



LOUISIANA NATURAL AND SCENIC RIVERS SYSTEM

PERMIT APPLICATION

Permit # 911 (Assigned by Department)

The Louisiana Department of Wildlife and Fisheries' Scenic Rivers program is authorized by LRS title 56, Chapter 9 Part II. This law requires permits authorizing activities in or affecting rivers that have been designated by the Louisiana Legislature as Natural and Scenic. Information provided on this form will be used in evaluating the application for a permit. Information in this application is made a matter of public record through issuance of a public notice. Disclosure of the information requested is voluntary, however, the data requested are necessary in order to communicate with the applicant and to evaluate the permit application. If necessary information is not provided, the permit application cannot be processed nor can a permit be issued.

APPLICANT INFORMATION

Table with 2 columns: Applicant (Comstock Oil & Gas-Louisiana, LLC) and Agent (EcoScience Resource Group, LLC). Rows include Name, Address, City, State, Zip, and Phone.

DESCRIPTION OF THE PROPOSED ACTIVITY

Brief summary of the description and purpose of the proposed activity (details to be attached as a separate document) Designated Tickfaw 3 Intake to withdraw water from the Tickfaw River into private pond storage for use in hydraulic fracturing. Is any portion of the activity complete? YES (NO) (If yes indicate month and year of completion)

LOCATION OF PROPOSED ACTIVITY

Table with 3 columns: Stream Name, Parish, Section, Township, Range, Latitude/Longitude, and Names, Addresses, Phone Numbers of Adjacent Property Owners.

ENVIRONMENTAL ASSESSMENT

Must be a separate document. See the attached instruction sheet for completing the assessment.

CONFIRMATION OF INFORMATION ACCURACY

Application is hereby made for a Scenic River Use Permit to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that, to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities, or I am acting as the duly authorized agent of the applicant.

Signature line with handwritten signature and the word 'Signature' below it.

Date line with handwritten date '9/11/14' and the word 'Date' below it.



Louisiana Scenic River Permit Application

for
Tickfaw River Intake 3
St. Helena Parish, Louisiana

Prepared for

**Comstock Oil & Gas-Louisiana, LLC
5300 Town and Country Blvd.
Suite 500
Frisco, TX 75034**

September 2, 2014

11827 Sunray Avenue
Baton Rouge, Louisiana 70816
225.755.8844



September 11, 2014

Louisiana Department of Wildlife and Fisheries Scenic Rivers Program
P.O. Box 98000
Baton Rouge, LA 70898-9000

Re: Scenic River Permit Application
Tickfaw River Intake 3
St. Helena Parish
Comstock Oil & Gas-Louisiana, LLC

Dear Representative:

As the agent for and on behalf of Comstock Oil & Gas-Louisiana, LLC, please accept this Scenic River Permit Application. Please note that this location is one of three on the Tickfaw River. Only one of these will be used at a time. An original and six (6) copies are enclosed. EcoScience check no. 39836 for the \$100.00 administrative fee is enclosed. Public notices have been initiated in the Baton Rouge Advocate and St. Helena Echo and proof of publication will be submitted later.

If you have any questions, please contact me. Thank you for your assistance.

Respectfully,

A handwritten signature in blue ink that reads 'PBLee'.

Peter B. Lee, P.G., P.H.
Principal Hydrogeologist

Cc: Comstock Oil & Gas-Louisiana, LLC

1.0 PROJECT DESCRIPTION

Comstock Oil & Gas-Louisiana, LLC is planning to drill and develop a well in the Tuscaloosa Marine Shale (TMS) by hydraulic fracturing. The water supply will be provided by surface water from the Tickfaw River in St. Helena Parish on private property. The Tickfaw River has been designated as a Scenic River from the Mississippi-Louisiana state line to LA Hwy. 42.

The planned extraction point is designated as Intake 3 (Figure 1) and is located at N30° 58' 17.5", W90° 40' 37.8". All figures are in Appendix A. The water will be pumped into man-made storage impoundments on private property, outside of the 100-foot Scenic River buffer, and then pumped to the well site. The surface water will be pumped from a screened intake hose by a trailer-mounted pump into a temporary discharge line to the storage pond and to the well site, which is within a mile of the intake point. The water supply required is 300,000 barrels (bbls) or 12,600,000 gallons. The pumping rate will vary from 25-80 bbls/minute or 1,050-3,360 gallons per minute (gpm). Based on these rates with constant pumping, withdrawal could be from 2.6 to 8.3 days. Pumping may be discontinuous and periodic in stages.

2.0 PROJECT LOCATION

The Intake 3 location is depicted on an aerial photograph (Figure 2) and topographic map (Figure 3) in Appendix A. Access to the intake point of withdrawal is through a cleared established private pasture to the river bank. No trees, flora or wetlands will be affected by operations. Figures 4-7 are photographs of the Tickfaw River intake on August 21, 2014.

3.0 OTHER REQUIRED PERMITS

The Louisiana Department of Natural Resources (DNR) has a Louisiana Running Surface Water Use Cooperative Endeavor Agreement with a Surface Water Withdrawal Application. This application will be submitted.

4.0 ENVIRONMENTAL ASSESSMENT

4.1 Existing Land Use

The access property adjacent to the intake is privately-owned developed pasture to the river bank with few hardwood trees in the vicinity. The land is used for agriculture and recreation by the owner.

4.2 Historical/Archeological Sites

The National Register of Historic Places indicates that there are only two (2) sites in St. Helena Parish and both are in the town of Greensburg.

4.3 Economic Impact of the Project

The drilling and production of the well will generate increases in tax revenue for the parish and state as severance taxes, ad valorem taxes and sales taxes. The well may generate drilling/production of more wells in the parish. The local population may benefit from the creation of jobs and services.

4.4 Wilderness/Rural Quality

The temporary extraction point is adjacent to private property. The Tickfaw River has hardwood forest along the banks except at the intake point, which is open. There are no jurisdictional wetlands affected by pumping or access. The landowner has sole access to the extraction point area. There will be no disturbance to the existing land. Land in this area is rural with agricultural and hunting uses. The nearest residence is approximately 2,000 feet to the east and belongs to the same land owner.

4.5 Scenic/Aesthetic Value

The use of the extraction point is temporary and the site will be restored to existing condition. There is no aesthetic value except to the landowner. Access from up or downstream is limited due to shallow seasonal depth and numerous natural barricades such as downed trees to restrict navigation (Figures 5 and 6).

4.6 Recreational Use/Opportunity

This portion of the Tickfaw River is designated as segment LA4050100 of the Lake Pontchartrain Basin in the LDEQ 2010 Louisiana Water Quality Inventory. Designated water body uses are primary contact recreation (swimming), secondary contact recreation (boating) and outstanding natural resource water (Appendix B). The only direct access for recreation is controlled by the landowner. Access from upstream or downstream for swimming or boating is unlikely. Temporary use of the extraction point will not interfere with the water body uses.

4.7 Ecological System Present

The existing flora on the river bank is hardwood forest and other associated plants. There is an open pathway to the intake point. All equipment and discharge hoses will use the pathway. There is limited habitat for wildlife and there are presently periodic visits to the area by the landowner. The river supports limited aquatic species due to the shallow depth. No wetlands are present. The bank is steeply incised at the intake point; the top of the bank is 10 feet above the stream bottom and slopes gradually toward the opposite (depositional) bank.

4.8 Fish and Wildlife in the Area

The listing of rare, threatened and endangered species from the DWF Natural Heritage Program indicates that no threatened or endangered species are found in St. Helena Parish. The Alabama Shad (*Alosa alabamae*) is listed as a federal candidate species. The rare plants and animals will not be affected since there will be no vegetative clearing and a filter will be attached to the pump intake to prevent taking of any aquatic species. As a precaution, the work area will be surveyed to identify and avoid any rare plant species prior to equipment placement.

4.9 Botanical Elements

The area adjacent to the intake is pasture with natural grasses (Figure 7). No trees or vegetation will be cut or removed.

4.10 Geological Features

The surface geology of the intake point comprises Pleistocene high terrace deposits consisting of tan to orange clay, silt and sand with large amounts of basal gravel (Geologic Map of Louisiana, 1984). The bank elevation at the intake point is approximately 235 feet, North American Vertical Datum (NAVD). The elevation increases to the east over 1,500 feet to approximately 300 feet, NAVD (Figure 3). To the west, the elevation increases slightly across the floodplain to approximately 245 feet, NAVD over a distance of approximately 3,000 feet.

4.11 Hydrological Features

The Tickfaw River is a tributary in the Lake Pontchartrain Basin. The basin is bounded on the north by the Mississippi state line, on the west and south by the east bank Mississippi River levee, on the east by the Pearl River Basin, and on the southeast by Breton and Chandeleur Sounds. This basin includes Lake Borgne, Breton Sound, Chandeleur Sound, and the Chandeleur Islands. The northern part of the basin consists of wooded uplands, both pine and hardwood forests. The southern portions of the basin consist of cypress-tupelo swamps and lowlands and brackish and saline marshes. Elevations in this basin range from minus five feet at New Orleans to over two hundred feet near the Mississippi border.

The Tickfaw River watershed is depicted on the map in Appendix B and extends downstream from Amite County Mississippi through St. Helena and Tangipahoa Parishes to Livingston Parish and Lake Maurepas.

The intake point on the east bank is the undercut or eroding bank, which is approximately 10 feet of depth to the river bottom (Figure 4). The west bank slope or depositional bank comprises sand deposits with an approximate 45° slope (Figure 7).

4.12 Water Quality/Quantity

Segment LA4050100 is listed on the 303 (d) list of impaired water bodies due to mercury in fish tissue and total suspended solids (Appendix B). The causes are atmospheric deposition of mercury and drainage/filling/loss of wetlands. Extraction will not contribute to the impairment since mercury is not used and there are no wetlands to be affected. Best management practices, such as silt fences and mats will be used to prevent sediment from entering the river if needed.

Comstock Tickfaw River Intake 3

The projected volume needed for the well is 12,600,000 gallons at a rate of 1,050-3,360 gpm. The profile from bank to bank across the intake point is depicted on Figure 9. The dimensions of the extraction point at 5 feet of depth were measured on August 21, 2014 as follows:

Width (ft)	Water depth from bottom (ft)	Depth from bank to bottom (ft)	Water Volume/foot (ft ²)
15	5	10	75

The velocity was measured with a MFP51 Stream Flowmeter in the 5-foot deep section at a depth of 2 feet below the water level. In addition, velocity and discharge data over the past 12 months (July 2013 to August 2014) were obtained from the USGS Liverpool gauge graph approximately 2.8 miles downstream at Hwy. 38 (Appendix B). Average velocities over time at the Liverpool gauge were obtained from the USGS *Technical Report 70, Low-Flow Characteristics of Louisiana Streams* (Appendix B).

	Velocity (ft/sec)	Discharge (ft ³ /sec)	Discharge (gpm)
Flow Meter	0.83	62	27,825
Liverpool Gauge August 21		38	17,054
Liverpool Gauge (12-month Min.)		30	13,464
Liverpool Gauge (12-month Max.)		9,000	4,039,200
TP 70 7Q10		32	14,361
TP 70 7Q2		38	17,054
TP 70 99%		29	13,015
Min. Pump Rate			1,050
Max. Pump Rate			3,360

The discharge at the intake is calculated by multiplying the water/volume/foot of 75 ft² by the velocity. The TP 70 7Q10 flow is the lowest annual average flow for 7 consecutive days over a 10-year interval and the 7Q2 flow is over a 2-year interval. The TP 70 99% is the flow rate that exceeds 99% of days.

Comstock Tickfaw River Intake 3

The lowest measured discharge on August 21, 2014 was 27,825 gpm. The flow rate at the Liverpool gauge on August 21, 2014 was 17,054 gpm (Appendix B). The discharge was unusually higher than the Liverpool gauge. There was precipitation prior to August 21 and a surge to 47 ft³/sec (21,093 gpm) on August 22 at the Liverpool gauge. The ratio of the measured rate at the intake to the gauge could not be adjusted. The minimum drawdown is based on the August 21, 2014 depth of 5 feet multiplied by the percentage of minimum and maximum drawdown using both the measured drawdown and 7Q2, which seems to be preferred by regulatory agency hydrologists.

Liverpool 7Q2(gpm)	Aug 21 (gpm)	Min. Flow Rate (gpm)	Max. Flow Rate (gpm)	Min. % of Discharge	Max. % of Discharge	Min. Drawdown (ft)	Max. Drawdown (ft)
	27,825	1,050	3,360	3.7	12	0.2	0.6
17,054		1,050	3,360	6.1	19.7	0.3	0.9

Therefore, the drawdown at the point of intake will be 0.2 to 0.9 feet, which will not prevent flow from continuing downstream. In addition, numerous tributaries downstream of the intake point recharge the Tickfaw River. Figure 8 depicts the intake and Liverpool Gauge locations in reference to the Tickfaw drainage area. Numerous tributaries recharge the Tickfaw upstream of the Liverpool Gauge including named tributaries Spring Creek and Mill Creek so pumping from the intake will only affect a portion of the stream flow.

5.0 LEGAL AGREEMENT

The signed legal agreement is in Appendix C.

6.0 COMPLIANCE HISTORY

The applicant has no regulatory or compliance history in Louisiana.

7.0 STEPS TO MINIMIZE IMPACTS

A site was chosen to minimize environmental impacts from vehicles and equipment. The intake is accessed by a developed pasture and there will be no impact to flora or fauna. There will be no impact to the Tickfaw River from sediment since there will be no earth clearing; however BMPs will be implemented if needed to prevent erosion and sediment into the river. The site was partially chosen because no wetlands will be affected. There are no federal or state endangered species in the project area. Aquatic species damage will be mitigated by the intake hose screen. The affected area will be surveyed for rare plant species and habitat and avoided if present. After removal of the equipment, the river access area and river will be restored to original condition prior to pumping.

8.0 PROJECT ALTERNATIVE

There are two sources of water in Louisiana: surface water and groundwater. Louisiana Water Resources Report dated Marc 15, 2012 encourages the use of abundant surface water over the use of high quality groundwater for hydraulic fracturing. Surface water from streams, ponds and lakes is the preferred alternative. For this project, water from the Tickfaw River will be pumped into storage ponds and then into the well. The Tickfaw River will naturally recharge over time from rainfall and springs. This section of the river, although it is a designated Scenic River, is relatively low quality, is impaired, is not used for recreation or fish and wildlife propagation and will not be affected except for temporary withdrawal. There will be no affect on recreation or wildlife. All water will be pumped and contained in hoses or ponds and water will not have to be transported via trucks, which increase traffic and safety hazards for the population, to the project area. Once the water is used, any flowback water will be contained, transported and disposed in an injection well.

9.0 SUMMARY

The proposed withdrawal of surface water from the Tickfaw River will NOT:

- Affect the current land use
- Impact historical sites
- Interfere with the use of the property or nearby residents
- Interfere with recreational use

Comstock Tickfaw River Intake 3

- Affect the aesthetic value of the river
- Permanently alter the natural ecological system
- Impact wetlands
- Significantly impact fish and wildlife
- Require use of high quality ground water
- Cause the water quality to change
- Significantly reduce the stream flow
- Draw down the river to a level that prevents flow
- Add unnecessary truck traffic to the community



State of Louisiana

BOBBY JINDAL
GOVERNOR

DEPARTMENT OF WILDLIFE AND FISHERIES

ROBERT J. BARHAM
SECRETARY

Dear Scenic River Permit Applicant:

Please review and concur on the following statement regarding the issuance of permits by the Louisiana Department of Wildlife and Fisheries. This agreement must be signed and returned before a Scenic River Permit can be issued.

"I have been advised and do understand that by applying for and accepting a Scenic Rivers permit issued by the Louisiana Department of Wildlife and Fisheries, I am being allowed to engage in an activity which would otherwise be prohibited by law or for which a permit is required. I understand that the permit is not a license and confers no property right upon me. I specifically agree to abide by all State and Federal fish and wildlife laws and regulations, and all State and Federal laws and regulations which relate to this permit or the permitted activity, and by all other terms and conditions of this permit. I understand that the permit for which I am applying may be suspended, annulled, withdrawn or revoked and that I may be assessed civil penalties, all in accordance with the provision of the Louisiana Administrative Procedure Act, and that I may be denied future permits as a consequence of my failure to fully and completely comply with the terms and conditions of the permit, as well as other laws and regulations pertinent thereto. If served with or notified of a cease and desist order signed by the Scenic Rivers Administrator, I agree to immediately and without delay cease all activities and operations which relate to the permitted activity or which are impacting the Scenic River, until such time as the matter can be resolved in an adjudicatory hearing pursuant to the Louisiana Administrative Procedure Act. I understand and agree that any permit issued to me by the Louisiana Department of Wildlife and Fisheries is in the nature of a privilege which is being voluntarily extended to me by the Department and the failure on my part to cooperate with the Department can result in the loss of the privilege conferred and the denial of future requests for permits. By accepting this permit, I evidence my agreement to be bound by all conditions and stipulations set forth herein."

A handwritten signature in blue ink, appearing to read "David A. Hain", written over a horizontal line.

Authorized Signature

A handwritten date "9/11/14" in blue ink, written over a horizontal line.

Date

REV. 12/7/98

Figure 1. Regional Location Map

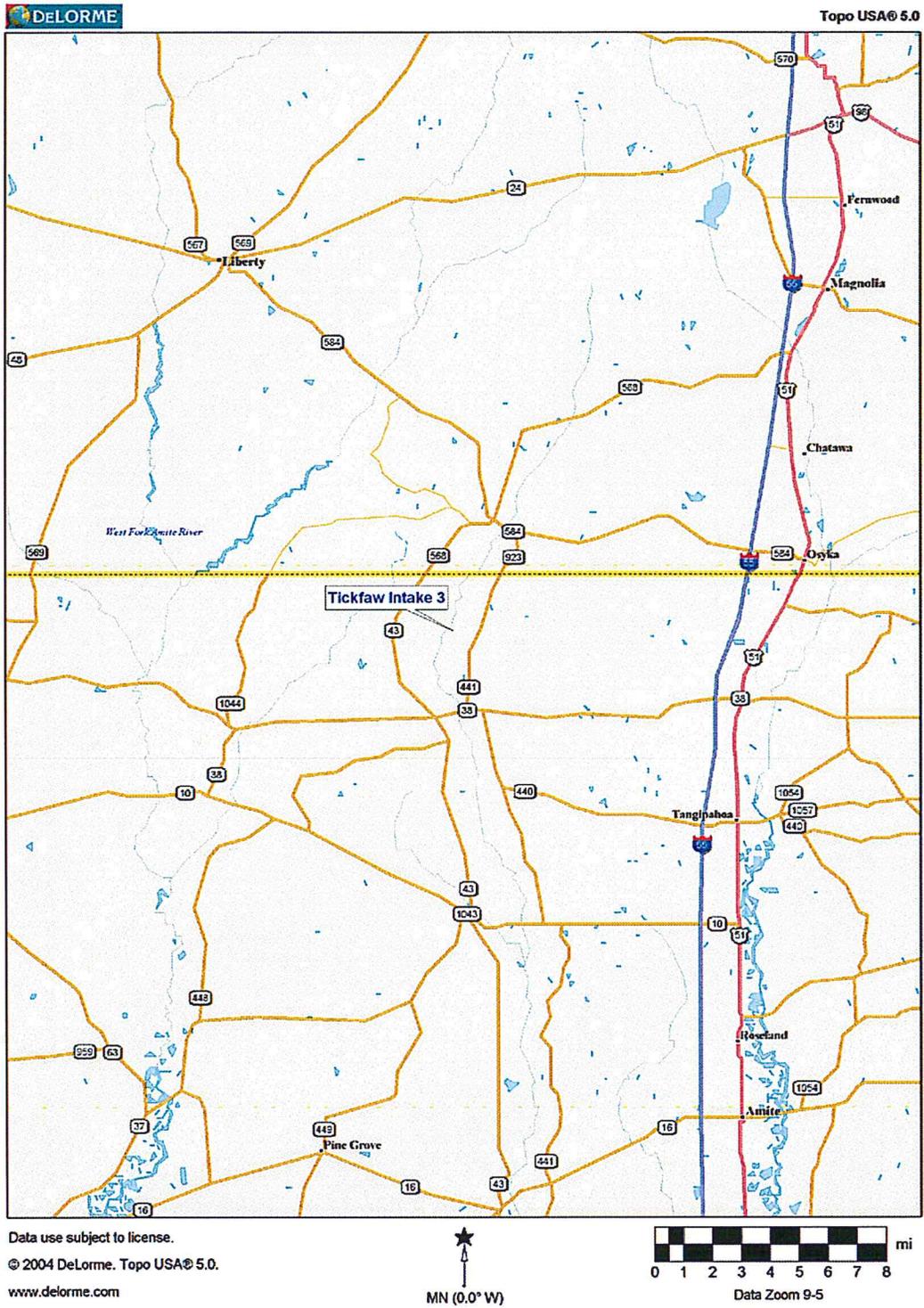


Figure 8. Tickfaw River Drainage Area

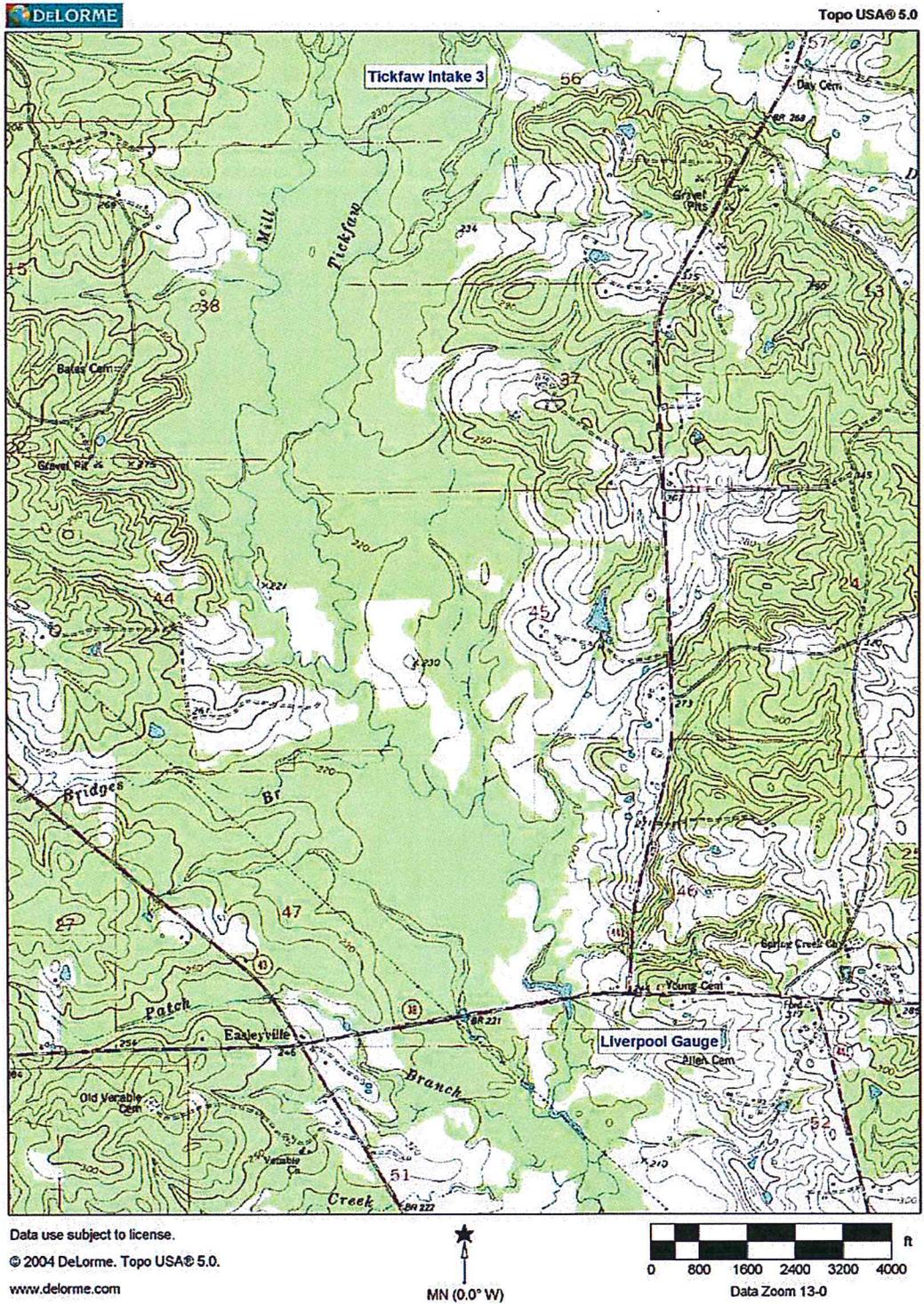
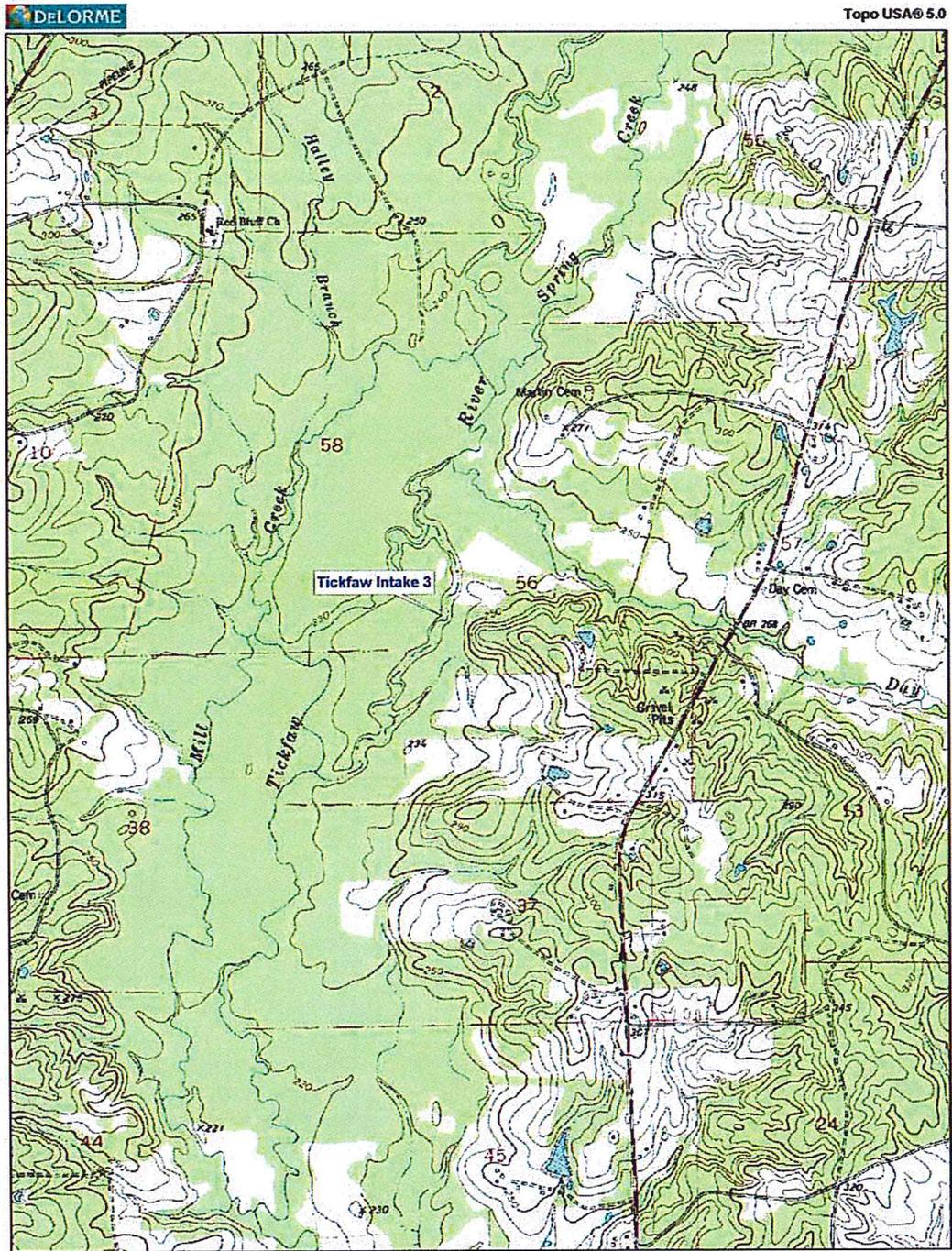


Figure 3. Topographic Map

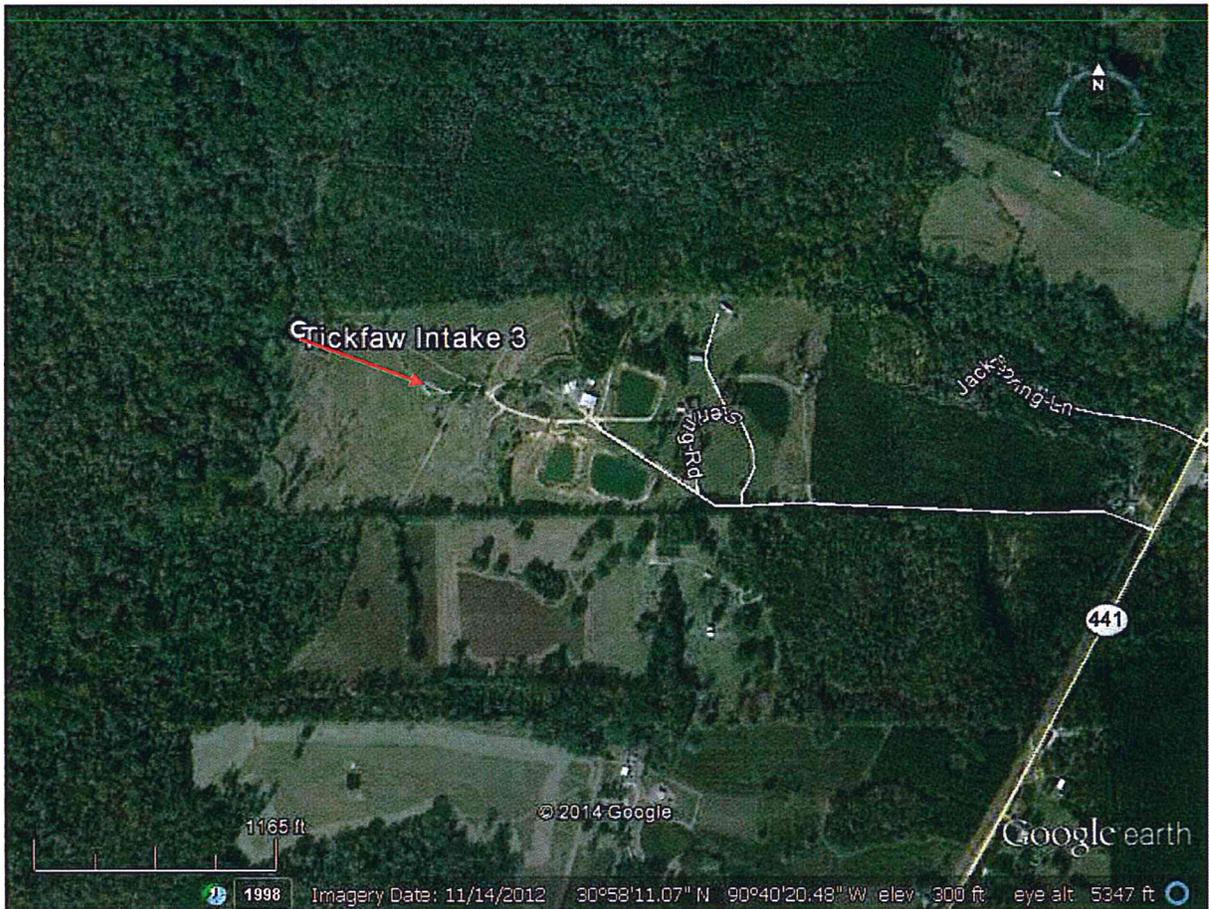


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MN (0.0° W)

0 600 1200 1800 2400 3000 3600 ft
Data Zoom 13-1

Figure 2. Aerial Photograph



→ = Discharge Direction

Figure 9

Profile of Tickfaw 3 Intake Point

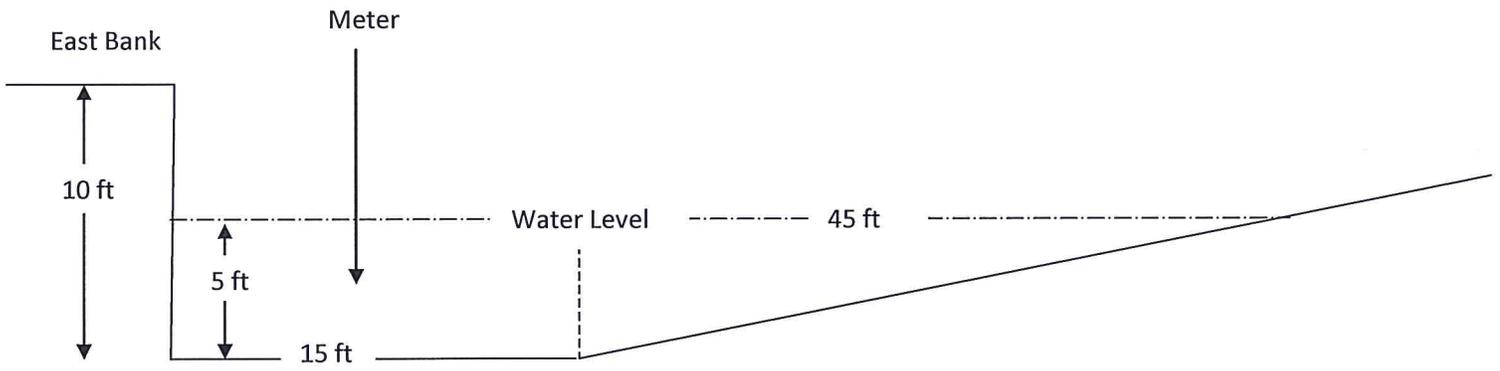




Figure 7. View of the east bank approach from the intake.



Figure 6. View downstream (south) from the intake.

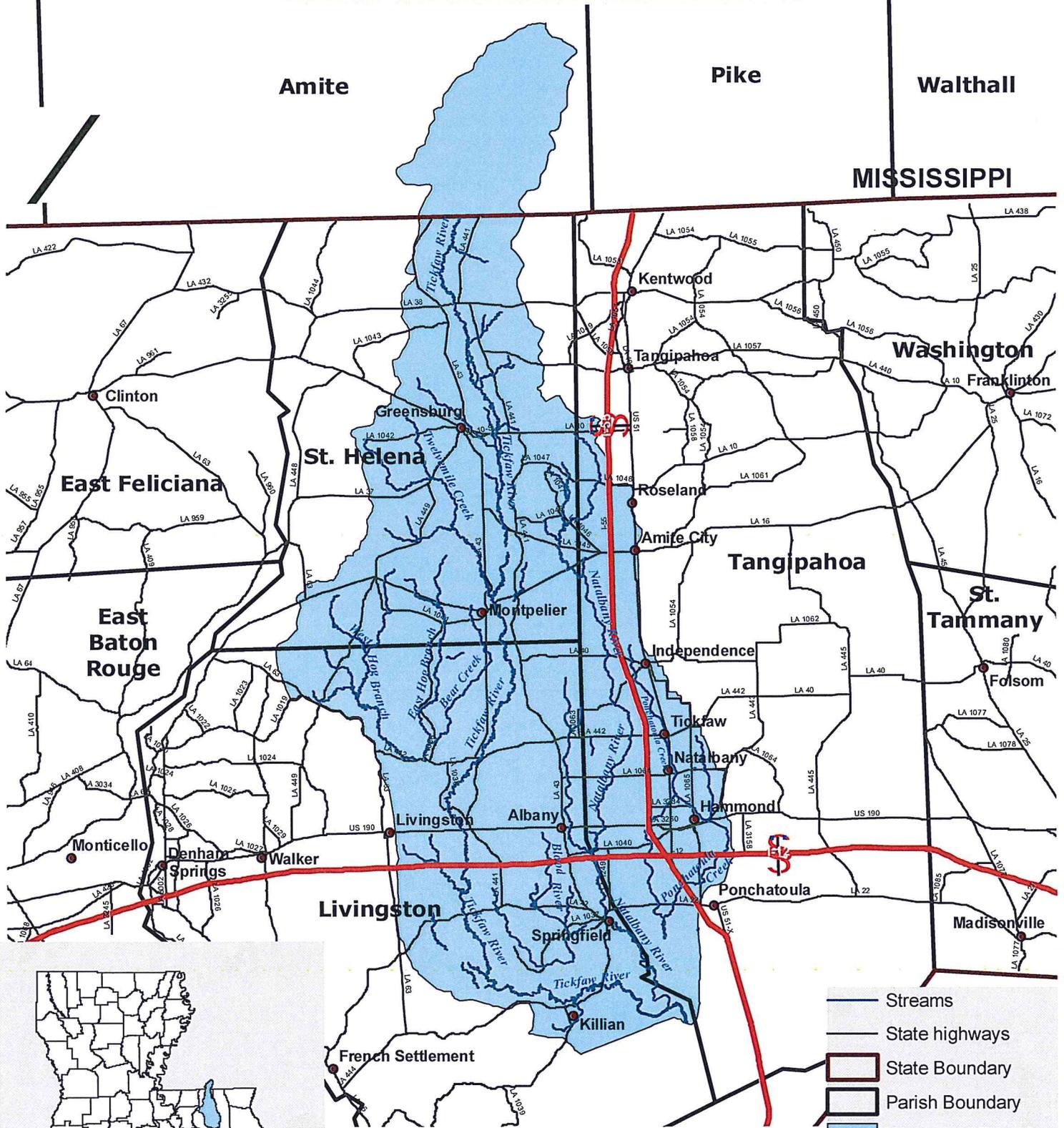


Figure 4. View of the Tickfaw River intake and west bank from the east bank.



Figure 5. View upstream (north) from the intake.

Tickfaw Watershed HUC 08070203



Louisiana
0 25 50 100 150 Miles

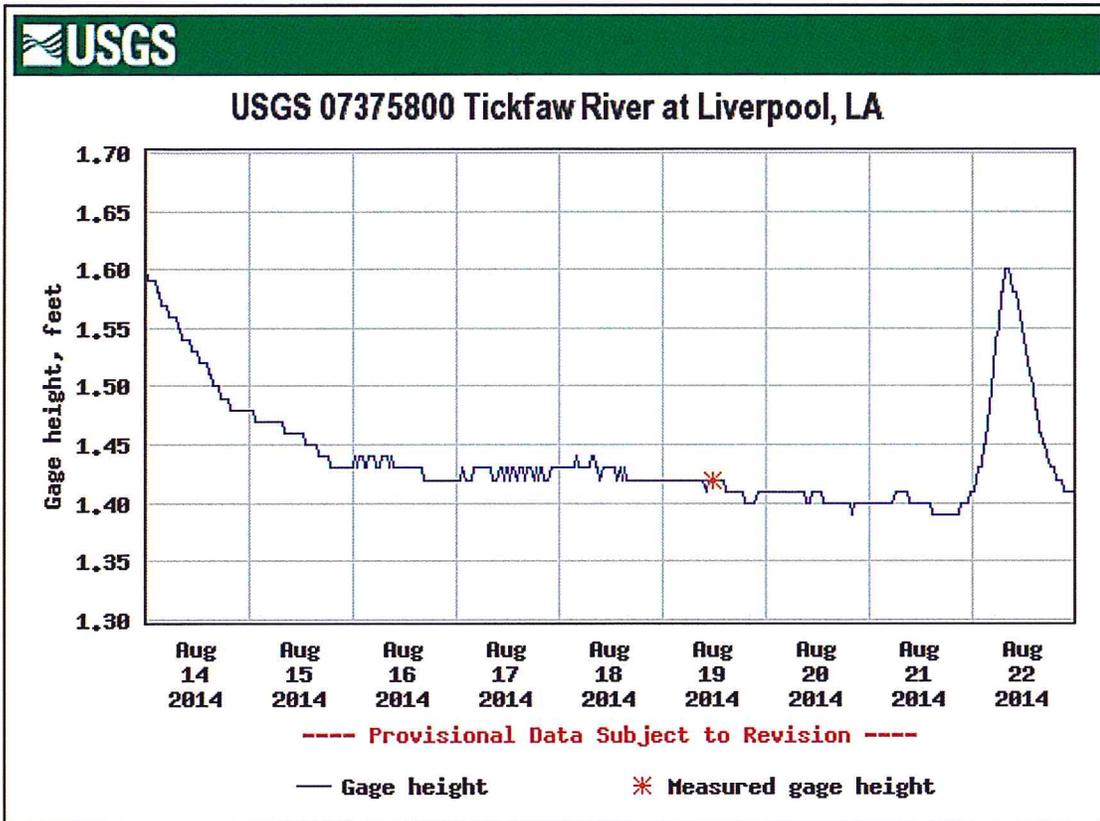
0 5 10 Miles

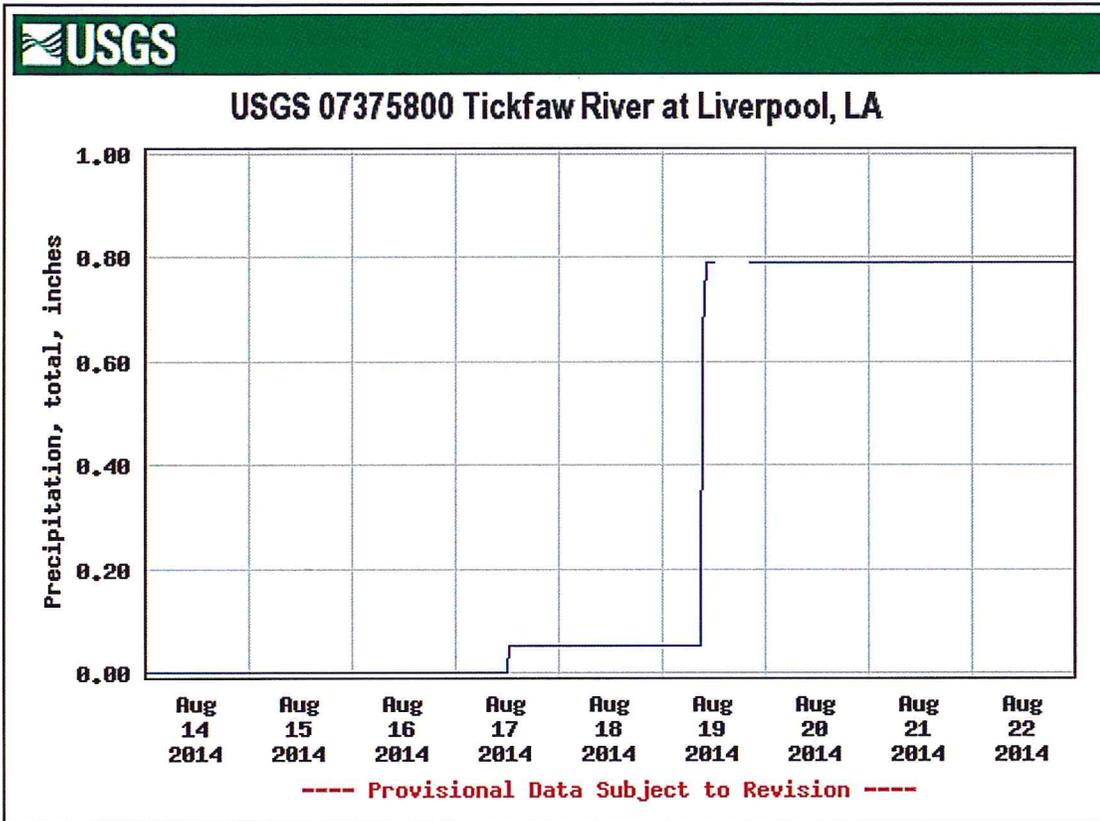
-  Streams
-  State highways
-  State Boundary
-  Parish Boundary
-  Watershed Boundary

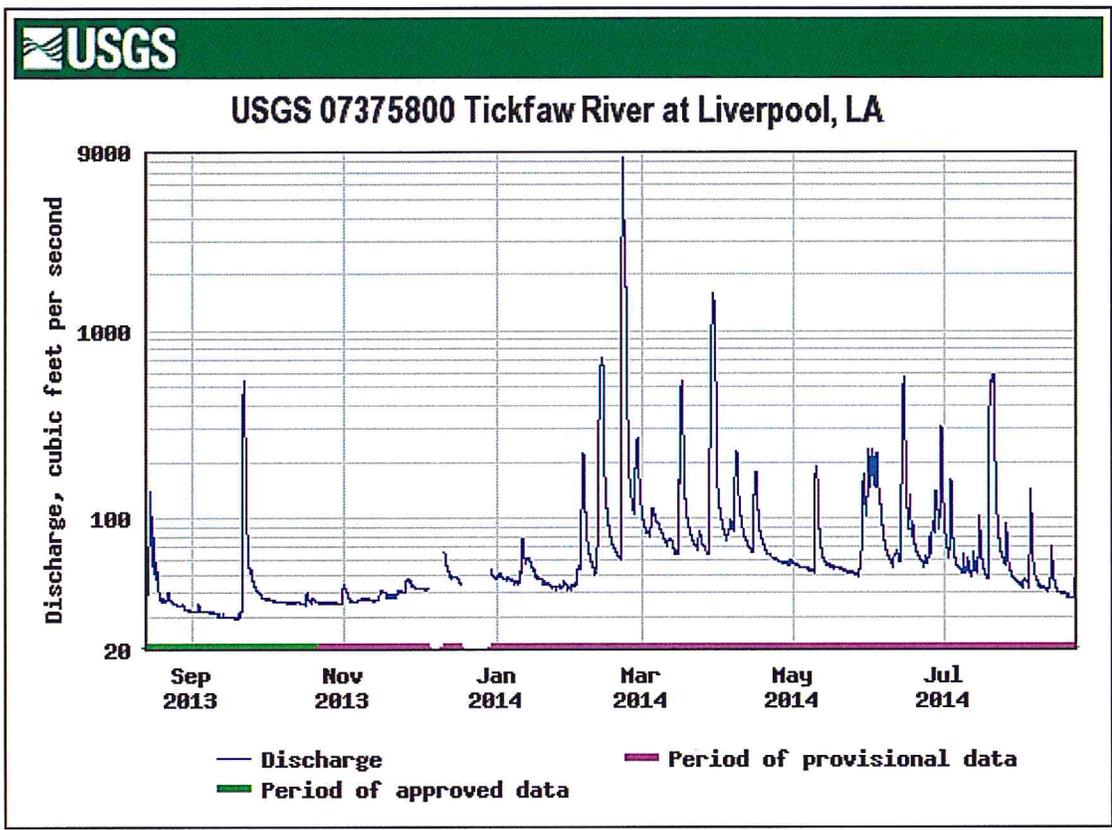


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Map Produced by:
USDA-NRCS, 3737 Government St.,
Alexandria, LA 71302
Data Source:
Hydrologic Units originated by USGS







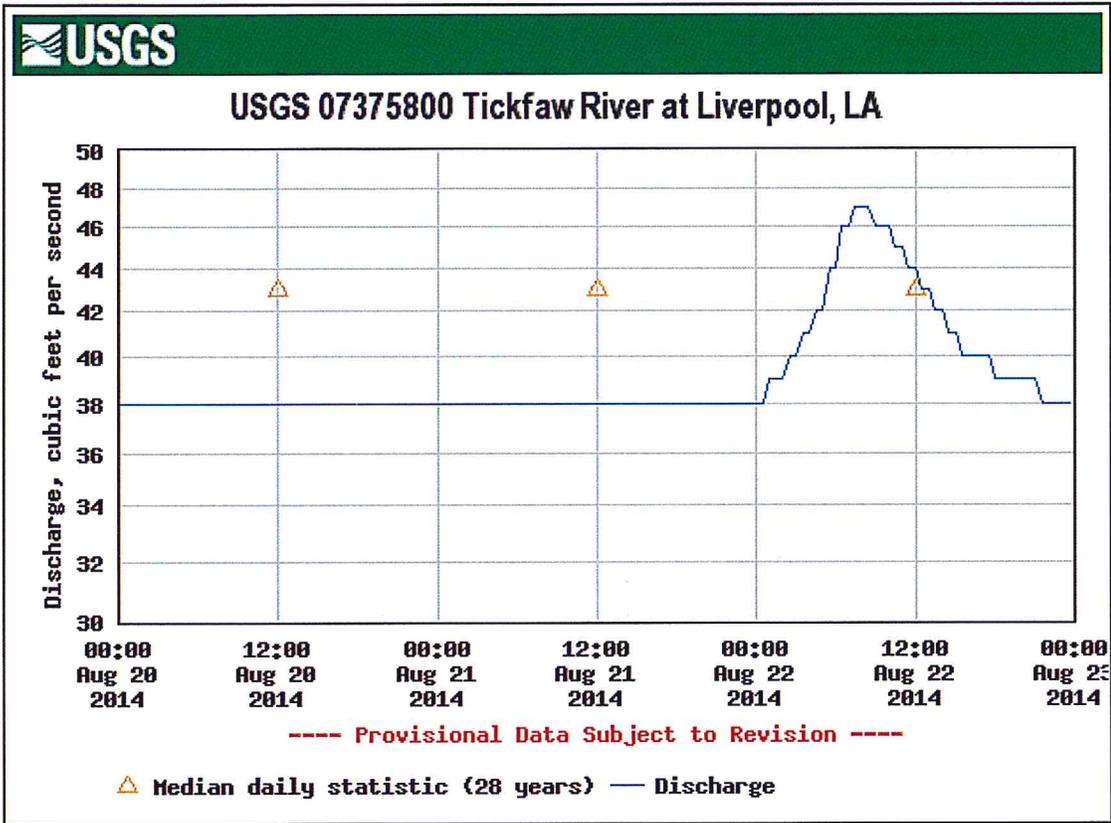


Table 2. Low-flow characteristics for continuous-record streamflow-gaging stations having 10 or more years of record—Continued

07375800 Tickfaw River at Liverpool, La. (71)

LOCATION.--Lat 30°55'50", long 90°40'24", on line between secs. 46 and 47, T. 1 S., R. 5 E., St. Helena Meridian, St. Helena Parish, near left bank on downstream side of bridge on State Highway 38, 0.2 mi east of intersection of State Highways 38 and 441, 0.5 mi upstream from Cotton Patch Branch, and 1.0 mi north of Liverpool.

DRAINAGE AREA.--89.7 mi².

PERIOD OF RECORD.-- April 1956 to September 1981. Record discontinuous.

MEAN-DAILY MINIMUM FLOW.--29 ft³/s.

Lowest annual average flow, in ft³/s, for the indicated number of consecutive days and recurrence interval

Days									
1	3	7	10	14	20	30	60	120	183
<u>2-year recurrence interval</u>									
37	38	38	38	39	39	40	43	49	55
<u>5-year recurrence interval</u>									
33	33	34	34	34	35	36	38	42	44
<u>10-year recurrence interval</u>									
31	31	32	32	32	33	34	36	39	40
<u>20-year recurrence interval</u>									
30	30	30	31	31	31	32	34	37	37

Lowest average flow, in ft³/s, for the indicated season, number of consecutive days, and recurrence interval

March-May			June-August			September-November			December-February		
Days											
1	7	14	1	7	14	1	7	14	1	7	14
<u>2-year recurrence interval</u>											
43	45	47	39	40	41	38	38	39	45	46	50
<u>10-year recurrence interval</u>											
36	37	38	31	32	34	32	33	33	36	37	38
<u>20-year recurrence interval</u>											
34	35	36	30	31	32	30	31	32	34	35	36

Flow, in ft³/s, which was exceeded for the indicated percentage of days

Percentage of days									
1	5	10	25	50	75	90	95	99	
1,310	357	165	79	55	44	38	33	29	