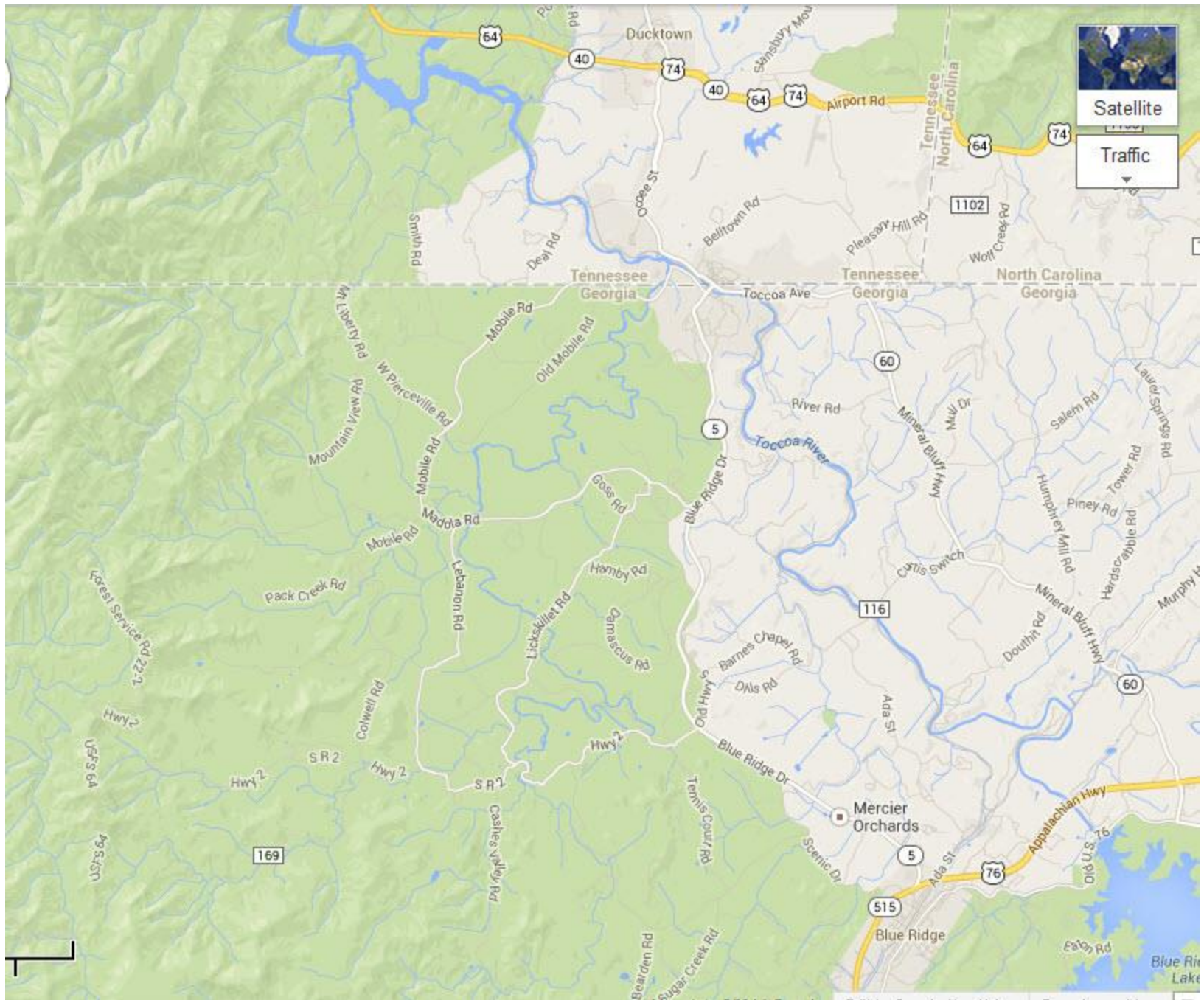
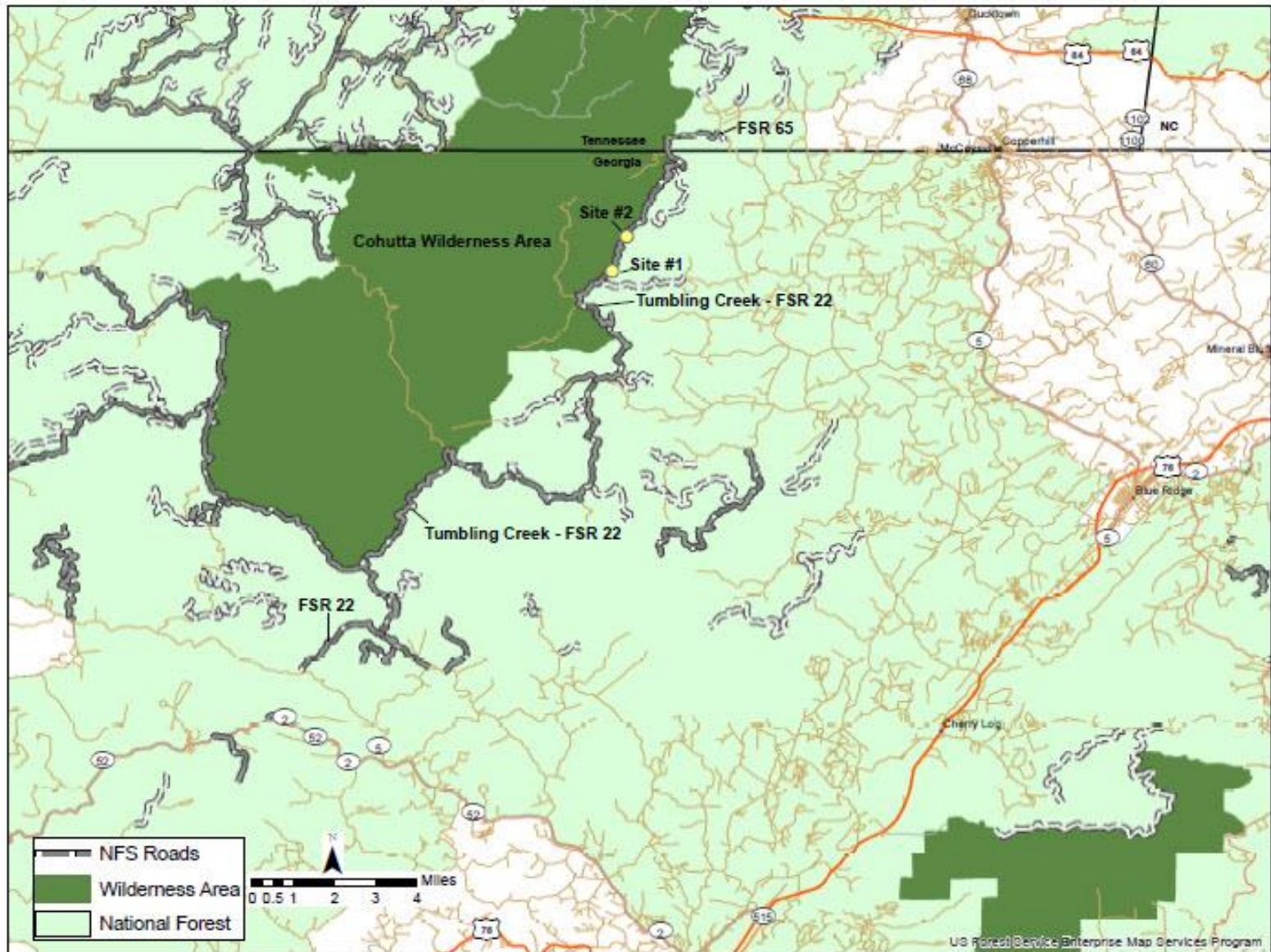




Tumbling Creek AOP Project – Chatt – Oc NF - GA







Pyrite

Iron Sulfide FeS_2



Pyrite

Pyrite is a compound of iron and sulfur, iron sulfide FeS_2 . Depending upon the conditions under which it forms this mineral can form crystals of different shapes. The crystals are isometric, meaning that they have equal faces. Cubes are common. Octahedral and dodecahedral shapes are also seen frequently.

The name comes from the Greek word for fire "pyr", literally fire rock. This is because it sparks when struck against iron.

Because of its high sulfur content pyrite is used in making sulfuric acid and sulfur dioxide.

Copper - Cu



1843 – 1850



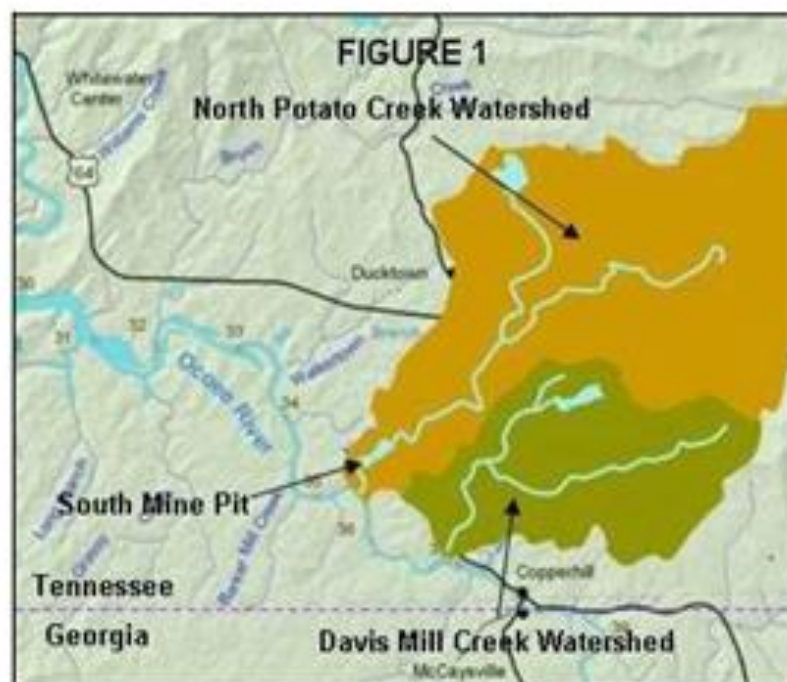
Copper Basin, TN

The Copper Basin in Tennessee (USA) is comprised of two watersheds, the North Potato Creek (NPC) and Davis Mill Creek Watersheds. Both of these watersheds discharge into the Ocoee River.

A map of this area is shown in Fig. 1.

The primary environmental issues in the Copper Basin are associated with the impacts from historical Copper mining and mineral processing operations that were conducted from the mid-1800s until 1987.

Acid generating materials at the site are metallic sulfides, including pyrite and pyrrhotite.

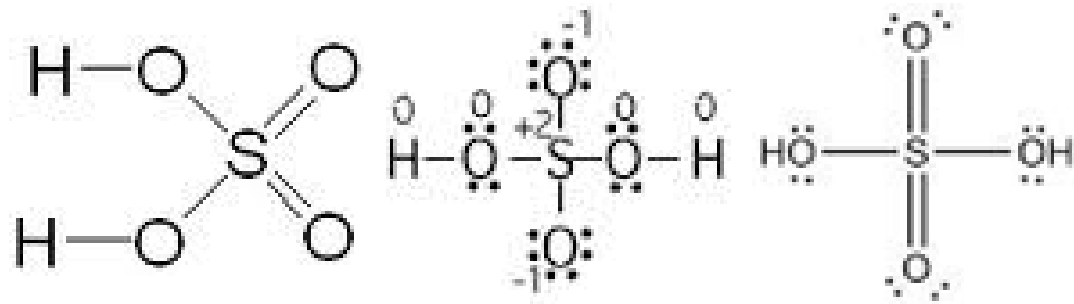


NPC WS = 9700 acres

DMC WS = 3000 acres

Copper Mining





Copperhill Desert – 1973



Eastern Desert (1973): Aerial view of Isabella area in
North Potato Creek watershed

Ducktown Area Watersheds



As suspected that sample tested very High for iron (>2.5 ppm). I would estimate that this is at least 500~5,000 times above the natural iron concentration for this area. Needless to say that level of iron is deadly to drink because it bioaccumulates in living tissue and causes brain damage.



Tumbling Creek





Walnut Creek – Site # 2



Unnamed Side Creek – Site # 1







Eastern Brook Trout Joint
Venture
Non-Profit Organization

Like Follow Message ...



Sizing Up Salamanders

Found worldwide, these amphibians have a wide range of lengths, from six inches to five feet.

Tiger salamander

Ambystoma tigrinum

Length: 6-8 inches

Most widespread salamander in North America



Hellbender salamander

Cryptobranchus alleganiensis

Length: 2 feet

Largest salamander in North America



Chinese giant salamander

Andrias davidianus

Length: 5 feet

Largest salamander in the world

ENDANGERED
STATUS

● Least
concern

● Near
threatened

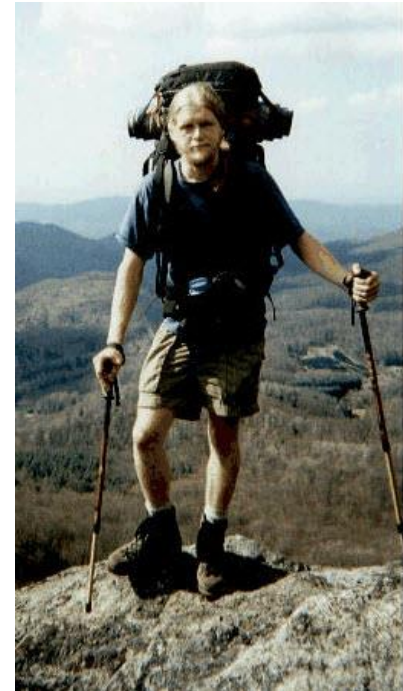
● Critically
endangered

FERNANDO G. BAPTISTA, NGM STAFF

SOURCES: INTERNATIONAL UNION FOR CONSERVATION OF NATURE;
ROGER CONANT AND JOSEPH T. COLLINS, *REPTILES AND AMPHIBIANS*

■ Range of hellbender salamander
(Cryptobranchus alleganiensis)







Funding –

- Highway Trust Funds
 - HTCN
 - HTAP
- MAP 21 Access Program
 - FLAP
 - FLTP
 - G350
 - G420
- FS Funds
 - CMRD
 - CMLG
- Partnerships & Grants



**UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE - SOUTHERN REGION**

**CHATTAHOOCHEE-OCONEE NATIONAL FORESTS
CONASAUGA RANGER DISTRICT**

CONSTRUCTION DRAWINGS FOR

**FS-22 CULVERTS
REPLACEMENT**



APPROVED BY:

FOREST SUPERVISOR

DATE

APPROVED BY:

DISTRICT RANGER

DATE

APPROVED BY:

STAFF OFFICER

DATE

APPROVED BY:

CIVIL ENGINEER

DATE

INDEX TO SHEETS

1. TITLE SHEET
2. LOCATION MAP
3. SCHEDULE OF ITEMS & GENERAL NOTES
4. FILL MATERIAL LOCATION MAP & GENERAL NOTES

- SITE #1 (NO NAME CREEK)
5. PLAN VIEW
6. CULVERT CROSS SECTION

- SITE #2 (WALNUT CREEK)
7. PLAN VIEW
8. CULVERT CROSS SECTION

- 9-10. TYPICAL HEADWALLS DETAILS
11. FOOTING PAD DETAILS, NOTES & BEDDING
12. TYPICAL ROAD SECTIONS & SIGN PLAN
13. STREAMBANK RESTORATION

14. EC-1 EROSION CONTROL PLAN
15. EC-2 SILT FENCE DETAIL & NOTES
16. EC-3 HAY BALE DETAIL & EROSION CONTROL PLAN



LEGEND	
	INTERSTATE HIGHWAY
	U.S. HIGHWAY
	STATE ROUTE
	COUNTY ROAD
	FOREST ROAD
	RIGHT-OF-WAY



ENGINEER'S ESTIMATE
(CONFIDENTIAL)
FS-22 CULVERTS REPLACEMENT
CONASAUGA RAGER DISTRICT
CHATTAHOOCHEE NATIONAL FOREST

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>METHOD OF MEASUREMENT</u>	<u>PAY UNIT</u>	<u>QUANTITIES</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
15101	Mobilization	LSQ	Lump Sum	1	\$16,602	\$16,602
15204	Drainage structure survey and staking	CQ	Each	2	\$1,000	\$2,000
15714	Erosion Control & Pollution Prevention Plan	LSQ	Lump Sum	1	\$5,000	\$5,000
20101	Clearing and grubbing	LSQ	Lump Sum	1	\$1,000	\$1,000
20301	Removal of Existing Culverts Structures	CQ	Each	2	\$3,000	\$6,000
20903	Culvert backfill,(Common Borrow from area sites), Compaction Method C	CQ	Cubic Yard	530	\$90	\$47,700
20857	Cofferdams and water diversion structures	LSQ	Lump Sum	1	\$5,000	\$5,000
21201	Linear grading	CQ	STA	4	\$2,500	\$10,000
25102	Placed riprap, class 2	CQ	Ton	130	\$90	\$11,700
30115	Aggregate surface course, Type GDOT #57 Stone, compaction method B	CQ	Ton	150	\$90	\$13,500
59050	Precast concrete member, Footings	CQ	Each	4	\$1,600	\$6,400
60301A	Site #1 Structural Plate 13'-0" X 4'-1" X 27'-0"	LSQ	Lump Sum	1	\$70,000	\$70,000
60301B	SITE #2 Structural Plate 14'-0" X 4'-8" X 27'-0"	LSQ	Lump Sum	1	\$70,000	\$70,000
61303	Simulated stone masonry surface treatment & test wall(s)	LSQ	Lump Sum	1	\$4,000	\$4,000
63306	Object markers, Type 3	CQ	Each	8	\$150	\$1,200
63501	Temporary traffic control	LSQ	Lump Sum	1	\$2,500	\$2,500
					Total	\$272,602









**Final Inspection –
May 21, 2014**


**Final Cost –
\$ 271,000.00**

Sampling & Monitoring



Sawmill Branch above First Culvert				Tinker Branch above First Culvert			
	2003	2008	2014		2001	2014	
Alabama hogsucker	3	1	3	Creek chub		15	
Alabama shiner		2	11	Largescale stoneroller		7	
Banded sculpin	28	4	17	Sculpin sp.		10	
Black banded darter			2	Tennessee shiner		8	
Bridled darter			1	Warpaint shiner		6	
Coosa darter	9	5	12	Western balcknose dace	2	41	
Coosa shiner			4	Total Fish Species	1	6	
Creek chub	8	22	9				
Eastern blacknose dace	3						
Largescale stoneroller	1	4	9				
Longear sunfish			3				
Rainbow shiner	79	12	19				
Redeye bass	6		3				
Southern studfish			1				
Striped shiner		1	5				
Tricolor shiner			32				
Total Fish Species	8	8	15				

Small streams like these are important spawning areas and are capable of holding extraordinary numbers of fish species but they lose species during drought conditions. With the new structures in place, reoccupation by these “lost species” occurs effortlessly when water levels return to normal flows.

Jim Herrig 
 Aquatic Biologist
 Cherokee National Forest
 (423) 476-9751

“Let’s get the data and test it, first.” Galileo



Tumbling Creek AOP – FLTP – Questions ?

ALABAMA HOG SUCKER

