, stakeholders should be equipped with the draft fisheries studies showing the current status of aquatic resources before being required to list all alternative flows to be studied.

C. Preliminary Proposals for Additional Flow Modeling and Study Modification Request

However, ARA understands that the modeling of additional flows takes time and effort, and Licensee has made clear that it would like to have as much stakeholder input as to various flows to model as soon as possible. While reserving the right to request other release alternatives be considered once more information is made available to stakeholders, ARA proposes the following study modification request pursuant to 18 C.F.R. § 5.15(d) for additional flow scenarios be analyzed as part of the Downstream Release Alternatives Study:

(i) A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin streamgage, rather than the current 75%;

(ii) A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria;

(iii) A constant but variable release that matches the flow at the USGS Wadley streamgage to the UGSG Heflin streamgage to mimic natural flow variability;[38] and

(iv) 300cfs and 600cfs minimum flows.

Some of these flows, particularly items (iii) and (iv) may have been modeled internally by Licensee as part of the original adaptive management process; however, those models are not currently available as part of this relicensing.[39] Studying a wider range of potential flows during the ILP

[36] Draft Downstream Release Alternatives Phase 1 Report (Apr. 2020), Accession No. 20200410-5069, at 2, FN1 ("Results from the other three scenarios as well as from the Aquatic Resources Study are needed to design the alternative to be studied.").
[37] *Id.* at 2-3.
[38] We understand that there may limitations imposed by the existing turbines to implementing this type of flow, but modeling it would provide a frame of reference to other options relative to a more natural flow.
[39] USGS Open-File Report 2019-1026, at 10 ("The other three alternatives were based upon the concept of mimicking the flow regime recorded at the USGS streamgage in Heflin, at Wadley, 22 km below the dam. The Heflin streamgage measures flows in the unregulated upper portion of the Tallapoosa River (fig. A1); several stakeholders hypothesized that mimicking these flows at the dam would allow for some natural flow variability in the regulated portion of the river. The first of these alternatives was, in effect, modeled as a constant flow from the dam to maintain the Heflin

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

could result in improved diversity and abundance of aquatic life and habitat, more recreation opportunities, decreased erosion and sedimentation, and gains in water quality.

III. DRAFT EROSION AND SEDIMENTATION REPORT

FERC has identified erosion and sedimentation as an issue to assess for cumulative impacts, with the tentative geographic scope of inquiry to encompass the upper Tallapoosa and the 44 river miles downstream of Harris dam, including Horseshoe Bend Military Park.[40] The Erosion and Sedimentation Study Plan involves "collecting and summarizing information under baseline operations," meaning the project and project operations as they exist today.[41] While the Draft Erosion and Sedimentation Study Report primarily attributes erosion downstream of the dam to clear-cutting and agricultural use, it reports that "erosion at these sites may be exacerbated as a result of flow releases from Harris Dam."[42]

Article 20 of the existing license states that Licensee "is responsible for and must take reasonable measures to prevent erosion and sedimentation."[43] Such measures and responsibility must be comprehensive in light of hydropeaking's amplifying effects on other potential sources of erosion both upstream and downstream of Harris. The High Definition Stream Survey (HDSS) completed as part of the Erosion and Sedimentation Study Report describes opportunities to "support targeted restoration, habitat improvement," and identified at least one area that "would be an excellent area to focus streambank rehabilitation efforts."[44] The HDSS states that it documents baseline conditions and that future surveys could be directly compared to it in order to understand ongoing shifts in river conditions.[45] ARA supports the collection of future surveys for this purpose.

As part of its environmental analysis, ARA encourages FERC to consider all historical evidence available when assessing how geology and soils may be impacted over another 30- to 50-year license term, including any evidence submitted by stakeholders in the form of photographs, maps, and personal accounts. If the Green Plan, or a similar pulsing flow regime is to be continued as part of a renewed license, a suspended solids sampling conducted pre-pulse, during generation, and post-pulse would better identify how and when sediment transport is occurring in the river, enabling an identification of project operations' impact apart from natural river processes and other potential sources of erosion.

---

target at Wadley (Heflin), which consisted of minimum flows plus any necessary generation flows. The second was similar, except the flow from the dam was to never reach levels below 8.5 m3/s (Heflin 300). The third was an option proposed by the power utility, in which at least 75 percent of the Heflin target was maintained by 2–3 daily pulses, 1 at 0600 and 1 at 1200.").

[40] FERC Scoping Document 2 (Nov. 16, 2018), Accession No. 20181116-3065, at 21-22.

[41] Erosion and Sedimentation Study Plan (May 2019), Accession No20190513-5093, at 2.

[42] Draft Erosion and Sedimentation Study Report (Mar. 2020), Accession No. 20200410-5091, at 31.

[43] Harris License, Article 20.

[44] *See* Appendix E to Draft Erosion and Sedimentation Study Report (Mar. 2020), Accession No. 20200410-5091, High Definition Stream Survey Final Report prepared by Trutta Environmental Solutions, LLC, at 43.

[45] *Id.*

20200611-5114 FERC PDF (Unofficial) 6/11/2020 2:04:07 PM

IV. NEW STUDY PROPOSAL FOR BATTERY STORAGE FEASIBILITY STUDY TO RETAIN FULL PEAKING CAPABILITIES WHILE MITIGATING HYDROPEAKING IMPACTS

Project operations of hydropeaking dams come with environmental costs, and over the past decade dam operators have faced increasing pressure to shift from highly-altered hydrologic conditions (*i.e.*, peaking operations) to more natural flows to restore downstream ecosystems.[46] Yet the need to meet peak system demand remains, and researchers are increasingly studying the use of battery energy storage systems (BESS) to mitigate the effects of hydropeaking while retaining full peaking capabilities. Increasingly cost-effective BESS can substitute for the peaking ability (or a portion of the peaking ability) usually provided by conventional hydropower plants by storing hydropower produced during off-peak hours (*e.g.*, generated with a continuous minimum flow or variable flow) and discharging this power during peak periods.[47]

By implementing BESS, restrictions can be imposed on ramping rates, which requires operators to adjust flows more slowly and constrains peaking capabilities; however, supplemental energy can be discharged from the BESS to still meet peak demand. BESS also provide additional grid benefits of frequency regulation, voltage support, black start services, and can further accommodate intermittent renewables, which make up a growing portion of the generation mix. According to new research, BESS "should begin to enter into discussions related to hydropeaking mitigation, especially given the typically long duration of operating licenses."[48]

At Harris, Licensee has expressed concerns that a 150cfs minimum flow would begin to constrain the utility's ability to peak with its current level of flexibility.[49] By undertaking a study of pairing BESS with existing hydropower generation, FERC, Licensee, and stakeholders may uncover a cost-effective path to expand operational flexibility, create new grid benefits, and achieve multiple stakeholder objectives, including accommodating a wider range of releases and mitigated peaking that improve ecological health downstream. Some studies indicate that "BESS can help to restore the natural [flow] regime at lower costs than using environmental flows alone," and such may be the case with the Harris Project.[50]

Pursuant to 18 C.F.R. §§ 5.15(e) and 5.9(b), ARA submits this proposal for a new study to determine the feasibility of adding BESS to the Harris Project to both serve project purposes and address project effects.

A. Goals, Objectives, and Information to Be Obtained - § 5.9(b)(1)

[46] Ryan A. McManamay et al., *Organizing Environmental Flow Frameworks to Meet Hydropower Mitigation Needs*, Environmental Management 58(3):365-85, doi: 10.1007/s00267-016-0726-y (Jun. 25, 2016), at 366.
[47] *See generally* Yoga Anindito et al., *A New Solution to Mitigate Hydropeaking? Batteries Versus Re-Regulation Reservoirs*, Journal of Cleaner Production 210 (2019) 477-489, *available at* https://kern.wordpress.ncsu.edu/files/2018/11/1-s2.0-S0959652618334401-main.pdf.
[48] Anindito, *supra* note 47, at 487.
[49] Initial Study Report Meeting Summary (May 12, 2020). Accession No. 20200512-5083, at 23.
[50] Anindito, *supra* note 47, at 487.

The goal of conducting the Battery Storage Feasibility Study is to determine whether a BESS system could be economically integrated at Harris to mitigate the impacts of hydropeaking while retaining full system peaking capabilities. The objectives of the study are to assess:

1. What type, size, and configuration of BESS is most practical?
2. How much would the BESS cost, and what are the ownership options?
3. What are the economic benefits of a BESS addition, including capacity and ancillary benefits and the ability to enable future additions of non-dispatchable renewables?
4. Could BESS integration allow Harris to generate more often while retaining week-day peaking capabilities?
5. What are the technical and economic barriers to integrating BESS?

B. Resource Management Goals of the agencies or Indian Tribes with Jurisdiction over the Resource to Be Studies - § 5.9(b)(2)

Not applicable.

C. Relevant Public Interest Considerations in Regard to the Proposed Study - § 5.9(b)(3)

Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

This study request relates to the public interest of restoring riverine ecosystems, including by providing more natural flow regimes that promote aquatic habitat and increase opportunities for fishing and other recreation. Riverine ecosystems are resources of particular public interest for a variety of reasons, including their ecological functions, sporting interest, and subsistence use. Describing the effects on these resources is necessary to fulfill the Commission's responsibilities under the National Environmental Policy Act (NEPA). Ensuring that environmental measures pertaining to these resources are considered in a reasoned way is relevant to the Commission's public interest determination.

D. Existing Information and the Need for Additional Information - § 5.9(b)(4)

While sources of information related to project generation and peak demand exist, there is a need for a more holistic understanding of Harris' role in the power system and what contributions it is required to make to meet system peak demand. The Pre-Application Document (PAD) filed by Licensee does not contain detailed information about the current operational flexibility of Harris, its limitations, and the causes of those limitations. A data gap exists around Project ramping rates, and understanding the extent to which imposing maximum ramping rates can smoothen the dam's discharge pattern and mitigate the impacts of hydropeaking would be useful to many stakeholders and to FERC. To ARA's knowledge, no battery feasibility study has been performed at other hydropower projects owned by Licensee that could provide sufficient comparable information, and

a feasibility study is needed to assess how much operational flexibility BESS could provide and how it might allow for more fine-tuned control of ramping rates and discharges while also benefitting the larger grid and Licensee.

E. Nexus to Project - § 5.9(b)(5)

A clear project nexus exists between project operations, downstream releases, and aquatic habitat. The Harris Project regulates the timing, allocation, and distribution of water flows in the Tallapoosa below Harris Dam, and prior to the Green Plan, completely cut off flows of the river at times. This regulation influences the availability of water for a variety of uses, including power generation, fisheries, and recreation. This requested study could form the basis for license requirements stipulating minimum or variable releases, mitigation measures, and assist future adaptive management.

F. Study Methodology - § 5.9(b)(6)

Integrating BESS at hydropower projects is a relatively new field with no established methodology.[51] This study can be completed through desktop analysis only and is primarily a financial cost/benefit analysis. By lessening hydropeaking activities, energy and perhaps capacity revenues from Harris will be reduced, and the study must quantify the additional value of BESS to Harris. Adding BESS has the potential to produce energy, capacity, and ancillary revenues (as well as deferral of transmission and distribution investments) that could offset these implementation costs. Importantly, some of these values are not dependent upon water flow.

Study activities will include:

- Creating a survey of battery cost estimates based on public sources focusing on price projections for 2023 and beyond, as well as any incentives that may be available.
- Describing the operational flexibility gains for a range of BESS (*e.g.*, 5 MW, 2-hour; 5 MW, 4-hour; 10 MW, 2-hour; 10 MW, 4-hour) vs. costs.
- Comparing BESS options to "business-as-usual" Harris operations to quantify revenues to be replaced by a BESS alternative. This will provide a preliminary alternative framework to consider changes in operations and allow for comparisons against other possible project mitigation measures.

[51] Examples of battery-paired hydropower projects, such as the 4 MW battery storage project added to Byllesby project in Virginia and the hydro-battery microgrid project in Alaska, can be used to further develop this study. *See generally* James R. Thrasher, *How the Byllesby Hydro Plant Continues to Make History*, Hydro Review (Jul. 29, 2019), *available at* (https://www.hydroreview.com/2019/07/29/hydro-review-how-the-byllesby-hydro-plant-continues-to-make-history/#gref); Clay Koplin, *Cordova's Microgrid Integrates Battery Storage with Hydropower*, T&D World (Mar. 7, 2019), *available at* https://www.tdworld.com/distributed-energy-resources/energy-storage/article/20972311/cordovas-microgrid-integrates-battery-storage-with-hydropower; and Marek Kubik, *Adding Giant Batteries To This Hydro Project Creates A 'Virtual Dam' With Less Environmental Impact*, Forbes (May 23, 2019), *available at* https://www.forbes.com/sites/marekkubik/2019/05/23/adding-giant-batteries-to-this-hydro-project-cre

- Identifying any technical requirements and limitations to integrating BESS, including siting restrictions and any separate metering needed to allow the BESS to draw power from hydro generation, the grid, or a combination of the two.
- Preparing a report summarizing economic data and other analysis to be presented to stakeholders and commented upon.

G. Level of Cost and Effort - § 5.9(b)(7)

The total cost of this study is expected to be $20,000 - $30,000. This cost estimate is based on a recent battery storage feasibility study conducted for a series of four hydroelectric dams in the northeast. The study would include a review of dam operational constraints and power system requirements (2 days), gathering BESS economic data (1/2 day), analysis (4 days), project report development (3 days), and presentation of results to the stakeholders (1/2 day).

H. Changes in Law or Regulations - § 5.15(e)(1)

There have been no material changes in law or regulations applicable to the information in this study proposal.

I. Goals and Objectives of Other Studies - § 5.15(e)(2)

This study request puts forward new goals and objectives that are not addressed by the methodology of any of the current approved studies.

J. Timing of Request - § 5.15(e)(3)

Adding battery storage to existing hydropower projects is a relatively new topic with examples and studies just becoming available. The enabling factor has been decreases in battery prices in recent years, making the technology an increasingly economic option, along with the growing body of scientific literature documenting the need for better environmental performance at hydropeaking dams.

This study request was not made earlier because the subject of minimum flows constraining Licensee's ability to peak arose after the Draft Downstream Release Alternatives Study Report was filed. This study can be completed in a relatively short amount of time with desktop work only, and if taken into account with the ongoing flow modeling, could inform possible release alternatives and operational parameters that meet the objectives of Licensee and stakeholders, making it an appropriate request at this stage in the relicensing.

K. Changes in Project Proposal - § 5.15(e)(4)

There have been no significant changes in the project proposal.

20200611-5148 FERC PDF (Unofficial) 6/11/2020 4:15:02 PM

June 11, 2020

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

RE: Comments on Initial Study Reports for Relicensing of Harris Dam (P-2628-065)

As a charter member of the Tallapoosa River Heritage group, I am the official spokesperson for other members who have concerns about our river and its ecosystems. Disturbed by changes that have been taking place on our river, we need to express our opinions, document our information, and preserve our memories of a river that has been vital to our economy for generations.

Some of those who have submitted to interviews go back three generations on the Tallapoosa, whether they are landowners or not. The Tallapoosa River has always been important, and only through our efforts do we believe that it will continue to be.

In fact, the area surrounding the town of Wadley itself (where my family has resided for at least four generations before me) was developed on the west bank of the Tallapoosa River to take the best advantage of the power it could provide (reprint of *LaGrange Reporter*, 14 Aug. 1908, as quoted in *Taproots: An Historical Account of Southern Union State Junior College and Areas in Randolph County*, October 1978). In fact, the main thoroughfare of the town was changed when the location of the river bridge was moved in the 1920s. The location of the bridge and its proximity to the river have always significantly influenced the town's configuration and therefore, its residents.

I am filing these anecdotal records on behalf of the following persons who for one reason or another either do not have an email address or who are intimidated by the submission process.

Dana Chandler
Wayne Cotney
Ronnie Siskey and Nelson Hay
Mike Smith
John Carter Wilkins

Dana Chandler (This is a reprint of an article I wrote for the local newspaper this spring)

Although most Randolph County residents are familiar with the river and its recreational uses, few of us may be aware of its historical and archaeological significance. According to Dana Chandler of Tuskegee University who is an expert on the river and its history, "The Tallapoosa river system was home for Native Americans from Archaic (3000 to 1000 BCE) through Creek (1600 to 1830 CE) time periods. Not only was the river a major transportation route, it also supplied an abundance of aquatic life to the communities. Interestingly, there were over a hundred habitation sites located along the Big and Little Tallapoosa river systems. Furthermore, the natives relied on river mollusks as a staple and even developed a tool used for

20200611-5148 FERC PDF (Unofficial) 6/11/2020 4:15:02 PM

opening them and extracting the meat. Although these tools have been found in other locales, they are found in abundance throughout these river systems" (email communication, 2 March 2020).

Chandler adds the Tallapoosa River was once the habitat for more species of mollusks than any other Alabama river. Of course, many of these are now gone because of the inconsistent river flow, among other reasons.

Over 100 fish wiers (traps) were lost when the river was dammed, and now below the dam, the inconsistent release of water has led to other sites being washed away or covered, ones that were used during the prehistoric period.

During the historic period, the river was navigable up to a point at Malone, but now many crossing sites have been decimated. These were all along the river.

The river banks have long been spots to find pottery shards and other Native American artifacts, but those sites are now almost gone, having been covered or washed away (personal communication, 1 March 2020).

We have a responsibility to preserve those sites that still exist and to record our experiences for those who come after us.

Wayne Cotney

Wayne Cotney is another lifelong river who has fished from the Wadley bridge to the head of the backwater since 1954. He has especially enjoyed fishing around Horseshoe Bend and the Frogeye/Bibby's Ferry areas. He tells me that it breaks his heart to know how the river used to be and to see it now and how much it has changed just during his lifetime.

When he was a boy, he and his grandfather Bishop, neither of whom could swim, would use fish baskets. There were always trees to hold on to, and trees that were small when he was a boy are now large trees, and some have even washed away. He remembers fishing around Capp's Island, so named for Capp Hodnett, a local farmer. All that's left are a few trees and a pile of rocks.

He remembers when the bridge was built at Horseshoe Bend and when folks kept boats tied to the banks up and down the river. Fishing was a way of life—and a way of feeding one's family—during those days. Those days are long gone, for several reasons, including but not limited to erosion and "fast water" that comes from up the river.

Wayne knows and uses the 800 number to check the generation schedule. However, he finds the information he obtains from the number to be quite inadequate, even downright incorrect. For instance, he was fishing June 2 and 3, 2020, near Horseshoe Bend. Checking the generation schedule, he learned the turbine would run from the morning of June 2 to 8 PM. According to Wayne, you seldom see big surges at Horseshoe Bend like the ones you see in Wadley, and if you do, it takes about 10 hours to reach the bend. On June 2, the rushing water ran him and his companions out of the water. They are experienced fishermen, and this water seemed to be more than what would have been released through generation.

20200611-5148 FERC PDF (Unofficial) 6/11/2020 4:15:02 PM

He has noticed during the past week (June 1-9) that the river banks are washing away, with water at flood stage for several days. It appears that 25-50 feet of bank have eroded since last fall.

There was a sandbar below the Horseshoe Bend bridge that has all but disappeared, but for the past few months, it seems to be reappearing! That is the enigma of the Tallapoosa River and its path. This is just one person's experiences with a river that has almost mythical significance to folks around here.

Ronnie Siskey and Nelson Hay

Ronnie Siskey and his brother-in-law Nelson Hay live within sight of the river and have been fishing its waters for years. Eating a mess of fish for supper that they pulled from the river in the afternoon was not unusual at all for their family. They are familiar with the Tallapoosa River and fish "patterns."

I am directly quoting him: "I haven't been able to fish all year. The water won't let me fish. I can call and get the release schedule, but then I can't go by it because it's not reliable. I used to be able to depend on it being accurate. Not anymore."

Mike Smith

Mike Smith, a resident of Wadley in his early 70s, has been raised and has lived on the river all of his life. He inherited the property that his parents owned on the banks of the Tallapoosa just below the Wadley bridge, and he, too, has seen the banks of the river gradually erode over the years, leaving trees uprooted or barely hanging onto the soil at the edge of the water that alternately rushes and meanders on its way to Horseshoe Bend. He says that his biggest concern is the erosion that is eating away at the bank. He lives within sight of Hutton Creek, which crosses Highway 22 just inside the Wadley city limits. He has watched that creek fill with trees and silt to the point that it no longer flows as freely as it did when he was a boy.

His father, Charles Smith, was a fisherman who caught baskets of fish that were plentiful in the river during the 1950s and 60s. According to Mike, his dad "caught lots of fish. We gave them away, sold them, ate them, froze them. There were always plenty of fish!"

Although Mike never fished as his father did, others were allowed to "put in" at their place for years. However, no one does that anymore, just highlighting the issues that come with the fishing on the river these days. It is not the relaxing activity that it once was.

John Carter Wilkins

John Carter Wilkins is yet another lifelong Wadley resident who has lived on the river over half his life. He has, of course, witnessed the erosion issues, but his concern is the mostly for the wildlife that no longer exists on his property.

In the past, he says that he could catch a mess of yellow cats, but now he is lucky if he catches one. Bullfrogs used to be so plentiful that he could frog gig at night, but not he might see one frog if he goes out at night.

The land and the wildlife are no longer what they were. To him, that is the greatest shame of all.

APC Harris Relicensing

From: Windows Live™ Team <JIMALLEN1959@hotmail.com>
Sent: Thursday, June 11, 2020 4:23 PM
To: APC Harris Relicensing
Subject: Tallapoosa river

I am writing you about the flow of water from Lake Harris dam.
We own a cabin on the East bank of the Tallapoosa river and a 19acre island across one fork of the river.
The excessive flow of water released from the dam is eroding the island, and floating the river is nearly Impossible when the dam is shut off. We need a more constant flow of water, and raising the winter level will only worsen the problem.
I understand that I was to fill out some kind of survey by 5:00, but I could not find out how.

Thanks,
James H. Allen
334-863-0347

Sent from Mail [go.microsoft.com] for Windows 10

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WILDLIFE AND FRESHWATER FISHERIES DIVISION

64 North Union Street, Ste. 567
P. O. Box 301456
Montgomery, AL 36130-1456
Phone: (334) 242-3465 Fax: (334) 242-3032
www.outdooralabama.com

KAY IVEY
GOVERNOR

CHRISTOPHER M. BLANKENSHIP
COMMISSIONER

EDWARD F. POOLOS
DEPUTY COMMISSIONER

The mission of the Wildlife and Freshwater Fisheries Division is to manage, protect, conserve, and enhance the wildlife and aquatic resources of Alabama for the sustainable benefit of the people of Alabama.

CHARLES F. "CHUCK" SYKES
DIRECTOR

FRED R. HARDERS
ASSISTANT DIRECTOR

June 11, 2020

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

RE: Comments on the Harris Project Initial Study Report (ISR) including Project Lands Evaluation, Operating Curve Change Feasibility, Downstream Release Alternatives Study, Water Quality Study, Erosion and Sedimentation Study, Threatened and Endangered Species Desktop Assessment, Cultural Resources Programmatic Agreement and Historic Properties, Management Plan Study, Area of Potential Effects (APE) and Harris Relicensing Initial Study Report Meeting April 28, 2020 for the R. L. Harris Hydroelectric Project (FERC No. 2628).

Dear Ms. Bose:

The Alabama Department of Natural Resources (ADCNR) Division of Wildlife and Freshwater Fisheries (WFF), has reviewed the filed Harris Project Initial Study Report (ISR) in regards to the relicensing of R.L. Harris Hydroelectric Project No. 2628 and submits the following comments and recommendations for your consideration:

Initial Study Report (ISR)

- On page 11, section 4.1 of Initial Study Report, "*i.e.*" ("that is") should be changed to "*e.g.*" ("for example"). The alternative/modified Green Plan operation downstream release alternative will be evaluated as part of Phase 2. Results from the other three scenarios as well as from the Aquatic Resources Study are needed to design the alternative to be studied. Downstream Aquatic Habitat Study and Recreational Evaluation Study results should be included in footnotes in order to fully evaluate and recommend an alternative Green Plan to be modeled and evaluated as a downstream release alternative. Without the ability to fully evaluate the Aquatic Resources Study, Downstream Aquatic Habitat Study and Recreational Evaluation Study results at this time, ADCNR recommends multiple base flow scenarios calculated from available aquatic inflow and base flow records and guidelines representative for the tailwaters downstream to the Horseshoe Bend with Pre-Green Plan, Green Plan and Modified Green Plan be modeled during the evaluation process. All operational changes to downstream releases should evaluate methods for how these flows could be provided while maintaining state dissolved oxygen guidelines and a natural temperature regime, at all times for the sustainable benefit of aquatic resources.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- On page 12, section 4.2 of Initial Study Report, remove the descriptive words "slight" and "worse" when detailing if alternatives will increase or decrease average annual economic costs to Alabama Power customers and provide estimated amount ranges for each alternative. If, "there are currently too many unknowns at this time to generate accurate and reliable Hydro Budget results", please explain how an assumption of whether it will be "same" or "worse" can be made. For comparisons of alternatives, additional details are recommended to provide how a Pre-Green Plan peaking operation with a 150 cfs continuous minimum flow regardless of generation or no generation to produce the minimum flow would not be a significant economic gain, if not evaluating capital and O&M costs into the equation.

- On page 15, section 5.2 of Initial Study Report, remove "well' in statement, "showed dissolved oxygen levels were well above 5 mg/L during each of their sampling events."

- On page 15, section 5.2 of Initial Study Report, additional data, evidence or other alternatives should be provided to make the statement that "The low dissolved oxygen events in 2017 may be attributed to conditions in the Harris Reservoir that were impacted by severe drought in the summer and fall of 2016, where inflows to the lake were at historic lows." On page 17, Figure 3-7 of the Water Quality Study does not indicate that temperature stratification occurred differently in 2017 verses 2018 or 2019. Year 2017 data, on page 37, Figure 4-4, and downstream water quality data on page 46, Figure 6-1 of the Water Quality Study disputes the theory that conditions were caused by previous year conditions. Inflows were above average during 2017, which means discharge was higher. This is another reason low dissolved oxygen could have been more pronounced in 2017. This same scenario has been observed in Lake Martin, where higher spring/summer rainfall leads to increased discharge, which leads to poorer water quality below the thermocline (Sammons and Glover, 2013). If a dam is drawing from the hypolimnion under these conditions, it can lead to a discharge of lower oxygenated water during a high precipitation spring/summer. In addition to evaluating potential causes of the 2017 low dissolved oxygen events, changes and improvements that can be made to detect, adjust and improve operations to prevent another 2017 event from occurring again should be considered and evaluated for the sustained benefit of downstream aquatic resources.

- On page 17, section 6.1 of Initial Study Report delete "likely" and insert, "potential" prior to cause(s).

- On page 18, section 6.2.1 of Initial Study Report, include additional details of how causes of erosion were determined. Methods primarily cover how sites of erosion were identified, not caused.

- On page 18, section 6.2.1 of Initial Study Report, verify and confirm accuracy of statement "Twenty-five percent of the Little Tallapoosa River basin has been converted to hay/pasture fields (MRLC 2019)". Table 2-3, of the Erosion and Sedimentation Study, indicate a net loss of Hay/Pasture in the Little Tallapoosa River Basin of -8,815.1 acres from 2001 to 2016. These two statements appear to be contradictory.

- On page 19, section 6.2.2 of Initial Study Report, it states "Notably, only one area scored as impaired to non-functional (located on the right bank between river mile [RM] 16.3 to 16.9)." On page 33, Figure 21 of Appendix E Downstream Bank Stability Study Report of the Erosion and Sedimentation Study, a red section is downstream of No Business Creek within the 3.5-5 range appears present. Explain and verify that this area is not considered a second impaired site.

- On page 19, section 6.2.2 of Initial Study Report, "primarily caused" should be changed to "potentially caused". Remove "natural riverine processes" and replace with "regulated riverine processes" or define how natural riverine processes are defined in this context and occur below a controlled and regulated tailrace.

- On page 19 section 6.2.2. of Initial Study Report. Providing the dissolved oxygen percent of measurements greater than 5 milligrams per liter is correct but misleading in regards to aquatic resources protection. It is important to note when presenting this data that it only takes a single incident of depleted dissolved oxygen to cause an aquatic species kill event. A caveat or footnote is recommended to address this fact.

- On page 19, section 6.2.2 of Initial Study Report, it states, "Questions have also been raised regarding potential effects the Harris Project may have on other aquatic fauna within the Project Area, including macroinvertebrates such as mollusks and crayfish. Alabama Power is investigating the effects of the Harris

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

Project on these aquatic species and is performing an assessment of the Harris Project's potential effects on species mobility and population health." There are currently records of mussel species Under Review for federal listing with substantial 90-day findings that occur and occurred historically in the Tallapoosa River and its tributaries. Alabama Spike (*Elliptio arca*) and Delicate Spike (*Ellipto arctata*) are currently state protected species and Under Review by United States Fish and Wildlife Service (USFWS) with a substantial 90-day finding. Threatened and Endangered Species study plan states in the methods that additional species of concern may be added at the request of USFWS and/or ADCNR if determined to be appropriate. Please provide details on what specific mollusks and crayfish species will be evaluated. A list of state protected species currently being evaluated during the relicensing process is recommended.

- Page 27, section 9.1 of Initial Study Report, there are additional state protected species that are not T&E. The final report may not address all state protected species and a statement should be included to clarify. The Initial Study Report plan used the term "and/or".

Draft Phase 1 Project Lands Evaluation Study Report

- Appendix B includes Figure of Maps and Supporting Information of Proposed Changes of the Project Lands Evaluation Study Report. These maps indicate there are several recreational properties which are being re-classified away from recreation (net loss of 600 acres- page 14, Table 6-1). In addition to the acreages provided, it would be beneficial to provide and understand the amount of linear feet of shoreline for each parcel being proposed for addition, re-classification or removal. Undisturbed natural shorelines and shorelines designated for recreational use benefit wildlife and aquatic resources and also provide recreational opportunities for anglers and hunters. Impacts to shoreline habitat in Lake Harris can negatively impact aquatic, semi-aquatic, and terrestrial species. Studies have shown that undeveloped shoreline areas provide the most suitable habitat for maintaining abundance, diversity, and species richness of aquatic, semi-aquatic, and terrestrial species. We recommend that natural vegetated shorelines remain undisturbed as much as possible when evaluating land classifications and future shoreline land use. When evaluating classification changes, linear lake front footage would be a useful metric to provide. ADCNR would like to ensure a suitable site(s) is(are) identified and reserved for future construction of an appropriately sized boating access facility(ies). Future boating demand on Lake Harris is currently unknown for the entire duration of the license, therefore ADCNR continues to request consultation with Alabama Power in the selection of future recreational sites to safeguard they are located in suitable areas for anglers and boaters. The sites need to be large enough to suit any future demand of boaters and anglers and the sites need to meet the engineering requirements for an appropriately sized facility. We recommend any suitable identified property continue to be classified as recreational. The distribution of public boat ramps in the lake should be fully evaluated when considering reclassifying recreation zoned areas. In areas of the lake with few public boating access points or high boat ramp usage, there should be recreational zoned properties for future boat ramp additions available to meet angler demand.

- Appendix B, Figures R1-R6 of the Project Lands Evaluation Study Report, indicates that these acreages are not suitable for recreation due to their location within areas of the lake with limited demand for public recreation opportunities. ADCNR requests the opportunity to evaluate the results from the Recreation Evaluation Study prior to this determination for these zoning reclassifications.

- On page 9, of the Project Lands Evaluation Study Report, the third bullet named Project Operations (formerly titled Prohibited Access) states "For security, the allowable uses in this classification are primarily restricted to Alabama Power personnel; however, in some cases, such as guided public tours, limited public access is available." ADCNR recommends that bank fishing be included in the "some cases" exemptions statement for these areas. Canoe or kayak access points should also be evaluated in these areas during the relicensing process, since they are currently nonexistent.

Draft Operating Curve Change Feasibility Analysis Phase1 Report

- On page 6, section 2.1.1.5 Lower Tallapoosa River of the Operation Curve Change Feasibility Analysis Study discusses downstream gages. Include years of discharge and stage data for these gages, similar to previous gages years of discharge and stage data discussed and included in the document.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- On pages 45-50, Figures 5-7 through 5-12 of the Operation Curve Change Feasibility Analysis Study visually indicate inundation boundaries for the baseline of four winter pool alternatives. Include a Table with calculated totals of inundated acreages for the baseline and four winter pool increase alternatives to assist with the quantitative evaluation of inundation effects downstream of the dam.

Draft Downstream Release Alternatives Phase 1 Report

- The Downstream Release Alternatives Study as is, presents the results for three downstream release alternatives: Pre-Green Plan operation, Green Plan operation, and Pre-Green Plan operation with a 150 cfs continuous minimum flow. Throughout the document the "Pre-Green Plan operation with a 150 cfs continuous minimum flow", is often referenced as "continuous minimum flow of 150 cfs". When referencing this downstream release alternative in the document it would be helpful to use the full "Pre-Green Plan operation with a 150 cfs continuous minimum flow" to clarify and fully identify the alternative. If a modified Green Plan, details pending, is evaluated with a continuous minimum flow, the addition will assist in differentiating the alternatives.

- A fourth Modified Green Plan downstream release alternative was included to be evaluated in the initial Study Plan for the Downstream Release Alternatives Study. ADCNR maintains its recommendation for a fourth alternative Modified Green Plan be fully evaluated. Details and design of a Modified Green Plan alternative are pending results from the Aquatic Resources Study. For a complete Downstream Release Alternative Study comparing four release alternatives, the Modified Green Plan alternative should be completed and included in this study or Phase 2. ADCNR requests the opportunity to provide specific recommendations for the Modified Green Plan alternative after assessing all of the planned study reports. ADCNR has consistently stated and provided published peer reviewed references that support recommendations for downstream flows to mimic a natural flow regime with an adaptive management of flows that follows state dissolved oxygen guidelines and provides natural temperature regimes, at all times for the sustained long term benefit and conservation of aquatic species (See *ADCNR*, P-2628-005 FERC ¶ 20181002-5006).

- On page 1, section 1.0 of the Downstream Release Alternatives Study, replace "However, some stakeholders noted that the temperature of the turbine releases could have potential effects on aquatic resources in the Tallapoosa River below Harris Dam." with "However, some stakeholders noted that the temperature of the turbine releases has documented negative impacts on aquatic resources in the Tallapoosa River below Harris Dam." (See *ADCNR*, P-2628-005 FERC ¶ 20181002-5006).

- On page 2, section 1.1, of the Downstream Release Alternatives Study, change "*i.e.*" to "*e.g.*" It should be "for example" not "that is" if an Aquatic Resources Study is required to evaluate and design the alternative to be studied as stated in footnote of the page. Downstream Aquatic Habitat Study and Recreational Evaluation Study results should be considered as inclusions in the footnote as prerequisites to fully evaluate and recommend an alternative Modified Green Plan to be modeled and evaluated as a downstream release alternative.

- On page 21, section 4.3.3 Model Flow Data of the Downstream Release Alternatives Study, ADCNR recommends re-stating that the Modified Green Plan alternative is not included in this model section pending results from additional studies and will be evaluated in Phase 2. This section states why 2001 data was used and presented but does not specify why the date range of 1/1/01-1/31/01 was specifically selected from the entire year data. ADCNR recommends including why this month was selected and providing additional figures similar to Fig. 4-3. showing a months' worth of data at four 1-month intervals covering spring, summer and fall sample portions of hydrographs to fully illustrate model flow data throughout the year.

- On page 25, section 5.2 of the Downstream Release Alternatives Study, remove the descriptive words "slight" and "worse" when detailing if alternatives will increase or decrease average annual economic costs to Alabama Power customers and provide estimated amount ranges for each alternative. If, "there are currently too many unknowns at this time to generate accurate and reliable Hydro Budget results", please explain how an assumption of whether it will be "same" or "worse" can be made. For comparisons of alternatives,

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

additional details should be provided describing how a Pre-Green Plan peaking operation with a 150 cfs continuous minimum flow, regardless of generation or no generation to produce the minimum flow, would not be a significant economic gain, if not evaluating capital and O&M costs into the equation.

- On page 27, section 6.0 Conclusions of the Downstream Release Alternatives Study, a space between "results indicate" should be included.

Draft Water Quality Study Report

- On pages ii-iv., Table of Contents, of the Water Quality Study, some of the page numbering does not coincide with the document contents. For example, Lake Levels and Hydrology page 7 of Table of Contents is on page 8.

- On page 3, section 1.1, of the Water Quality Study, after "A summary of data sources for this report is provided in" a large space creates and extra page that appears to be unnecessary and should be removed.

- On page 8, section 2.0, of the Water Quality Study "October of 2107" should be changed to 2017.

- On page 9, Figure 2-2 of the Water Quality Study, specify if the 1987-2016 data is a monthly average or long-term average in the figure key or label.

- On page 22, Table 3-2 of the Water Quality Study, include minimum and maximum ranges of data to this Table, if available.

- On page 25, Figure 4-1 of the Water Quality Study, provide major tributary names and periodic river mile markings to aid in location descriptions.

- On page 27, Table 4-3 of the Water Quality Study, include minimum and maximum ranges of data to this Table, if available.

- On page 39, of the Water Quality Study, "Error! Reference source not found?" should be removed or corrected.

- On page 42, Table 4-11 of the Water Quality Study, if available, separate and provide this data into Pre-Green Plan and Post-Green Plan implementation year groupings to further examine if operational differences affect water quality.

- On page 46, section 6.2 of the Water Quality Study, additional data, evidence or other alternatives should be provided to make the statement that "The low dissolved oxygen events in 2017 may be attributed to conditions in Harris Reservoir that were impacted by severe drought in the summer and fall of 2016, where inflows to the lake were at historic lows (Figure 6-1)" On page 17, Figure 3-7 of the Water Quality Study does not indicate that temperature stratification occurred differently in 2017 versus 2018 or 2019. Year 2017 data, on page 37, Figure 4-4, and downstream water quality data on page 46, Figure 6-1 of the Water Quality Study disputes the theory that conditions were caused by previous year conditions. Inflows were above average during 2017, which means discharge was higher. This is another reason low dissolved oxygen could have been more pronounced in 2017. This same scenario has been observed in Lake Martin, where higher spring/summer rainfall leads to increased discharge, which leads to poorer water quality below the thermocline (Sammons and Glover 2013). If a dam is drawing from the hypolimnion under these conditions, it can lead to a discharge of lower oxygenated water during a high precipitation spring/summer. In addition to evaluating potential causes of the 2017 low dissolved oxygen events, changes and improvements that can be made to detect, adjust and improve operations to prevent another 2017 event from occurring again should be considered and evaluated for the sustained benefit of downstream aquatic resources.

Draft Erosion and Sedimentation Study Report

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- Throughout the Erosion and Sedimentation Study when referencing "cause of erosion" change to "potential cause(s) of erosion/sedimentation." On page 2, section 2.0 Goals and Objectives in the Erosion and Sedimentation Study Plan it states, "The goals of this study are to identify any problematic erosion sites and sedimentation areas and determine the likely causes." "Once areas are identified, Alabama Power will perform assessments and collect additional information, as necessary, to describe and categorize each area according to its severity and potential cause(s)."

- On page 6, section 2.0 Lake Harris, 2.1 Methods in the Erosion and Sedimentation Study, replace, "determine the cause of erosion:" with "determine areas of erosion and potential cause(s):" For the potential cause(s) categories considered, provide a definition of each and additional details into the methods utilized to characterize how each cause was determined and differentiated. The methods described appear to detail how areas of erosion were identified but do not detail how potential cause(s) were determined. A reference to the Erosion and Sedimentation Study Plan Study Plan methods or inclusion of section 4.1 study plan methods should be provided.

- On page 12, section 2.2 Results, 2.2.1 Erosion Survey in the Erosion and Sedimentation Study insert "potential cause(s)" into "Each site was photographed and examined to determine the cause of erosion."

- On page 20, section, of the Erosion and Sedimentation Study, verify and confirm accuracy that Table 2-3 indicates a net loss of Hay/Pasture in the Little Tallapoosa River Basin of -8,815.1 acres from 2001 to 2016. Text indicates a "Twenty-five percent of the Little Tallapoosa River basin has been converted to hay/pasture fields (MRLC 2019)" These two statements appear to be contradictory.

- On page 24, section 3.2 Results of the Erosion and Sedimentation Study, change "primarily caused" to "potentially caused". Remove "natural riverine processes" and replace with "regulated riverine processes" or define how natural riverine processes are defined in this context and occur below a controlled and regulated tailrace.

- On page 25, Table 3-2 of the Erosion and Sedimentation Study, add score ranges (minimum and maximum scores) in addition to the means. If previous sites E22 and E23 are included in this Table, provide an asterisk and footnote specifying which ones they are. Include in discussion section how this scoring method compared to the method used at sites E22 and E23.

- On page 26, Figure 3-1 of the Erosion and Sedimentation Study, include site numbers from Table 3-2 into this map or provide incremental river mile markers.

- On page, Table 4-1 of the Erosion and Sedimentation Study indicates a 592.1 acreage increase in deciduous forest. Deciduous forest stream buffers have been shown to reduce nitrogen, phosphorous and sedimentation from surface water runoff into streams, lakes and estuaries. This could be included in the discussion section as a positive observed land use trend in the area (Klapproth and Johnson 2009; Roy *et al.* 2006).

- On page 31, Section 5.0 Discussion and Conclusions of the Erosion and Sedimentation Study, provide additional information on definitions and methodology in how cause(s) were determined before the conclusion that erosion was a result of anthropogenic and/or natural processes independent of project operations. As is, the use of the word "potential" should be included. Provide the current definition of "project operations" for this study and include it prior to other document "project operations" statements. If referring to "fluctuations" from project operations, this should be clearly stated throughout Erosion and Sedimentation Study. Among Study plans there appears to be variations in the provided definition of "Project operations" and "project related impacts". For example, on page 4 the Erosion and Sedimentation Study Plan states "Project operations" as "(*i.e.*, water level fluctuations or construction/maintenance activities on/at Project facilities or lands)", but on page 2 of the Threatened and Endangered Species Study Plan it states "project related impacts" as "(*i.e.*, lake fluctuations, downstream flows, recreation and shoreline management activities, timber management, etc.)". Providing consistency of these definitions among studies would be beneficial during the relicensing evaluation process. In addition, including "etc." which indicates that "further, similar items are included" after using "*i.e.*" or "that is" is a contradictory use of the terms.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- On page 31, section 5.0 Discussion and Conclusions of the Erosion and Sedimentation Study, replace "extremely small" with "relatively small".

- On page 31, section 5.0 Discussion and Conclusions of the Erosion and Sedimentation Study, insert "potentially" prior to "affected"

- On page 31, section 5.0 Discussion and Conclusions of the Erosion and Sedimentation Study, insert "potentially" prior to "clear-cut". Reword sentence to read: "The observed erosion at the these sites is the potential result of adjacent land use and clearing of riparian plant cover destabilizing soils along the affected banks, although erosion at these sites may have been initially caused or exacerbated as result of altered flow releases from Harris Dam."

- On page 31, section 5.0 Discussion and Conclusions of the Erosion and Sedimentation Study, insert "in the reservoir" after decrease in "Sedimentation in Lake Harris is most pronounced in the Little Tallapoosa River arm where sediment transported from upstream settles out of the water column as water velocities decrease" statement.

- In Appendix E Downstream Bank Stability Study Report of the Erosion and Sedimentation Study, include periodic river mile markers and corresponding segment numbers in figures of the study.

- On page 33, Figure 21 of Appendix E Downstream Bank Stability Study Report of the Erosion and Sedimentation Study, a red section in downstream of No Business Creek within the 3.5-5 range appears present. In results or discussion explain how this area is not included as a second impaired site.

- On page 34, Table 3 of Appendix E Downstream Bank Stability Study Report of the Erosion and Sedimentation Study, if available, include ranges (minimum and maximum scores) with segment data.

- On page 43, Conclusions section of Appendix E Downstream Bank Stability Study Report of the Erosion and Sedimentation Study include a definition and discussion about the potential for head cutting in tributaries due to main river channel operations. Head cutting is a process by which the upstream portion of a stream channel becomes destabilized and erodes progressively in an upstream direction. Accelerated velocities can lead to an increase in head cutting upstream from affected areas (Annear *et al.* 2002).

Draft Threatened and Endangered Species Desktop Assessment

- Throughout the Threatened and Endangered Species Desktop Assessment, capitalize species common names. When a species is first used in the document, include the scientific name in parentheses. The common name can then be used in the remaining sections of the document.

- Range Figures included in the Threatened and Endangered Species Desktop Assessment illustrating aquatic species habitat ranges, include the tributaries and streams names on the maps.

- On page 6, Table 1-1 of the Threatened and Endangered Species Desktop Assessment in Scientific names column change "*Villosa trabalis*" to "*Venustaconcha trabalis*", "*Quadrula cylindrica*" to "*Theliderma cylindrica*". Correct error for scientific name of Shiny Pigtoe to "*Fusconaia cor*" (Williams *et al.* 2017).

- On page 6, Table 1-1 of the Threatened and Endangered Species Desktop Assessment all of the species listed in this table are now State Protected, see Alabama Regulations relating to game, fish and furbearing animals. 2019-2020. Alabama Department of Conservation and Natural Resources, with the exception of the plant species listed, Little Amphianthus, White Fringeless Orchid, Price's Potato-bean and Morefield's Leather Flower.

- On page 6, Table 1-1 of the Threatened and Endangered Species Desktop Assessment change column heading "Occurrence" column to "Recent Documented Occurrence in Harris Project Boundary". Within the

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

document "Recent" should be defined, for example, "In this report any documented occurrence within the past 25 years will be classified as a Recent Documented Occurrence".

- On page 6, Table 1-1 of the Threatened and Endangered Species Desktop Assessment, Williams *et al.* (2008) is cited but this resource is not utilized anywhere else in the document. Recommend including the most up to date resources in the following species descriptions.

- On Page 9, 3.2 Palezone Shiner section of the Threatened and Endangered Species Desktop Assessment if an updated survey is proposed for this species suggest including and discussing or note that it will be included in an additional Phase 2 study report.

- On page 10, 3.4 Finelined Pocketbook section of the Threatened and Endangered Species Desktop Assessment, include "primarily" in the statement, "this mussel lives in large to small streams in habitats "primarily" above the fall line." See Williams *et al.* 2008 distribution map and distribution descriptions.

- On page 10, 3.4 Finelined Pocketbook section of the Threatened and Endangered Species Desktop Assessment, include, if any, the last mussel survey completed in the Tallapoosa Harris Tailrace and tributaries. Include a statement indicating if a mollusk tailrace study has been considered in the study plan development process and why it was not deemed necessary for this species.

- On page 10, 3.4 Finelined Pocketbook section of the Threatened and Endangered Species Desktop Assessment, a statement should be included notifying that ADCNR and USFWS are currently reintroducing the Finelined Pocketbook into suitable historical habitats within the state (USFWS 2019).

- On page 10, 3.4 Finelined Pocketbook section of the Threatened and Endangered Species Desktop Assessment, the reasons for decline could be updated and improved by summarizing statements from USFWS (2019), Nine Mobile River Basin mussels (Finelined Pocketbook (*Hamiota (=Lampsilis) altilis*), Orangenacre Mucket (*Hamiota (=Lampsilis) perovalis*), Alabama Moccasinshell, (*Medionidus acutissimus*), Coosa Moccasinshell (*Medionidus parvulus*), Southern Clubshell (*Pleurobema decisum*), Dark Pigtoe *(Pleurobema furvum*), Southern Pigtoe (*Pleurobema georgianum*), Ovate Clubshell (*Pleurobema perovatum*), Triangular Kidneyshell (*Ptychobranchus greenii*)) 5-year review. This review states that suitable habitats and water quality, free of excessive sedimentation and other pollutants, are required for Finelined Pocketbook. The primary cause of curtailment of range and fragmentation of habitat for these mussel species has been contributed to the historic construction of dams and impoundment of large reaches of major river channels (Federal Register 58 FR 14330). Although most of these actions took place in the past, the impacted conditions and habitat continue to affect the species. In recent years, some improvements have been made to improve riverine conditions. For example, flow improvements have been made below Weiss Dam on the Coosa River that benefit existing populations of Southern Clubshell. Watershed-specific threats continue to negatively impact the species. These threats include: 1) coal mining activities 2) oil and gas exploration 3) water withdrawal 4) hypolimnetic discharges 5) poor water quality due to insufficient releases from dams 6) instream aggregate mining 7) navigation channel maintenance activities (8) agricultural practices that degrade water quality by increasing nutrients, herbicide/surfactant compounds, and hormones in surface waters; (9) hydropeaking dams that alter downstream flow conditions, water temperatures, and dissolved oxygen (10) increasing urban development that degrades water quality and stream geomorphology; and (11) climate change, which is expected to result in more frequent and extreme dry and wet years in the Southeast over the next century.

- On page 10, 3.4 Finelined Pocketbook section of the Threatened and Endangered Species Desktop Assessment, change statement "No populations were identified within the Project Boundary at Lake Harris, but future surveys have been proposed by Alabama Power." to "To date, no populations were identified within the Project Boundary at Lake Harris, but surveys focused on the 3.75 mile stretch of the Tallapoosa River where critical habitat is known to occur from the County 36 bridge to a shoal below the Highway 431 bridge are currently being conducted by Alabama Power and USFWS."

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- On page 11, 3.5 Alabama Lampmussel section of the Threatened and Endangered Species Desktop Assessment, a statement should be included notifying that ADCNR and USFWS is currently reintroducing the Alabama Lampmussel into suitable historical habitats within the state (USFWS 2012).

- On page 11, 3.5 Alabama Lampmussel section of the Threatened and Endangered Species Desktop Assessment, reasons for imperilment should be updated and improved summarizing statements from USFWS released a Five-Year Review for the species (USFWS 2012).

- On page 11, 3.5 Alabama Lampmussel section of the Threatened and Endangered Species Desktop Assessment, include that in laboratory trials Alabama Lampmussel glochidia have been found to utilize Rock Bass (*Ambloplites rupestris*), Green Sunfish (*Lepomis cyanellus*), Bluegill (*Lepomis macrochirus*), Smallmouth Bass (*Micropterus dolomieu*), Spotted Bass (*Micropterus punctulatus*), Largemouth Bass (*Micropterus salmoides*), and Redeye Bass (*Micropterus coosae*) as host fish and that Banded Sculpin (Cottus carolinae) appear to be marginal hosts (Williams et. Al. 2008).

- On page 12, 3.6 Cumberland Bean section of the Threatened and Endangered Species Desktop Assessment, a statement should be included notifying that ADCNR and USFWS is currently reintroducing the Cumberland Bean into suitable historical habitats within the state (USFWS 2020).

- On page 12, 3.6 Cumberland Bean section of the Threatened and Endangered Species Desktop Assessment, reasons for imperilment should be updated and improved summarizing statements from USFWS released a Five-Year Review for the species (USFWS 2020).

- On page 12, 3.7 Fine-Rayed Pigtoe section of the Threatened and Endangered Species Desktop Assessment, reasons for species decline should be updated and improved summarizing statements from USFWS released a Five-Year Review for the species (USFWS 2013b).

- On page 13, 3.8 Pale Lilliput section of the Threatened and Endangered Species Desktop Assessment, a statement should be included notifying that ADCNR and USFWS is currently reintroducing the Pale Lilliput Mussel into suitable historical habitats within the state (USFWS 2011).

- On page 13, 3.8 Pale Lilliput section of the Threatened and Endangered Species Desktop Assessment, reasons for imperilment should be updated and improved summarizing statements from USFWS released a Five-Year Review for the species (USFWS 2011).

- On page 13, 3.8 Pale Lilliput section of the Threatened and Endangered Species Desktop Assessment, include, in laboratory trials by ADCNR, Pale Lilliput glochidia have been found to utilize Northern Studfish (*Fundulus catenatus*), Blackspotted Topminnow (*Fundulus olivaceus*) and Blackstripe Topminnow (*Fundulus notatus*) as primary hosts. (Fobian *et al.* 2015)

- On page 13, 3.9 Rabbitsfoot section of the Threatened and Endangered Species Desktop Assessment, a statement should be included notifying that ADCNR and USFWS is currently reintroducing the Rabbitsfoot into suitable historical habitats statewide.

- On page 13, 3.9 Rabbitsfoot section of the Threatened and Endangered Species Desktop Assessment, include, suitable fish hosts for Rabbitsfoot populations west of the Mississippi River include Blacktail Shiner (*Cyprinella venusta*) from the Black and Little rivers and Cardinal Shiner (*Luxilus cardinalis*), Red Shiner (*Cyprinella lutrensis*), Spotfin Shiner (*Cyprinella spiloptera*), and Bluntface Shiner (*Cyprinella camura*) from the Spring River, but host suitability information is lacking for most of the eastern range (Fobian 2007). A host study by ADCNR in 2011, found Scarlet Shiner (*Lythrurus fasciolari*), Whitetail Shiner (*Cyprinella galactura*) and Striped Shiner (*Luxilus chrysocephalus*) to be sympatric hosts with Rabbitsfoot from Paint Rock River, AL. Marginal minnow hosts from studies have included Central Stoneroller (*Campostoma anomalum*), Emerald Shiner (*Notropis atherinoides*), Rosyface Shiner (*Notropis rubellus*), Bullhead Minnow (*Pimephales vigilax*) and Rainbow Darter (*Etheostoma caeruleum*), but not in all stream populations tested (Fobian 2007, Watters *et al.* 2005).

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- On page 14, 3.10 Snuffbox section of the Threatened and Endangered Species Desktop Assessment, update and include that in 2019, USFWS released a Five-Year Review for the species (USFWS 2019b). Reasons for imperilment could be added and improved summarizing statements from this document as well.

- On page 15, 3.11 Shiny Pigtoe Mussel section of the Threatened and Endangered Species Desktop Assessment, reasons for imperilment should be updated and improved summarizing statements from USFWS released a Five-Year Review for the species (USFWS 2013c).

- On page 16, 3.12 Southern Pigtoe section of the Threatened and Endangered Species Desktop Assessment, change "finelined pocketbook mussel" to "Southern Pigtoe".

- On page 16, 3.12 Southern Pigtoe section of the Threatened and Endangered Species Desktop Assessment, the reasons for decline could be updated and improved by summarizing statements from USFWS (2019), Nine Mobile River Basin mussels (Finelined Pocketbook (*Hamiota (=Lampsilis) altilis*), Orangenacre Mucket (*Hamiota (=Lampsilis) perovalis*), Alabama Moccasinshell, (*Medionidus acutissimus*), Coosa Moccasinshell (*Medionidus parvulus*), Southern Clubshell (*Pleurobema decisum*), Dark Pigtoe *(Pleurobema furvum*), Southern Pigtoe (*Pleurobema georgianum*), Ovate Clubshell (*Pleurobema perovatum*), Triangular Kidneyshell (*Ptychobranchus greenii*)) 5-year review. This review states that suitable habitats and water quality, free of excessive sedimentation and other pollutants, are required for Southern Pigtoe. The primary cause of curtailment of range and fragmentation of habitat for mussel species has been contributed to the historic construction of dams and impoundment of large reaches of major river channels (Federal Register 58 FR 14330). Although most of these actions took place in the past, the impacted conditions and habitat continue to affect the species. In recent years, some improvements have been made to improve riverine conditions. For example, flow improvements have been made below Weiss Dam on the Coosa River that benefit existing populations of Southern Clubshell. Watershed-specific threats continue to negatively impact the species. These threats include: 1) coal mining activities 2) oil and gas exploration 3) water withdrawal 4) hypolimnetic discharges 5) poor water quality due to insufficient releases from dams 6) instream aggregate mining 7) navigation channel maintenance activities (8) agricultural practices that degrade water quality by increasing nutrients, herbicide/surfactant compounds, and hormones in surface waters; (9) hydropeaking dams that alter downstream flow conditions, water temperatures, and dissolved oxygen (10) increasing urban development that degrades water quality and stream geomorphology; and (11) climate change, which is expected to result in more frequent and extreme dry and wet years in the Southeast over the next century.

- On page 17, 3.13 Slabside Pearlymussel section of the Threatened and Endangered Species Desktop Assessment, include that in 2013, USFWS designated critical habitat for the species (Federal Register 78:59555-59620). A statement similar to the Rabbitsfoot section could be included for consistency.

- On page 25, Discussion and Conclusions: section of the Threatened and Endangered Species Desktop Assessment, include a caveat statement or footnote reiterating that this is a desktop assessment and that to be certain of species occurrence, surveys should be conducted by qualified biologists to determine if a sensitive species occurs within a project area. Species not listed for a specific area does not imply that they do not occur there, only that their occurrence there is as yet unrecorded by state or federal agencies. This assessment is currently under review and reflects only our current understanding of species distributions.

- On page 25, Discussion and Conclusions: section of the Threatened and Endangered Species Desktop Assessment, change "…extant populations of 20 federal and state protected T&E species (Appendix B)." to "….extant populations of 20 federally T&E species of which 16 are state protected (Appendix B)."

- Appendix B Species Habitat Range Maps of the Threatened and Endangered Species Desktop Assessment, all figures with "extant population" shown. change to "Recent Documented Occurrence". In addition, make sure "Current Range" and "Documented Historic Range" terminology is defined in the assessment. As is, all Figure Titles in Appendix B should have "Current" inserted before Habitat Range and after the Species name.

- Figure 3.12-1 Appendix B of the Threatened and Endangered Species Desktop Assessment, Southern Pigtoe does not occur in the Tennessee River system. It does not have critical habitat in the Paint Rock River system. This map appears to be inaccurate and should be deleted.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

- Figure 3.13-1 Appendix B of the Threatened and Endangered Species Desktop Assessment, The Paint Rock River has designated critical habitat for this species. See Federal Register 78:59555-59620 for critical habitat details that should be included.

Cultural Resources Programmatic Agreement and Historic Properties, Management Plan Study

- ADCNR has no comments or recommendations at this time.

Area of Potential Effects (APE)

- ADCNR has no comments or recommendations at this time.

Harris Relicensing Initial Study Report Meeting April 28, 2020

- Recreational Evaluation Study discussion. Recreation use data was collected at recreational facilities from March to December 2019, however questionnaires were only filled out from May to December 2019. The Questionnaires missed an active time for anglers. ADCNR is concerned that recreational anglers may not be adequately represented in this data. ADCNR would like to make sure that anglers are adequately represented in the survey since it asks specific questions about specific facilities.

- Downstream Release Alternatives Study discussion. A fourth alternative is proposed in the study plan. It was to be a Modified Green Plan. Aquatic Resources Study is required to evaluate and design the alternative to be studied as stated in the footnotes.

- Erosion and Sedimentation Study discussion. ADCNR recommends including the APC response statement "Most of the erosion issues downstream are not due exclusively to operations. For example, areas where trees and vegetation are being cleared are not due exclusively to operations, but water fluctuations could exacerbate erosion." into the discussion section of the study.

- Threatened and Endangered Species Desktop Assessment discussion. APC stated that "No listed species have been documented in the Tallapoosa River below the Harris Dam." Should be changed to "No listed species have recently been documented in the Tallapoosa River between Harris Dam and Lake Martin." The Documented Historic Range for Finelined Pocketbook includes the Tallapoosa River.

Thank you for the opportunity to comment on the R.L. Harris Hydroelectric Project relicensing filed Harris Project Initial Study Report (ISR). We look forward to continuing our cooperative efforts with the Federal Energy Regulatory Commission, Alabama Power, and other stakeholders during this process.

If you have any questions regarding these comments, please contact me at (334-353-7484) or Todd.Fobian@dcnr.alabama.gov.

Sincerely,

Todd Fobian

Environmental Affairs Supervisor

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

References:

Alabama Department of Conservation and Natural Resources Comment under P-2628-005. Washington, United States. Federal Energy Regulatory Commission, FERC ¶ 20181002-5006, October 2, 2018. 8pp.

Annear, T., Chisholm, I., Beecher, H., Locke, A., Aarrestad, P., Burkardt, N., Coomer, C., Estes, C., Hunt, J., Jacobson, R. and Jobsis, G., 2002. Instream flows for riverine resource stewardship.

Fobain, T.B., 2007. Reproductive biology of the rabbitsfoot mussel (*Quadrula cylindrica*)(Say, 1817) in the Upper Arkansas River system, White River system and the Red River system (Doctoral dissertation, Missouri State University).

Fobian, T.B., M.L. Buntin, J. Powell, D. Hubbs, J.T. Garner and P.D. Johnson. 2015. Reproductive Biology and Reintroduction of Pale Lilliput (T*oxolasma cylindrellus*, Lea 1868) into the Duck River. Freshwater Mollusk Conservation Society 9th Biennial Symposium, St. Charles, MO.

Klapproth, J.C. and Johnson, J.E., 2009. Understanding the science behind riparian forest buffers: effects on water quality.

Roy, A.H., Freeman, M.C., Freeman, B.J., Wenger, S.J., Ensign, W.E. and Meyer, J.L., 2006. Importance of riparian forests in urban catchments contingent on sediment and hydrologic regimes. Environmental Management, 37(4), pp.523-539.

Sammons, S.M. and Glover, D.C., 2013. Summer habitat use of large adult striped bass and habitat availability in Lake Martin, Alabama. North American journal of fisheries management, 33(4), pp.762-772.

U.S. Fish and Wildlife Service. 2011. Pale Lilliput (*Toxolasma cylindrellus*), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Daphne, Alabama. 27 pp.

U.S. Fish and Wildlife Service. 2012. Alabama Lampmussel (*Lampsilis virescens*), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Daphne, Alabama. 34 pp.

U.S. Fish and Wildlife Service. 2013. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Fluted Kidneyshell and Slabside Pearlymussel. Department of the Interior Federal Register 78 (187): 59555-59620.

U.S. Fish and Wildlife Service. 2013b. Finerayed Pigtoe (*Fusconaia cuneolus*), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, North Carolina. 23 pp.

U.S. Fish and Wildlife Service. 2013c. Shiny Pigtoe (*Fusconaia cor*), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Asheville, North Carolina. 22 pp.

U.S. Fish and Wildlife Service. 2016. Endangered and Threatened Wildlife and Plants; Amending the Formats of the Lists of Endangered and Threatened Wildlife and Plants. Department of the Interior Federal Register 81 (150): 51549-51605

U.S. Fish and Wildlife Service. 2019. Finelined Pocketbook (*Hamiota (=Lampsilis) altilis*), Orangenacre Mucket (*Hamiota* (*=Lampsilis) perovalis*), Alabama Moccasinshell, (*Medionidus acutissimus*), Coosa Moccasinshell (*Medionidus parvulus*), Southern Clubshell *(Pleurobema decisum*), Dark Pigtoe (*Pleurobema furvum*), Southern Pigtoe (*Pleurobema georgianum*), Ovate Clubshell (*Pleurobema perovatum*), Triangular Kidneyshell (*Ptychobranchus greenii*), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Daphne, Alabama. 69 pp.

U.S. Fish and Wildlife Service. 2019b. Snuffbox (*Epioblasma triquetra*), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Columbus, Ohio. 60 pp.

U.S. Fish and Wildlife Service. 2020. Cumberland Bean (Villosa trabalis), 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Frankfort, Kentucky. 29 pp.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5152 FERC PDF (Unofficial) 6/11/2020 4:30:32 PM

Watters, G.T., Menker, T., Thomas, S. and Kuehnl, K., 2005. Host identifications or confirmations. Ellipsaria, 7(2), pp.11-12.

Williams, J.D., Bogan, A.E. and Garner, J.T., 2008. Freshwater mussels of Alabama and the Mobile basin in Georgia, Mississippi, and Tennessee. University of Alabama Press.

Williams, J.D., Bogan, A.E., Butler, R.S., Cummings, K.S., Garner, J.T., Harris, J.L., Johnson, N.A. and Watters, G.T., 2017. A revised list of the freshwater mussels (Mollusca: Bivalvia: Unionida) of the United States and Canada. Freshwater Mollusk Biology and Conservation, 20(2), pp.33-58.

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, national origin, disability, pregnancy, genetic information or veteran status in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

20200611-5174 FERC PDF (Unofficial) 6/11/2020 4:44:32 PM

Chuck Denman
1810 Oak Grove Road
Titusville Florida
32796

Regarding:Alabama Power Company relicensing for the Harris Hydroelectric Project (FERC No. 2628-065).

Harris Dam additional studies suggested

A general review of historical materials ie newspapers, and other records dealing with the proposals for constructing the Dam. Including comments and conditions provided in initial permitting. With the goal being to determine if the dam has achieved the original benefits expected. Perhaps a score card.

A pre vs post Dam analysis of down stream impacts. Including flooding,erosion and habitat changes to flora and fauna.

1. Flooding :storm runoff model comparing 25,50 and 100 year 24 hour storm events.
2. Erosion : utilizing available remote sensing materials to compare river channel and islands size and shape today and pre dam.
3. Plants: utilize remote sensing materials to map flag grass and invasive plant communities to compare changes from pre Dam.
4. Fisheries: review available materials from locals in the community, fish and game and other resources to determine what effect the Dam has had on down stream fish types and numbers.

APC Harris Relicensing

From: Clark, Maria <Clark.Maria@epa.gov>
Sent: Thursday, June 11, 2020 7:45 PM
To: Anderegg, Angela Segars
Cc: Sarah Salazar; Clark, Maria
Subject: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

EXTERNAL MAIL: Caution Opening Links or Files

Dear Angie,

U.S. Environmental Protection Agency appreciates the opportunity to review the Draft Study Reports regarding the relicensing of the R.L. Harris Dam on the Tallapoosa River in Alabama. We also appreciate the outreach that Alabama Power has done in the early stage of the process to ensure that issues can be fully addressed prior to finalizing the major components of the proposed project.

During the April 29, 2020, Initial Study Report meeting, Federal Energy Regulatory Commission (FERC) and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to the Green Plan, Pre-Green Plan, and Pre-Green Plan with 150 cfs minimum flow. Questions were also asked as to why only the 150 cfs minimum flow was selected. Multiple questions were asked about the possibility of having an option of the Green Plan with a minimum flow.

Further, Alabama Power suggested that any requests for additional flow scenarios be submitted as soon as possible before phase 2 starts. The EPA requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow. The 150 cfs minimum flow was selected based upon the volume of water used for the Green Plan, as opposed to an analysis based upon protective minimum flows for aquatic life.

Additionally, EPA requests the inclusion of both adaptively managed flow scenarios and adaptive management as an outcome. The state-of-the-science on environmental flows includes adaptive management as a key feature for the protection of aquatic life. The evaluation could examine how monitoring would be used to evaluate the success of the flows, and any potential adjustments that may be needed over time. The EPA submitted resources that supports this request in March 2019.

We thank you in advance for the opportunity to work with you during the FERC relicensing process.

Maria R. Clark
NEPA Section - Region 4
Strategic Programs Office
U.S. Environmental Protection Agency
61 Forsyth, Street South West
Atlanta, GA 30303
404-562-9513

20200611-5005 FERC PDF (Unofficial) 6/10/2020 9:29:34 PM

David Bishop, Helena, AL.
June 10, 2020 FERC Permit P-2628-065

Dear FERC,

I have spent much time fishing the Tallapoosa River from Wadley to Horseshoe Bend. I have been following the re-licensing for the past couple of years and have listened in on one call.

I began fishing on the Tallapoosa River near Wadley with my family in 1962. Both my grandfathers before me fished on the river since they were children in the early 1900's. As an adult I fish often (35-40 days) every year. As a kid I probably fished 100 times a year. I grew up less than a mile from Lake Harris but have only fished it a handful of times. I have no problem with the lake.. But I do have a problem with it's operation regarding downstream releases.

As recently as last week (June 2-3, 2020), actual release was at least 3 times more volume than scheduled. Currently, I live 2 hours away from where I fish, so I always call the dial-up line before leaving the house. It said only one turbine would be generating. This information was wrong. Not only was it an inconvenience, but a real endangerment to those of us who rely on the phone schedule for release information . In this case, at Horseshoe Bend, the water rose at least 5 feet in a 45 minute span. This has happened numerous times and presents a real danger to small craft. We were run off the river for about 10 hours while the water was too high and fast to fish. I do my best to pick good, safe times to fish. I check with the power company ahead of time. I know that water from the dam takes 10 hours to reach Horseshoe Bend. In spite of all I know, I don't know what the Power Company doesn't share. They could send real time alerts to my phone. This would go a long way toward protecting the lives of Alabama citizens.

We have noticed a large amount of bank erosion and tree loss in the years since the dam was built. A corresponding widening and shallowing of the stream with warmer water resulting in fewer fish has been noted by many who fish the river.I feel that responsible and constant release would mimic the pre-dam flow and allow the river to recover to its natural state. I am also concerned that raising the winter pool of the lake will result in more flooding, erosion, loss of property and life downstream. Also, public access is limited to only two points above Lake Martin and below Wadley. This needs to be remedied so that more people may enjoy the river. FERC can take the lead and make sure that those of us downstream can enjoy our river as before.

Thank you,David Bishop
205-613-3091
177 River Valley Road
Helena, AL 35080

APC Harris Relicensing

From: Sarah Salazar <Sarah.Salazar@ferc.gov>
Sent: Friday, June 12, 2020 7:27 AM
To: Clark, Maria; Anderegg, Angela Segars
Cc: Allan Creamer; Stephen Bowler
Subject: RE: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

EXTERNAL MAIL: Caution Opening Links or Files

Good morning Maria,

If you haven't already filed these comments to the Commission's record, could you file them using either our eFiling option (for instructions on eFiling see https://www.ferc.gov/docs-filing/ferconline.asp [ferc.gov]).

Thank you in advance and let me know if you have any questions.

Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863*
Please consider the environment before printing this email.

From: Clark, Maria <Clark.Maria@epa.gov>
Sent: Thursday, June 11, 2020 8:45 PM
To: Anderegg, Angela Segars <ARSEGARS@southernco.com>
Cc: Sarah Salazar <Sarah.Salazar@ferc.gov>; Clark, Maria <Clark.Maria@epa.gov>
Subject: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Dear Angie,

U.S. Environmental Protection Agency appreciates the opportunity to review the Draft Study Reports regarding the relicensing of the R.L. Harris Dam on the Tallapoosa River in Alabama. We also appreciate the outreach that Alabama Power has done in the early stage of the process to ensure that issues can be fully addressed prior to finalizing the major components of the proposed project.

During the April 29, 2020, Initial Study Report meeting, Federal Energy Regulatory Commission (FERC) and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to the Green Plan, Pre-Green Plan, and Pre-Green Plan with 150 cfs minimum flow. Questions were also asked as to why only the 150 cfs minimum flow was selected. Multiple questions were asked about the possibility of having an option of the Green Plan with a minimum flow.

Further, Alabama Power suggested that any requests for additional flow scenarios be submitted as soon as possible before phase 2 starts. The EPA requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow. The 150 cfs minimum flow was selected based upon the volume of water used for the Green Plan, as opposed to an analysis based upon protective minimum flows for aquatic life.

Additionally, EPA requests the inclusion of both adaptively managed flow scenarios and adaptive management as an outcome. The state-of-the-science on environmental flows includes adaptive management as a key feature for the protection of aquatic life. The evaluation could examine how monitoring would be used to evaluate the

success of the flows, and any potential adjustments that may be needed over time. The EPA submitted resources that supports this request in March 2019.

We thank you in advance for the opportunity to work with you during the FERC relicensing process.

Maria R. Clark

NEPA Section - Region 4
Strategic Programs Office
U.S. Environmental Protection Agency
61 Forsyth, Street South West
Atlanta, GA 30303
404-562-9513

APC Harris Relicensing

From: Clark, Maria <Clark.Maria@epa.gov>
Sent: Friday, June 12, 2020 10:04 AM
To: Sarah Salazar; Anderegg, Angela Segars
Cc: Allan Creamer; Stephen Bowler
Subject: RE: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

EXTERNAL MAIL: Caution Opening Links or Files

Good morning Sarah,

I thought this one was only for Alabama. I already uploaded to eFiling FERC site.

Thank you and have a great weekend!
Maria

From: Sarah Salazar <Sarah.Salazar@ferc.gov>
Sent: Friday, June 12, 2020 8:27 AM
To: Clark, Maria <Clark.Maria@epa.gov>; Anderegg, Angela Segars <ARSEGARS@southernco.com>
Cc: Allan Creamer <Allan.Creamer@ferc.gov>; Stephen Bowler <Stephen.Bowler@ferc.gov>
Subject: RE: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Good morning Maria,

If you haven't already filed these comments to the Commission's record, could you file them using either our eFiling option (for instructions on eFiling see https://www.ferc.gov/docs-filing/ferconline.asp [gcc01.safelinks.protection.outlook.com]).

Thank you in advance and let me know if you have any questions.

Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863*
Please consider the environment before printing this email.

From: Clark, Maria <Clark.Maria@epa.gov>
Sent: Thursday, June 11, 2020 8:45 PM
To: Anderegg, Angela Segars <ARSEGARS@southernco.com>
Cc: Sarah Salazar <Sarah.Salazar@ferc.gov>; Clark, Maria <Clark.Maria@epa.gov>
Subject: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Dear Angie,

U.S. Environmental Protection Agency appreciates the opportunity to review the Draft Study Reports regarding the relicensing of the R.L. Harris Dam on the Tallapoosa River in Alabama. We also appreciate the outreach that Alabama Power has done in the early stage of the process to ensure that issues can be fully addressed prior to finalizing the major components of the proposed project.

During the April 29, 2020, Initial Study Report meeting, Federal Energy Regulatory Commission (FERC) and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to the

Green Plan, Pre-Green Plan, and Pre-Green Plan with 150 cfs minimum flow. Questions were also asked as to why only the 150 cfs minimum flow was selected. Multiple questions were asked about the possibility of having an option of the Green Plan with a minimum flow.

Further, Alabama Power suggested that any requests for additional flow scenarios be submitted as soon as possible before phase 2 starts. The EPA requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow. The 150 cfs minimum flow was selected based upon the volume of water used for the Green Plan, as opposed to an analysis based upon protective minimum flows for aquatic life.

Additionally, EPA requests the inclusion of both adaptively managed flow scenarios and adaptive management as an outcome. The state-of-the-science on environmental flows includes adaptive management as a key feature for the protection of aquatic life. The evaluation could examine how monitoring would be used to evaluate the success of the flows, and any potential adjustments that may be needed over time. The EPA submitted resources that supports this request in March 2019.

We thank you in advance for the opportunity to work with you during the FERC relicensing process.

Maria R. Clark
NEPA Section - Region 4
Strategic Programs Office
U.S. Environmental Protection Agency
61 Forsyth, Street South West
Atlanta, GA 30303
404-562-9513

APC Harris Relicensing

From: Sarah Salazar <Sarah.Salazar@ferc.gov>
Sent: Friday, June 12, 2020 10:58 AM
To: Clark, Maria; Anderegg, Angela Segars
Cc: Allan Creamer; Stephen Bowler
Subject: RE: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

EXTERNAL MAIL: Caution Opening Links or Files

Thank you for filing these comments on the draft study reports, which are part of the ISR, to our record as well.

Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863*
Please consider the environment before printing this email.

From: Clark, Maria <Clark.Maria@epa.gov>
Sent: Friday, June 12, 2020 11:04 AM
To: Sarah Salazar <Sarah.Salazar@ferc.gov>; Anderegg, Angela Segars <ARSEGARS@southernco.com>
Cc: Allan Creamer <Allan.Creamer@ferc.gov>; Stephen Bowler <Stephen.Bowler@ferc.gov>
Subject: RE: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Good morning Sarah,

I thought this one was only for Alabama. I already uploaded to eFiling FERC site.

Thank you and have a great weekend!
Maria

From: Sarah Salazar <Sarah.Salazar@ferc.gov>
Sent: Friday, June 12, 2020 8:27 AM
To: Clark, Maria <Clark.Maria@epa.gov>; Anderegg, Angela Segars <ARSEGARS@southernco.com>
Cc: Allan Creamer <Allan.Creamer@ferc.gov>; Stephen Bowler <Stephen.Bowler@ferc.gov>
Subject: RE: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Good morning Maria,

If you haven't already filed these comments to the Commission's record, could you file them using either our eFiling option (for instructions on eFiling see https://www.ferc.gov/docs-filing/ferconline.asp [gcc01.safelinks.protection.outlook.com]).

Thank you in advance and let me know if you have any questions.

Sarah L. Salazar ✧ *Environmental Biologist* ✧ *Federal Energy Regulatory Commission* ✧ *888 First St, NE, Washington, DC 20426* ✧ *(202) 502-6863*
Please consider the environment before printing this email.

From: Clark, Maria <Clark.Maria@epa.gov>
Sent: Thursday, June 11, 2020 8:45 PM
To: Anderegg, Angela Segars <ARSEGARS@southernco.com>

Cc: Sarah Salazar <Sarah.Salazar@ferc.gov>; Clark, Maria <Clark.Maria@epa.gov>
Subject: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Dear Angie,

U.S. Environmental Protection Agency appreciates the opportunity to review the Draft Study Reports regarding the relicensing of the R.L. Harris Dam on the Tallapoosa River in Alabama. We also appreciate the outreach that Alabama Power has done in the early stage of the process to ensure that issues can be fully addressed prior to finalizing the major components of the proposed project.

During the April 29, 2020, Initial Study Report meeting, Federal Energy Regulatory Commission (FERC) and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to the Green Plan, Pre-Green Plan, and Pre-Green Plan with 150 cfs minimum flow. Questions were also asked as to why only the 150 cfs minimum flow was selected. Multiple questions were asked about the possibility of having an option of the Green Plan with a minimum flow.

Further, Alabama Power suggested that any requests for additional flow scenarios be submitted as soon as possible before phase 2 starts. The EPA requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow. The 150 cfs minimum flow was selected based upon the volume of water used for the Green Plan, as opposed to an analysis based upon protective minimum flows for aquatic life.

Additionally, EPA requests the inclusion of both adaptively managed flow scenarios and adaptive management as an outcome. The state-of-the-science on environmental flows includes adaptive management as a key feature for the protection of aquatic life. The evaluation could examine how monitoring would be used to evaluate the success of the flows, and any potential adjustments that may be needed over time. The EPA submitted resources that supports this request in March 2019.

We thank you in advance for the opportunity to work with you during the FERC relicensing process.

Maria R. Clark
NEPA Section - Region 4
Strategic Programs Office
U.S. Environmental Protection Agency
61 Forsyth, Street South West
Atlanta, GA 30303
404-562-9513

20200612-5018 FERC PDF (Unofficial) 6/11/2020 5:02:20 PM

June 11,2020

Dear Secretary Bose,

HAT 1.

PROPOSED MODIFICATION TO OPERATING CURVE AND DOWNSTREAM FLOW STUDIES

18 CFR 5.15
For studies using 100 year climate data to model outcomes,

(d) I propose additional modelling based on predictive data from the studies of climate change. It is my understanding Federal Dams do additional modelling to take effects of climate change into account when undergoing licensing. This would include climate change considerations of Operating Curve Rules among others.

This idea was previously presented to FERC in 2019 comments by Maria Clark from the EPA.

Given the long life of the permit, the measurable manifestations of climate change and the Southern Company's goal to shift power generation away from fossil fuels, it seems prudent to take advantage of modelling in preparation to be best able to deal with unexpected situations such as greater reliance on hydro power by APC.

1. To my knowledge climate alternative data has not been modelled
2. Modelling is a very cost effective way to prepare for future events.

P-2628 HAT 2 Comments

Submitted separately are landowner forms reproduced from the study report and completed by landowning downstream stakeholders.They are reporting on erosion at their property sites. They represent lay attempts to recognize and monitor riverfront erosion. Whether or not each geo-located individual completed and submitted a form, each has taken their time to attend at least one meeting to express their grievance with downstream management over the life of the dam.

Also submitted is a screen shot of pinned landowner locations. Additionally, submitted is a page from the Trutta report locating erosion sites. There are correlations with landowner reported erosion and the study map. The Trutta float-the-river erosion survey is baseline information. It is a current day 'snapshot'. It may provide useful data for prospective study. Not being conversant in reading sonar / lidar data, I seek reassurance that riverbank video taken when the river channel is full does not dampen / downplay the classification of erosion sites.
The river's edges evaluated - as landowners experience it - when the water is low may expose more severe erosion than shown on the Trutta video.

Notable is the omission from the report of log/lat data for the sites identified in Figure 3-1 and Table 3-2. (Long/lat data was provided in Table 2-1 Summary of Lake Harris Erosion & Sedimentation)

20200612-5018 FERC PDF (Unofficial) 6/11/2020 5:02:20 PM

#1 Request for long/data data for Figure 3-1 and Table 3-2 of the Trutta Report and Request greater resolution image of Figure 3-1

Of major concern to all Harris Project Stakeholders is the Erosion Issue. Foundational to taking steps going forward is looking back to what has been. The University of Alabama maintains an aerial photographic library including images of the Harris Project area beginning in 1942. In existence are digitized prints for 1942, 1950, 1954, 1964, 1973. These are housed at www.alabamamaps.ua.edu. Attached is a mosaic of a portion of the project area as it appeared in 1942. The full sized map is rendered and georeferenced.

#2 Proposed: A New Study of the downstream river using historic images overlaid onto current imagery

18 CFR 5.15 (e)

1. Erosion is a significant and persistent concern. Erosion is problematic for landowners and flora & fauna in and around the river.
2. To my knowledge, this type of GIS comparison using historic data to impact effects of release effects downriver have not been done.
3. At the initial licensing there was no post dam data to compare to compare to the historic data.
4. This is a simple and inexpensive study, using readily available data

18 CFR 5.0(b)

1. The study should look at and provide change analysis for:

a. Analysis of the river bank contour along its length through time. Free flowing rivers are elastic, moving silt and sedimentation from side to side and down its length. A river serving as a channel should show deviations from historic patterns.
b. Any changes in river bank elevation
c. Provide image overlays of historic data onto current imagery with the intent to discover what the data show about the effects of a dam on the downstream river and can be a tool to evaluate effect of future changes made to flow patterns.
d. Begin construction of a detailed GIS map with information relating fish populations, (and a whole host of other parameters) in 3D. That is, not only presence/absence of species along the river length, but presence (where data are available) of species during different decades in time. There are numerous possibilities.
e. APC can gather additional, (say scaled to 1:6000 or the highest resolution feasible) imagery to overlay on the historic public images available at 1:20000. This would provide a baseline for future studies. At our fingertips are 80 years of data.

2. This GIS modeling tool can also be applied to provide opportunity for interagency contribution towards building the most accurate picture of aquatic and other life of the Tallapoosa.

3. Creating the realization of and expounding upon the treasures of the Tallapoosa River is something all parties (APC and stakeholders above/below the dam) can rightly be proud of.

P-2628_HAT5 Comments

20200612-5018 FERC PDF (Unofficial) 6/11/2020 5:02:20 PM

#1 Re: NOTIFICATION TO DOWNSTREAM USERS OF WATER RELEASE FROM HARRIS DAM

Downstream rivers users 'don't know what they can't know', They cannot know the mind of market forces determining when the turbines will run. APC and the dam managers have an obligation and responsibility, not to make the river safe for downstream users, but to provide users with accurate, timely and transparent information so users can make informed decisions regarding their own safety. APC must develop an effective way to 'push' dam operation realtime change notifications to those who opt in. Increased river usage as described by riverside landowners, reinforces the need-to-know for downstream users, especially those not already familiar with river level irregularities.

It appears FERC in Atlanta has approved the status quo notification system currently used by APC. The current system provides outdated and insufficient information for downstream users.

Accession Number:	20200317-3033
Description:	Letter order to Alabama Power Company accepting the automated downstream notification system for the Tallapoosa River Projects et al under P-349 et al.

If this issue is not part of the HAT 5 relicensing process, we need to know. When is the proper time to address this recreation / safety issue? Please have APC advise us of the process we need to pursue regarding revamping and modernizing the notification of release operations. This is an important issue, impacting below dam river use at each of APC dam projects.

And….. if this has been addressed and I missed it, I apologize.

PS a copy of the FERC Atlanta office correspondence with APC is sent as a separate PDF.

#2 RE: IMPROVED BELOW THE DAM RIVER ACCESS

As I understand it, part of the initial rational for the APC dam system included a 'give back to the public' component. This is easily realized on the impoundments created by dam construction.

Requiring more effort and thought are ways APC 'gives back' to below-dam river users. The below-the-dam efforts to provide access / ramps are as inherent in the mandate as are the creation of put-ins on the impoundment. To date, I have not seen any APC ideas or proposals put forth regarding downstream access. This is a real public/private partnership opportunity. forIf this is not a relicensing issue, please advise so we can pursue the proper channels. Again, I apologize in advance if I have missed APC correspondence.

Sincerely,
Donna Matthews
Box 1054
105 Woodland Ave E
Wedowee, AL 3278

20200612-5025 FERC PDF (Unofficial) 6/11/2020 6:12:57 PM

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

Re: R.L. Harris Dam Relicensing Project (FERC Project No. P-2628-065) located on the Tallapoosa River in Alabama. Comments on the Initial Study Report Meeting Summary dated May 12, 2020, and the Initial Study Report dated April 10, 2020.

Dear Secretary Bose:

The U.S. Environmental Protection Agency is providing clarifications and additional comments on the Initial Study Report (ISR) and the Summary Report.

ISR comments:

Section 4.2: Study Progress of the ISR, states …" *In evaluating the 150 cfs minimum flow alternative, there are too many unknowns at this time to generate reliable/accurate HydroBudget results; however, if the 150 cfs minimum flow is provided through a non-generation mechanism, the impact to hydropower generation will be the same or slightly worse than the impact from Green Plan operations. ...*" EPA would like to request clarification or supporting information regarding this conclusion.

Section 4.4: Remaining Activities does not include any follow-up to address these unknowns described in Section 4.2. Minimum flows are likely to have a significant impact on aquatic life resources, which will be evaluated in Phase 2. EPA recommends against making assumptions that minimum flows will have an adverse impact if the data is not ample enough to make that conclusion. For instance, quantifying the impact could result in finding that they are minor or negligible as compared to the Green Plan. EPA recommends that a Remaining Activity be added to gather the information needed to quantify the impacts.

Section 5.2: Reports on the dissolved oxygen (DO) data. The EPA recommends that data be included in the document where it is analyzed as an Appendix in all future documents or provide live links and page numbers to where the data is located, in order to provide an easier discussion to review.

The EPA would like to note that the analysis of DO is inconsistent with how it should be evaluated against the Water Quality Standard (WQS). Below are comments from prior EPA recommendations:

The WQ Study Plan does not indicate that the goal of characterizing water quality would be to evaluate where water quality standards are not being met, and to develop conditions to be included in the 401 Certification to operate the Project in such a manner as to attain those WQS. The goal as written does not indicate any action to be taken once the characterization of the water quality is complete. The EPA recommends that the goal be clarified to note that where WQS are not being met, the 401 may be conditioned so that WQS can be met through operational changes or other modifications to the project."

20200612-5025 FERC PDF (Unofficial) 6/11/2020 6:12:57 PM

The purpose of collecting water quality data is to compare it to the Alabama WQS. However, the DO data analysis only reports the results in terms of percentages. The WQS, below, does not include the use of percentages for protection of Fish and Wildlife:

4. Dissolved oxygen:
(i) For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations ***shall not be less than 5 mg/l at all times****; except under extreme conditions due to natural causes,* ***it may range between 5 mg/l and 4 mg/l,*** *provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels.* ***In no event shall the dissolved oxygen level be less than 4 mg/l due to discharges from existing hydroelectric generation impoundments.*** *All new hydroelectric generation impoundments, including addition of new hydroelectric generation units to existing impoundments, shall be designed so that the discharge will contain at least 5 mg/l dissolved oxygen where practicable and technologically possible. The Environmental Protection Agency, in cooperation with the State of Alabama and parties responsible for impoundments, shall develop a program to improve the design of existing facilities.*

Each data point must be compared to the WQS for DO. For WQS purposes, data are not aggregated and evaluated on percentages. DO is a parameter that has a direct effect on aquatic life. That is, if a sample is extremely low on a particular event, it does not help aquatic life if a sample taken at a later unrelated time shows sufficient oxygen. Therefore, the data for oxygen should not be averaged or reviewed as percentages, but reviewed against the water quality standard as stated above. For water below the dam, for instance, it should not be less than 4 mg/l. That is not to be averaged with other data. For downstream water, it shall not be less than 5 mg/l at all times, although it may range between 5 mg/l and 4 mg/l. The analysis should include a discussion of the number of samples that did not meet the state WQS for and the measured DO value. It is important to know both how many times the WQS were not met, as well as to know how much it deviated from the state WQS. This is critical as these data will be used as the basis for submitting the 401 WQ certification.

Section 5.4: The EPA recommends developing a matrix where each sampling result is compared to water quality standards.

Summary Report comments:

FERC and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to 150 cfs and why an option was not presented to model the Green Plan with minimum flows. EPA raised the same concerns and would like to recommend the addition of a scenario that includes a minimum flow for the Green Plan.

In question 7 by EPA: Alabama Power responded that the flows would be set without variation or modification throughout the term of the license. EPA would like to provide another resource (supported by the US Department of Energy, 2020) that could improve the study results by comparing models used in this Multi-model research:

20200612-5025 FERC PDF (Unofficial) 6/11/2020 6:12:57 PM

Multi-model Hydroclimate Projections for the Alabama-Coosa-Tallapoosa River Basin in the Southeastern United States https://www.ornl.gov/publication/multi-model-hydroclimate-projections-alabama-coosa-tallapoosa-river-basin-southeastern

This research focuses on the project area and includes relevant information and data that could be used for Alabama's study. Efforts to adaptively managing flows would allow Alabama Power to respond to changing conditions or new information within the system.

In question 8 by Alabama Rivers: EPA recommends that temperature be addressed in the water quality section and be included with the WQ certification as appropriate.

Thank you for the opportunity to comment.

Maria R. Clark

NEPA Section - Region 4

Strategic Programs Office

U.S. Environmental Protection Agency

61 Forsyth, Street South West

Atlanta, GA 30303

404-562-9513

20200612-5079 FERC PDF (Unofficial) 6/12/2020 10:14:44 AM

Clark, Maria

From: Clark, Maria
Sent: Thursday, June 11, 2020 8:45 PM
To: Anderegg, Angela Segars
Cc: Sarah Salazar; Maria Clark
Subject: EPA comments on R.L. Harris Dam Relicensing Draft Study Reports

Dear Angie,

U.S. Environmental Protection Agency appreciates the opportunity to review the Draft Study Reports regarding the relicensing of the R.L. Harris Dam on the Tallapoosa River in Alabama. We also appreciate the outreach that Alabama Power has done in the early stage of the process to ensure that issues can be fully addressed prior to finalizing the major components of the proposed project.

During the April 29, 2020, Initial Study Report meeting, Federal Energy Regulatory Commission (FERC) and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to the Green Plan, Pre-Green Plan, and Pre-Green Plan with 150 cfs minimum flow. Questions were also asked as to why only the 150 cfs minimum flow was selected. Multiple questions were asked about the possibility of having an option of the Green Plan with a minimum flow.

Further, Alabama Power suggested that any requests for additional flow scenarios be submitted as soon as possible before phase 2 starts. The EPA requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow. The 150 cfs minimum flow was selected based upon the volume of water used for the Green Plan, as opposed to an analysis based upon protective minimum flows for aquatic life.

Additionally, EPA requests the inclusion of both adaptively managed flow scenarios and adaptive management as an outcome. The state-of-the-science on environmental flows includes adaptive management as a key feature for the protection of aquatic life. The evaluation could examine how monitoring would be used to evaluate the success of the flows, and any potential adjustments that may be needed over time. The EPA submitted resources that supports this request in March 2019.

We thank you in advance for the opportunity to work with you during the FERC relicensing process.

Maria R. Clark
NEPA Section - Region 4
Strategic Programs Office
U.S. Environmental Protection Agency
61 Forsyth, Street South West
Atlanta, GA 30303
404-562-9513

20200629-5238 FERC PDF (Unofficial) 6/29/2020 8:50:28 AM

United States Department of the Interior

NATIONAL PARK SERVICE
Atlanta Federal Center
1924 Building
100 Alabama Street, SW
Atlanta, GA 30303

1.A.2 (SERO-NR)

IN REPLY REFER TO:

Angie Anderegg
Harris Relicensing Project Manager
Alabama Power Company

Dear Ms. Anderegg:

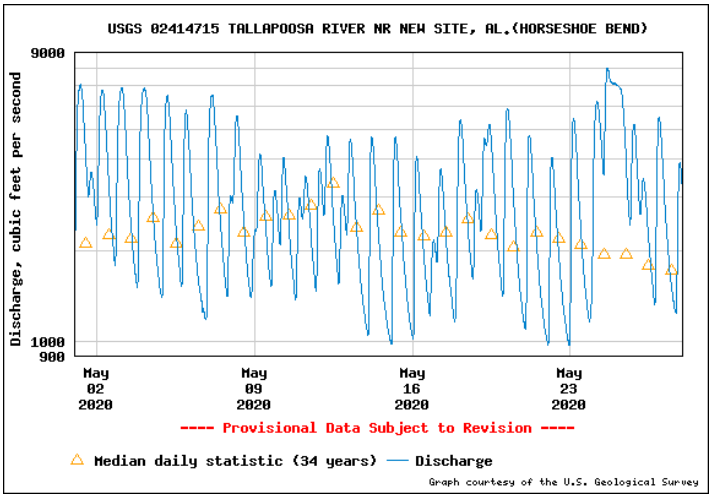
The National Park Service (NPS), South Atlantic-Gulf Region, in coordination with Horseshoe Bend National Military Park, offers the following comments in response to Alabama Power Company's Draft Erosion and Sedimentation Study Report filled with the Federal Energy Regulatory Commission (FERC) on April 10, 2020 pursuant to the relicensing of the R.L. Harris Hydroelectric Project (P-2628).

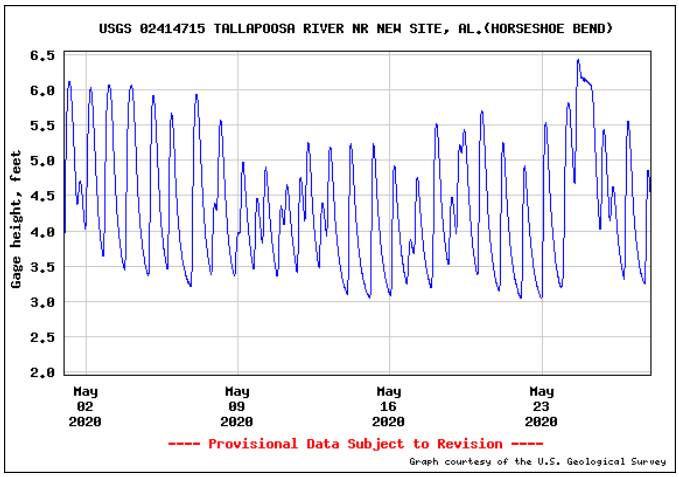
Background:

Federal Power Act regulations (18 C.F.R. 4.38(a), 18 C.F.R. 16.8(a) and 18 C.F.R. 5.1(d)), as amended, require consultation with the NPS, among others throughout the course of hydropower relicensing proceedings. In the case of the R.L. Harris Hydroelectric Project (here after "Project"), the NPS manages Horseshoe Bend National Military Park (HOBE), situated in a bend of the Tallapoosa River approximately 40 miles downstream of the Project. HOBE protects, preserves, commemorates, and interprets the final battle of the Creek War. On March 27, 1814, 3,300 U.S. troops and militia under Major General Andrew Jackson attacked Chief Menawa's 1,000 Red Stick Creek warriors fortified in a horseshoe-shaped bend of the Tallapoosa River. Over 800 Red Sticks died that day. The battle ended the Creek War, resulted in a land cession of 23,000,000 acres to the United States and created a national hero of Andrew Jackson.

HOBE was established as a unit of the National Park System in 1956 in part to protect the site and artifacts of this momentous event. Today, the park contains 2,049 acres of land on the banks of the Tallapoosa which flows approximately 4 river miles through the park. Since operations of the R.L. Harris project commenced in the 1980s, HOBE has been subjected to significant daily fluctuations in discharge and stage. The graphs below depict the typical flow fluctuations during May, 2020 at the USGS stream gauge located at the park (https://waterdata.usgs.gov/nwis/uv?02414715). This was a particularly wet period. During this period, daily discharge ranged from less than 1,000 cfs to 8,000 cfs. Daily changes in river stage (i.e., elevation) were on the order of 3 feet. These rapid changes in flow over the course of a day lead to bank erosion, as saturated soils slough off as waters recede.

20200629-5238 FERC PDF (Unofficial) 6/29/2020 8:50:28 AM





Rapid and recurring flow fluctuations and corresponding bank erosion at the park potentially expose sensitive historical artifacts that are projected by Archeological Resource Protection Act (ARPA) and other federal statutes.

In addition, extreme flow alternations likely contribute to scour erosion of the historic Miller Bridge Piers, a former covered bridge within the park that is protected by the National Historic Preservation Act. Miller Bridge was constructed in 1907. The bridge ultimately fell into disrepair and collapsed. Today, all that remains of Miller Bridge is four stone piers, one of which is collapsed, within the Tallapoosa River. The piers, together with all of the historic resources within HOBE, are listed on the National Register of Historic Places. The List of Classified Structures states that the bridge piers and abutments (LCS No. 005003, Structure No. HS-3) are locally significant under National Register Criteria A and C in the areas of transportation history and engineering, noting that they are the remains of one of the longest American covered bridges.

Comments on the Draft Erosion and Sedimentation Report

The NPS has reviewed the Alabama Power Company's Draft Erosion and Sedimentation Report as well as the accompanying Downstream Bank Stability Report located in Appendix E, titled Tallapoosa River High Definition Stream Survey Final Report produced by Trutta Environmental Solutions, LLC. In addition, the NPS participated in the Alabama Power's Initial

20200629-5238 FERC PDF (Unofficial) 6/29/2020 8:50:28 AM

Study Report meeting, held virtually on April 28, 2020. We offer the following comments on the Erosion and Sedimentation Report:

1. We appreciate Alabama Power's efforts to characterize and hopefully remedy erosion that is occurring as a result of project operations as far downstream as HOBE. Although a relatively small park and not particularly well-known to the general public outside of Alabama, the story preserved and interpreted by the park, along with the archeological resources it protects, is that of a watershed moment in the history of our nation, and is therefore worthy of robust consideration within the context of continued project operations and the unintended consequences of bank erosion.

2. Trutta's stream survey consisted of floating the river in two kayaks equipped with georeferenced video cameras as well as side scan sonar, together comprising a longitudinal survey of the river and its banks from below the dam to HOBE. In addition, Trutta conducted 40 cross-sectional surveys of the river below the dam at pre-designated locations, several of which were located within HOBE. Alabama Power subsequently provided relicensing stakeholders with Trutta's video of the entire river below the dam which NPS reviewed. The information produced by this effort is both highly useful and relevant in demonstrating the extent of erosion on the Tallapoosa River below the dam.

3. According to the Trutta survey, at least two sites within HOBE ranked among the worst eroding banks below the dam. An additional site immediately upstream of the park boundary on river-left also made Trutta's list of the most significantly impaired banks (see figures 25 and 28 in the Trutta report). Trutta notes that the riparian corridor within HOBE and adjacent to these areas has little to no modification. Thus, we can only conclude that the major cause of erosion within the park is likely due to project operations.

4. There is no mention of the historic Miller Bridge piers in the Trutta report; however, the piers do appear in the video. Further assessment of the piers in the context scour erosion exacerbated by project operations is warranted within the context of relicensing.

Again, we appreciate the efforts of Alabama Power Company and its consultants to characterize the extent of bank erosion within the Tallapoosa River below R.L. Harris Dam. We look forward to continued collaboration as we seek measures to reduce ongoing erosion at the park. If you have any questions, please do not hesitate to contact Dr. Jeff Duncan, NPS Hydropower Coordinator at (423) 987-6127 or jeff_duncan@nps.gov.

Sincerely,

Karen L. Cucurullo
Acting Regional Director

cc: Barbara Tagger, HOBE Superintendent
Jeff Duncan, Regional Hydropower Coordinator

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

Alabama Power

600 North 18th Street
Hydro Services 16N-8180
Birmingham, AL 35203
205 257 2251 tel
arsegars@southernco.com

July 10, 2020

VIA ELECTRONIC FILING

Project No. 2628-065
R.L. Harris Hydroelectric Project
Response to Initial Study Report (ISR) Disputes or Requests for Modifications of Study Plan

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

Dear Secretary Bose,

Alabama Power Company (Alabama Power) is the Federal Energy Regulatory Commission (FERC) licensee for the R.L. Harris Hydroelectric Project (Harris Project) (FERC No. 2628). On April 10, 2020, Alabama Power filed the Initial Study Report (ISR) along with six Draft Study Reports and two cultural resources documents. Alabama Power held the ISR Meeting with stakeholders and FERC on April 28, 2020. On May 12, 2020, Alabama Power filed the ISR Meeting Summary. Comments on the ISR, draft reports, and ISR Meeting Summary were due on June 11, 2020.

On June 10, 2020, FERC staff provided comments on the ISR and the ISR Meeting Summary.[1] FERC requested that Alabama Power respond to specific comments by July 11, 2020. Attachment A of this filing includes Alabama Power's responses to those questions for which FERC requested a July 11 response.

Stakeholders and FERC provided three Additional Study Requests and two study modifications as part of comments on the ISR and ISR Meeting Summary. Two of the requested studies do not meet the criteria outlined in FERC's regulations at 18 C.F.R. § 5.9(b) and 5.15 and/or address pre-project conditions. Although, the other study request meets FERC's criteria, Alabama Power is not incorporating the study request into the relicensing process for the Harris Project. The complete response to these study requests is in Attachment B.

FERC staff, Alabama Rivers Alliance (ARA)[2], and the U.S. Environmental Protection Agency (EPA)[3] also requested the inclusion of additional downstream flow release alternatives as modifications to Alabama

[1] Accession No. 20200610-3059.

[2] Accession No. 20200611-5114.

[3] Accession Nos. 20200612-5025 and 20200612-5079.

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

Power's existing Downstream Release Alternatives Study. Alabama Power's response to the recommended modifications is also provided in Attachment B.

Within preliminary comments on the Draft Water Quality Study Report as well as during the ISR Meeting and within comments on the ISR and ISR Meeting Summary, multiple stakeholders requested that Alabama Power continue monitoring water quality downstream of Harris Dam in 2020 and 2021. To collect dissolved oxygen and water temperature data in 2020, Alabama Power installed the continuous monitor on May 4, following the ISR meeting. The generation monitor was installed on June 1 to align with the monitoring season start date in the Water Quality Study Plan. Alabama Power also agrees to collect water quality data at both locations in 2021 (from March 1 – June 30, 2021 at the continuous monitor and June 1 – June 30, 2021 at the generation monitor) to include in the final license application.

The EPA recommended inclusion of water quality monitoring data with the Water Quality report. Alabama Power notes that the Draft Water Quality Study Report contains an appendix with the 2017 – 2019 water quality monitoring data, and the Final Water Quality Study Report will contain a similar appendix with the complete set of water quality monitoring data (including 2020). Any data collected in 2021 and after the Final Water Quality Study Report is provided will be included within the Final Licensing Proposal.

Alabama Power reviewed FERC and stakeholder comments on the ISR and Draft Study Reports and will address all other comments in any Final Study Reports (filed in 2020 and 2021), the Updated Study Report (USR) (due April 10, 2021), or the Preliminary Licensing Proposal (PLP) (due on or before July 3, 2021).

If there are any questions concerning this filing, please contact me at arsegars@southernco.com or 205-257-2251.

Sincerely,

Angie Anderegg
Harris Relicensing Project Manager

Attachment A: Alabama Power's Response to FERC's June 10, 2020 Staff Comments on the Initial Study Report and Initial Study Report Meeting Summary for the R.L. Harris Hydroelectric Project
Attachment B: Alabama Power's Response to Study Modifications and Additional Study Requests Following the May 12, 2020 Initial Study Report and Initial Study Report Meeting Summary for the R.L. Harris Hydroelectric Project

cc: Harris Stakeholder List

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

Attachment A

Alabama Power's Response to FERC's June 10, 2020 Staff Comments on the Initial Study Report and Initial Study Report Meeting Summary for the R.L. Harris Hydroelectric Project

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

FERC questions are presented in italic text and the specific information requested is highlighted in yellow; Alabama Power's response follows.

Draft Downstream Release Alternatives (Phase 1) Study Report

Question #2: During the ISR Meeting, Alabama Power requested that stakeholders provide downstream flow alternatives for evaluation in the models developed during Phase 1 of the Downstream Release Alternatives Study. Stakeholders expressed concerns about their ability to propose flow alternatives without having the draft reports for the Aquatic Resources and Downstream Aquatic Habitat Studies, which are scheduled to be available in July 2020 and June 2020, respectively. It is our understanding that during Phase 2 of this study, Alabama Power would run stakeholder-proposed flow alternatives that may be provided with ISR comments, as well as additional flow alternatives that stakeholders may propose after the results for the Aquatic Resources and Downstream Aquatic Habitat Studies are available. Please clarify your intent by July 11, 2020, as part of your response to stakeholder comments on the ISR.

Alabama Power Response:

Alabama Power's response to evaluating additional flow alternatives is discussed in Attachment B.

Regarding the Aquatic Resources and Downstream Aquatic Habitat Studies, it is Alabama Power's intent to provide stakeholders 30 days to review, provide comments, and recommend any additional flow analyses based on the information in the draft reports. It is also Alabama Power's intent to meet with the Harris Action Teams (HATs) between Fall 2020 and Spring 2021 to present preliminary results, including the bioenergetics modeling, and obtain stakeholder input on additional analyses.

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

Question #5: Page 14 of the Draft Downstream Release Alternatives (Phase 1) Study Report includes a description of the HEC-ResSim model that was developed for the project. Harris Dam was modeled in HEC-ResSim with both a minimum release requirement and maximum constraint at the downstream gage at Wadley. The draft report states that the minimum release requirement is based on the flow at the upstream Heflin gage, which is located on the Tallapoosa River arm of Harris Reservoir and has 68 years of discharge records. Page 5 of the draft report indicates that there is also a gage (Newell) on the Little Tallapoosa River Arm of the reservoir, which has 45 years of discharge records. It appears that only the Heflin gage was used in developing the minimum release requirement. As part of your response to stakeholder comments on the ISR, please explain the rationale for basing the minimum releases in the HEC-ResSim model only on the flows at the Heflin gage and not also on the flows at the Newell gage.

Alabama Power Response:

The HEC-ResSim model bases the releases on the Green Plan, which specifies the use of the Heflin gage. During development of the Green Plan, the Heflin gage was considered the gage that best mimicked the unregulated, natural flow of the Tallapoosa River. Based on available information from stakeholder meetings in early 2000, the Newell gage was not considered. Stakeholders involved in the Green Plan development process did acknowledge that the Heflin gage excluded the flow from Little Tallapoosa River.

Below is a brief summary of the recorded stakeholder discussions that reference the use of the Heflin gage.

- 5/21/2003 Stakeholder Meeting: Stan Cook (Alabama Department of Conservation and Natural Resources (ADCNR)) stated that the Heflin gage is being used to mimic natural events and that the “Big” Tallapoosa River better reflects a larger scale drainage.
- 8/4/2003 Stakeholder Meeting: Elise Irwin presents findings on the models indicate that the Heflin gage is a promising location.
- 11/3/2003 Stakeholder Meeting: Alabama Rivers Alliance (ARA) stated they wanted Alabama Power to evaluate use of a house turbine that would provide capabilities to duplicate the Heflin gage flows. During this meeting, it was mentioned that the Heflin gage does not include flows from the Little Tallapoosa River, and no one stated opposition to use of the Heflin gage.
- 1/1/2006 Stakeholder Meeting: Stakeholders commented that mimicking Heflin flows would allow for some natural variability of flow in the regulated part of the river.

Draft Erosion and Sedimentation Study Report

Question #7: The Erosion and Sedimentation Study in the approved study plan states that Alabama Power would analyze its existing lake photography and Light Detection and Ranging (LIDAR) data using a geographic information system (GIS) to identify elevation or contour changes around the reservoir from historic conditions and quantify changes in lake surface area to estimate sedimentation rates and volumes within the reservoir. In addition, the approved study plan states that Alabama Power will verify and survey sedimentation areas for nuisance aquatic vegetation. According to the study schedule, Alabama Power will prepare the GIS overlay and maps from June through July 2019 and conduct field verification from fall 2019 through winter 2020.

The Draft Erosion and Sedimentation Study Report does not include a comparison of reservoir contour changes from past conditions or the results of nuisance aquatic vegetation surveys. The report states that limited aerial imagery of the lake during winter draw down and historic LIDAR data for the reservoir did not allow for comparison to historic conditions and that Alabama Power will conduct nuisance aquatic vegetation surveys during the 2020 growing season. It is unclear why the existing aerial imagery and Alabama Power's LIDAR data did not allow for comparison with past conditions or why the nuisance aquatic vegetation surveys will be conducted during the 2020 growing season instead of during the approved field verifications from fall 2019 to winter 2020. As part of your response to stakeholder comments on the ISR, please clarify what existing aerial imagery and LIDAR data was used and why it was not suitable for comparison with past conditions.

Alabama Power Response:

Alabama Power has 2007 and 2015 Light Detection and Ranging (LiDAR) data for Lake Harris that it will use to develop a comparison for the Final Erosion and Sedimentation Study Report.

Ms. Donna Matthews proposed a new study of the Tallapoosa River downstream of Harris Dam to use historic images overlaid on current imagery to evaluate changes in the Tallapoosa River.[1] Alabama Power's response to this study request is addressed in Attachment B; however, Ms. Matthews noted in the ISR Meeting that she would share various images of the Tallapoosa River pre-Harris Dam and after construction. Alabama Power intends to facilitate obtaining copies of these images to provide to FERC for its use in addressing cumulative effects, as noted in FERC's November 16, 2018 Scoping Document 2.[2]

Regarding the nuisance aquatic vegetation component of the Erosion and Sedimentation study, the growing season is late spring into summer, which did not correspond with the fall 2019 to winter 2020 in the FERC-approved study plan schedule. Therefore, Alabama Power plans to conduct the nuisance aquatic vegetation survey in summer 2020. These results will be provided to HAT 2 participants as a technical memo to supplement the Draft Erosion and Sedimentation Study Report.

[1] Accession No. 20200612-5018.

[2] Accession No. 20181116-3065.

Question #9: (comment provided below includes only the information requested by FERC) As part of your response to stakeholder comments on the ISR, please provide:

1) the maps and assessment of the availability of potentially suitable habitat within the project boundary for all of the T&E species on the official species list for the project;
2) documentation of consultation with FWS regarding the species-specific criteria for determining which T&E species on the official species list will be surveyed in the field;
3) a complete list of T&E species that will be surveyed during the 2nd study season as part of the T&E Species Study; and
4) confirmation that Alabama Power will complete the field verification scheduled by September 2020.

Alabama Power Response:

1) The maps and assessment of the availability of potentially suitable habitat within the Harris Project Boundary were included in the draft Threatened and Endangered Species Desktop Assessment Report and were prepared based on available sources of information. Any maps and assessments of habitat suitability that could not be resolved in the desktop assessment will be included in the Final Threatened and Endangered Species Study Report. Alabama Power is actively consulting with U.S. Fish and Wildlife Service (USFWS) regarding Threatened and Endangered Species (T&E species) where existing information is insufficient to determine their presence/absence and habitat suitability. Alabama Power plans to continue to work with USFWS and the Alabama Natural Heritage Program (ANHP) to resolve questions about the species and perform field surveys as deemed appropriate.

2) Alabama Power met with HAT 3 participants on August 27, 2019 to discuss species included in the Threatened and Endangered Species Study Plan. As a result of that meeting and based on recommendations from USFWS, Alabama Power conducted surveys for Finelined Pocketbook in the Tallapoosa River and Palezone Shiner in Little Coon Creek. Additional surveys for Finelined Pocketbook in tributaries to Lake Harris are ongoing and should be completed in Summer 2020. Alabama Power is consulting with the USFWS and ANHP to determine the need for additional surveys. If requested, Alabama Power may perform surveys for additional species and/or assessments to determine suitability of habitat that could not be resolved in the Threatened and Endangered Species Desktop Assessment. All consultation regarding this process will be included as an appendix to the Final Threatened and Endangered Species Study Report.

3) Alabama Power plans to conduct additional surveys for Finelined Pocketbook in Summer 2020. Based on ongoing consultation with USFWS and with input from ANHP, Alabama Power may perform surveys for Price's Potato Bean, White Fringeless Orchid, and Little Amphianthus (pool sprite) as well as assessments to determine if suitable habitat exists for Red-cockaded Woodpecker and Little Amphianthus.

4) Alabama Power plans to complete field verifications by September 2020.

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

Question #10: To facilitate review of the existing shoreline land use classifications, please file larger scale maps of all the shoreline areas as a supplement to the Draft Project Lands Evaluation Report, as part of your response to stakeholder comments on the ISR. Please include land use classifications on the maps. In addition, if available, please file the GIS data layers of the existing and proposed shoreline land use classifications.

Alabama Power Response:

Included with this filing are the larger scale maps, including land classifications, and the GIS files of the existing and proposed shoreline land use classifications.

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

Attachment B

Alabama Power's Response to Study Modifications and Additional Study Requests Following the May 12, 2020 Initial Study Report and Initial Study Report Meeting Summary for the R.L. Harris Hydroelectric Project

Alabama Power received two recommendations to modify the existing FERC-approved studies and three Additional Study Requests. Alabama Power's response to the study modifications and Additional Study Requests is discussed below.

A. Modifications to Existing Studies

1) FERC Question #3:[1] "To facilitate modelling of downstream flow release alternatives, we recommend that Alabama Power run base flows of 150 cfs, 350 cfs, 600 cfs, and 800 cfs through its model for each of the three release scenarios (i.e., the Pre-Green Plan, the Green Plan, and the modified Green Plan flow release approach). The low-end flow of 150 cfs was proposed by Alabama Power as equivalent to the daily volume of three 10-minute Green Plan pulses. This flow also is about 15 percent of the average annual flow at the United States Geological Survey's flow gage (#02414500) on the Tallapoosa River at Wadley, Alabama, and represents "poor" to "fair" habitat conditions. We recommend 800 cfs as the upper end of the base flow modeling range because it represents "good" to "excellent" habitat and is nearly equivalent to the U.S. Fish and Wildlife Service's Aquatic Base Flow guideline for the Tallapoosa River at the Wadley gage. The proposed base flows of 350 cfs and 600 cfs cover the range between 150 cfs and 800 cfs."

2) ARA's June 11, 2020 comments:[2] "While reserving the right to request other release alternatives be considered once more information is made available to stakeholders, ARA proposes the following study modification request pursuant to 18 C.F.R. § 5.15(d) for additional flow scenarios be analyzed as part of the Downstream Release Alternatives Study:

   (i) A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gage, rather than the current 75%;

   (ii) A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria;

   (iii) A constant but variable release that matches the flow at the USGS Wadley stream gage to the UGSG Heflin stream gage to mimic natural flow variability, and

   (iv) 300 cfs and 600 cfs minimum flows.

   Some of these flows, particularly items (iii) and (iv) may have been modeled internally by Licensee as part of the original adaptive management process; however, those models are not currently available as part of this relicensing. Studying a wider range of potential flows during the ILP could result in improved diversity and abundance of aquatic life and habitat, more recreation opportunities, decreased erosion and sedimentation, and gains in water quality."

[1] Accession No. 20200610-3059.

[2] Accession No. 20200611-5114.

20200710-5122 FERC PDF (Unofficial) 7/10/2020 2:25:37 PM

3) In its June 11, 2020 comments[3], EPA "requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow.

Alabama Power's Response:

Based on FERC, ARA, and EPA's recommendation to modify the Downstream Release Alternatives study, Alabama Power will model the following additional downstream flow scenarios:

- A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gage, rather than the current 75%;
- A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria;
- 300 cfs continuous minimum flow;
- 600 cfs continuous minimum flow; and a
- 800 cfs continuous minimum flow.

These recommended flow release alternatives are in addition to Alabama Power's release alternatives in the FERC-approved Study Plan that include:

- Pre-Green Plan (peaking only; no pulsing or continuous minimum flow);
- Green Plan (existing condition);
- Modified Green Plan (changing the time of day in which the Green Plan pulses are released); and
- 150 cfs continuous minimum flow.

Alabama Power has not included ARA's recommended "constant but variable release that matches the flow at the USGS Wadley streamgage to the UGSG Heflin streamgage to mimic natural flow variability", as an alternative to model. This alternative would eliminate peaking operations, which would significantly reduce or eliminate use of the Harris Project for voltage support and system reliability, including black start operations. Alabama Power regards this alternative as a complete change in Project operations (from peaking to run-of-river) that is not consistent with Project purposes.[4]

Furthermore, the units are not capable of adjusting to the extent of simulating natural river flows. The flow through the Harris units varies only to the extent of changes in gross head (the difference between the forebay elevation and tailwater elevation) and the wicket gate opening. Small wicket gate openings lead to excessive pressure drops, which is the primary driver of cavitation[5] initiation. The best way to minimize cavitation and its associated detrimental vibrations is to quickly move the wickets gates from a closed position to the best gate setting. The best gate setting is a permanent setting on the governor system to ensure that the control system will force a fast movement of the wicket gates through the "rough zone" to the best gate position thereby minimizing the time spent in the rough zone. The rough zone is an area on the operating curve where flows that are less than efficient gate cause increased vibrations in the turbine

[3] Accession Nos. 20200612-5025 and 20200612-5079.

[4] For additional explanation, see Alabama Power's March 13, 2019 letter to FERC (Accession No. 20190313-5060).

[5] Cavitation is a phenomenon in which rapid changes of pressure in a liquid lead to the formation of small vapor-filled cavities in places where the pressure is relatively low.

and cavitation along the low-pressure surfaces of the turbine runner. For these reasons, this is not a viable alternative.

Alabama Power also declines FERC's recommendation to study all of the continuous minimum flows combined with the Pre-Green Plan, Green Plan, and Modified Green Plan. Alabama Power asserts that modeling one combination of a continuous minimum flow AND pulsing (the hybrid Green Plan listed above) is adequate to determine the effect of this downstream release alternative on Project operations and other resources. The eight alternatives Alabama Power will model will provide sufficient information to evaluate the resources of interest, determine any downstream release proposal, and determine protection, mitigation, and enhancement (PM&E) measures to be incorporated into the new license for the Project.

B. Proposed Additional Studies

1) ARA proposed a new study for "Battery Storage Feasibility Study to Retain Full Peaking Capabilities While Mitigating Hydropeaking Impacts".

Alabama Power's Response:

While ARA's additional study request appears to conform to FERC's regulations and criteria for additional study requests, Alabama Power respectfully declines to complete this study for the Harris Project relicensing. Our reasons are provided below:

a. ARA notes that there is a data gap around Project ramping rates. The Harris Project units are not capable of ramping; rather they were designed as peaking units to quickly react to electrical grid needs, and as such, the turbines were not designed to operate in a gradually loaded state—or restricted ramping rate—over an extended period of time. In fact, restricted ramping is avoided to prevent damage to hydroturbine machinery. When transitioning from spinning mode to generating mode, the wicket gates are opened over a period of approximately 45 seconds. One reason for this method of operating is so the turbine spends a minimal amount of time in the rough zone.

b. The goal of this study, as outlined by ARA, is to determine whether a battery energy storage system (BESS) could be economically integrated at Harris. This technology is very new and there is no established methodology for integrating BESS at hydropower facilities. The cost of a BESS system with restricted hydraulic ramping is concerning because the cost must include not only the battery but also the cost of replacing both turbine runners and determining the extent of the effect on the balance of plant. Each unit at Harris makes approximately 60 megawatts (MW) at efficient gate. For an example, a 60 MW/60-megawatt hour (MWhr), 1-hour duration, standalone battery including construction and installation, is estimated to cost $36M dollars.[6] This battery would need to be sized to produce up to 60 MW for one hour so that the full capacity of the turbine could be supplemented from battery power. The battery would need this capacity because ramping would essentially begin at zero MWs with a very small wicket gate opening and then gradually open over the period of one hour. A smaller MW battery would not be large enough to make up the lost MWs in a full ramping scenario. For example, if a 5 MW battery

[6] Fu, Remo and Margolis, "2018 U.S. Utility-Scale Photovoltaics-Plus-Energy Storage System Costs Benchmark", National Renewable Energy Laboratory, NREL/TP-6A20-71714.

were used, the unit would have to ramp very quickly, within 30 to 45 seconds, to an output of 55 MW. The 5 MW battery would then make up for the remaining power to reach the original power output of 60 MW. To be clear, a battery smaller than the unit's power at efficient gate does not allow for full ramping because the unit must quickly be brought up to a point where the unit's power plus the battery's power equals 60 MW.

The cost of $36M would be doubled to $72M since there are two units at Harris Dam and peaking requires the availability of both units. Additionally, this is a one-hour battery, so the unit(s) must be at efficient gate at one hour past the start of generation. If a longer ramping rate was desired, the battery would likely need to be even larger. The cost to upgrade the turbine runners in order to have a much wider operating range would also need to be considered. It is also important to note that it is undetermined, due to the site-specific conditions and the geometry of the water passages in the powerhouse, if a suitable turbine runner with a wide operating range can even be produced.

c. While information and access to battery storage technology is increasing, as ARA notes, integrating BESS at hydropower projects is a relatively new field with no established methodology. This is especially true for the size of BESS needed to replace the full megawatt capacity at Harris. Furthermore, full-scale redesign of the existing turbines is not being considered by Alabama Power during this relicensing.

For these reasons, Alabama Power declines this study proposal and contends that the downstream release alternatives study will provide information for Alabama Power and the stakeholders to effectively evaluate effects of downstream releases on Project resources (both on Lake Harris and in the Tallapoosa River below Harris Dam) and for Alabama Power to propose an operating scenario for the next license term.

2) Pre-and Post-Dam Analysis of Downstream Impacts, including flooding, erosion, and habitat changes to flora and fauna.

Alabama Power's Response:

Mr. Chuck Denman[7] proposed that Alabama Power conduct an additional study that analyzes pre-dam and post-dam impacts on flooding, erosion, plants, and fisheries. This study request did not meet FERC's criteria for an additional study; however, Alabama Power notes that many of the analyses requested by Mr. Denman are in fact occurring as part of the Harris relicensing. FERC does not require a licensee to evaluate pre-project conditions in a relicensing. In FERC's "*Guide to Understanding and Applying the Integrated Licensing Process Study Criteria*" (2012), FERC notes that where information is being sought solely to look at historic effects, FERC staff will not require an applicant to reconstruct pre-project conditions, because that is not the baseline from which the FERC conducts its environmental analysis. The FERC's choice of current environmental conditions as the baseline for environmental analysis in relicense cases was affirmed in American Rivers v. FERC, 187 F.3d 1007, amended and rehearing denied, 201 F.3d 1186 (9th Cir., 1999); Conservation Law Foundation v. FERC, 216 F.3d 41 (D. C. Cir. 2000).

[7] Accession No 20200611-5174.

Alabama Power has consistently communicated and explained that it will use the 100-year flood event to model effects from a change in Harris Project operations on downstream resources. Alabama Power has also completed an erosion evaluation and is reviewing all stakeholder comments on lake and downstream erosion and sedimentation and will address those comments in the Final Erosion and Sedimentation Report. Alabama Power is also evaluating how changes to current Project operations may affect nuisance aquatic vegetation. Finally, Alabama Power has compiled a large amount of existing information on the Tallapoosa River fisheries community and is also conducting three studies investigating fish habitat, aquatic resources in the Tallapoosa River, and water quality and water temperature in both Lake Harris and in the Tallapoosa River. For these reasons, Alabama Power believes the issues raised by Mr. Denman are covered in the FERC-approved Study Plan and a new study is not warranted.

3) A New Study of the Downstream River Using Historic Images Overlaid onto Current Imagery

Alabama Power's Response:

Ms. Donna Matthews[8] proposed that Alabama Power conduct a new study using GIS to compare historic imagery to current imagery to evaluate effects of releases downstream of Harris Dam. Ms. Matthews notes that existing data can be used and that Alabama Power can gather historic images and overlay them on current images to determine the effects of the dam on the river downstream. The primary purpose of this study is to address "significant and persistent concerns about erosion" in the Tallapoosa River downstream of Harris Dam.

Alabama Power notes that while this study does not conform to FERC's criteria for additional studies, Alabama Power is committed to evaluating erosion and sedimentation effects on Lake Harris and in the Tallapoosa River downstream of Harris Dam. Alabama Power is reviewing stakeholder comments on the Draft Erosion and Sedimentation Report and will address these comments in the Final Erosion and Sedimentation Report. Further, the FERC-approved Erosion and Sedimentation Study Plan provides adequate methodology to address erosion and sedimentation issues resulting from Harris Project operations.

As noted above, FERC does not require licensees in the relicensing process to study pre-project conditions; however, Ms. Matthews volunteered in the April 28, 2020 ISR Meeting to provide images to Alabama Power that FERC may consider in conducting its cumulative effects analysis for soils and geologic resources, specifically erosion and sedimentation. Alabama Power intends to contact Ms. Matthews to obtain copies of these photos.

[8] Accession No. 20200611-5169.

Note: The large-scale maps referenced in the response to Question #10 are not included in this version of the filing due to file size recommendations for eFiling.

Harris relicensing - response to ISR comments

APC Harris Relicensing <g2apchr@southernco.com>

Fri 7/10/2020 6:58 PM

To: 'harrisrelicensing@southernco.com' <harrisrelicensing@southernco.com>
Bcc: 1942jthompson420@gmail.com <1942jthompson420@gmail.com>; 9sling@charter.net <9sling@charter.net>; allan.creamer@ferc.gov <allan.creamer@ferc.gov>; alpeeple@southernco.com <alpeeple@southernco.com>; amanda.fleming@kleinschmidtgroup.com <amanda.fleming@kleinschmidtgroup.com>; amanda.mcbride@ahc.alabama.gov <amanda.mcbride@ahc.alabama.gov>; amccartn@blm.gov <amccartn@blm.gov>; ammcvica@southernco.com <ammcvica@southernco.com>; amy.silvano@dcnr.alabama.gov <amy.silvano@dcnr.alabama.gov>; andrew.nix@dcnr.alabama.gov <andrew.nix@dcnr.alabama.gov>; arsegars@southernco.com <arsegars@southernco.com>; athall@fujifilm.com <athall@fujifilm.com>; aubie84@yahoo.com <aubie84@yahoo.com>; awhorton@corblu.com <awhorton@corblu.com>; bart_roby@msn.com <bart_roby@msn.com>; baxterchip@yahoo.com <baxterchip@yahoo.com>; bboozer6@gmail.com <bboozer6@gmail.com>; bdavis081942@gmail.com <bdavis081942@gmail.com>; beckyrainwater1@yahoo.com <beckyrainwater1@yahoo.com>; bill_pearson@fws.gov <bill_pearson@fws.gov>

1 attachments (143 KB)

2020-07-10 Response to ISR Comments.pdf;

Harris relicensing stakeholders,

On April 10, 2020, Alabama Power filed the Initial Study Report (ISR) along with six Draft Study Reports and two cultural resources documents. Alabama Power held the ISR Meeting with stakeholders and FERC on April 28, 2020. On May 12, 2020, Alabama Power filed the ISR Meeting Summary. Comments on the ISR, draft reports, and ISR Meeting Summary were due on June 11, 2020.

Alabama filed a response to ISR comments with FERC today. The response is attached and can also be found on the relicensing website: www.harrisrelicensing.com under “Relicensing Documents.” Note that the larger scale maps requested by FERC can be found in the HAT 4 – Project Lands folder.

Thanks,

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

APC Harris Relicensing

From: Anderegg, Angela Segars
Sent: Monday, July 13, 2020 8:53 AM
To: Barry Morris
Subject: RE: Harris Relicensing: continuous minimum flow in Tallapoosa River

Hi Barry,

The answer is B – the Green Plan includes pulses *plus* releases for generation needs.

The Green Plan is included in the Downstream Release Alternatives study plan and in the Pre-Application Document (Appendix E). However, the best explanation of how we operate is in a presentation Alan Peeples gave on January 31, 2018. The entire presentation is worth watching; however, the specifics of peaking operations and the Green Plan begins around minute 40 in the video and slide 53 in the powerpoint.

http://harrisrelicensing.com/_layouts/15/start.aspx#/HAT%201%20%20Project%20Operations/Forms/AllItems.aspx

I hope this helps!

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

From: Barry Morris <rbmorris222@gmail.com>
Sent: Saturday, July 11, 2020 10:20 AM
To: Anderegg, Angela Segars <ARSEGARS@southernco.com>
Subject: Re: Harris Relicensing: continuous minimum flow in Tallapoosa River

EXTERNAL MAIL: Caution Opening Links or Files

Your explanation is not confusing, but what I can't grasp is why the CMF plus peak demand generating will not cause the lake level to go lower.

OR, has the dam been doing the 3x10 pulsing *plus* peak demand generating for years and I've not been aware of it? In that case obviously the amount of water thru the dam in CMF is the same, just spaced out throughout the day.

Sorry if my ignorance of the green plan is causing you extra work. Does the company have a concise summary of the green plan that I could use to make me and the LWPOA smarter?

Thanks for your help. Barry

On July 10, 2020, at 8:37 AM, "Anderegg, Angela Segars" <ARSEGARS@southernco.com> wrote:

Hi Barry,

A 150 cfs continuous minimum flow is the same daily volume as the 3- 10 minute pulses currently provided by the Green Plan and does not include any releases for peaking operations. The Green Plan pulses are released through the turbines, so a large volume of water is released over a short period of time each time we pulse. The 150 cfs continuous flow spreads the volume provided by the pulses throughout the day. Also, the 150 cfs would have to be provided through some other mechanism than the turbines because they are not designed to operate at that low flow.

I hope this helps, but if it's still confusing, don't hesitate to give me a call.

Thanks,

Angie Anderegg
Hydro Services
(205)257-2251
arsegars@southernco.com

From: Barry Morris <rbmorris222@gmail.com>
Sent: Thursday, July 9, 2020 12:49 PM
To: Anderegg, Angela Segars <ARSEGARS@southernco.com>
Subject: Harris Relicensing: continuous minimum flow in Tallapoosa River

EXTERNAL MAIL: Caution Opening Links or Files

Angie: I'm trying to write up relicensing notes for the LWPOA membership and I'm still puzzled as to how a 150 CFS continuous minimum flow (equivalent of a day's generation) would not impact the Lake RL Harris water level. Seems to me it would double the amount of water released thru the dam every day and thus *must* lower the lake. What am I missing here?

I can't find anything in the on line documents, but there's a lot there. Could you please have one of your folks send me some sort of explanation, or direct me to a place in the documents where this is spelled out?

Thanks for your help.

Barry Morris
LWPOA
404 449 3452

 Virus-free. www.avg.com [avg.com]
[avg.com]

Attachment 2
Comments and Responses on the Draft Downstream Release Alternatives Phase 1 Report

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
Federal Energy Regulatory Commission (FERC) Note: footnotes included in the original letter have been omitted from this table	6/10/2020 20200610-3059	During the ISR Meeting, Alabama Power requested that stakeholders provide downstream flow alternatives for evaluation in the models developed during Phase 1 of the Downstream Release Alternatives Study. Stakeholders expressed concerns about their ability to propose flow alternatives without having the draft reports for the Aquatic Resources and Downstream Aquatic Habitat Studies, which are scheduled to be available in July 2020 and June 2020, respectively. It is our understanding that during Phase 2 of this study, Alabama Power would run stakeholder-proposed flow alternatives that may be provided with ISR comments, as well as additional flow alternatives that stakeholders may propose after the results for the Aquatic Resources and Downstream Aquatic Habitat Studies are available. Please clarify your intent by July 11, 2020, as part of your response to stakeholder comments on the ISR.	See Alabama Power's response filed July 10, 2020 (Accession No. 20200710-5122).
FERC		According to the approved study plan, the goal of the Downstream Release Alternatives Study is to evaluate the effects of four downstream flow release alternatives on project resources. The four release alternatives are: (1) the Green Plan, or Alabama Power's current pulsing operation; (2) the Pre-Green Plan, or Alabama Power's historic peaking operation; (3) the Pre-Green Plan with a continuous baseflow of 150 cubic feet per second (cfs); and (4) a modified Green Plan. The Phase 1 Report, filed on April 10, 2020, presented complete results for Pre-Green Plan operation and Green Plan operation, partial results for the Pre-Green Plan with a 150-cfs baseflow, and no results for the modified Green-Plan alternative. During the ISR Meeting, Alabama Power requested that stakeholders identify and propose downstream flow release alternatives so that the proposed alternative's effects on environmental resources can be assessed during Phase 2 of the study. To facilitate modelling of downstream flow release alternatives, we recommend that Alabama Power run base flows of 150 cfs, 350 cfs, 600 cfs, and 800 cfs through its model for each of the three release scenarios (i.e., the Pre-Green Plan, the Green Plan, and the modified Green Plan flow release approach). The low-end flow of 150 cfs was proposed by Alabama Power as equivalent to the daily volume of three 10-minute Green Plan pulses. This flow also is about 15 percent of the average annual flow at the United States Geological Survey's flow gage (#02414500) on the Tallapoosa River at Wadley, Alabama, and represents "poor" to "fair" habitat conditions. We recommend 800 cfs as the upper end of the base flow modeling range because it represents "good" to "excellent" habitat and is nearly equivalent to the U.S. Fish and Wildlife Service's Aquatic Base Flow guideline for the Tallapoosa River at the Wadley gage. The proposed base flows of 350 cfs and 600 cfs cover the range between 150 cfs and 800 cfs.	As indicated in the final report and its July 10, 2020 filing, Alabama Power will model the following additional downstream flow scenarios: • A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gage, rather than the current 75%; • A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria; • 300 cfs continuous minimum flow; • 600 cfs continuous minimum flow; and a • 800 cfs continuous minimum flow. These recommended flow release alternatives are in addition to Alabama Power's release alternatives in the FERC-approved Study Plan that include: • Pre-Green Plan (peaking only; no pulsing or continuous minimum flow); • Green Plan (existing condition); • Modified Green Plan (changing the time of day in which the Green Plan pulses are released); and • 150 cfs continuous minimum flow. For additional information about why some proposed alternatives will not be analyzed, see the July 10, 2020 filing.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
		In addition, we recommend that the modeling for Alabama Power's Aquatic Resources Study and Downstream Aquatic Habitat Study, as well as any Phase 2 assessment(s) include all the downstream flow release alternatives identified and evaluated as part of the Downstream Flow Release Alternatives Study. The results of all the modeling for the Aquatic Resources Study and Downstream Aquatic Habitat Study should be included in the final study reports and filed with the Updated Study Report, due by April 12, 2021.	All alternatives will be analyzed in the Aquatic Resources Study and Downstream Aquatic Habitat Study, as well as the Phase 2 analysis.
FERC		The Draft Downstream Release Alternatives (Phase 1) Study Report refers to data sets (e.g., topographic and geometric data on pages 12-13 and 17-19) that were used to develop the models. To assist us in interpreting the models, we recommend including in the final study report a table and/or figure that summarizes all of the data sets used in the models and identifies their spatial extents in terms such as watershed segments, river miles (RMs), and square miles covered by each dataset (as appropriate), with reference to other geographic landmarks (e.g., nearest city, dam, bridge, etc.). Please incorporate into the table and/or figure, the stakeholder- and Alabama Power-identified erosion areas of concern. In addition, please provide the metadata for each data set used.	The final report includes a table and figure to clarify what data are being used, when it was collected and by whom, and the data's geographic extent. However, the table and figure do not include the erosion areas of concern. A synthesis of the HEC-RAS model and other data collected in other studies will occur in the Phase 2 analysis.
FERC		Page 14 of the Draft Downstream Release Alternatives (Phase 1) Study Report includes a description of the HEC-ResSim model that was developed for the project. Harris Dam was modeled in HEC-ResSim with both a minimum release requirement and maximum constraint at the downstream gage at Wadley. The draft report states that the minimum release requirement is based on the flow at the upstream Heflin gage, which is located on the Tallapoosa River arm of Harris Reservoir and has 68 years of discharge records. Page 5 of the draft report indicates that there is also a gage (Newell) on the Little Tallapoosa River Arm of the reservoir, which has 45 years of discharge records. It appears that only the Heflin gage was used in developing the minimum release requirement. As part of your response to stakeholder comments on the ISR, please explain the rationale for basing the minimum releases in the HEC-ResSim model only on the flows at the Heflin gage and not also on the flows at the Newell gage.	See Alabama Power's response filed July 10, 2020 (Accession No. 20200710-5122).
FERC		Pages 15 and 16 of the Draft Downstream Release Alternatives (Phase 1) Study Report, state that the drought indicator thresholds, or triggers, are only evaluated on the 1st and the 15th of every month in the model and that once a drought operation is triggered, the drought intensity level can only recover from drought condition at a rate of one level per "period." Please clarify in the final report if one "period" is equal to 15 days (i.e., the interval for evaluating drought triggers) and if this protocol is used for managing reservoir operations currently, or if it is only a parameter used in the model.	The drought operations have been clarified in the final report.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
Alabama Department of Conservation and Natural Resources (ADCNR) Note: footnotes included in the original letter have been omitted from this table	6/11/2020 20200611-5152	The Downstream Release Alternatives Study as is, presents the results for three downstream release alternatives: Pre-Green Plan operation, Green Plan operation, and Pre-Green Plan operation with a 150 cfs continuous minimum flow. Throughout the document the "Pre-Green Plan operation with a 150 cfs continuous minimum flow", is often referenced as "continuous minimum flow of 150 cfs". When referencing this downstream release alternative in the document it would be helpful to use the full "Pre-Green Plan operation with a 150 cfs continuous minimum flow" to clarify and fully identify the alternative. If a modified Green Plan, details pending, is evaluated with a continuous minimum flow, the addition will assist in differentiating the alternatives.	The addition of five additional alternatives should clarify which alternative is being discussed. Alabama Power has, and will continue, to be consistent with how the alternatives are referenced.
ADCNR		A fourth Modified Green Plan downstream release alternative was included to be evaluated in the initial Study Plan for the Downstream Release Alternatives Study. ADCNR maintains its recommendation for a fourth alternative Modified Green Plan be fully evaluated. Details and design of a Modified Green Plan alternative are pending results from the Aquatic Resources Study. For a complete Downstream Release Alternative Study comparing four release alternatives, the Modified Green Plan alternative should be completed and included in this study or Phase 2. ADCNR requests the opportunity to provide specific recommendations for the Modified Green Plan alternative after assessing all of the planned study reports. ADCNR has consistently stated and provided published peer reviewed references that support recommendations for downstream flows to mimic a natural flow regime with an adaptive management of flows that follows state dissolved oxygen guidelines and provides natural temperature regimes, at all times for the sustained long term benefit and conservation of aquatic species (See ADCNR, P-2628-005 FERC ¶ 20181002-5006).	It is Alabama Power's intent to provide stakeholders 30 days to review, provide comments, and recommend any additional flow analyses based on the information in the draft reports.
ADCNR		On page 1, section 1.0 of the Downstream Release Alternatives Study, replace "However, some stakeholders noted that the temperature of the turbine releases could have potential effects on aquatic resources in the Tallapoosa River below Harris Dam." with "However, some stakeholders noted that the temperature of the turbine releases has documented negative impacts on aquatic resources in the Tallapoosa River below Harris Dam." (See ADCNR, P-2628-005 FERC ¶ 20181002-5006).	Section 1.0 summarizes the Introduction of the Downstream Release Alternatives Study Plan and this sentence was taken directly out of the approved Study Plan. The purpose of the study is to evaluate any effects and the magnitude of identified effects on the resources; therefore, Alabama Power does not feel that the sentence needs to be changed at this time.
ADCNR		On page 2, section 1.1, of the Downstream Release Alternatives Study, change "i.e." to "e.g." It should be "for example" not "that is" if an Aquatic Resources Study is required to evaluate and design the alternative to be studied as stated in footnote of the page. Downstream Aquatic Habitat Study and Recreational Evaluation Study results should be considered as inclusions in the footnote as prerequisites to fully evaluate and recommend an alternative Modified Green Plan to be modeled and evaluated as a downstream release alternative.	This change has been made in the final report.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
ADCNR		On page 21, section 4.3.3 Model Flow Data of the Downstream Release Alternatives Study, ADCNR recommends re-stating that the Modified Green Plan alternative is not included in this model section pending results from additional studies and will be evaluated in Phase 2. This section states why 2001 data was used and presented but does not specify why the date range of 1/1/01-1/31/01 was specifically selected from the entire year data. ADCNR recommends including why this month was selected and providing additional figures similar to Fig. 4-3. showing a months' worth of data at four 1-month intervals covering spring, summer and fall sample portions of hydrographs to fully illustrate model flow data throughout the year.	This has been modified to re-state that the additional alternatives will be evaluated in Phase 2. In addition, the final report includes additional figures to show the hydrographs during each season of the year.
ADCNR		On page 25, section 5.2 of the Downstream Release Alternatives Study, remove the descriptive words "slight" and "worse" when detailing if alternatives will increase or decrease average annual economic costs to Alabama Power customers and provide estimated amount ranges for each alternative. If, "there are currently too many unknowns at this time to generate accurate and reliable Hydro Budget results", please explain how an assumption of whether it will be "same" or "worse" can be made. For comparisons of alternatives, additional details should be provided describing how a Pre-Green Plan peaking operation with a 150 cfs continuous minimum flow, regardless of generation or no generation to produce the minimum flow, would not be a significant economic gain, if not evaluating capital and O&M costs into the equation.	This section has been modified to remove the preliminary analysis that was included in the draft report to reflect that a more robust analysis on hydropower generation will be completed in Phase 2.
ADCNR		On page 27, section 6.0 Conclusions of the Downstream Release Alternatives Study, a space between "results indicate" should be included.	This change has been made in the final report.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
Alabama Rivers Alliance (ARA) Note: footnotes included in the original letter have been omitted from this table	6/11/2020 20200611-5114	The extent to which the Harris project has altered flows of the Tallapoosa River is reflected in comments submitted by the Alabama Department of Conservation and Natural Resources (ADCNR) in 1982, which lament the "loss of 49 percent of the last major free-flowing river habitat…in Alabama." According to the ADCNR's reading of USGS data at the time, flows from the pre-dam period of 1923 to 1972 equaled or exceeded the minimum flow of 45cfs stipulated in Article 13 of the license 100% of the time. Flows of 8,000cfs due to single turbine generation at Harris were equaled or exceeded during that era only 4.4% of the time, and flows of 16,000cfs due to two-unit generation were equaled or exceeded only 1.2% of the time. For decades the Tallapoosa downstream of Harris has weekly experienced flows it otherwise would have seen, on average, roughly eight days out of a given year. This flow regime has not been without consequences. Researchers have documented as much as a 67% reduction in flows than during pre-dam periods, greater instability of day-to-day flow variations, and an increase in very low-flow periods. The flow instability and altered thermal patterns caused by hydropeaking operations have depressed species richness, "influenced fish persistence and colonization," reconfigured the downstream macroinvertebrate community, and created "adverse effects on hydraulic variables such as water velocity, depth, and temperature." As a result of Harris operations, the 14-mile stretch of the Tallapoosa from the dam to Alabama Highway 77 is currently listed by ADEM as a Category 4C waterbody impaired due to hydrologic alteration. And the U.S. Geological Survey's (USGS) Open-File Report from last year indicates "that hydrologic alteration in the river has affected various biological processes." Despite the past decades of disruption, studies performed during the ILP and a reinvigorated adaptive management approach can shape a new framework for creating positive ecological responses below Harris. As the USGS Open-File Report on adaptive management of flows from Harris states, "[i]f flow and thermal alteration from the dam can be modified toward improving natural resource objectives, adaptive management processes and long-term monitoring could further reduce uncertainty related to biotic response to new Federal Energy Regulatory Commission licensing requirements."	Comment noted.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
ARA		A. Wider Variety of Release Patterns Needs to Be Modeled and Considered We appreciate that Licensee was willing fifteen years ago to enter into a collaborative process with stakeholders and to voluntarily operate the Harris project according to an adaptive management plan known as the Green Plan, the purpose of which "was to reduce effects of peaking operations on the aquatic community downstream." The Green Plan was a starting point for adaptive management, but evidence suggests it has not improved conditions for aquatic life. The most recent published literature demonstrates that although "habitat availability for fishes increased under the Green Plan management…improved conditions did not improve recruitment processes for species of interest." Further, "results indicate that the Green plan did not meet the stakeholder objective to restore and maintain macroinvertebrate community composition similar to unregulated reaches within the regulated portions of the river." Since beginning adaptive management and the Green Plan roughly fifteen years ago, no actual adaptation or iteration has occurred. This relicensing and the studies now underway provide an opportunity to iterate, adapt, and improve flows and subsequent impacts on downstream aquatic life, recreation opportunities, erosion and sedimentation, and water quality. In order to make the refinements contemplated by a full adaptive management process, a wide variety of flow scenarios should be studied, and "continuing adaptive management in tandem during the FERC relicensing process would be advantageous to include a specific assessment of long-term objectives of all stakeholders."	Comment noted.
ARA		B. Until Aquatic Resources and Aquatic Habitat Study Reports Are Available, It Is Premature to Ask Stakeholders to Specify All Flow Alternatives to Model Commenters, stakeholders, and FERC staff have encouraged Licensee to examine a broad range of flows throughout the ILP. Currently, licensee is studying two possibilities other than its current flow regime and its prior flow regime. The Draft Downstream Release Alternatives Phase 1 Report filed by Licensee assesses impacts to operational parameters (e.g., generation, reservoir levels, flood control) under three flow scenarios: (i) the current Green Plan pulsing regime that has been in effect since 2005 through a voluntary adaptive management process; (ii) the pre-Green Plan regime with no intermittent flows between peaks, which occurred from 1983 to 2004; and (iii) a continuous minimum flow of 150cfs, which is the equivalent daily volume of the current Green Plan pulses and has never been physically implemented and studied.	Comment noted.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
		A fourth release scenario, the alternative/modified Green Plan, will be evaluated in Phase 2 of the study, once results from the Aquatic Resources Study are available to shape the design of an altered Green Plan. The two alternatives that have never been implemented—a continuous minimum flow of roughly an equivalent volume and altering the timing of the existing Green Plan releases— are effectively different flavors of the existing release scheme, though studying those modifications may yield important insights into improving flows. The summary of the Initial Study Report meeting reflects that Licensee desires "to hear from stakeholders now" regarding alternative flow scenarios stakeholders would like to have modeled, despite no draft Aquatic Resources Study or Aquatic Habitat Study reports being available. The downstream release alternatives, aquatic resources, water quality, and aquatic habitat reports are all deeply interrelated, and without at least draft reports of the fisheries studies, stakeholders should not be required to propose alternative flow scenarios until more information is available. Indeed, Licensee itself acknowledges that the results from the Aquatic Resources Study are needed to design the fourth flow scenario it plans to model. Those same results will also inform what variety of inputs stakeholders suggest. In fact, the logical time to propose additional flow scenarios is after Licensee has "analyze[d] the effects of each downstream release alternative on other resources, including water quality… downstream aquatic resource (temperature and habitat), wildlife and terrestrial resources, threatened and endangered species, recreation, and cultural resources," which will be accomplished by Phase 2 of the study. At a minimum, stakeholders should be equipped with the draft fisheries studies showing the current status of aquatic resources before being required to list all alternative flows to be studied.	
ARA		C. Preliminary Proposals for Additional Flow Modeling and Study Modification Request However, ARA understands that the modeling of additional flows takes time and effort, and Licensee has made clear that it would like to have as much stakeholder input as to various flows to model as soon as possible. While reserving the right to request other release alternatives be considered once more information is made available to stakeholders, ARA proposes the following study modification request pursuant to 18 C.F.R. § 5.15(d) for additional flow scenarios be analyzed as part of the Downstream Release Alternatives Study: (i) A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin streamgage, rather than the current 75%;	As indicated in the final report and its July 10, 2020 filing, Alabama Power will model the following additional downstream flow scenarios: • A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gage, rather than the current 75%; • A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria; • 300 cfs continuous minimum flow; • 600 cfs continuous minimum flow; and a • 800 cfs continuous minimum flow.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
		(ii) A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria; (iii) A constant but variable release that matches the flow at the USGS Wadley streamgage to the UGSG Heflin streamgage to mimic natural flow variability; and (iv) 300cfs and 600cfs minimum flows. Some of these flows, particularly items (iii) and (iv) may have been modeled internally by Licensee as part of the original adaptive management process; however, those models are not currently available as part of this relicensing. Studying a wider range of potential flows during the ILP could result in improved diversity and abundance of aquatic life and habitat, more recreation opportunities, decreased erosion and sedimentation, and gains in water quality.	These recommended flow release alternatives are in addition to Alabama Power's release alternatives in the FERC-approved Study Plan that include: • Pre-Green Plan (peaking only; no pulsing or continuous minimum flow); • Green Plan (existing condition); • Modified Green Plan (changing the time of day in which the Green Plan pulses are released); and • 150 cfs continuous minimum flow. For additional information about why some proposed alternatives will not be analyzed, see the July 10, 2020 filing.
Environmental Protection Agency (EPA)	6/12/2020 20200612-5025	Section 4.2: Study Progress of the ISR, states …" In evaluating the 150 cfs minimum flow alternative, there are too many unknowns at this time to generate reliable/accurate HydroBudget results; however, if the 150 cfs minimum flow is provided through a non-generation mechanism, the impact to hydropower generation will be the same or slightly worse than the impact from Green Plan operations. …" EPA would like to request clarification or supporting information regarding this conclusion.	Although this comment refers to the Initial Study Report, the section in the Downstream Release Alternatives Report has been modified to remove the preliminary analysis that was included in the draft report to reflect that a more robust analysis on hydropower generation will be completed in Phase 2.
EPA		Section 4.4: Remaining Activities does not include any follow-up to address these unknowns described in Section 4.2. Minimum flows are likely to have a significant impact on aquatic life resources, which will be evaluated in Phase 2. EPA recommends against making assumptions that minimum flows will have an adverse impact if the data is not ample enough to make that conclusion. For instance, quantifying the impact could result in finding that they are minor or negligible as compared to the Green Plan. EPA recommends that a Remaining Activity be added to gather the information needed to quantify the impacts.	Although this comment refers to the Initial Study Report, the section in the Downstream Release Alternatives Report has been modified to remove the preliminary analysis that was included in the draft report to reflect that a more robust analysis on hydropower generation will be completed in Phase 2.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
EPA		FERC and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to 150 cfs and why an option was not presented to model the Green Plan with minimum flows. EPA raised the same concerns and would like to recommend the addition of a scenario that includes a minimum flow for the Green Plan.	Alabama Power declines the recommendation to study all of the continuous minimum flows combined with the Green Plan. Alabama Power asserts that modeling one combination of a continuous minimum flow AND pulsing (the hybrid Green Plan listed above) is adequate to determine the effect of this downstream release alternative on Project operations and other resources. The eight alternatives Alabama Power will model will provide sufficient information to evaluate the resources of interest, determine any downstream release proposals, and determine protection, mitigation, and enhancement (PM&E) measures to be incorporated into the new license for the Project.
EPA		In question 7 by EPA: Alabama Power responded that the flows would be set without variation or modification throughout the term of the license. EPA would like to provide another resource (supported by the US Department of Energy, 2020) that could improve the study results by comparing models used in this Multi-model research: *Multi-model Hydroclimate Projections for the Alabama-Coosa-Tallapoosa River Basin in the Southeastern United States https://www.ornl.gov/publication/multi-model-hydroclimate- projections-alabama-coosa-tallapoosa-river-basin-southeastern* This research focuses on the project area and includes relevant information and data that could be used for Alabama's study. Efforts to adaptively managing flows would allow Alabama Power to respond to changing conditions or new information within the system.	Comment noted.

Commenting Entity	Date of Comment & FERC Accession Number	Comment on Draft Downstream Release Alternatives Phase 1 Study Report	Alabama Power Response
EPA	6/12/2020 20200612-5079	During the April 29, 2020, Initial Study Report meeting, Federal Energy Regulatory Commission (FERC) and Alabama Rivers Alliance submitted questions asking why modelling of downstream releases were limited to the Green Plan, Pre-Green Plan, and Pre-Green Plan with 150 cfs minimum flow. Questions were also asked as to why only the 150 cfs minimum flow was selected. Multiple questions were asked about the possibility of having an option of the Green Plan with a minimum flow. Further, Alabama Power suggested that any requests for additional flow scenarios be submitted as soon as possible before phase 2 starts. The EPA requests that the flow scenarios include the evaluation of an option including both the pulses of the Green Plan with a minimum flow, and a higher minimum flow. The 150 cfs minimum flow was selected based upon the volume of water used for the Green Plan, as opposed to an analysis based upon protective minimum flows for aquatic life.	As indicated in the final report and its July 10, 2020 filing, Alabama Power will model the following additional downstream flow scenarios: • A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gage, rather than the current 75%; • A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria; • 300 cfs continuous minimum flow; • 600 cfs continuous minimum flow; and a • 800 cfs continuous minimum flow. These recommended flow release alternatives are in addition to Alabama Power's release alternatives in the FERC-approved Study Plan that include: • Pre-Green Plan (peaking only; no pulsing or continuous minimum flow); • Green Plan (existing condition); • Modified Green Plan (changing the time of day in which the Green Plan pulses are released); and • 150 cfs continuous minimum flow. For additional information about why some proposed alternatives will not be analyzed, see the July 10, 2020 filing.
EPA		Additionally, EPA requests the inclusion of both adaptively managed flow scenarios and adaptive management as an outcome. The state-of-the-science on environmental flows includes adaptive management as a key feature for the protection of aquatic life. The evaluation could examine how monitoring would be used to evaluate the success of the flows, and any potential adjustments that may be needed over time. The EPA submitted resources that supports this request in March 2019.	It is premature in the relicensing process to determine protection, mitigation, and enhancement (PM&E) measures. If study results show that the downstream resources could benefit from an adaptive management process, Alabama Power may consider evaluating adaptive management as a PM&E measure along with other potential PM&E measures.

Attachment 3
Final Downstream Release Alternatives Phase 1 Report

Downstream Release Alternatives

Phase 1 Report

R.L. Harris Hydroelectric Project

FERC No. 2628

HARRIS DAM RELICENSING

Prepared by:

Alabama Power Company

and

Kleinschmidt Associates

July 2020

Alabama Power

Kleinschmidt

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Alabama Power Company (Alabama Power) owns and operates the R.L. Harris Hydroelectric Project (Harris Project), licensed by the Federal Energy Regulatory Commission (FERC or Commission) (FERC Project No. 2628). The Harris Project consists of a dam, spillway, powerhouse, and those lands and waters necessary for the operation of the hydroelectric project and enhancement and protection of environmental resources.

Alabama Power began operating the Harris Project in 1983. Initially, the Harris Project operated in peaking mode with no intermittent flows between peaks. Agencies and non-governmental organizations requested that Alabama Power modify operations to potentially enhance downstream aquatic habitat. In 2005, based on recommendations developed in cooperation with stakeholders, Alabama Power implemented a pulsing scheme for releases from Harris Dam known as the Green Plan (Kleinschmidt 2018a). The purpose of the Green Plan was to reduce the effects of peaking operations on the aquatic community downstream. Although Green Plan operations are not required by the existing license, Alabama Power has operated Harris Dam according to its guidelines since 2005. A copy of the Green Plan Release Criteria is provided in Appendix B.

The purpose of the Green Plan was to, within the physical and regulatory limits of the plant and equipment, reduce the effects of various hydropower operations on the downstream aquatic and environmental resources. From 2005 to 2017, the Alabama Cooperative Fish and Wildlife Research Unit (ACFWRU) conducted monitoring of shallow-water fish and benthic macroinvertebrate communities which has indicated a positive fish community response and increased shoal habitat availability (Irwin et al. 2011). However, some stakeholders noted that the temperature of the turbine releases could have potential effects on aquatic resources in the Tallapoosa River below Harris Dam.

1.1 Study Background

Alabama Power is using the Integrated Licensing Process (ILP) to obtain a new license for the Harris Project from FERC. During stakeholder one-on-one meetings and at an October 19, 2017 Issue Identification Workshop, stakeholders requested that Alabama Power evaluate Green Plan releases compared to the pre-Green Plan peaking flows. Stakeholders also commented that alternative downstream release scenarios should be evaluated as

part of the relicensing process. On November 13, 2018, Alabama Power filed ten proposed study plans for the Harris Project, including a study plan for downstream release alternatives. FERC issued a Study Plan Determination on April 12, 2019, which included FERC staff recommendations. Alabama Power incorporated FERC's recommendations and filed the Final Study Plans with FERC on May 13, 2019.

Alabama Power formed the Harris Action Team (HAT) 1 to evaluate downstream release alternatives in the Tallapoosa River downstream of Harris Dam. Alabama Power held a HAT 1 meeting on September 11, 2019, to discuss the models, the methods, and the model inputs and outputs (how the model will be used) for the Downstream Release Alternatives Study.

Based on stakeholder input, the Downstream Release Alternatives Study evaluates the effects of pre- and post-implementation of the Green Plan operations, a continuous minimum flow of 150 cfs (which is roughly the equivalent daily volume of three ten-minute pulses), and an alternative/modified Green Plan operation[1] (e.g., changing the time of day in which Green Plan pulses are released) on Harris Project resources. In addition to these four alternatives, Alabama Power will also evaluate:

- A variation of the existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gauge, rather than the current 75%;
- A hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria;
- 300 cfs continuous minimum flow;
- 600 cfs continuous minimum flow; and a
- 800 cfs continuous minimum flow.[2]

[1] The alternative/modified Green Plan operation downstream release alternative will be evaluated as part of Phase 2. Results from the other three scenarios as well as from the Downstream Aquatic Habitat Study, Aquatic Resources Study, and Recreation Evaluation Study are needed to design the alternative to be studied.

[2] Due to the timing of receiving the requests to evaluate these alternatives, impacts to existing operational parameters, including reservoir levels, hydropower generation, flood control, navigation, and drought operations will be included in the Phase 2 Report.

This study is being conducted in two phases. In Phase 1, Alabama Power has used models developed in other Harris Project FERC-approved relicensing studies and conducted modeling simulations using specific methods, tools, and processes (as described in the FERC-approved Study Plan) to evaluate impacts to existing operational parameters, including reservoir levels, hydropower generation, flood control, navigation, and drought operations. In Phase 2, Alabama Power will analyze the effects of each downstream release alternative on other resources, including water quality, water use, erosion and sedimentation (including invasive species), downstream aquatic resources (temperature and habitat), wildlife and terrestrial resources, threatened and endangered species, recreation, and cultural resources. This report describes the results of Phase 1 of this study.

2.0 GEOGRAPHIC SCOPE AND MODEL BOUNDARIES

The FERC-approved geographic scope (i.e., the study area) of this study corresponds with the physical area and/or resources influenced by the proposed operational change, which may or may not be consistent with the Harris Project boundary. The Harris Project operations have direct, indirect, and potential cumulative effects on Harris Lake and downstream Tallapoosa River resources. The area of project influence is the Harris Reservoir and Tallapoosa River downstream of Harris Dam through Horseshoe Bend. Because the Alabama-Coosa-Tallapoosa (ACT) is operated as a system and is set up as such in the various models, the impacts of the release alternatives on operational parameters must be evaluated accordingly. The geographic scope of analyses for each operational parameter for Phase 1 is listed in Table 2-1. Section 2.1 describes the model boundaries, which represent a physical area included in the various models used in the study.

TABLE 2-1 SUMMARY OF OPERATIONAL PARAMETERS, GEOGRAPHIC SCOPE, AND RATIONALE

OPERATIONAL PARAMETER	GEOGRAPHIC SCOPE	RATIONALE
Harris Operating Curve	Harris Reservoir	Effects on Harris Reservoir levels
Hydropower Generation	Alabama Power's Coosa and Tallapoosa Projects	Effects on hydropower generation would impact system-wide operations
Flood Control	Lake Harris and Harris Dam to Montgomery Water Works	Model parameters are set to evaluate flood operation effects to Montgomery Water Works
Navigation	ACT Basin	Model parameters are set to evaluate effects on the ACT Basin per the USACE Master Water Control Manual
Drought Operations	ACT Basin	Model parameters are set to evaluate effects on the ACT Basin per the USACE Master Water Control Manual

2.1 Model Boundaries

The following sections describe the ACT river basin as used in the various models used in this study. The ACT network extends from Carters Dam and Allatoona Dam, both upstream of Alabama Power's hydroelectric projects on the Coosa River, and from Harris Dam, on the Tallapoosa River, to the tailwater of Claiborne Lock and Dam on the Alabama River. Regulation in the upper portion of the basin is provided by Carters and Allatoona Dams. The middle of the watershed is represented by eleven Alabama Power hydroelectric projects on the Coosa and Tallapoosa Rivers. The three additional federal projects on the Alabama River were also included where needed in the models.

2.1.1 TALLAPOOSA RIVER

2.1.1.1 HARRIS RESERVOIR

The Harris Reservoir extends up the Tallapoosa River 29 miles from Harris Dam, which is located at River Mile (RM) 136.7 of the Tallapoosa River, with an arm also extending up the Little Tallapoosa River. There are no other major impoundments upstream of Harris Dam. There are two operating United States Geological Survey (USGS) gages upstream of Harris Dam. The Heflin gage (No. 02412000; located approximately 26 miles upstream of Harris Dam) has sixty-eight years of discharge and stage data. The Newell gage (No. 02413300; located 35.5 river miles upstream of the confluence of the Little Tallapoosa and Tallapoosa Rivers) has forty-five years of daily average discharge and stage data. Harris Reservoir receives inflows from approximately 1,454 square miles of drainage.

2.1.1.2 HARRIS DAM TO MARTIN POOL

The Tallapoosa River below Harris Dam (RM 136.7[3]) is an upper basin type stream with steep slopes and narrow floodplains that include rapids. It also contains two currently operating USGS gage sites, the Wadley (No. 02414500; RM 122.79) and Horseshoe Bend (No. 02414715; RM 93.7) gages. The Wadley gage has ninety-seven years of daily flow and stage data and Horseshoe Bend has thirty-five years of daily flow and stage data. The stream channel is characterized by rock outcrops and a few sand bars. The stream is

[3] River miles in this report are consistent with the georeferenced locations in the models used for the study. This resulted in slightly different river mile values than were referenced in the Harris PAD, which were based on USACE stream mileage tables.

crossed by four highway bridges and two railroad bridges. The most populated community along this reach of the Tallapoosa River is the City of Wadley at RM 122.97. This free-flowing reach of the Tallapoosa River ends at the Martin Dam Project (FERC No. 349) reservoir near RM 88.0.

2.1.1.3 MARTIN RESERVOIR

The Martin Reservoir ranges from RM 88 to the Martin Dam at RM 60. The primary purpose of Martin Dam is hydropower generation. The Martin Reservoir receives inflows from the Tallapoosa River, representing 2,131 square miles of drainage, and local inflows from an additional 853 square miles of tributaries that flow directly into the lake.

2.1.1.4 YATES AND THURLOW RESERVOIRS

The Yates and Thurlow Project (FERC No. 2407) Dams impound the Tallapoosa River from RM 60 to RM 49.7, with the Yates pool backing up to the toe of Martin Dam. Thurlow Dam is the most downstream dam on the Tallapoosa River. These dams are located at the base of the fall line of the Tallapoosa basin. These reservoirs provide very minimal storage and simply generate power from releases at Martin Dam along with local inflows and are operated at constant levels, except during major floods. During some periods, the local inflows to these lakes are sufficient to satisfy downstream minimum flow requirements. Yates Reservoir receives inflows from approximately 3293 square miles of drainage and Thurlow Reservoir receives inflows from approximately 3308 square miles of drainage.

2.1.1.5 LOWER TALLAPOOSA RIVER

The reach of river below Thurlow Dam is a free-flowing system that enters the alluvial plain with widening floodplains and much flatter slopes. This reach of the Tallapoosa River contains approximately forty-nine miles of stream and is crossed by at least three major road bridges. Alabama Highway 229 crosses at RM 39.8; a county road bridge crosses the river at RM 18.5; and U.S. Highway 231 crosses the river at RM 9.8 and is a four-lane highway. Three USGS gage sites have data on this reach. The Tallassee (RM 47.98) gage (No. 02418500) is approximately one mile downstream of Thurlow Dam. The Milstead gage (No. 02419500) is located on the Alabama Highway 229 Bridge (RM 39.8), and the most downstream gage on the Tallapoosa River is located at the Montgomery Water Works plant (No. 02419890) at RM 12.9. A major pipeline crosses the river at RM 48.99

and the reach from the tailwaters of Thurlow to just below the pipeline remains relatively steep. The entire Tallapoosa River basin is approximately 4,687 square miles.

2.1.2 ALABAMA AND COOSA RIVERS

The Tallapoosa and Coosa Rivers merge near Montgomery to form the Alabama River. Drainage area of the Coosa, at its mouth, is approximately 10,161 square miles and the Tallapoosa is 4,675 square miles at its mouth. Therefore, the Coosa River has the greatest influence on the total flows in the Alabama River with 68 percent of the drainage area. Flows from the Coosa enter the Alabama River from two sources, Jordan and Bouldin Dams. Jordan Dam was constructed on the mainstem of the Coosa River and Bouldin Dam is a diversion lake with hydroelectric power facilities that simply draw flows from Jordan Reservoir. Jordan Dam is 19 miles upstream of the confluence of the Coosa and Tallapoosa rivers. The Alabama River flows from Montgomery west to converge with the Tombigbee River forming the Mobile River. The USACE's Robert F. Henry Lock and Dam on the Alabama River at RM 245.4, is located approximately 69 miles downstream of the confluence of the Tallapoosa and Coosa Rivers. Two USGS gages are located on the Alabama River in this 69-mile reach. These gages are identified as the "near Montgomery gage" (No. 02420000) at RM 287.7 and the "Montgomery gage" (No. 02419988) at RM 296.9.

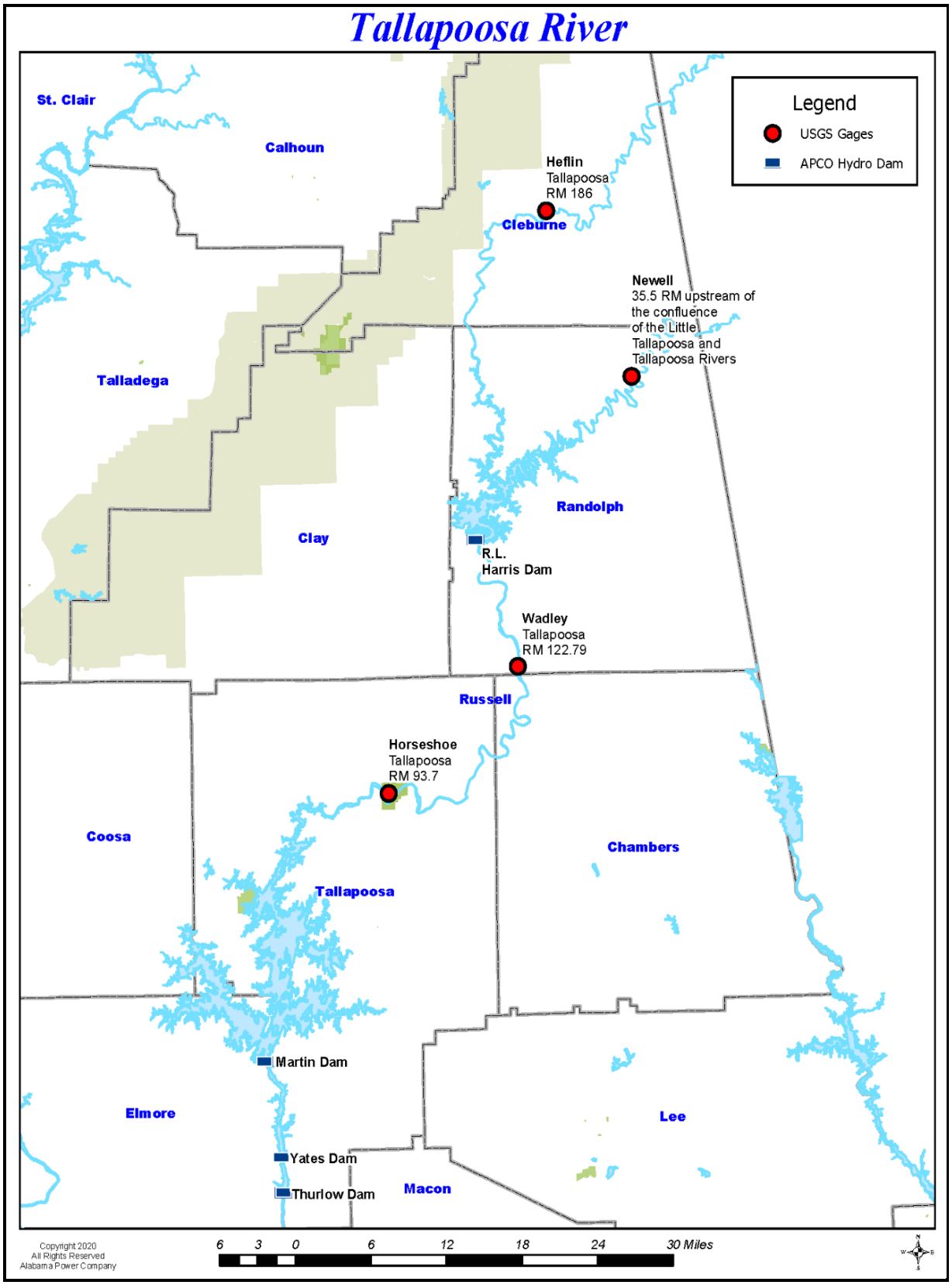


FIGURE 2–1 TALLAPOOSA RIVER MAP

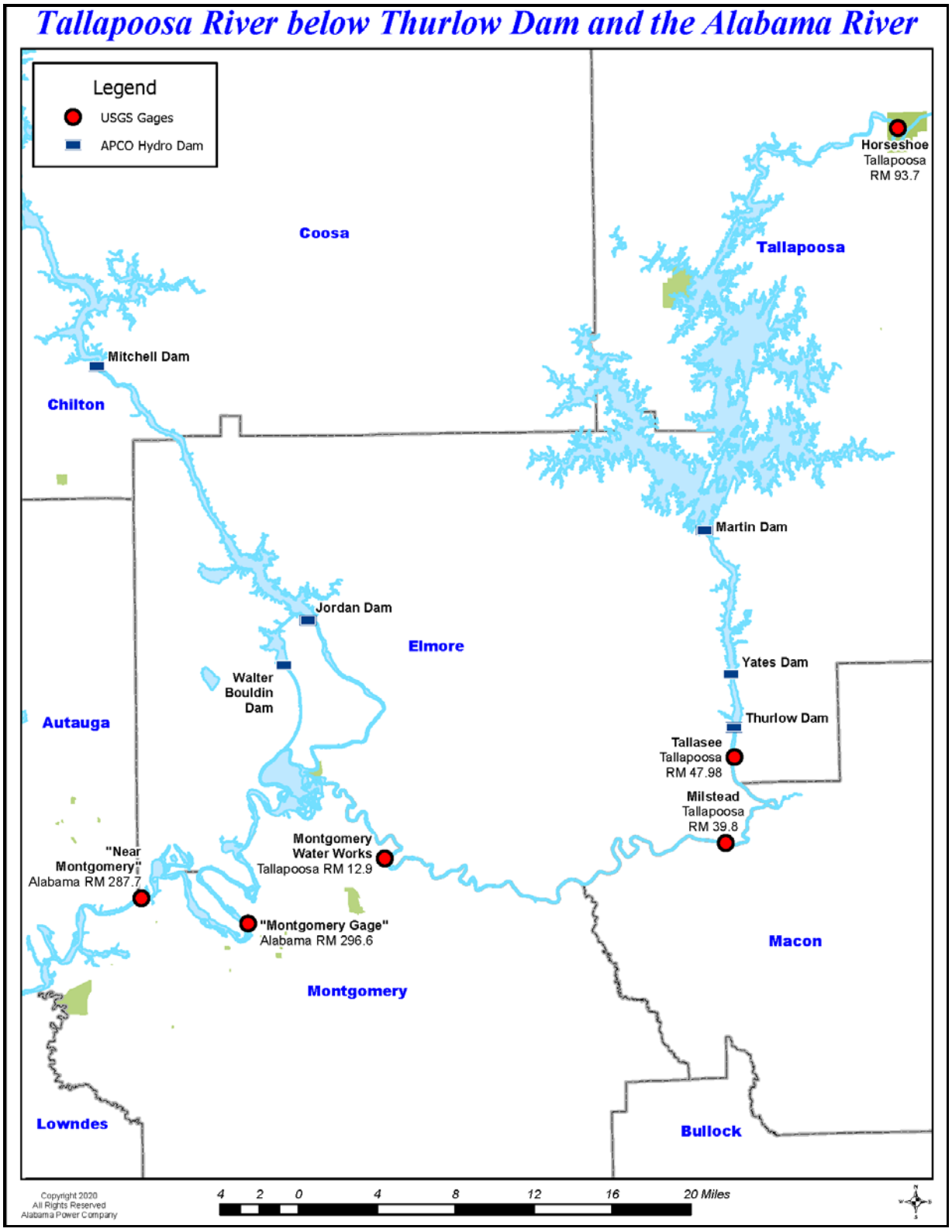


FIGURE 2–2 MAP OF THE TALLAPOOSA RIVER BELOW THURLOW DAM AND THE ALABAMA RIVER

3.0 MODEL SUMMARY

3.1 Overview

Study methods included using existing data (hydrologic record and baseline information) in order to develop the appropriate simulation models to conduct the analysis of the downstream release alternatives. The primary tool for this study is HEC-River Analysis System (HEC-RAS); however, Alabama Power used other HEC models to address the effects of downstream release alternatives.

Impacts to the Harris Project were evaluated by modeling the current operations combined with each downstream release alternative through the daily HEC-Reservoir Simulation Model (HEC Res-Sim) for the ACT basin. During Phase 2 of this study, the outflow hydrographs from HEC-ResSim will be routed downstream using HEC-RAS to assess effects on Project resources.

Alabama Power used the following data and models to conduct the analysis of the downstream release alternatives.

DATA

1. Alabama-Coosa-Tallapoosa (ACT) unimpaired flow database – this database was developed by the USACE with input and data from other stakeholders in the ACT comprehensive study, including both the states of Georgia and Alabama, Alabama Power, and others. The unimpaired flow data set that served as a basis for the 2010 critical yield analysis for the ACT Basin included data for the period from 1939 through 2008. Subsequently, the unimpaired flow dataset has been extended through 2011[4]. This dataset includes average daily flows from 1939 – 2011 with regulation influences removed.

2. Other data – Other data sources include daily and hourly USGS, USACE, and Alabama Power records.

[4] Although when developing the study plan Alabama Power anticipated the dataset to include the years 1939-2016, the unimpaired dataset provided by the USACE includes 1939-2011.

MODELS

1. HEC-River Analysis System (HEC-RAS) – This hourly time step model was used to route flows in the unsteady state[5] along the river. This model will be used to assess effects of alternative release scenarios on boatable days, wetted perimeter, and temperature. During Phase 2, model inputs will also include data from other ongoing studies.

2. HEC-ResSim – This model was used, on a daily timestep, to evaluate the ability of Alabama Power to maintain the operating curve at the Harris Reservoir under the various downstream release alternatives. In Phase 2 of this study, this model will look at, if applicable, operational changes at the Harris Project in conjunction with operating curve changes on an hourly timestep. It will focus on the hourly flood study operations. This model, in conjunction with the HEC-RAS model, will show impacts, if applicable, to the Martin Dam Project operations.

3. HEC-Data Storage System and Viewer (HEC-DSSVue) – This is the USACE's Data Storage System, which is designed to efficiently store and retrieve scientific data that is typically sequential. Data in HEC-DSS database files can be graphed, tabulated, edited, and manipulated with HEC-DSSVue. This program was used to display some of the output of the other HEC models.

4. Alabama Power Hydro Energy (HydroBudget) Model – This model is a proprietary daily model that is used to evaluate the net economic gains or losses that could result from downstream flow alternatives at the Harris Project.

[5] In hydraulic modeling, simulations run in the unsteady state consider the variance of flow with respect to time.

4.0 MODEL DEVELOPMENT

The respective models summarized in Section 3.0 were developed to analyze the impacts of the downstream release alternatives on operational parameters and other resources. This section discusses how the models were developed, calibrated, and/or verified.

4.1 Data Sources and Descriptions

4.1.1 HYDROLOGIC DATA

Hydrologic data was collected in the form of stream flow historic records at established gage sites. This included Alabama Power's records of releases from its dams, the ACT unimpaired flow data, and USGS published flow records at its established gage sites. Due to the extensive stream gage data, determination of runoff hydrographs from rainfall records was not necessary. For long term evaluations, average daily flows primarily from the ACT unimpaired flow data were utilized; and, for short term evaluations, hourly flows were used. Records at some gage sites only contained average daily flows. Hourly flows were interpolated at these sites by combining the average daily flows with the estimated instantaneous peak values.

4.1.2 HYDRAULIC DATA

Hydraulic data consisted of stream gage historical stage records, highwater marks during flood events, spillway and gage ratings at the dams, and gate operation schedules for the respective structures. Seasonal reservoir levels for Harris and Martin were represented by the published flood control guide curves.

4.1.3 TOPOGRAPHIC AND GEOMETRIC DATA

The channel geometry of the Tallapoosa River in the HEC-RAS model was represented using data collected during bathymetric surveys of channel cross sections between RM 136.7 and RM 88.0. The overbank geometry (i.e., the area outside of the main river channel) was represented using LiDAR data. Bathymetry data from RM 136.7 to RM 123.0 was collected by survey during two different field efforts in 1999 and 2003. The 1999 surveying effort was completed by Sublett Surveying, LLC and extended from RM 136.7

to RM 130. The 2003 surveying effort was completed by Alabama Power and extended from approximately RM 130 to RM 123. Trutta Environmental Solutions collected bathymetry data for the reach of the Tallapoosa between Wadley and the Martin reservoir in 2019 using two different survey methods. In areas with sufficient depth for boating, a Global Positional System (GPS)/Global Navigation Satellite System (GNSS) rover antenna (Trimble R10) mounted above an 200 kHz echosounder (CEE-LINE, CEE Hydrosystems) was mounted to a kayak and used to collect river bottom elevations at 1-second intervals as the surveyor paddled in a path across the river channel perpendicular to the flow. In areas where there was insufficient depth for boating, the GPS/GNSS rover antenna was mounted on a 2-meter survey rod and river bottom elevations were collected manually at approximately 10-foot intervals in a path across the river channel perpendicular to the flow. The average horizontal and vertical accuracy of these survey data was 0.08 feet and 0.15 feet, respectively. A total of 120 bathymetric cross sections between Wadley and the Martin reservoir were surveyed. Additionally, in January 2006, Alabama Power contracted Lasermap Image Plus to collect LiDAR and imagery for the reach of the Tallapoosa River from just below Tallassee to the Montgomery Water Works, and, in 2018, contracted EagleView to collect LiDAR and imagery for the Tallapoosa River downstream from Harris Dam through Horseshoe Bend. Table 4-1 provides summary metadata of the sources of elevation used for the Tallapoosa River bathymetry and overbank areas. Figure 4-1 shows the extent of each dataset in relation to the Tallapoosa River.

TABLE 4-1 ELEVATION SOURCES' METADATA

DATA SOURCE	DATE COLLECTED	RM LOCATION IN MODEL	DISTANCE / AREA COVERED	USAGE IN HEC-RAS MODEL
Sublett Surveying, LLC	1999	136.7 to 130.0	6.7 miles	Channel Bathymetry
Alabama Power	2003	130.0 to 123.0	7.0 miles	Channel Bathymetry
Trutta Environmental Solutions	2019	123.0 to 88.0	35.0 miles	Channel Bathymetry
EagleView	2018	136.7 to 88.03	185 square miles	Overbank Terrain

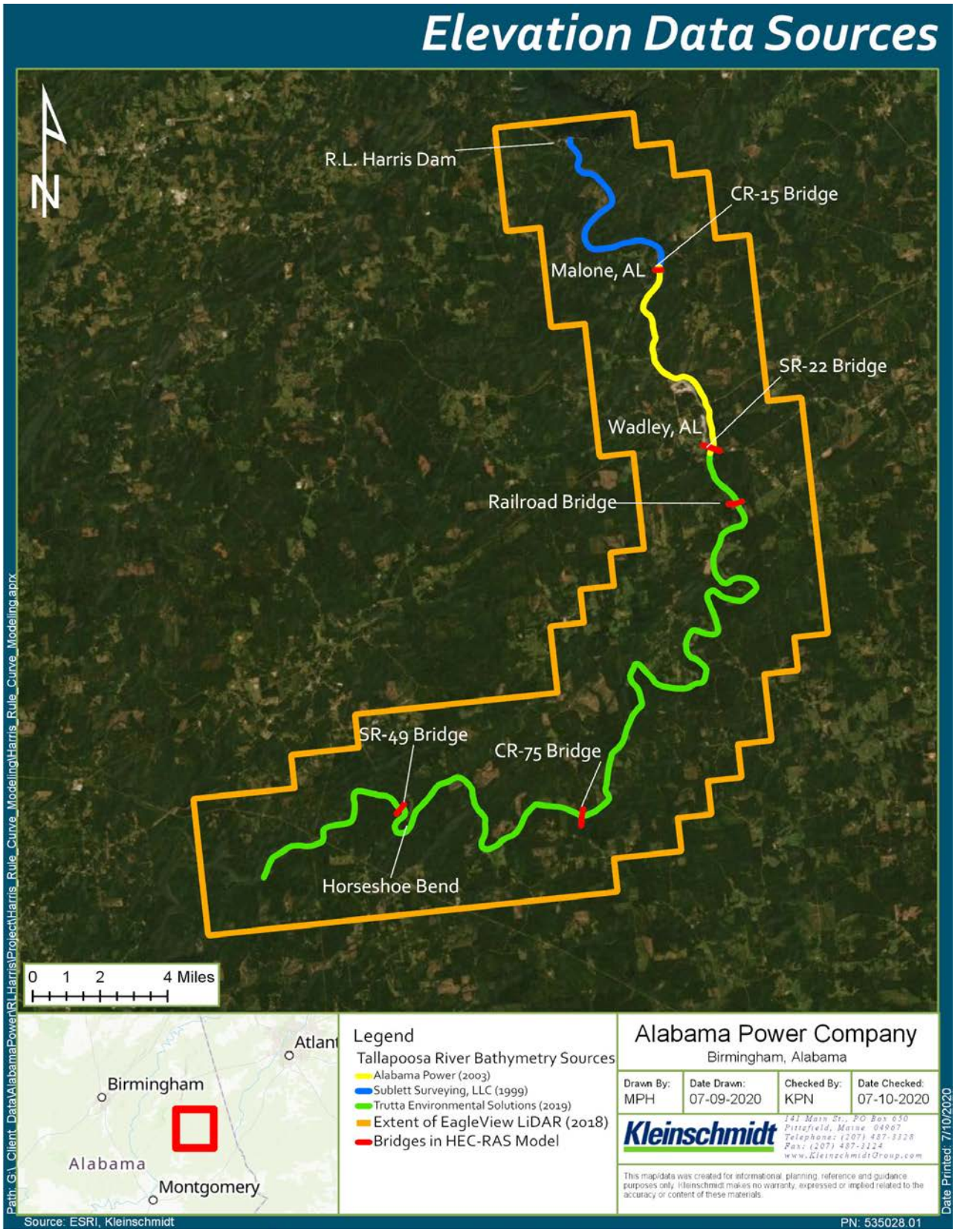


FIGURE 4–1 EXTENTS OF ELEVATION DATA SOURCES

In HEC-RAS, cross sections were drawn along the river at each location where a bathymetric cross section was collected. The data from the bathymetric cross section was imported into the model for each cross section, and LiDAR data was used for areas outside of the stream channel. Combining both datasets provided accurate representations of the terrain for the entire cross section. Dimensions of the four highway bridges spanning the Tallapoosa River between Harris Dam and Martin Reservoir were obtained from engineering drawings from the Alabama Department of Transportation. Drawings for a railroad bridge located at RM 120.9 were not available; thus, its dimensions were estimated using aerial photos and LiDAR data.

4.2 HEC-ResSim Daily Model

The ACT HEC-ResSim model was initially developed in conjunction with USACE to replace the HEC-5 model of the basin. To calibrate the HEC-ResSim model, the HEC office and USACE Mobile District entered conditions from 1977, 1995, and 2006 in both HEC-ResSim and HEC-5. Adjustments were made to the model and network until the ResSim model was able to reproduce the HEC-5 results. Working with the USACE Mobile District and HEC office, a reservoir network was developed that contained current physical and operational rules for each project in the ACT basin. The ACT reservoir network, described in Section 2.0, was further refined during the recent WCM update process. Version 3.4.1 of HEC-ResSim was used to simulate the current operations, providing a baseline condition in the model.

The ACT unimpaired flow database was used for flow data from 1939 through 2011[6]. These data include inflow and diversions for junctions in the network, along with evaporation for each reservoir. A daily time step was used in the model, which limits some operational flexibility when compared to an hourly model but allows for many alternatives to be evaluated over a long simulation period.

Harris Dam is modeled in HEC-ResSim with both a minimum requirement and a maximum constraint at the downstream gage at Wadley. This maximum limit can be exceeded when Harris Reservoir is in flood control operations and follows the induced surcharge function. There is also a minimum release requirement based on the flow at the upstream gage of Heflin. A power generation rule applies during normal and flood operations. The project

[6] Although when developing the study plan Alabama Power anticipated the dataset to include the years 1939-2016, the unimpaired dataset provided by the USACE includes 1939-2011.

is operated in tandem with the downstream reservoir, Martin, for minimum flow operations when the pool is not being operated for flood control.

4.2.1 OPERATIONAL FEATURES

4.2.1.1 MINIMUM FLOW OPERATIONS

The reservoir network defined by the Mobile District and Alabama Power includes the current operations for all the reservoirs in the basin as best captured by a daily model. Downstream flow requirements were included in the network. To meet these requirements, the storage projects on each river act as a system. On the Tallapoosa River, Harris and Martin work in tandem to provide the Thurlow minimum flow requirement. On the Coosa River, Logan Martin, in tandem with Weiss and H. Neely Henry developments, operates through the run-of-river reservoirs to meet the flow requirement at Jordan Dam. For each of these river systems, the projects release water based on maintaining an approximately equal percentage of available storage at each project. The downstream flow requirement does include the intervening flows between the storage project discharge and the flow requirement location so that reservoir releases may be less than the measured downstream required flows.

The minimum flow requirement at Thurlow is included in the model as an operational rule at Martin, which Harris also supports by operating in tandem with Martin. This is because Yates and Thurlow are entered as flow-through projects with no operational rules, that is, the flow that enters the project also exits. The flow rule is programmed to allow a cutback during drought conditions. Depending on the month and drought intensity, the minimum flow requirement ranges from 1,200 cfs to 350 cfs. Flows at the Tallassee gage were found to meet or exceed 350 cfs for the entire period of record.

There are two minimum flows modeled at Harris Dam - a minimum flow of 45 cfs at Wadley and a release based on the previous day's Heflin flow, representing the Green Plan. The downstream minimum flow at Wadley is met with a with a flow rule of 45 cfs measured at Wadley throughout the entire year. The Green Plan is represented by a daily minimum release from Harris Dam based on the previous day's flow at the Heflin gage. The required release ranges from 85 cfs, when Heflin flows are less than 50 cfs, to 1,067 cfs, when Heflin flows are 900 cfs or higher. The Green Plan does include provisions for cutbacks in releases during periods of drought.

4.2.1.2 DROUGHT OPERATIONS

The Alabama-ACT Drought Response Operations Plan (ADROP) provides for three incremental drought intensity level responses based on the severity of drought conditions in the basin.[7] The drought intensity level (DIL), ranging from 0 to 3, is based on three triggers – basin inflow, state line flows, and composite storage.

- The basin inflow computation differs from the navigation basin inflow, because it does not include releases from Allatoona Lake and Carters Lake.
- A low state line flow trigger occurs when the Mayo's Bar USGS gage (Gage No. 02397000) measures a flow below the monthly historical 7Q10[8] flow.
- Low composite conservation storage occurs when the Alabama Power projects' composite conservation storage is less than or equal to the storage available within the drought contingency curves for the Alabama Power reservoirs.

These thresholds are evaluated on the 1st and 15th of every month in the model. The DIL increases as more of the drought indicator thresholds (or triggers) are met. The ADROP matrix defines monthly minimum flow requirements for the Coosa, Tallapoosa, and Alabama Rivers as function of DIL and time of year. Such flow requirements are modeled as daily averages. The storage volumes in the Alabama Power Coosa and Tallapoosa projects are balanced to support this release. Once a drought operation is triggered, the DIL can only recover from drought condition at a rate of one level per period (i.e., the DIL can only recover at the rate of one level every 15 days).

4.2.1.3 NAVIGATION OPERATIONS

Navigation operations in HEC-ResSim are based on basin inflows and the historical average storage usage from Alabama Power projects during a given month. Releases are made from Alabama Power projects on the Coosa and Tallapoosa Rivers, along with local inflow, in order to provide the navigation flows in the model. Basin inflow targets are designed to provide channel depths of 9.0 ft and 7.5 ft in the Alabama River below the Claiborne Lock and Dam. If a 9.0 ft channel cannot be made available due to inflows, a 7.5

[7] Alabama Power uses ADROP as its drought operating plan for its hydroelectric projects in the Coosa and Tallapoosa river basins. The Harris Project is included in ADROP only to the extent that its storage is analyzed for the composite storage trigger.

[8] The lowest 7-day average flow that occurs, on average, once every 10 years.

ft channel is attempted, which would allow light loaded barges to move through the system. If basin inflows do not support a 7.5 ft channel, navigation releases are suspended. During drought operations, releases to support navigation would be discontinued until the DIL is equal to zero.

4.2.1.4 FLOOD CONTROL OPERATIONS

The flood control procedures in the 1972 agreement between the USACE and Alabama Power referenced in Article 13 of the existing Harris license are incorporated into the daily HEC-ResSim model. The flood control zone is defined as the area below the top of the dam and above the operating curve, ranging from 785 ft to 793 ft depending on the date. The elevation 790 ft serves as a transition elevation for flood control operations. When the reservoir elevation is above the operating curve and below 790 ft, Harris is operated to keep the Wadley gage at or below a stage of 13.0 ft, with a maximum release of 13,000 cfs. If the pool elevation exceeds 790 ft and the operating curve, releases are 16,000 cfs or greater if determined by induced surcharge curves. The 45 cfs minimum flow at the Wadley site and power operations are included in the flood control operating zone.

4.2.1.5 SPILLWAY OPERATIONS

The spillway at Harris is included in the HEC-ResSim model to capture releases from the project that exceed the turbine capacity. With the Harris flood control procedures and spillway characteristics in the daily model, spill frequency and duration can be determined. Although there is a slight underestimation of the frequency of spill (0.5 percent difference), HEC-ResSim satisfactorily models the flood control operations at Harris.

4.2.1.6 HYDROPOWER OPERATIONS

A power guide factor was used in the HEC-ResSim model to simulate the existing generation at Harris. The power guide factor relates plant factors to the percentage of power storage remaining in the reservoir. The factors represent the hours of generation per day as a function of the remaining power storage. The power guide factor creates a zone for utilizing hydropower and is comparable to the zone between the existing operating guide curve and the drought curve. Generation is employed after all flow requirements have been met. With full power storage available, Harris is programmed to generate 3.84 hours per day. These 3.84 hours per day include both peaking and non-

peaking generation (e.g., Green Plan releases, releases made for reservoir management, etc) and are based on the average number of hours a day that Harris operates over the entire year, utilizing actual historic generation data.

4.3 Harris-Martin HEC-RAS Model

As part of Phase 1, Alabama Power developed a HEC-RAS model. This model will be used during Phase 2 of the study to assess downstream impacts.

The USACE HEC-RAS software was used to develop a hydraulic model of the Tallapoosa River from immediately downstream of Harris Dam (RM 136.7) to Martin Dam (RM 60). Significant updates were made to the Tallapoosa HEC-RAS model in 2017 with, at a minimum, version 5.0.4 of HEC-RAS. Further revisions to the model were made in 2019 using the most recent version of the software, version 5.0.7.

4.3.1 HEC-RAS Model Geometry

The 2017 model was comprised of 306 1-dimensional (1D) cross sections and 6 storage areas. The storage areas were those that can backwater during flood conditions, allowing for out-of-river storage of flood waters. In the HEC-RAS model software, storage areas are represented by stage-storage relationships. The 1D cross sections included the bathymetric data collected in 1999 and 2003 for RM 136.7 to RM 123.0; however, all other cross section bathymetry downstream of RM 123.0 only had an estimated thalweg elevation and an assumed trapezoidal or triangular shape. All cross sections' overbank areas out of the river had elevation data based on coarse USGS digital elevation model (DEM) raster data.

The 2019 model geometry incorporated the recently acquired terrain data and bathymetry. As discussed in Section 4.1.3, Trutta collected bathymetry data in 2019 from RM 123.0 to RM 88.0, which, in addition to the 1999 and 2003 data, provided bathymetry from the tailwater of Harris Dam (RM 136.7) to the beginning of the Martin Pool (RM 88.0). The original cross sections between RM 123.0 and RM 88.0 were removed and replaced with new cross sections placed at each of the locations where bathymetric cross sections were surveyed in 2019. The cross sections located between RM 136.7 and RM 123.0 had bathymetric data from the previous surveys and were not removed. However, the overbank areas outside of the river channel were resampled using the LiDAR data

collected in 2006 to replace the less detailed USGS DEM data for all cross sections. Artificial cross sections were interpolated between the surveyed cross sections as needed to provide adequate model stability. When cross sections were interpolated, the bathymetric data within the banks of the channel was retained but the overbank terrain was updated to match the actual overbank terrain under the interpolated cross section. This was done because the bathymetry between the surveyed cross sections was unknown and interpolating between known data was a reasonable assumption, but the overland data was available from the LiDAR and did not need to be interpolated. The final geometry with all the newly surveyed and interpolated cross sections included a total of 436 cross sections.

In addition to the changes to the cross sections, two of the storage areas located between RM 136.7 and RM 88.0 were replaced with 2-dimensional (2D) mesh areas and additional 2D mesh areas were added in areas that can backwater during floods. The 2D mesh areas perform the same function as the storage areas, which is to allow for flood waters to be stored outside of the main river during floods. However, unlike storage areas, 2D meshes are composed of many cells in a connected grid with attribute data obtained from the terrain data underlying the cells. Because the storage areas are represented by stage-storage relationships, any water contained within a storage area can immediately flow back into the river no matter how large the storage area is. Unlike storage areas, the model computes the flow into and out of each cell in each 2D mesh as the river rises and falls, and water flowing into the mesh takes time to travel out of the mesh back into the river, which more accurately simulates flood routing. Due to the improved resolution of the LiDAR data that was available, the total number of offline storage where 2D meshes were used between RM 136.7 and RM 88 was 25. The 4 remaining storage areas included in the geometry are located downstream of RM 88.0 where LiDAR data was not available.

The model includes 4 highway bridges and 1 railroad bridge spanning the Tallapoosa River. Data for the 4 highway bridges was obtained from drawings provided to Alabama Power by the Alabama Department of Transportation. Data for the railroad bridge was obtained by examining aerial imagery and the LiDAR data.

4.3.2 HEC-RAS Model Calibration

Historical flow and stage data were available from the two USGS streamflow gages between the Harris Dam and start of the Martin Pool; the gage at Wadley (RM 122.79)

and the gage at Horseshoe Bend (RM 93.7). Stage-discharge rating curves for the gages were obtained from the USGS website for comparison with the model results. An unsteady state rating curve flow plan was created in the HEC-RAS model that increased flow in the river from 2,000 cfs up to approximately 80,000 cfs, which provided stage data for flows in that range at the two USGS gage locations. Model calibration was completed by adjusting the Manning's roughness values in the channel and overbanks until the model matched the historical data as closely as possible over the range of flows modeled, and flow roughness factors were used to adjust the selected Manning's values in the river with flow, since roughness typically decreases as flow increases. The HEC-RAS model results of flow versus stage at the USGS gage locations for the calibration are plotted against the historical flow versus stage data of the gages and shown in Figures 4-2 and 4-3.

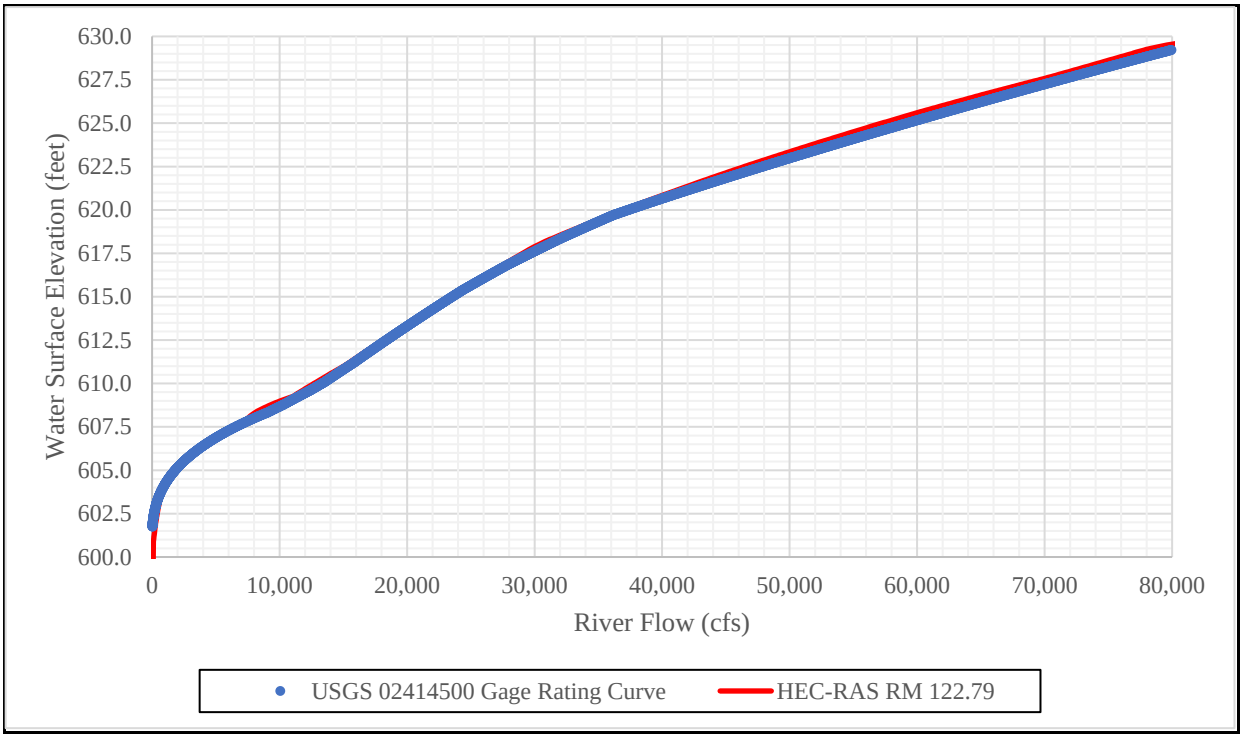


FIGURE 4–2 HARRIS-MARTIN HEC-RAS MODEL RESULTS VERSUS USGS WADLEY GAGE NO. 02414500

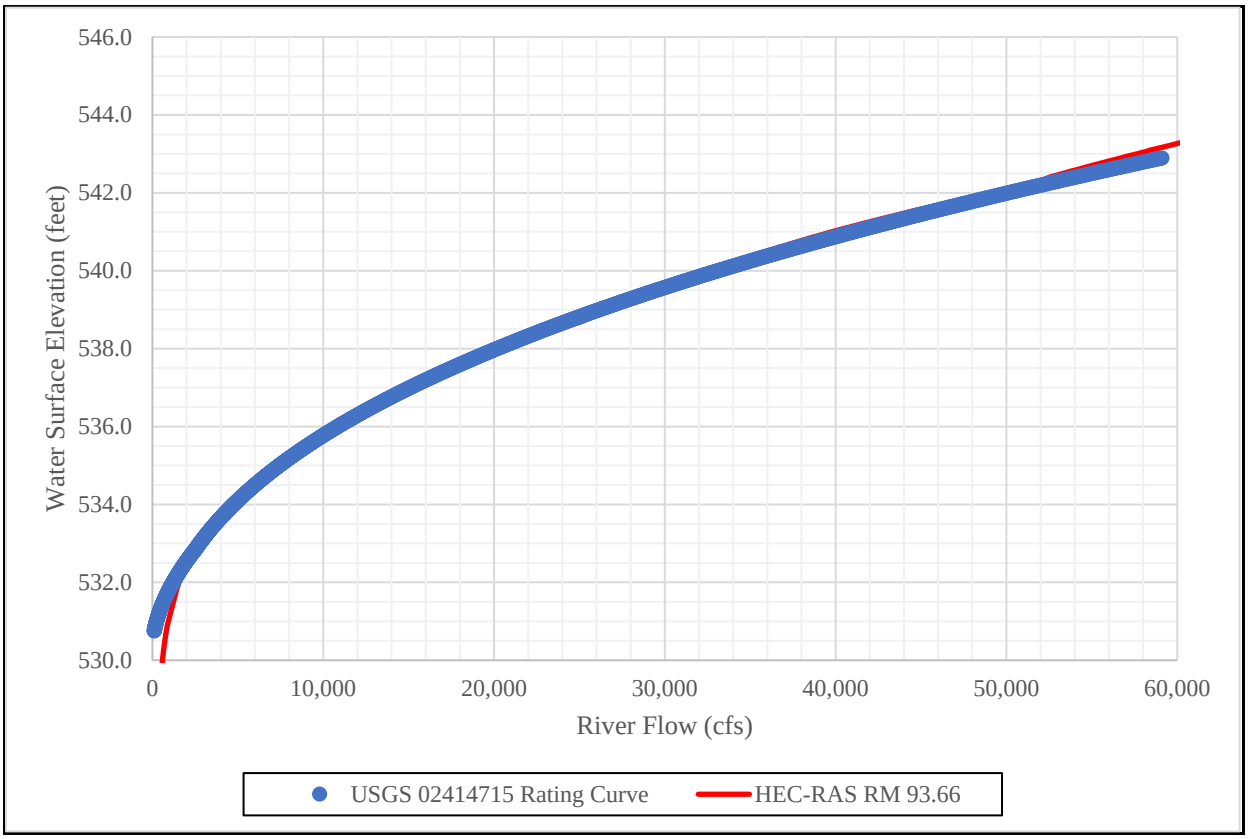


FIGURE 4–3 HARRIS-MARTIN HEC-RAS MODEL RESULTS VERSUS USGS HORSESHOE BEND GAGE NO. 02414715

4.3.3 MODEL FLOW DATA

Based on analysis of the unimpaired flow dataset, 2001 was selected as a "normal" water year as inflows to the Harris Project were closest to the median, and hourly flow data was available for that year. Since 2001 pre-dated Green Plan implementation, hourly discharge records for Harris Dam were used to model the Pre-Green Plan scenario. The Green Plan scenario was created by applying existing Green Plan rules to the Pre-Green Plan releases. The 150 cfs continuous minimum flow scenario was created by amending the Pre-Green Plan scenario such that no hourly interval had less than a 150 cfs discharge from Harris Dam.[9] Figures 4-4 through 4-7 show a monthly hydrograph from each of the four seasons

[9] Alabama Power will explain how the additional alternatives (alternative/modified Green Plan, variation of existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gauge, hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria, and 300 cfs, 600 cfs, and 800 cfs continuous minimum flow.) are created in the model in the Phase 2 Report.

of the year, showing the general differences between the three different outflows from Harris Dam (the entire year is not shown because it is not possible to identify three different curves with so much data displayed).

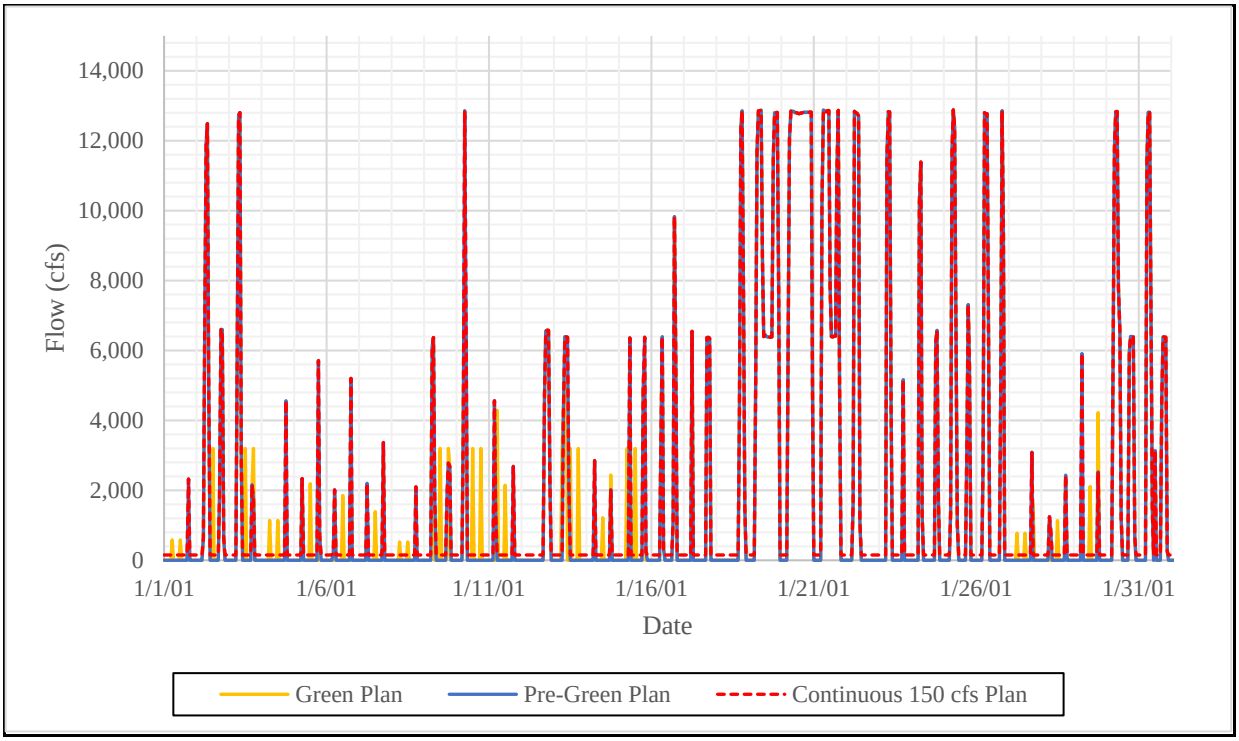


FIGURE 4–4 JANUARY HARRIS DAM DISCHARGES

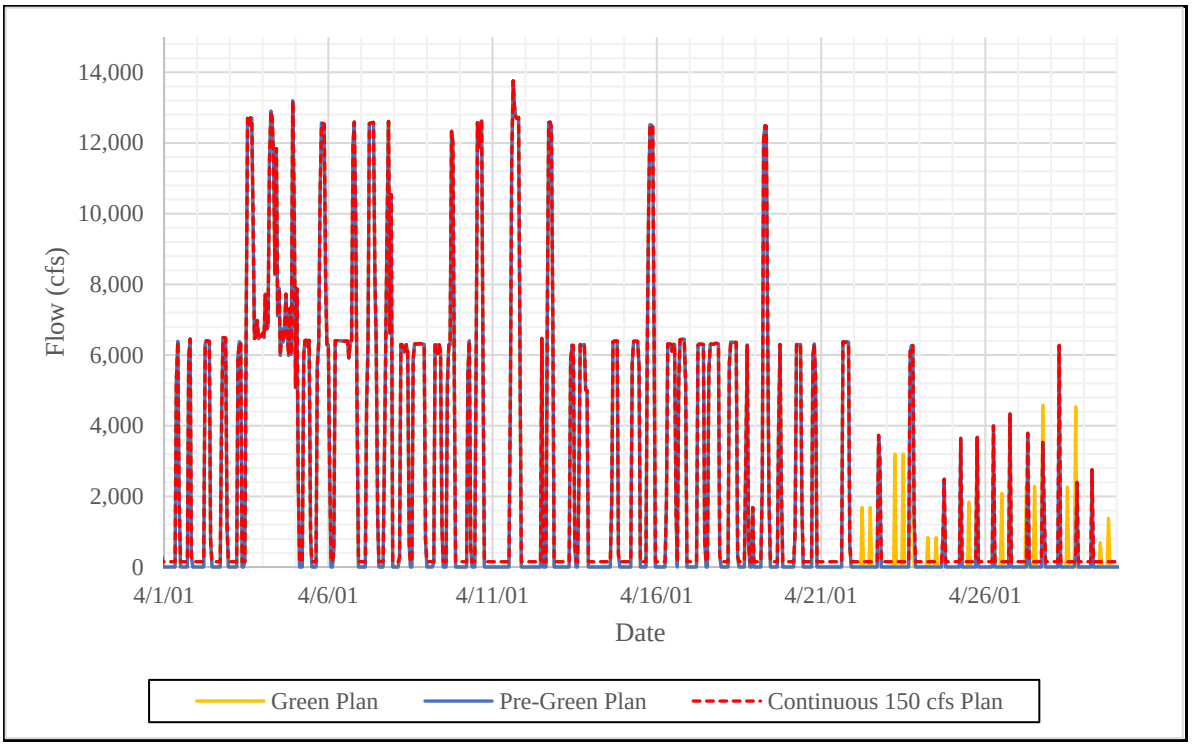


FIGURE 4–5 APRIL HARRIS DAM DISCHARGES

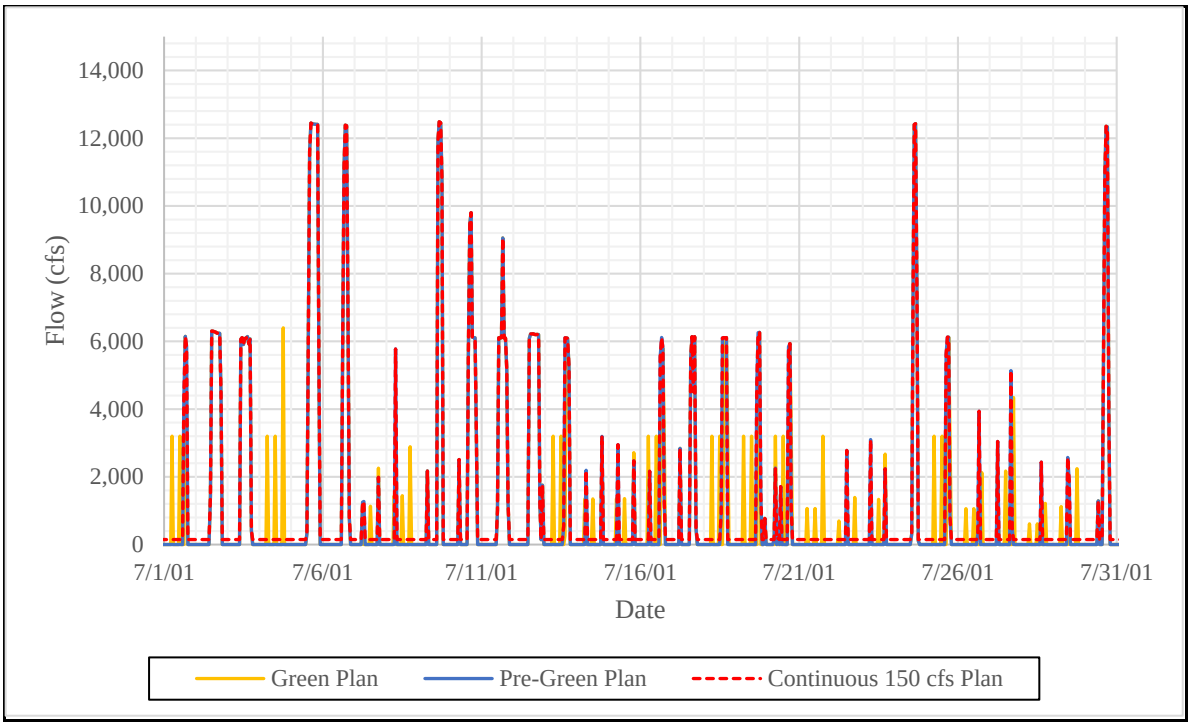


FIGURE 4–6 JULY HARRIS DAM DISCHARGES

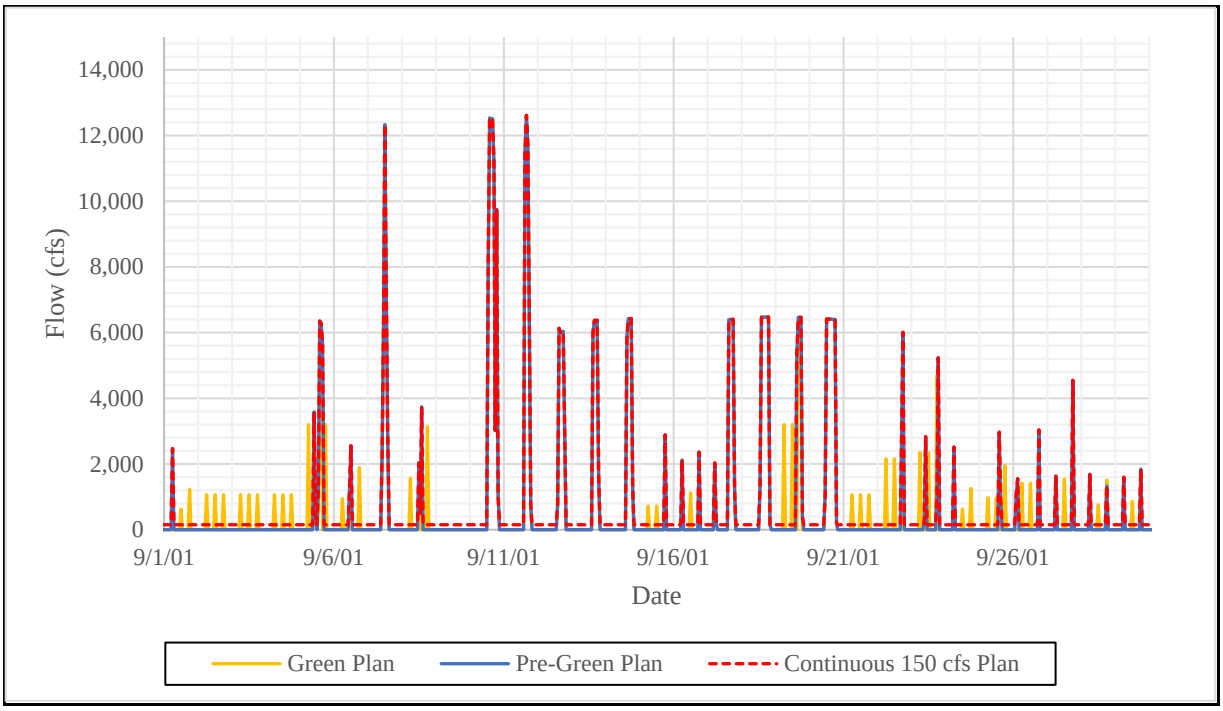


FIGURE 4–7 SEPTEMBER HARRIS DAM DISCHARGES

For all three downstream alternatives simulations, the flow data input to the model domain included the following:

- An inflow hydrograph to the Tallapoosa River at the upstream end of the model (RM 136.7) from the Harris Dam (described above);
- A uniform lateral inflow hydrograph added to the river between RM 136.6 and RM 122.7, which represented the intervening flow from the watershed between Harris Dam and the USGS gage at Wadley; and
- A uniform lateral inflow hydrograph added to the river between RM 122.7 and RM 93.7, which represented the intervening flow from the watershed between the USGS gage at Wadley and the USGS gage at Horseshoe Bend.

Data for the intervening flow hydrographs was obtained from the two USGS gages for the year 2001. Data were available in 15- and 30-minute measurements at Wadley and Horseshoe Bend, respectively, which were resampled to 1-hour measurements to match the Harris Dam discharges. The intervening flow for the watershed between the dam and the Wadley gage was determined by subtracting the Pre-Green Plan flows from Harris Dam from the discharge measured at the Wadley gage. Review of historical data found

that there is an approximately 3-hour lag between the time that flow leaves Harris Dam and arrives at Wadley and was accounted for in determining the intervening flow. The intervening flow between the Wadley USGS gage and the Horseshoe Bend gage was determined by subtracting the historical Wadley flows from the flows measured at Horseshoe Bend. Review of the historical data found that there is an approximately 7-hour lag between flows leaving Wadley and arriving at the Horseshoe Bend gage. The lag time was accounted for in the determination of the intervening flow. All three downstream release alternatives hydrographs are very similar; therefore, the same intervening flows were used for the three alternatives. Figures 4-8 through 4-11 show the intervening flow hydrographs at Wadley and Horseshoe Bend for one month out of each of the four seasons of the year (the entire year is not shown because it is not possible to identify the different curves with so much data displayed).

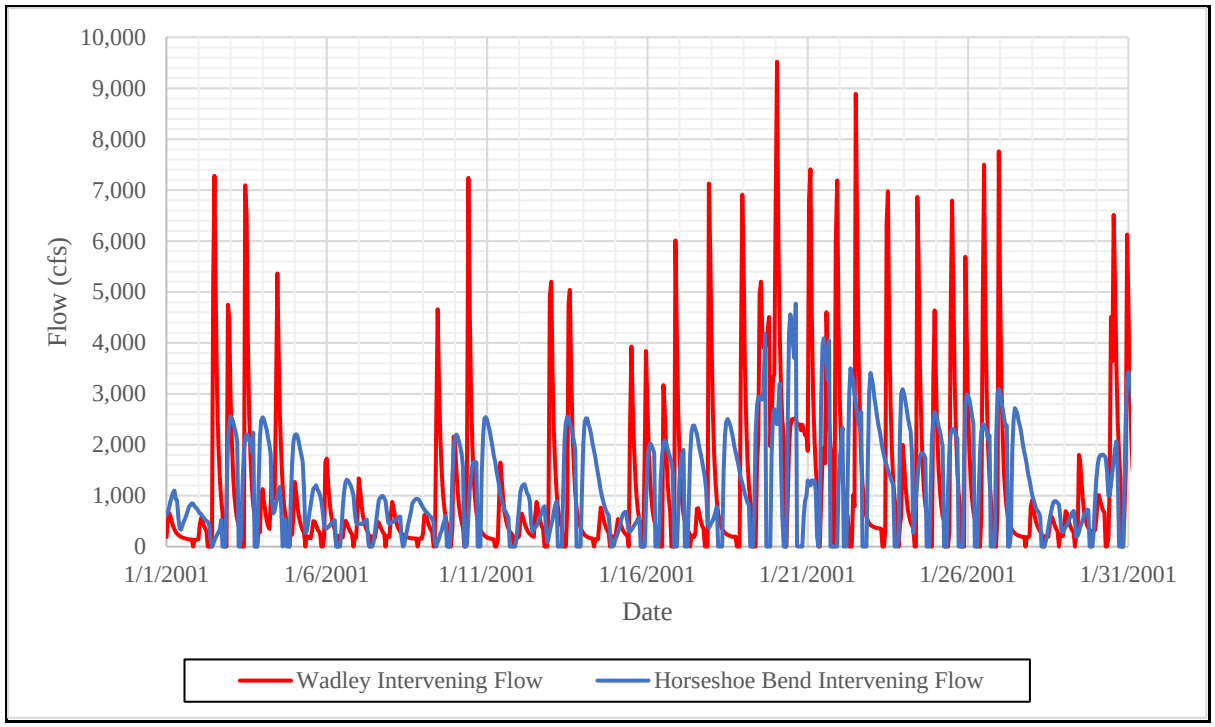


FIGURE 4–8 WADLEY AND HORSESHOE BEND JANUARY INTERVENING HYDROGRAPHS

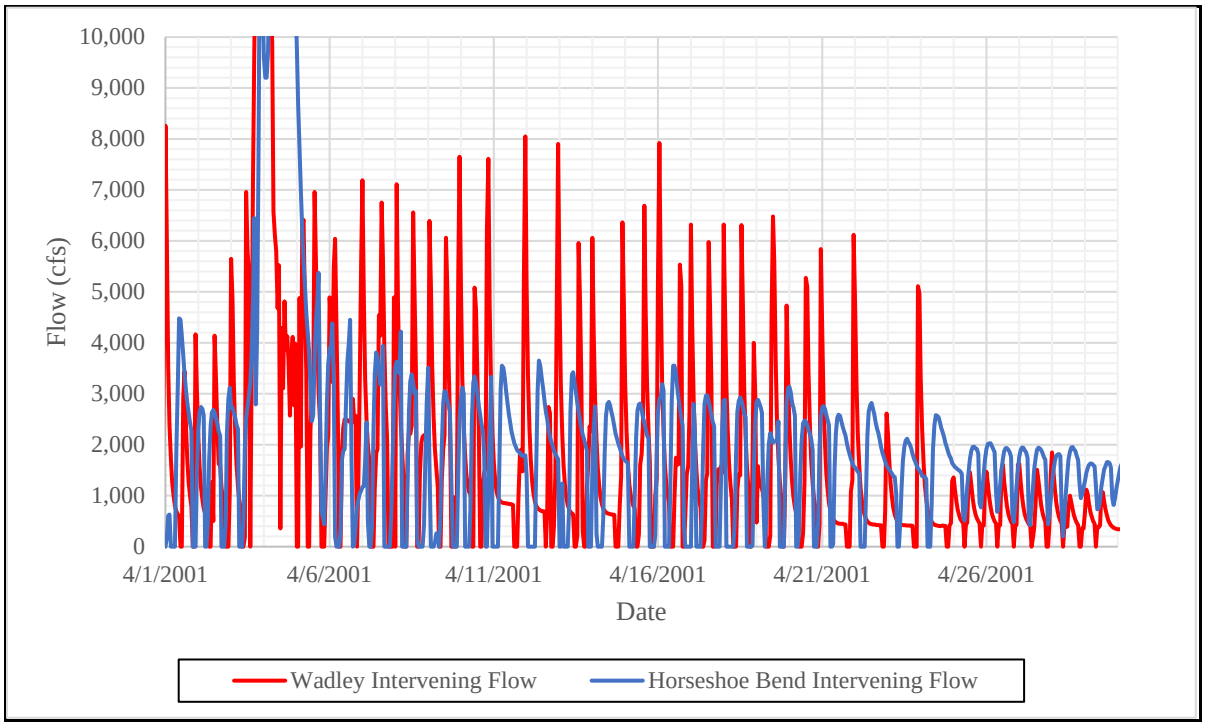


FIGURE 4–9 WADLEY AND HORSESHOE BEND APRIL INTERVENING HYDROGRAPHS

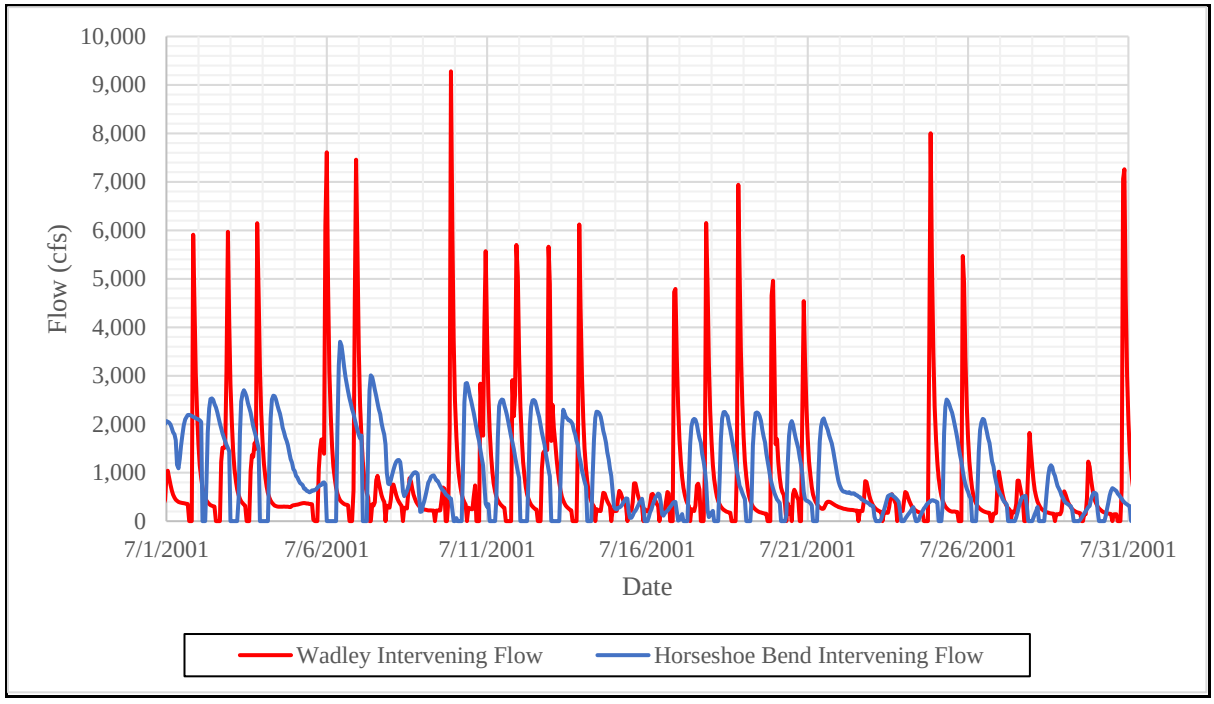


FIGURE 4–10 WADLEY AND HORSESHOE BEND JULY INTERVENING HYDROGRAPHS

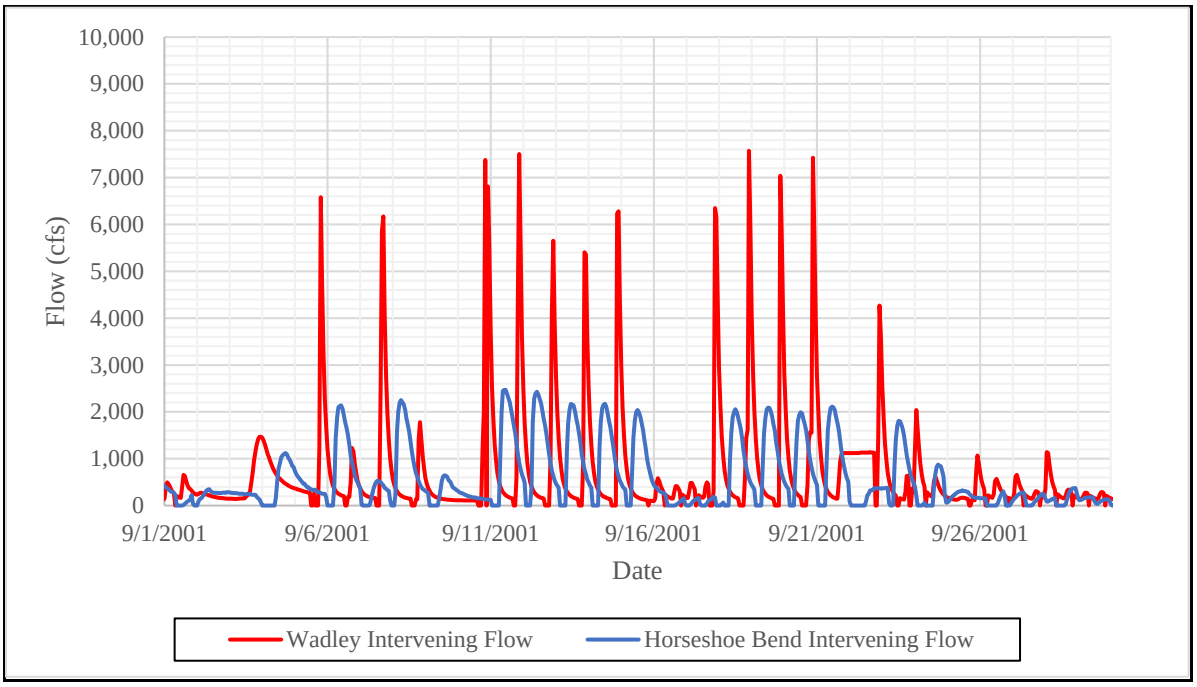


FIGURE 4–11 WADLEY AND HORSESHOE BEND SEPTEMBER INTERVENING HYDROGRAPHS

4.3.4 MODEL LOGIC AND OPERATION

All simulations were computed using the unsteady flow analysis in the HEC-RAS model. The simulation modeled 365 days of real time based on the data for the year 2001. The computational timestep was 3 minutes, which provided model stability and accuracy. Data was output from the model at an hourly timestep.

The upstream model boundary is located at RM 136.7, immediately downstream from the Harris Dam, and is an inflow hydrograph as described in Section 4.3.3. All 2D mesh areas did not have any storage volume initially, however, the 4 storage areas that are located in the Martin pool between RM 88.0 and RM 60 required an initial storage and were set to elevation 490.5 feet msl to match the downstream stage hydrograph. Two uniformly distributed lateral inflow hydrographs were included as described in Section 4.3.3. The downstream model boundary of the model is located at RM 60.8. For all simulations, a constant stage hydrograph equal to elevation 490.5 feet msl was used, which is the normal operating elevation in the Martin Pool.

4.4 HydroBudget Model

The HydroBudget Model is an analytical daily model for the determination of power production and its value by simulating actual reservoir operation. By using the HydroBudget model rather than actual generation records, Alabama Power has developed an accurate estimate of annual generation under existing conditions (baseline) to which alternatives can be compared. The model assumes that all dams are in place for the 1940-2018 period of record.

FERC has recognized the validity of this HydroBudget Model approach in estimating annual generation by accepting this method in the context of Alabama Power's relicensing of the Yates and Thurlow Project (P-2407) in the early 1990's. Alabama Power has submitted the same method to evaluate the changes for the recent Martin Relicensing.

The parameters for the model include turbine discharge ratings and efficiencies, generator efficiencies, head loss, and operating guidelines. In addition, hourly power system marginal costs (lambdas) are used to calculate the most valuable use of inflows. There are no specific power requirements; therefore, when there is flow available the model will stay on the flood control guide curves. To meet flow targets downstream, Martin and Logan Martin, in tandem with the other Alabama Power storage projects, are operated as a system. This operation allows for a balanced contribution from the Tallapoosa and Coosa rivers.

5.0 RESULTS

5.1 Harris Reservoir Elevations

Because each downstream release alternative uses the same daily volume of water as current operations, there is no effect on the ability of Alabama Power to maintain the operating curve at the Harris Reservoir.

5.2 Hydropower Generation

Alabama Power's HydroBudget model was used to evaluate the energy produced and value related to pre-Green Plan and Green Plan downstream release alternatives. Each alternative was evaluated to determine the economic impact (loss or gain) to Alabama Power customers from a hydropower generation perspective. Using the 2018 system lambdas, returning to Pre-Green Plan operations would result in an approximate $357,000 average annual economic gain to Alabama Power customers from a hydropower generation perspective. This economic gain results because all hydropower generation would occur during peak times rather than a portion of generation occurring during off-peak pulsing operations. In evaluating the 150 cfs minimum flow alternative, there are too many unknowns at this time to generate reliable/accurate HydroBudget results. Therefore, a robust evaluation of all alternatives[10], including assumptions about how any continuous minimum flow is delivered (e.g., via a minimum flow unit), will be presented in the Phase 2 Report. Note that HydroBudget does not evaluate capital and O&M costs, which could be considerable for any additional generating or non-generating mechanism needed to provide a 150 cfs minimum flow. Additional capital and O&M costs associated with such measures will be considered in other economic analyses required by the relicensing process.

[10] Including the alternative/modified Green Plan, variation of existing Green Plan where the Daily Volume Release is 100% of the prior day's flow at the USGS Heflin stream gauge, hybrid Green Plan that incorporates both a base minimum flow of 150 cfs and the pulsing laid out in the existing Green Plan release criteria, and 300 cfs, 600 cfs, and 800 cfs continuous minimum flow.

5.3 Flood Control

The downstream release alternatives were modeled with the current USACE-approved flood control procedures that are incorporated into the daily HEC-ResSim model. The operational rules for flood control prescribe maximum releases from the reservoir based on the date and pool elevation. Modifying the downstream releases would not impact this operation.

5.4 Navigation

Navigation levels are triggered by inflow for the ACT basin. The required basin inflow to support each navigation channel depth includes a volume historically contributed by the storage projects on the Coosa and Tallapoosa Rivers and USACE's assumptions for dredging the navigation channel in the Alabama River. Altering the downstream releases at Harris would not impact this trigger. Therefore, there is no impact to the number of days over the period of record that each alternative would support navigation releases under each of the downstream release alternatives.

5.5 Drought Operations

Alabama Power evaluated how drought operations may be positively or adversely affected by the downstream release alternatives. Because each alternative uses the same daily volume of water as current operations, there is no effect on ADROP. Two of the three triggers in ADROP are based on factors independent of Harris Reservoir, basin inflow, and state-line flows. The impact of the release alternatives to the volume of water in the Harris reservoir is negligible with respect to the third ADROP trigger, basin-wide composite storage. There is no change in the percentage of time spent over the period of record in each DIL.

6.0 CONCLUSIONS

Alabama Power will use the information in this report and the HEC-RAS model to complete Phase 2 of the Downstream Release Alternatives Study Plan (Table 6–1)[11]. The modeling results combined with other environmental study analyses will result in a final recommendation from Alabama Power on any downstream release at Harris.

The Phase 1 modeling results indicate that Pre-Green Plan, Green Plan, and 150 cfs minimum flow have no effect on Harris Reservoir levels, flood control, navigation, or drought (ADROP) operations. Because the mechanism for providing a 150 cfs minimum flow has not been determined at this point, it is unclear at this point what, if any, impacts to hydropower generation may occur.

[11] The geographic scope for Phase 2 is defined in the FERC SPD.

TABLE 6-1 PHASE 2 RESOURCE IMPACTS ANALYSIS METHODS

RESOURCE	METHOD
Water Quality	• HEC-RAS model • Existing information – Water Quality Baseline Report • Results from the FERC-approved Water Quality Study • Qualitatively evaluate potential effects on dissolved oxygen in the tailrace
Water Use	• HEC-RAS model • Existing information - Water Quantity, Water Use, and Discharges Report
Erosion	• HEC-RAS model • FERC-approved Erosion and Sedimentation Study (erosion portion only) • LIDAR, aerial imagery, historic photos
Aquatic Resources	• HEC-RAS model • HEC-RAS to evaluate effects on wetted habitat • HEC-RAS to evaluate effects on water temperature in the Tallapoosa River below Harris Dam • FERC-approved Downstream Aquatic Habitat Study • FERC-approved Aquatic Resources Study
Wildlife and Terrestrial Resources - including Threatened, and Endangered Species	• HEC-RAS model • FERC-approved Threatened and Endangered Species Study

RESOURCE	METHOD
Recreation Resources	• HEC-RAS model • FERC-approved Recreation Evaluation Study • Existing information on boatable flows
Cultural Resources	• HEC-RAS model • LIDAR, aerial imagery, and expert opinions

7.0 REFERENCES

Irwin, E.R. and T.P. Goar. 2015. Spatial and temporal variation in recruitment and growth of Channel Catfish, Alabama Bass, and Tallapoosa Bass in the Tallapoosa River and associated tributaries. U.S. Department of Interior, Fish and Wildlife Service, Cooperator Science Series FWS/CSS-116, Washington, D.C.

Kleinschmidt Associates. 2018a. Summary of R.L. Harris Downstream Flow Adaptive Management History and Research. R.L. Harris Project, FERC No. 2628. Kleinschmidt Associates, Birmingham, Alabama.

APPENDIX A

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

A

A&I	Agricultural and Industrial
ACFWRU	Alabama Cooperative Fish and Wildlife Research Unit
ACF	Apalachicola-Chattahoochee-Flint (River Basin)
ACT	Alabama-Coosa-Tallapoosa (River Basin)
ADCNR	Alabama Department of Conservation and Natural Resources
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
ADROP	Alabama-ACT Drought Response Operations Plan
AHC	Alabama Historical Commission
Alabama Power	Alabama Power Company
AMP	Adaptive Management Plan
ALNHP	Alabama Natural Heritage Program
APE	Area of Potential Effects
ARA	Alabama Rivers Alliance
ASSF	Alabama State Site File
ATV	All-Terrain Vehicle
AWIC	Alabama Water Improvement Commission
AWW	Alabama Water Watch

B

BA	Biological Assessment
B.A.S.S.	Bass Anglers Sportsmen Society
BCC	Birds of Conservation Concern
BLM	U.S. Bureau of Land Management
BOD	Biological Oxygen Demand

C

°C	Degrees Celsius or Centrigrade
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulation
cfs	Cubic Feet per Second
cfu	Colony Forming Unit
CLEAR	Community Livability for the East Alabama Region
CPUE	Catch-per-unit-effort
CWA	Clean Water Act

D

DEM	Digital Elevation Model
DIL	Drought Intensity Level
DO	Dissolved Oxygen
dsf	day-second-feet

E

EAP	Emergency Action Plan
ECOS	Environmental Conservation Online System
EFDC	Environmental Fluid Dynamics Code
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act

F

°F	Degrees Fahrenheit
ft	Feet
F&W	Fish and Wildlife
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FNU	Formazin Nephelometric Unit
FOIA	Freedom of Information Act
FPA	Federal Power Act

G

GCN	Greatest Conservation Need
GIS	Geographic Information System
GNSS	Global Navigation Satellite System
GPS	Global Positioning Systems
GSA	Geological Survey of Alabama

H

Harris Project	R.L. Harris Hydroelectric Project
HAT	Harris Action Team
HEC	Hydrologic Engineering Center
HEC-DSSVue	HEC-Data Storage System and Viewer
HEC-FFA	HEC-Flood Frequency Analysis
HEC-RAS	HEC-River Analysis System
HEC-ResSim	HEC-Reservoir System Simulation Model
HEC-SSP	HEC-Statistical Software Package

HDSS	High Definition Stream Survey
hp	Horsepower
HPMP	Historic Properties Management Plan
HPUE	Harvest-per-unit-effort
HSB	Horseshoe Bend National Military Park

I

IBI	Index of Biological Integrity
IDP	Inadvertent Discovery Plan
IIC	Intercompany Interchange Contract
IVM	Integrated Vegetation Management
ILP	Integrated Licensing Process
IPaC	Information Planning and Conservation
ISR	Initial Study Report

J

JTU	Jackson Turbidity Units

K

kV	Kilovolt
kva	Kilovolt-amp
kHz	Kilohertz

L

LIDAR	Light Detection and Ranging
LWF	Limited Warm-water Fishery
LWPOA	Lake Wedowee Property Owners' Association

M

m	Meter
m^3	Cubic Meter
M&I	Municipal and Industrial
mg/L	Milligrams per liter
ml	Milliliter
mgd	Million Gallons per Day
µg/L	Microgram per liter
µs/cm	Microsiemens per centimeter
mi^2	Square Miles
MOU	Memorandum of Understanding

MPN	Most Probable Number
MRLC	Multi-Resolution Land Characteristics
msl	Mean Sea Level
MW	Megawatt
MWh	Megawatt Hour

N

n	Number of Samples
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
NWI	National Wetlands Inventory

O

OAR	Office of Archaeological Resources
OAW	Outstanding Alabama Water
ORV	Off-road Vehicle
OWR	Office of Water Resources

P

PA	Programmatic Agreement
PAD	Pre-Application Document
PDF	Portable Document Format
pH	Potential of Hydrogen
PID	Preliminary Information Document
PLP	Preliminary Licensing Proposal
Project	R.L. Harris Hydroelectric Project
PUB	Palustrine Unconsolidated Bottom
PURPA	Public Utility Regulatory Policies Act
PWC	Personal Watercraft
PWS	Public Water Supply

Q

QA/QC	Quality Assurance/Quality Control

R

RM	River Mile
RTE	Rare, Threatened and Endangered
RV	Recreational Vehicle

S

S	Swimming
SCORP	State Comprehensive Outdoor Recreation Plan
SCP	Shoreline Compliance Program
SD1	Scoping Document 1
SH	Shellfish Harvesting
SHPO	State Historic Preservation Office
Skyline WMA	James D. Martin-Skyline Wildlife Management Area
SMP	Shoreline Management Plan
SU	Standard Units

T

T&E	Threatened and Endangered
TCP	Traditional Cultural Properties
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TRB	Tallapoosa River Basin
TSI	Trophic State Index
TSS	Total Suspended Soils
TVA	Tennessee Valley Authority

U

USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

W

WCM	Water Control Manual
WMA	Wildlife Management Area
WMP	Wildlife Management Plan
WQC	Water Quality Certification

APPENDIX B

GREEN PLAN RELEASE CRITERIA

R L HARRIS RELEASE CRITERIA – *Effective March 1, 2005*

1. Daily Release Schedule
    a. The required Daily Volume Release will be at least 75% of the prior day's flow at the USGS Heflin Gauge.
    b. In the event that the Heflin Gauge is not in service, the required Daily Volume Release will be at least one-fourth of the previous day's inflow into R L Harris Reservoir.
    c. The Daily Volume Release will not to be below 100 DSF.
    d. Operations to ensure that flows at Wadley remain above the 45 cfs minimum mark shall continue.
    e. The required Daily Volume Release will be suspended if R L Harris is engaged in flood control operations.
    f. The required Daily Volume Release will be suspended if it jeopardizes the ability to fill R L Harris.
2. Hourly Release Schedule
    a. If less than two machine hours are scheduled for a given day, then the generation will be scheduled as follows:
        i. One-fourth of the generation will be scheduled at 6 AM.
        ii. One-fourth of the generation will be scheduled at 12 Noon.
        iii. One-half of the generation will be scheduled for the peak load.
        iv. If the peak load is during the morning, one-fourth of the generation will be scheduled at 6 PM.
    b. If two to four machine hours are scheduled for a given day, then generation will be scheduled as follows:
        i. Thirty minutes of generation will be scheduled at 6 AM.
        ii. Thirty minutes of generation will be scheduled at 12 Noon.
        iii. The remaining generation will be scheduled for the peak load.
        iv. If the peak load is during the morning, thirty minutes of the generation will be scheduled at 6 PM.
3. Two Unit Operation
    a. On the average, there will be more than 30 minutes between the start times between the two units.
    b. Two units may come online with less than 30 minute difference in their start times if there is a system emergency need.
4. Spawning Windows

    Spring and Fall spawning windows will scheduled as conditions permit. The operational criteria during spawning windows will supersede the above criteria.

R L HARRIS RELEASE CRITERIA – *Effective March 1, 2005*

1. Daily Release Schedule

    a. The required Daily Volume Release will be at least 75% of the prior day's flow at the USGS Heflin Gauge.

    b. In the event that the Heflin Gauge is not in service, the required Daily Volume Release will be at least one-fourth of the previous day's inflow into R L Harris Reservoir.

    c. The Daily Volume Release will not to be below 100 DSF.

    d. Operations to ensure that flows at Wadley remain above the 45 cfs minimum mark shall continue.

    e. The required Daily Volume Release will be suspended if R L Harris is engaged in flood control operations.

    f. The required Daily Volume Release will be suspended if it jeopardizes the ability to fill R L Harris.

DROUGHT 2007-2008 R L HARRIS RELEASE CRITERIA

a. If the flows at Wadley are at or above 100 cfs, there will be one pulse per day, which will result in a Daily Volume Release of approximately 50 DSF.

b. The flows at Wadley will not be lower than the flows at Heflin.

R L HARRIS MINIMUM FLOW PROCEDURE

STEP 1: CREATE SCHEDULE BASED ON PRIOR DAY'S HEFLIN FLOW

Prior Day's Heflin Flow (DSF)	Generation At 6 AM	Generation At 12 Noon	Generation As System Needs	Total Machine Time	R L Harris Total Disch (DSF)
0 < HEFLIN Q < 150	10 MIN	10 MIN	10 MIN	30 MIN	133
150 < HEFLIN Q < 300	15 MIN	15 MIN	30 MIN	1 HR	267
300 < HEFLIN Q < 600	30 MIN	30 MIN	1 HR	2 HRS	533
600 < HEFLIN Q < 900	30 MIN	30 MIN	2 HRS	3 HRS	800
900 < HEFLIN Q	30 MIN	30 MIN	3 HRS	4 HRS	1,067

STEP 2: ADD ADDITIONAL PEAK GENERATION AS NEEDED

STEP 3: ADJUST SCHEDULE IF NECESSARY

TOTAL SCH GENERATION	Generation At 6 AM	Generation At 12 Noon	Generation As System Needs	Total Machine Time	R L Harris Total Disch (DSF)
IF GENERATION = 1 MACH HR	15 MIN	15 MIN	30 MIN	1 HR	267
IF GENERATION = 2 MACH HRS	30 MIN	30 MIN	1 HR	2 HRS	533
IF GENERATION = 3 MACH HRS	30 MIN	30 MIN	2 HRS	3 HRS	800
IF GENERATION = 4 MACH HRS	30 MIN	30 MIN	3 HRS	4 HRS	1,067
IF GENERATION = 5+ MACH HRS			ALL		

NOTES

1. SCHEDULING OF GENERATION DOES NOT PRECLUDE THE ADDITION OF GENERATION AT ANY TIME.
2. ALL START TIMES ARE APPROXIMATE.
3. WHEN PULSING, IF THE SYSTEM DOES NOT DICTATE GENERATION DURING THE PM, A PULSE WILL BE SCHEDULED AT 6 PM.
4. R L HARRIS MIN FLOW PROCEDURE WILL BE SUSPENDED DURING ANY OF THE FOLLOWING CONDITIONS:
   A) TALLAPOOSA RIVER HAS BEEN PLACED UNDER FLOOD CONTROL OPERATIONS.
   B) FISH SPAWNING OPERATIONS HAVE BEEN SCHEDULED.
   C) APC HAS DECLARED THAT CONDITIONS EXIST THAT THREATEN THE SPRING FILLING OF R L HARRIS RESERVOIR.