FINAL HYDRAULIC AND HYDROLOGIC MODELING REPORT

(Volume II of III)

LANGDALE PROJECT (FERC No. 2341)
AND
RIVERVIEW PROJECT (FERC No. 2350)



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Georgia Power Company

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APPENDIX B

ACRONYMS

COMMONLY USED ACRONYMS AND ABBREVIATIONS

#

1D 1-dimensional2D 2-dimensional

A

ACF Apalachicola-Chattahoochee-Flint (River Basin)

ADCNR Alabama Department of Conservation and Natural Resources

ADEM Alabama Department of Environmental Management

AHC Alabama Historical Commission

APE Area of Potential Effects

В

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
CPUE Catch-per-unit-effort

CRK Chattahoochee River Keeper
Crow Hop Dam Crow Hop Diversion Dam

CWA Clean Water Act

D

DEM Digital Elevation Model

DO Dissolved Oxygen dsf day-second-feet

Ε

EAWSFPD East Alabama Water, Sewer, and Fire Protection District

EAP Emergency Action Plan

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

FPA Federal Power Act fps Feet per second

G

Georgia Power Company

GADNR Georgia Department of Natural Resources

EPD Georgia Department of Natural Resources-Environmental

Protection Division

HPD Georgia Department of Community Affairs – Historic Preservation

Division

WRD Georgia Department of Natural Resources-Wildlife Resources

Division

GEC Geotechnical & Environmental Consultants

GIS Geographic Information System
GPS Global Positioning Systems

Н

H&H Hydraulic and Hydrologic

H&H Report Hydraulic and Hydrologic Modeling Report

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-SSP HEC-Statistical Software Package
HDSS High Definition Stream Survey

hp Horsepower

I

J

K

kV Kilovolt kva Kilovolt-amp kHz Kilohertz

L

LIDAR Light Detection and Ranging

Μ

m Meter

m³ Cubic Meter

M&I Municipal and Industrial mg/L Milligrams per liter

ml Milliliter

mgd Million Gallons per Day

mi² Square Miles

MOA Memorandum of Agreement MOU Memorandum of Understanding

msl Mean Sea Level

MW Megawatt

MWh Megawatt Hour

Ν

NAVD North American Vertical Datum
NEPA National Environmental Policy Act
NGO Non-governmental Organization
NHPA National Historic Preservation Act

NOI Notice of Intent

NPDES National Pollutant Discharge Elimination System

NRHP National Register of Historic Places

NWI National Wetlands Inventory

0

P

PDF Portable Document Format

Projects Langdale and Riverview Hydroelectric Projects

PWC Personal Watercraft

PWS Public Water Supply

Q

R

RM River Mile

S

SEPA Southeastern Power Administration
SHPO State Historic Preservation Officer

T

TMDL Total Maximum Daily Load TNC The Nature Conservancy

U

USGS U.S. Geological Survey

USACE U.S. Army Corps of Engineers USFWS U.S. Fish and Wildlife Service

V

Valley WWTP EAWSFPD's Lower Valley Wastewater Treatment Plant

W

WP Min Flow West Point Minimum Flow WQC Water Quality Certification

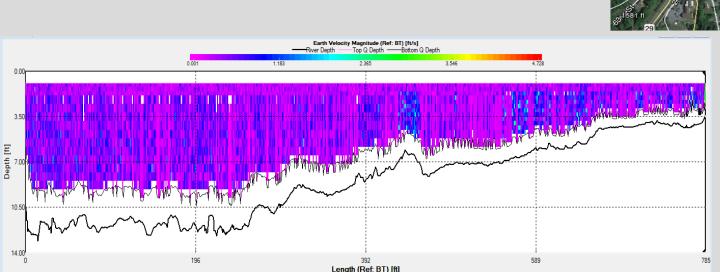
APPENDIX C USGS FLOW MEASUREMENTS



Langdale and Riverview Flow measurements and water surface elevation measurements at all locations except BF WSElev, which is just a water surface elevation measurement. Lang-B Lang-C Crow-A Crow-B Crow-C 💠 River-A Crow-D River-B • BF WSElev Map provided by Georgia Power

Discharge measurement above Langdale Dam

- Location of cross-section identified as Lang-A on map provided.
- Discharge measurement made above the influence of the dam on the cross section. This location chosen due to channel conditions.
- Velocity in this section was low but fairly uniform throughout the cross section.
- W/S = 550.4 feet. GPS accuracy of +/- 0.30 feet.

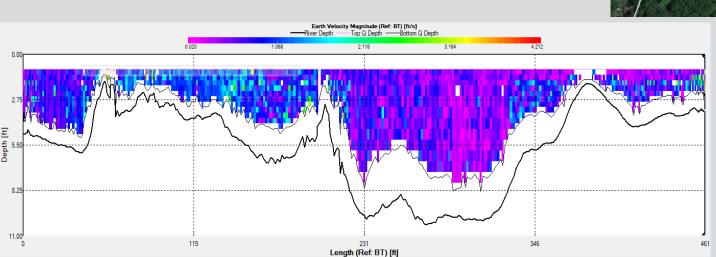




- 800 feet wide
- 0.15 ft/s mean velocity
- 6,300 ft² area
- Total $Q = 859 \text{ ft}^3/\text{s}$
- Sandy, rocky bottom

Discharge measurement below Langdale Dam

- Location of cross-section identified as **Lang-B** on map provided.
- Discharge measurement made below the influence of the dam on the cross section. This location is between two large shoals.
- Velocity in this section was low and not uniform throughout the majority of the cross section.
- W/S = 534.6 feet. GPS accuracy of +/- 0.30 feet.

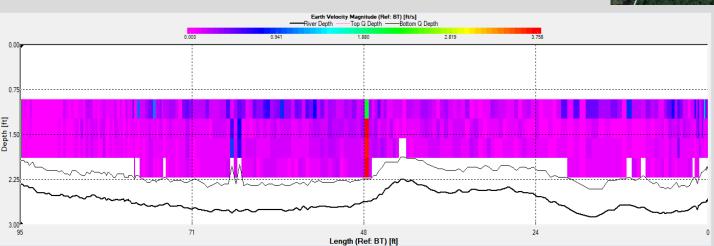




- 610 feet wide
- 0.31 ft/s mean velocity
- 2,720 ft² area
- Total $Q = 840 \text{ ft}^3/\text{s}$
- Sandy and rock boulder bottom

Discharge measurement below Langdale Dam

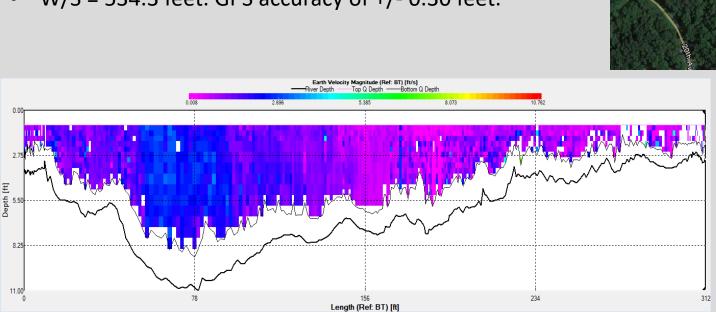
- Location of cross-section identified as **Lang-C** on map provided.
- Discharge measurement made below the influence of the dam on the cross section. This location is downstream of suggested location but provided best channel conditions for measurement.
- Velocity in this section was extremely low fairly uniform throughout the cross section.
- W/S = 534.6 feet. GPS accuracy of +/- 0.30 feet.





- 126 feet wide
- 0.10 ft/s mean velocity
- 255 ft² area
- Total $Q = 16 \text{ ft}^3/\text{s}$
- Measurement quality is POOR.

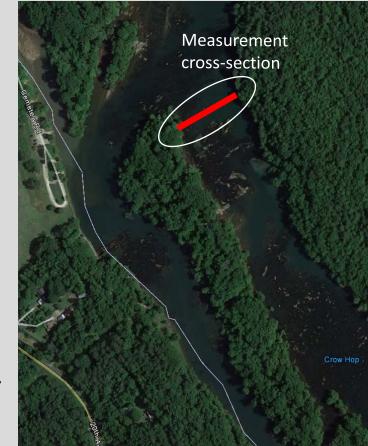
- Location of cross-section identified as **Crow-A** on map provided.
- Discharge measurement location is at suggested location.
- Velocity in this section was fairly uniform throughout the cross section.
- Channel bottom is composed of sand and large boulders.
- W/S = 534.3 feet. GPS accuracy of +/- 0.30 feet.

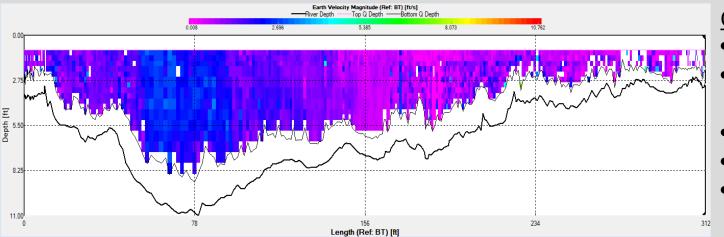




- 322 feet wide
- 0.71 ft/s mean velocity
- 1,730 ft² area
- Total $Q = 838 \text{ ft}^3/\text{s}$
- Measurement quality is POOR.

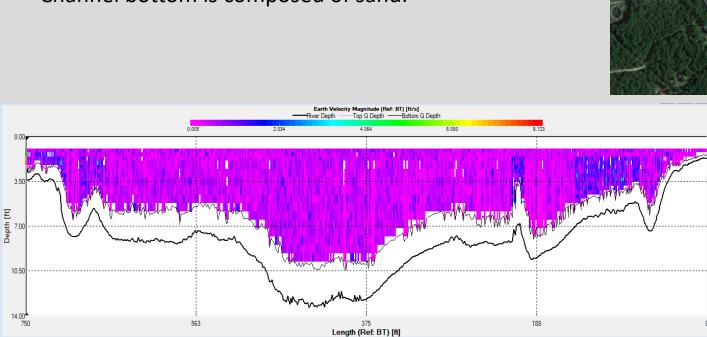
- Location of cross-section identified as **Crow-B** on map provided.
- Discharge measurement location is upstream of suggested location but provided best channel conditions for measurement.
- Velocity in this section was fairly uniform throughout the cross section.
- Channel bottom is composed of sand and large boulders.

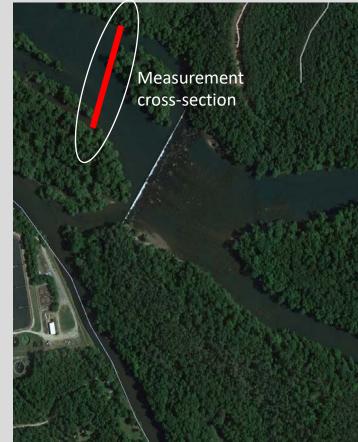




- 353 feet wide
- 0.03 ft/s mean velocity
- 1,730 ft² area
- Total $Q = 39 \text{ ft}^3/\text{s}$
- Measurement quality is POOR.

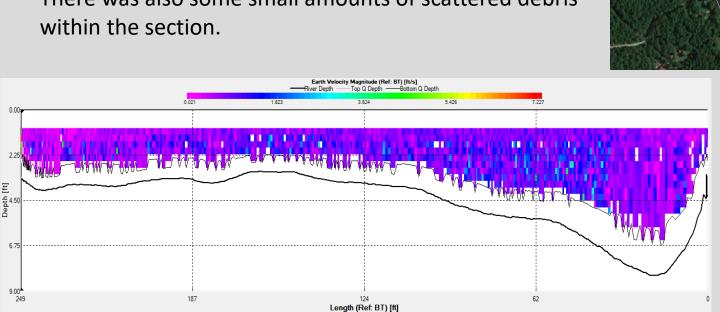
- Location of cross-section identified as Crow-C on map provided.
- Discharge measurement location is near suggested location.
- Velocity in this section was extremely sluggish but uniform throughout the cross section.
- Channel bottom is composed of sand.

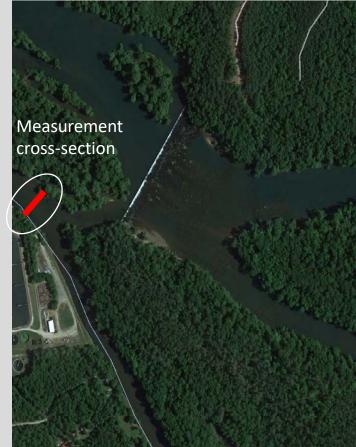




- 808 feet wide
- 0.08 ft/s mean vel.
- 5,880 ft² area
 - Total $Q = 233 \text{ ft}^3/\text{s}$
- Measurement quality is extremely POOR.

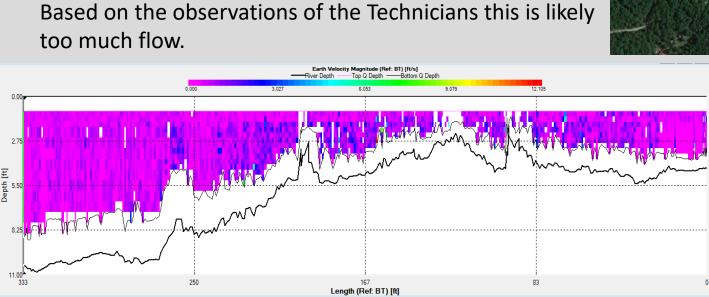
- Location of cross-section identified as River-A on map provided.
- Discharge measurement location is near suggested location.
- Velocity in this section was good and fairly uniform throughout the cross section.
- Channel bottom is composed of sand and boulders.
 There was also some small amounts of scattered debris within the section.

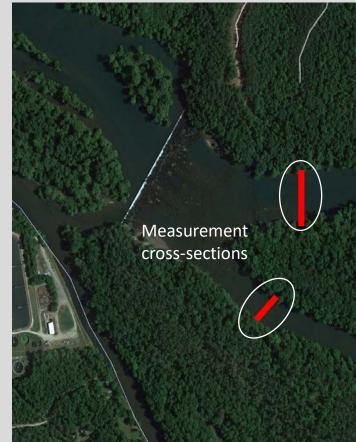




- 260 feet wide
- 0.56 ft/s mean vel.
- 1,090 ft² area
- Total $Q = 612 \text{ ft}^3/\text{s}$
- Measurement quality is FAIR.

- Location of cross-section identified as Crow-D on map provided.
- Discharge measurement location is downstream of suggested section. River divides into two channels upstream. Cross-section included both channels. Channel characteristics listed are sum of two channels.
- Numerous sections were attempted as it was difficult to obtain a measurement in the right branch of the divided channel. The total flow for this branch measured 71 ft³/s. Based on the observations of the Technicians this is likely too much flow.

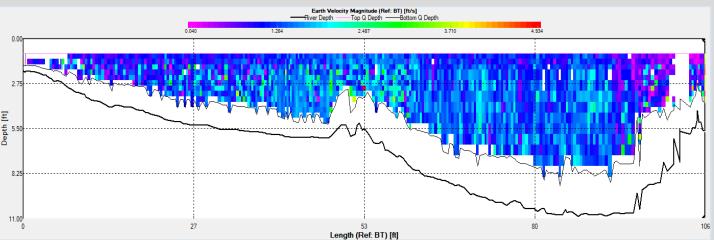




- 635 feet wide
- 0.08 ft/s mean vel.
- 2,680 ft² area
 - Total $Q = 189 \text{ ft}^3/\text{s}$
- Measurement quality is extremely POOR.

Discharge measurement above Riverview Dam

- Location of cross-section identified as River-B on map provided.
- Discharge measurement location is near suggested location.
- Velocity in this section was good and fairly uniform throughout the cross section.
- Channel bottom is composed of sand. There was some small amounts of scattered debris near the right bank.
- W/S = 533.6 feet. GPS accuracy of +/- 0.30 feet.





- 160 feet wide
- 1.13 ft/s mean vel.
- 735 ft² area
- Total $Q = 717 \text{ ft}^3/\text{s}$
- Measurement quality is GOOD.

Water-level measurement below

Riverview Dam

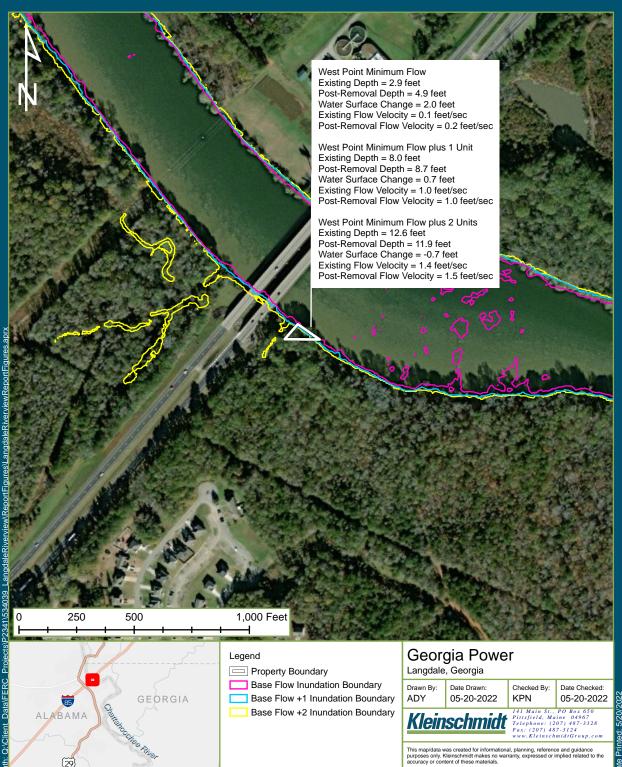
- Location of cross-section identified as BF-WSElev on map provided.
- No discharge measurement was obtained at this location.
- W/S = 515.2 feet. GPS accuracy of +/- 0.30 feet.

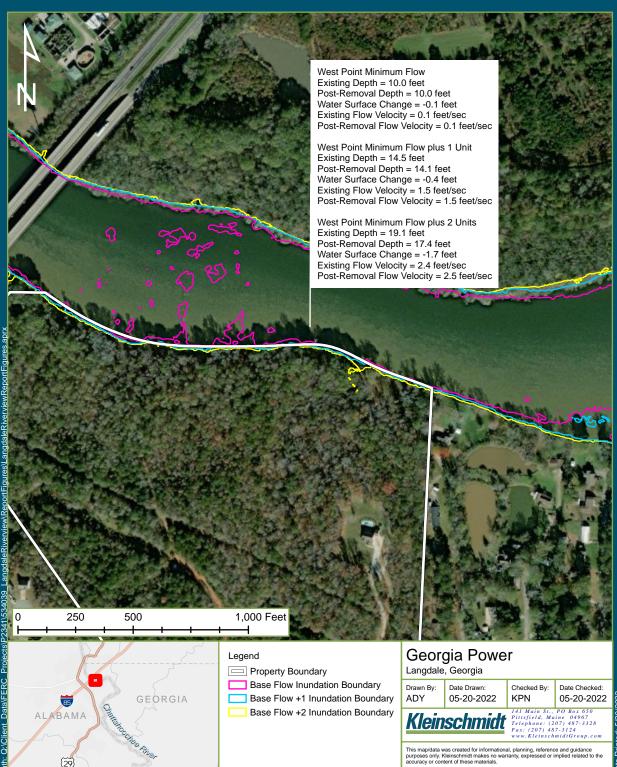


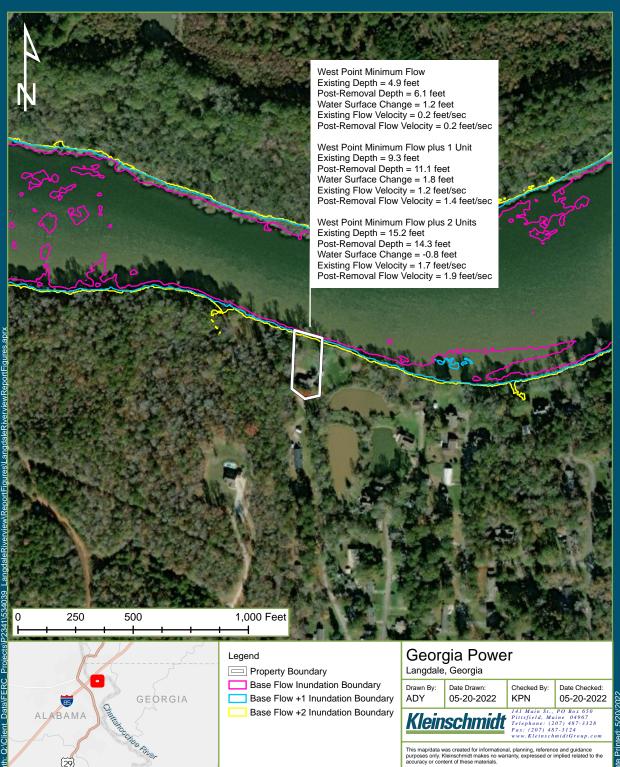
General Observations

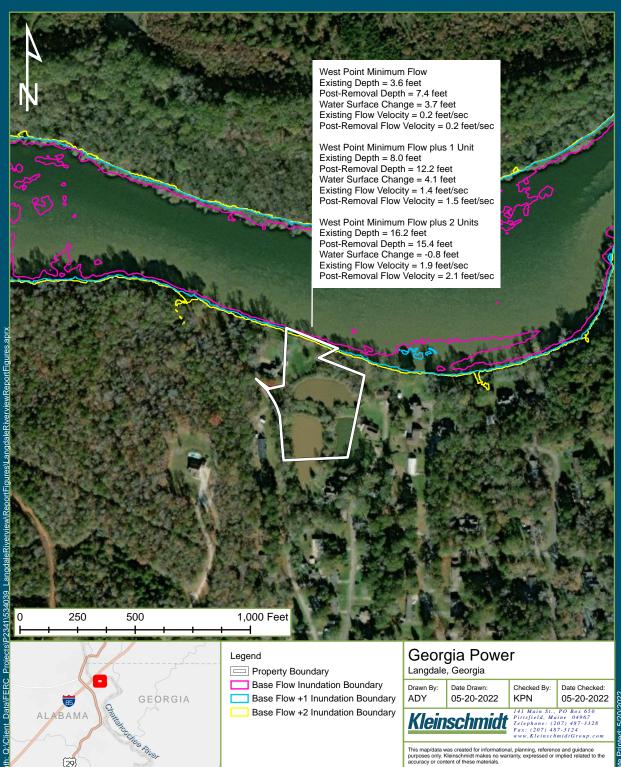
- The USGS crew is thankful for the opportunity to explore the area requested by Georgia Power.
- Obtaining discharge measurements near the three dams is extremely challenging. The USGS crew spent considerable time scouting measurement sections. The area below Crow Hop in the natural river channel is particularly difficult and it was necessary to split the measurement into two channels, as noted.
- Due to the channel conditions several of the measurements were rated as POOR by the USGS Technicians. This designation denotes the quality of the measurement and is an indication of the channel conditions and/or available cross sections. This is not a qualitative assessment the work of the Technicians. However measurements rated POOR should be considered +/-10% of the measured discharge.
- The water surface elevations were acquired using a GPS and the eGPS Real-time network (RTN). This network adjusts the GPS elevation data in real time. This network was used in the interest of celerity as releases from West Point Dam were imminent. Elevations obtained using this network should be considered USGS Level III survey and are considered within +/- 0.30 feet. Heavy tree cover affected most GPS observations and degraded the quality of the GPS data.

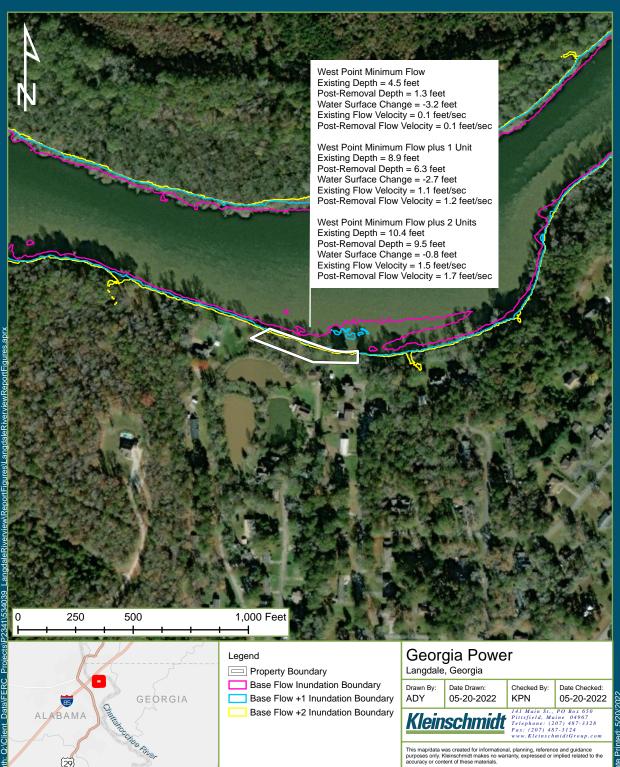
APPENDIX D PROPERTY OWNERS PARCEL MAPS

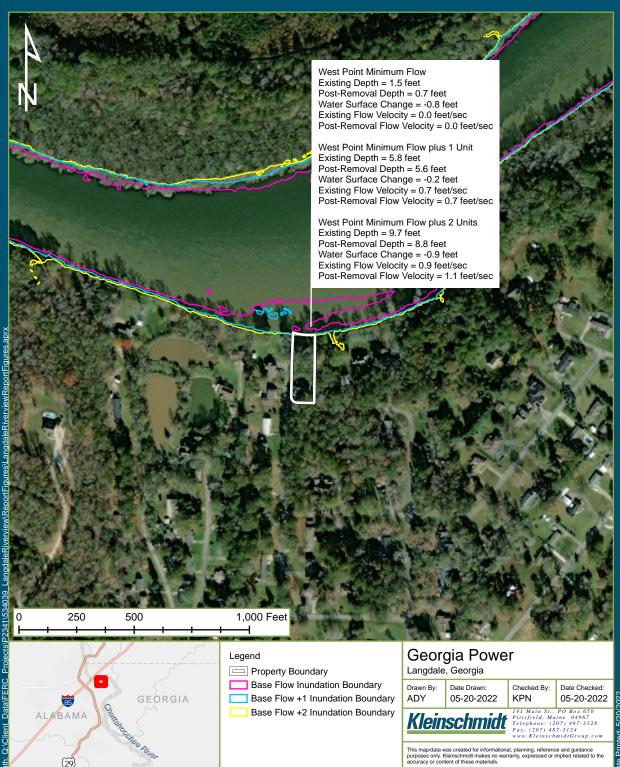


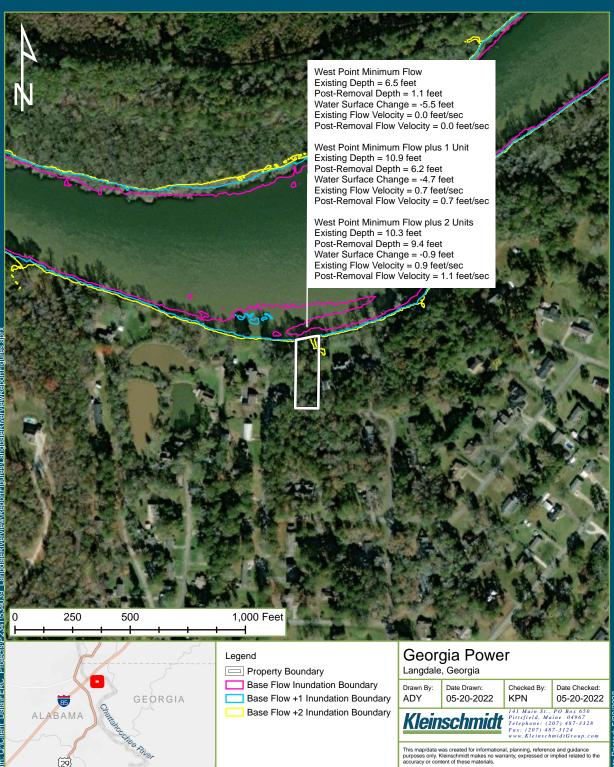


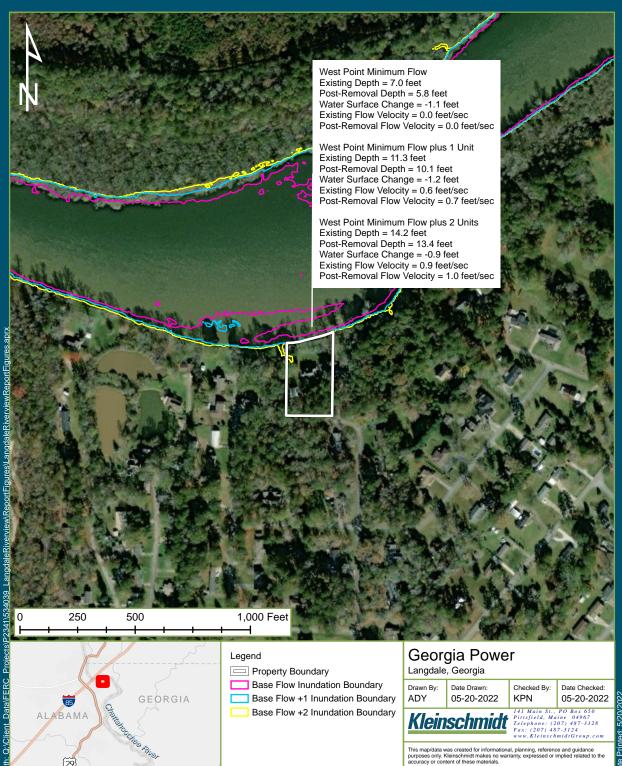


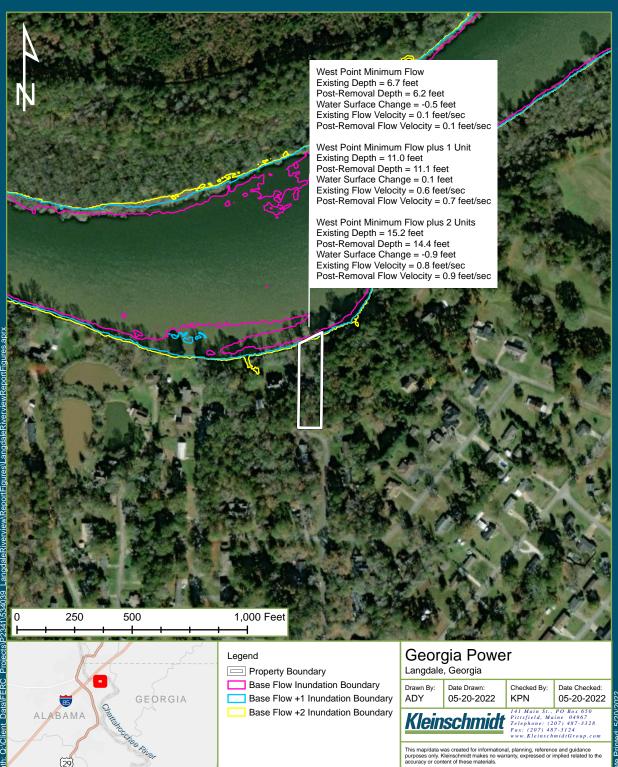


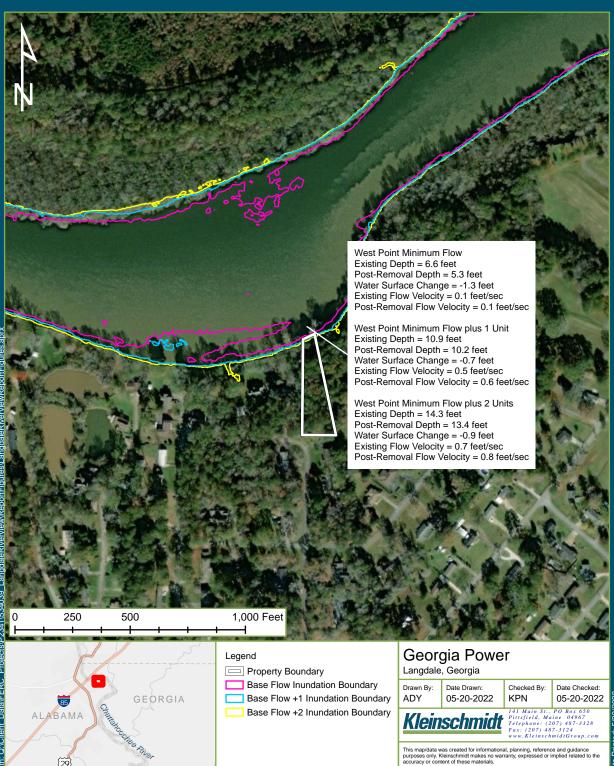


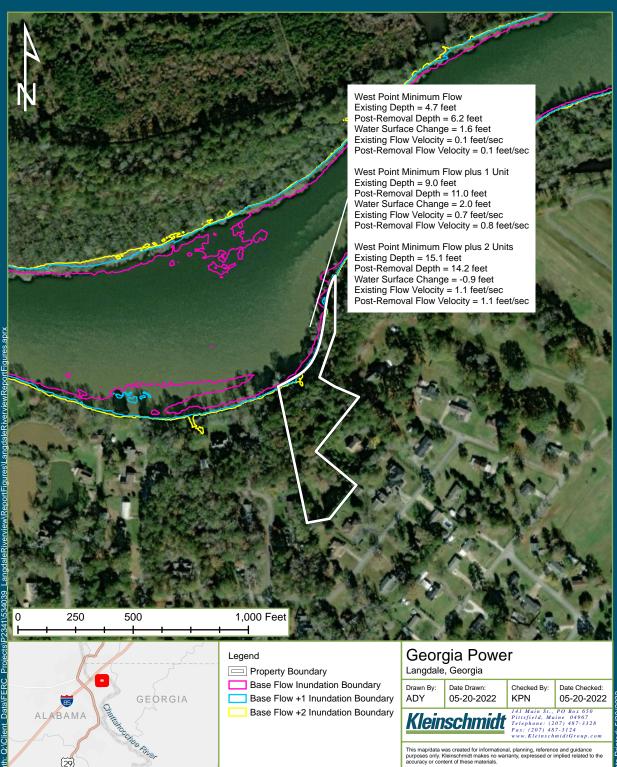


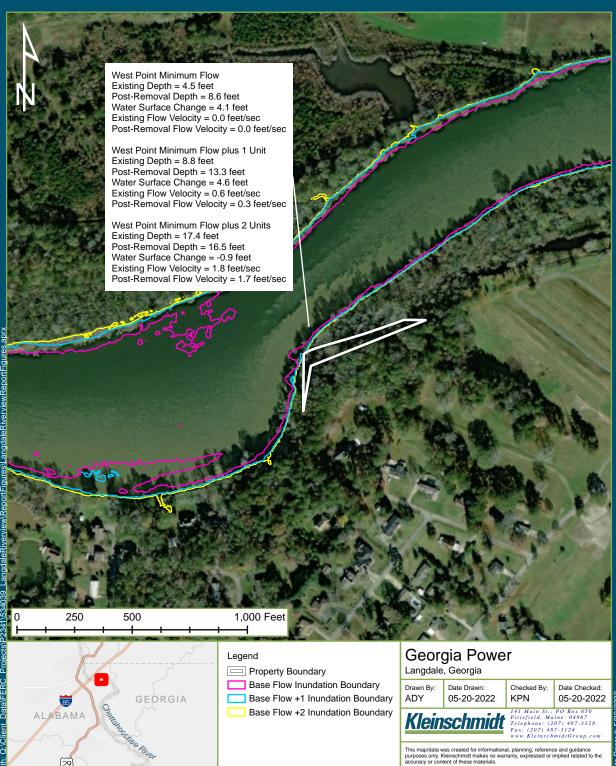


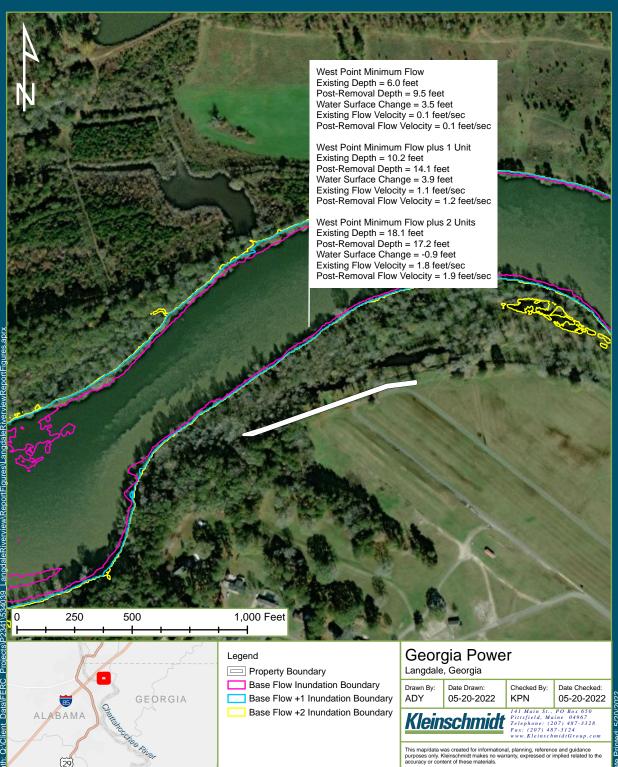


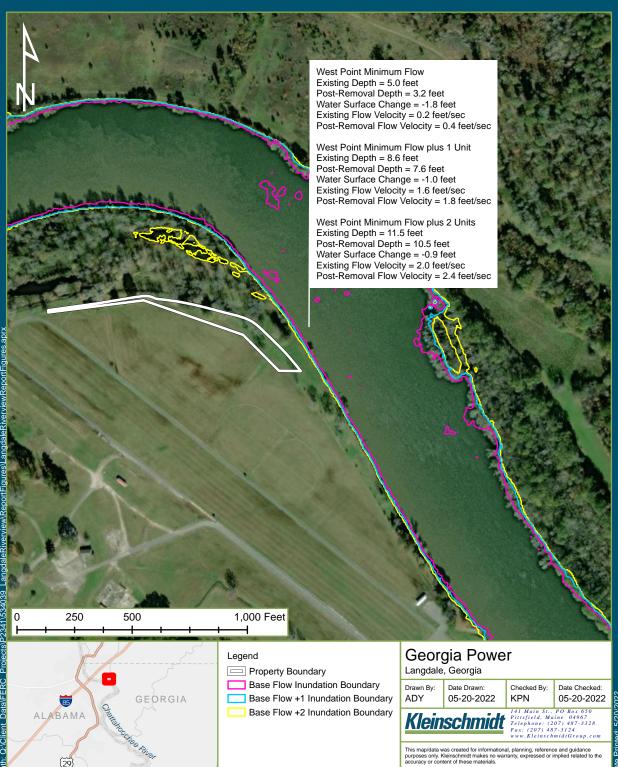


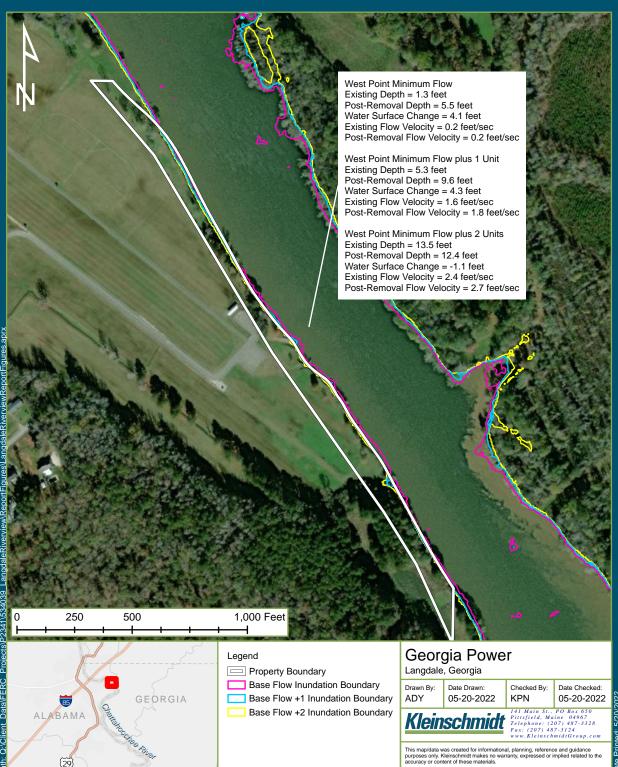


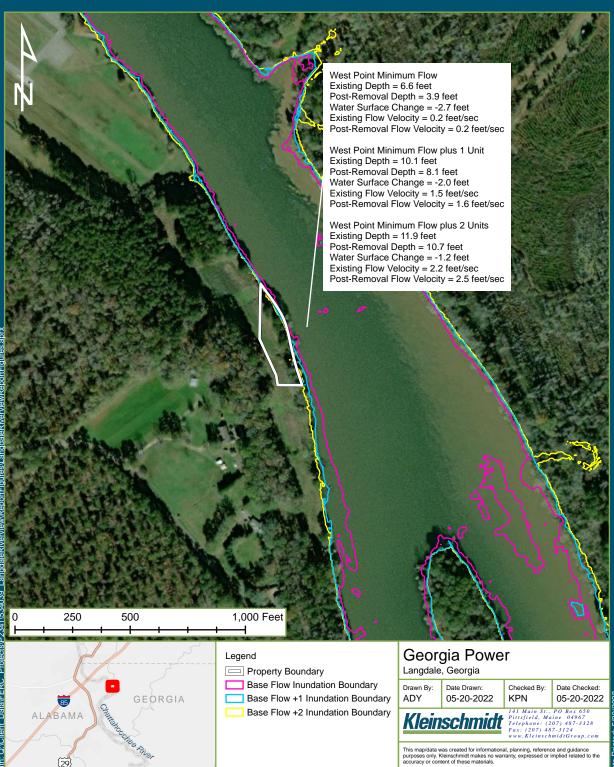


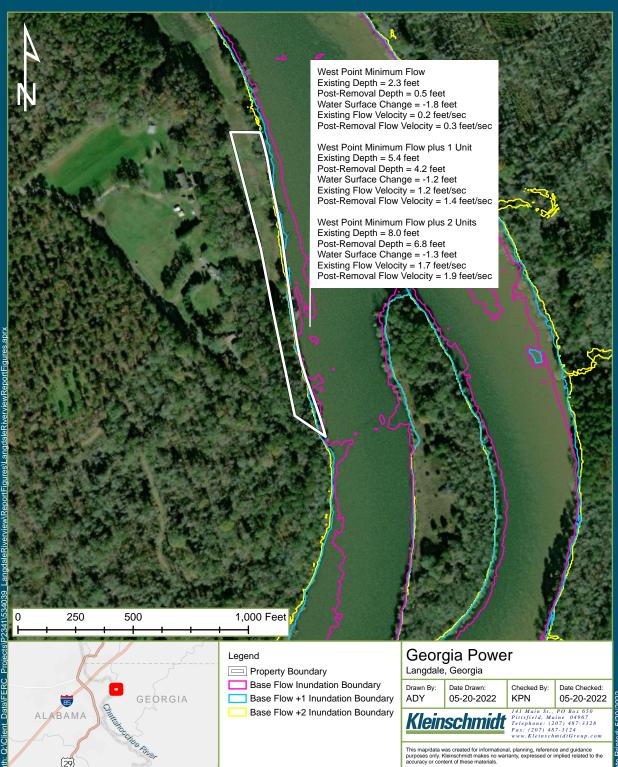


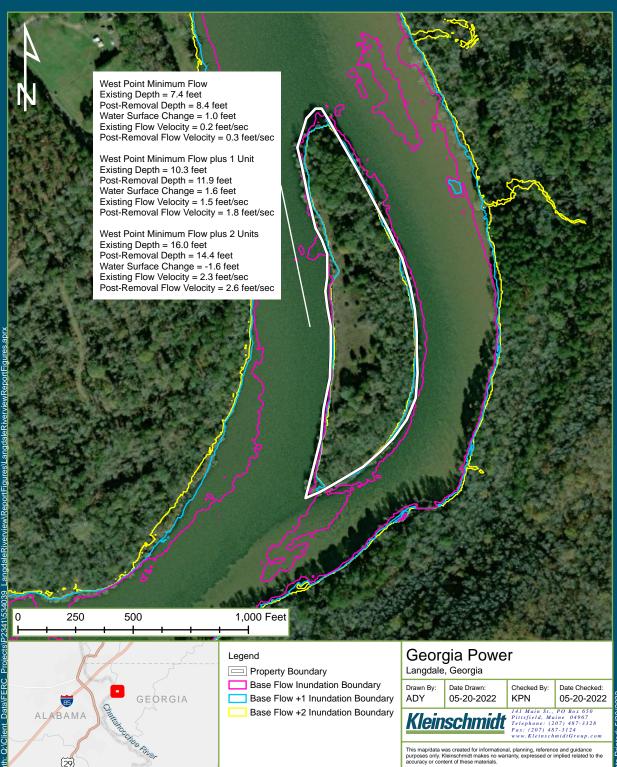


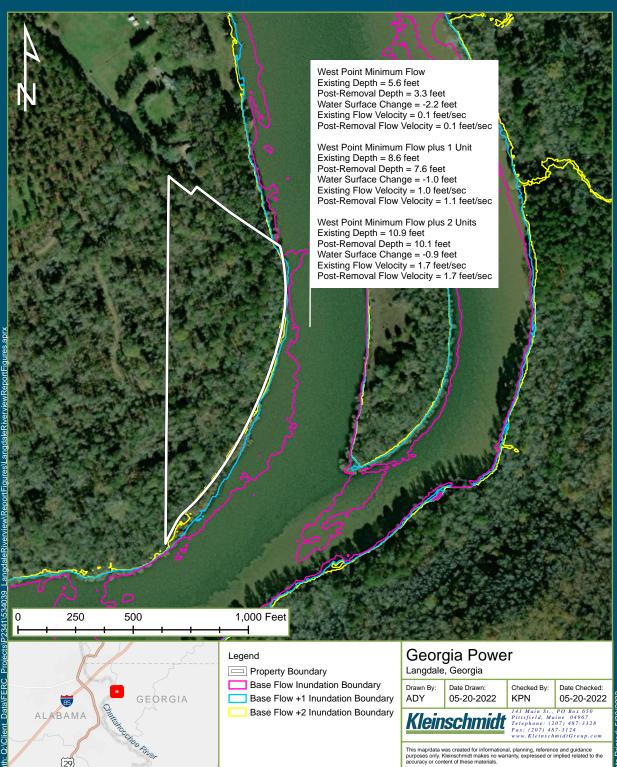


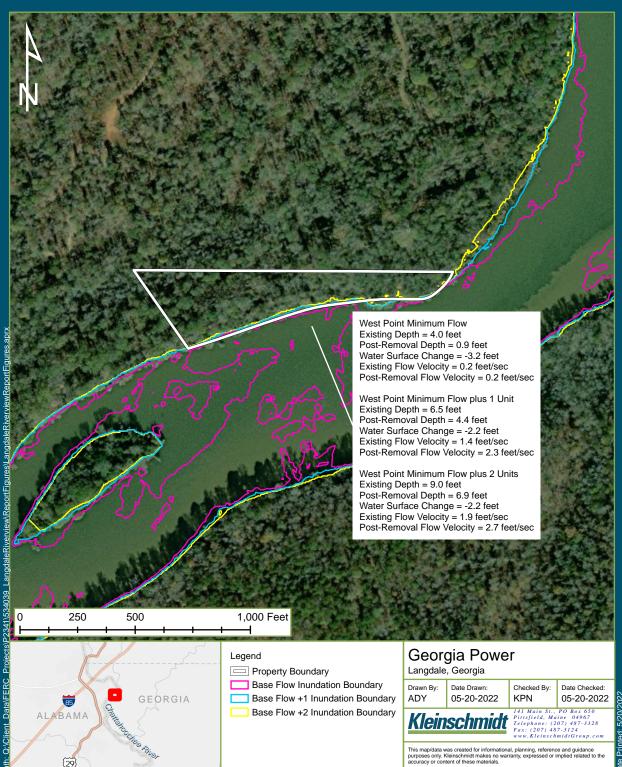


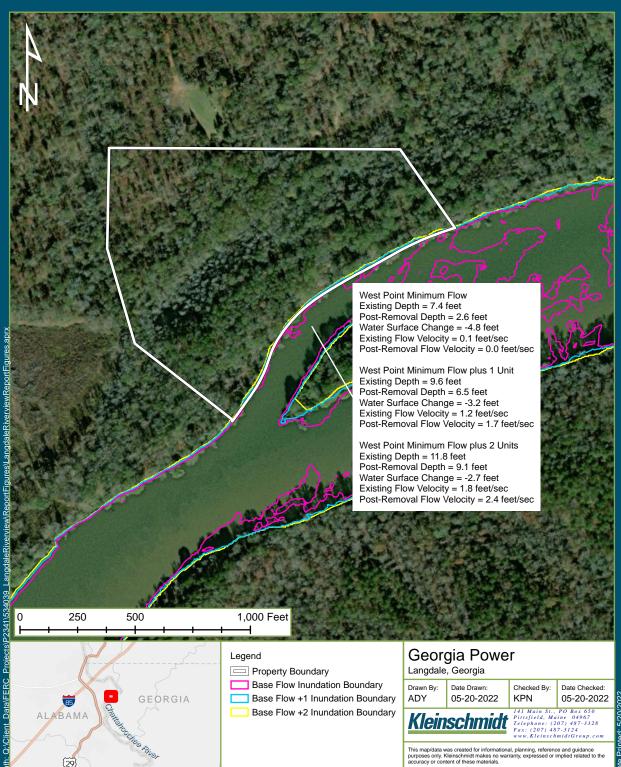


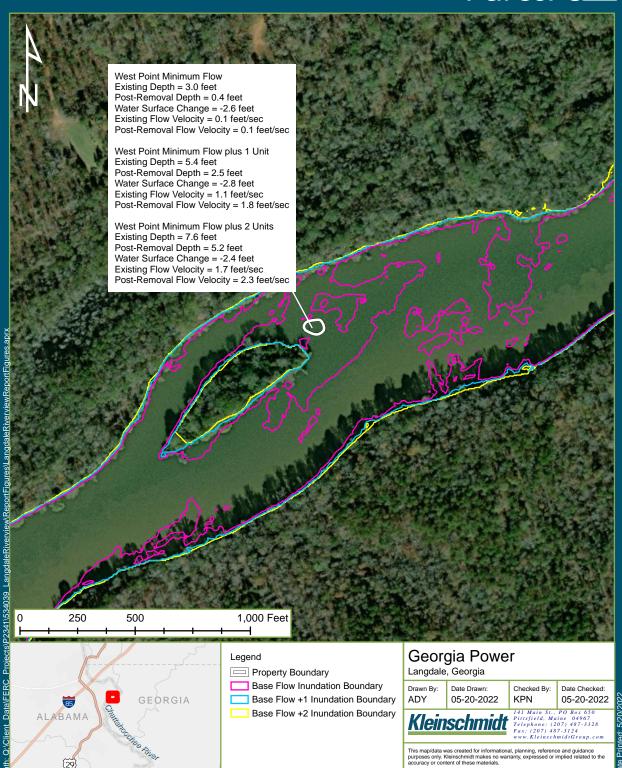


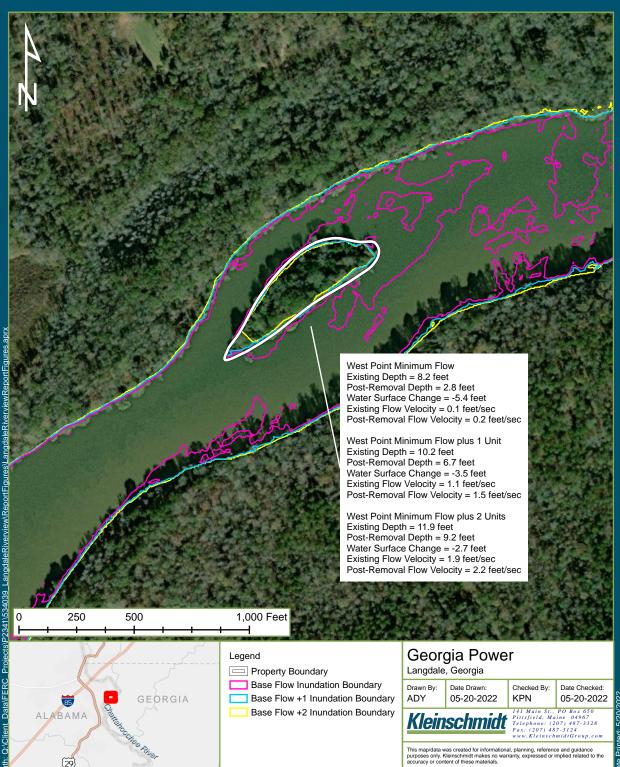


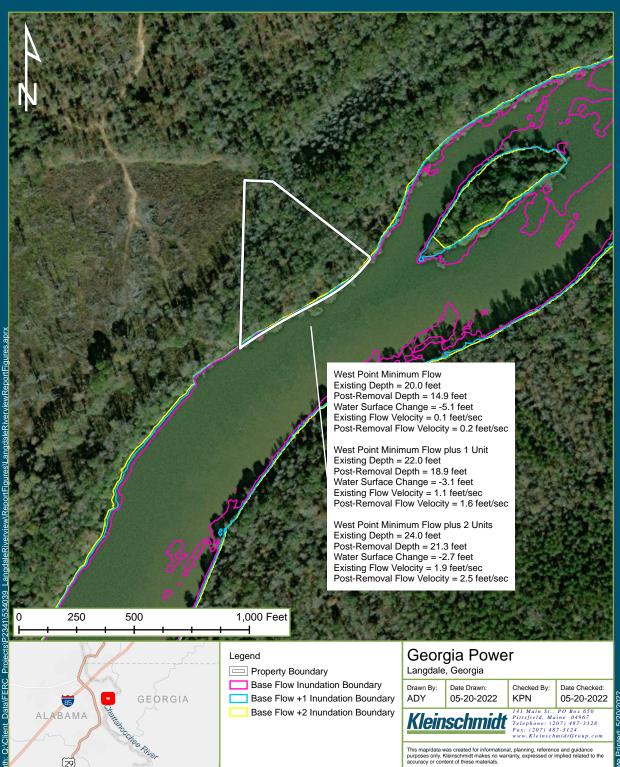


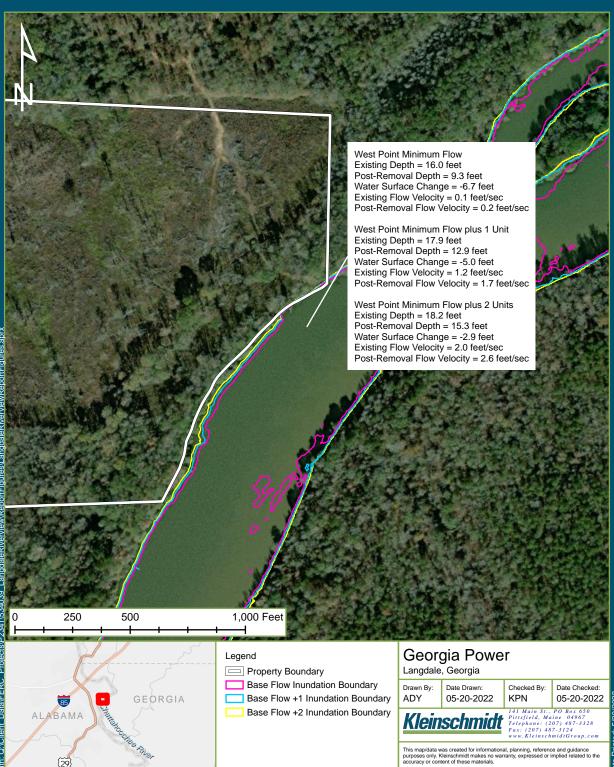


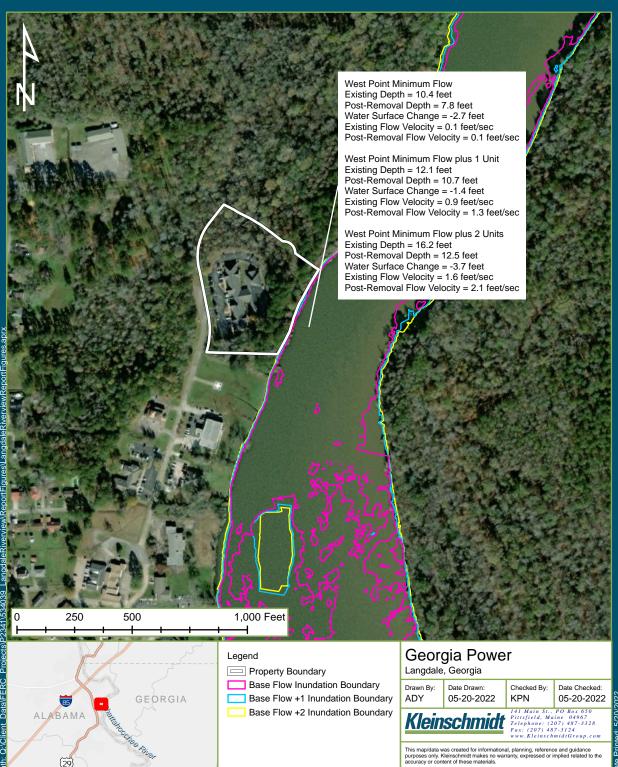


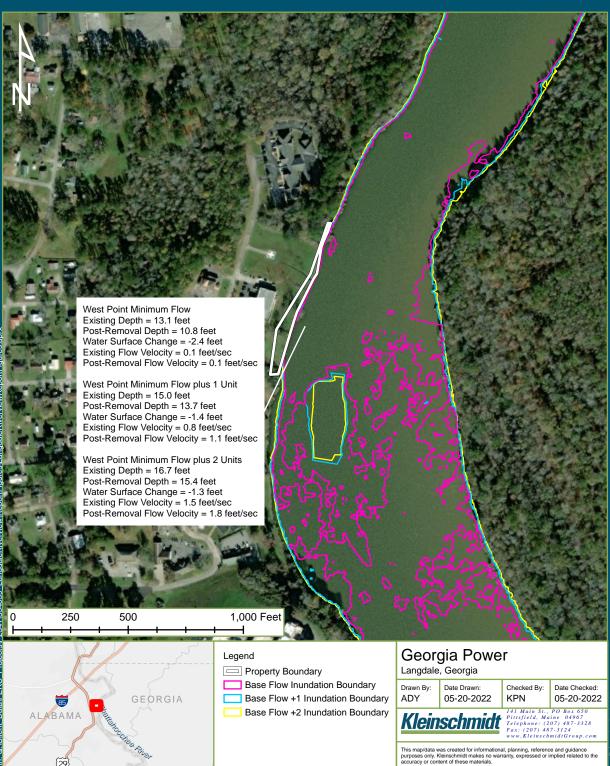


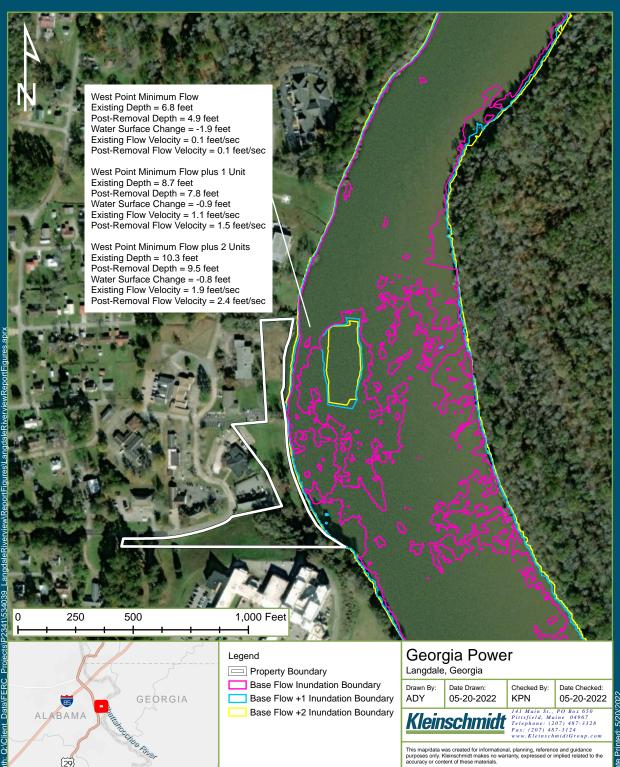


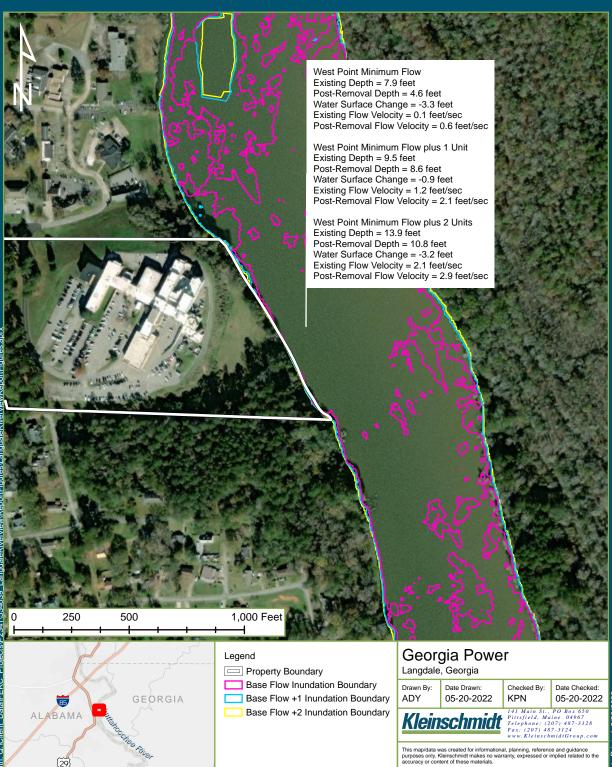




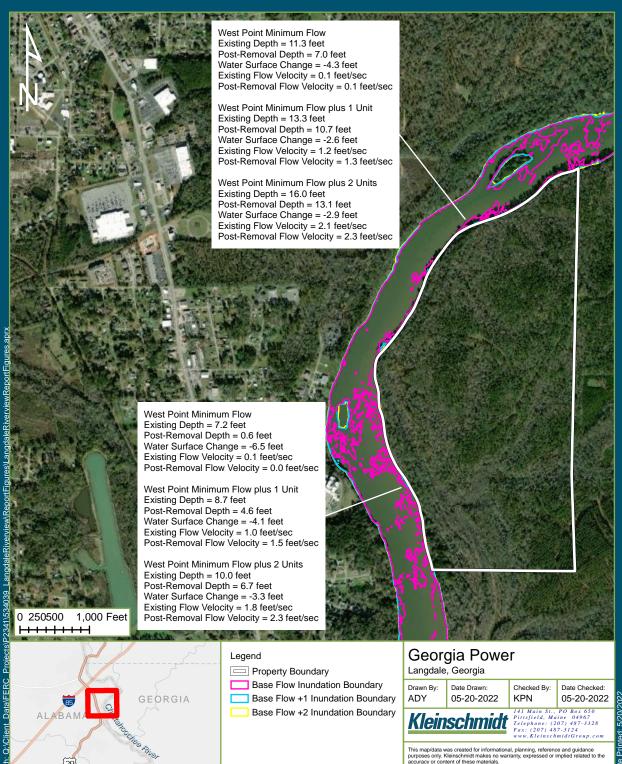








Parcel 031A



Parcel 031B

