# United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526


IN REPLY REFER TO:
2011-F-0519

DEC 08 2011

Bradley Bishop, Chief
U.S. Army Corps of Engineers, Nashville District
Western Regulatory Field Office, Operations Division
2042 Beltline Road SW
Building C, Suite 415
Decatur, Alabama 35601

Dear Mr. Bishop:

This document transmits the Fish and Wildlife Service's (Service) biological opinion (BO) based on our review of the proposed construction of an aerial sanitary sewer line across Limestone Creek located approximately 40 feet south of the Alabama State Highway 72 bridge, Limestone County, Alabama, and the effects of this action on the endangered armored snail (*Marstonia pachyta*) and slender campeloma (*Campeloma decampi*), in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 United States Code [U.S.C.] 1531 *et seq.*). The endangered Anthony's riversnail (*Athearnia anthonyi*) was determined not to be in the project area and, therefore, will not be addressed in this opinion. Your July 12, 2011, letter requesting initiation of formal consultation was received by our office on July 14, 2011. Formal consultation was initiated on August 10, 2011.

This biological opinion is based on information provided in the July 12, 2011, biological assessment, June 2011 survey report, site visits, telephone conversations, e-mails, office files, published literature, field investigations, and other sources of information. A complete administrative record of this consultation is on file in the Alabama Field Office, Daphne, Alabama.

**Consultation History**

*Service Log No:* 2011-F-0519
*Application No:* 2011-00100 (published in joint public notice (PN) No. 11-12)
*Date Started:* August 10, 2011
*Applicant:* City of Huntsville (City)
*Action Agencies:* U.S. Army Corps of Engineers (Corps), Nashville District (lead), Tennessee Valley Authority (TVA) (cooperating agency)

*Project Title:* Proposed Aerial Sanitary Sewer Line Crossing at Limestone Creek Mile 16.9, a tributary to Tennessee River Mile 310.7, Right Bank, Limestone County, Alabama.

*County:* Limestone County, Alabama

March 15, 2011 — Joint public notice (No. 11-12) published by the Corps, TVA, and the State of Alabama, Department of Environmental Management (ADEM). The applicant, City of Huntsville, submitted for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (CWA) for the discharge of fill material into waters of the United States, a TVA permit pursuant to Section 26a of the TVA Act, and certification by ADEM, pursuant to Section 401 (a)(1) of the CWA. The proposed work consists of the construction of an aerial sanitary sewer line across Limestone Creek, by the City to extend sanitary sewer service to recently annexed property.

April 11, 2011 — Telephone phone call made by Anthony Ford, Service, to Gary Davis, Corps. This call requested that a one week extension to the public notice period be granted to the Service for response to the joint public notice. Corps granted the extension to the Service.

April 20, 2011 — Letter sent from Dan Everson, Deputy Field Supervisor, Service, to Gary Davis. This letter responds to the joint public notice (No. 11-12). This letter indicated that this project may affect listed snails. The Service requested that a boring method or spanning method be used to avoid impacts to the stream bottom. However, if construction disturbance cannot be avoided the Service recommended that a listed species survey be conducted. The Service also requested that the application be held in abeyance pending receipt and review of requested information by the Service and until ESA concerns are satisfied.

April 25, 2011 — Site visit made to project site with Gary Davis; Samantha Strickland, TVA; and Anthony Ford, Jeff Powell, and Jennifer Pritchett, Service, in attendance. Gary Davis remarked that the applicant reported that boring below or spanning the entire creek (above the current proposed elevation) would be costly and would require building a pumping station. He thinks that the applicant still prefers to span the creek as proposed. It was explained that the Service still prefers not impacting the stream bed because of the potential for presence of listed species, however if the applicant wants to proceed as proposed, the Service would require a survey first.

April 27, 2011 — Gary Davis met with Kathy Martin, City, to discuss the options for crossing the creek with the proposed sewer line and decided to go forward with surveys and formal consultation if required. The City estimated

construction of a pump station would cost around $845,000 with $100,000 in yearly operation and maintenance costs. The City did agree to backfill flush with the stream bottom with natural substrate around the piers (instead of the proposed riprap) and to use natural vegetation on the banks for stabilization.

May 25, 2011 — Site visit made to project site by Anthony Ford and Jennifer Pritchett. Construction (laying a large storm drain) and ground moving activities were taking place adjacent to Limestone Creek, along Highway 72 and captured runoff was being actively pumped and discharged to Limestone Creek, best management practices were absent or improperly installed. Anthony Ford talked to the site foreman and project manager about the listed species within the creek and the discharge was halted until improved BMPs were installed.

June 6, 2011 — Aquatic survey report submitted by AST Environmental (AST) to Scott Leach, Garver LLC. This report summarizes the findings of the field survey conducted by Terry Richardson and Jeff Selby on May 25, 2011, within Limestone Creek in a stream reach extending 100 yards upstream and 300 yards downstream of the proposed stream crossing. While appropriate substrate types for the target snail species were present within the survey reach, no protected snails were observed within the proposed project footprint. However, a total of 12 armored snails and 1 slender campeloma were collected downstream of the proposed crossing, while 2 additional slender campeloma snails were collected upstream of the proposed crossing. No Anthony's riversnail were collected within the survey reach.

July 12, 2011 — Letter sent from Bradley Bishop, Chief, Western Regulatory Section, Operations Division, Corps, to Dan Everson. This letter serves as the request for formal consultation. The Corps determined that the proposed project is likely to adversely affect suitable substrate for federally listed snail species and requested concurrence with this determination and transmitted the species survey to the Service.

August 10, 2011 — Letter sent from Dan Everson, to Bradley Bishop. This letter acknowledged receipt of the letter requesting initiation of formal consultation from the Corps and formalized the initiation.

## BIOLOGICAL OPINION

## DESCRIPTION OF THE PROPOSED ACTION

The proposed action (Figures 1 & 2) consists of the construction of an aerial sanitary sewer line across Limestone Creek (Figure 3), by the City of Huntsville (Applicant) to extend sanitary

sewer service to recently annexed property. The sewer line would be constructed with a 12 inch ductile iron pipe. The pipe would span the creek, a distance of approximately 86 linear feet, supported by two concrete piers within the stream, spaced 46 feet on center. The bottom elevation of the proposed sewer line pipe would be 630.80 feet (MSL). According to USGS stream gage data, the ordinary high water mark of Limestone Creek at this location is 628.77 feet (MSL). Sheet piling would be used to construct a cofferdam during pier construction to provide a dry work area.

Construction Method for Sanitary Sewer Crossing Over Limestone Creek

1) The construction contractor will construct a 10 ft x 20 ft steel cofferdam.
2) A crane will be used to lower the cofferdam into the creek at the location where the first pier will be constructed.
3) A pump will be lowered into the cofferdam and the water will be pumped out of the cofferdam.
4) Water from the cofferdam will discharged to a location where it can be treated by overland flow, a series of sediment barriers, or a temporary sediment trap.
5) A small excavator will be lowered into the cofferdam to excavate material in order to construct pier. Material removed from the excavation will be placed in a bucket and removed by crane.
6) The forming for the pier will be constructed in the excavation and a bucket and the crane will be used to pour the pier.
7) Fill material removed from excavation will be placed back around the bottom of each pier to return the disturbed area to its "natural"/pre-existing conditions as close as possible.
8) The crane will be used to remove all construction equipment.
9) The crane will be used to remove the cofferdam.
10) The crane will be used to place the cofferdam at the location of second pier.
11) Repeat the procedure to construct the second pier.

There will be three piers total. Two are in the normal flow of the creek. The third is located in the overbank area of the creek and will not require a cofferdam for construction. The total disturbed area of the streambed will be approximately 680 square feet. This is the area of the cofferdam plus a couple of feet of buffer around the dam at both locations.

The **Action Area** (Figure 4) consists of the construction footprint (direct impact) totaling approximately 680 square feet, and the stream bed 100 yards downstream of the construction footprint (indirect impact).

## STATUS OF THE SPECIES/CRITICAL HABITAT

### Listed species/critical habitat description

**Armored Snail**

The armored snail was described by Thompson (1977) and was listed as endangered by the Service on February 25, 2000. It was historically only known to occur in Limestone and Piney Creek in Limestone County, Alabama; however recent surveys have located the snail in French Mill Creek, a major tributary to Piney Creek (AST 2007). Critical habitat has not been designated for this species.

The armored snail is very small (less than 4 mm or 0.15 inches), has an ovate-conical shaped shell and is presumed to have a life cycle of only one year. It is usually found among submerged root masses and bryophytes (mosses) along creek edges, bryophytes growing on rocks in slow to moderate current, especially around submerged water willow roots, but may also occur on leafy/woody debris and on other aquatic macrophytes (FWS 1994, Haggerty and Garner 2007).

The armored snail is believed to be endemic to the Limestone and Piney Creek system (FWS 2008) (Figure 5). No populations are known to have been extirpated, however the construction of Wheeler Lake may have separated a once larger population into the two present today (FWS 1994). While both populations remain viable, the snail appears to be more widely distributed in Limestone Creek (Haggerty and Garner 2007).

Because the armored snail is restricted to just a few stream reaches, the species' status remains vulnerable. Due to its annual life cycle, it could be subject to sudden extinction should its habitat be degraded to the point of causing a single year's reproduction to fail. Thus, a population's survival is dependent upon successful reproduction each year.

The threat of human-related activities and development continues to increase in the basin and surrounding areas. Indiscriminant logging, agriculture, withdrawal of water, road and bridge construction, and other multiple point and non-point source pollution discharges are inevitable as human activities migrate out from the cities of Huntsville, Madison, Decatur, and Athens, into the Limestone and Piney Creek watersheds (FWS 2010). Toxic spills could also pose a risk to the snail. While toxic chemical spills may not be imminent threats, the impact of such an event in either of the creeks could potentially eliminate one-half of the population.

**Slender Campeloma**

The slender campeloma was listed as endangered by the Service on February 25, 2000. It is currently restricted to four stream reaches in Limestone, Piney, Beaverdam, and Round Island Creeks (Figure 6). Critical habitat has not been designated for this species.

The slender campeloma is medium to large in size ranging up to 35mm (1.4 inches) in length and is ovately conic with a tapered pointed spire. The snail is distinguished from related species by the presence of fine sculpture in the form of faint striations and a relatively higher spire on the shell. Little is known about the life history of the slender campeloma. However, it belongs to the family Viviparidae, in which all members give birth to live young rather than laying eggs that hatch in an external environment (FWS 2008).

This species is typically found burrowing in soft sediment (sand or mud) or detritus. Haggerty and Garner (2007) found slender campeloma burrowing within patches of water willow (*Justicia americana*) growing in a substratum of clay and mud, and at shallow depths composed of clay along creek margins. The food habits of the snail are unknown, but they likely feed on detritus.

The range of the slender campeloma has been reduced by at least three-quarters from its historical distribution, and existing populations are now isolated by Wheeler Reservoir (FWS 2008). While the snail is present in four stream reaches (Limestone, Piney, Beaverdam, and Round Island), Haggerty and Garner (2007, 2008) found greatest abundance within Round Island Creek. This was presumably due to the presence of more suitable habitat; however specific life history and habitat needs are not entirely understood at present.

Only four creeks comprise the known range of the slender campeloma. As such, it is vulnerable to extirpation should these habitats be threatened. Land use surrounding the creeks remains heavily agricultural (e.g. cotton production and sod farming), potentially making this species susceptible to pollution from pesticides and fertilizers, excessive irrigation, and sedimentation (FWS 2008). Toxic spills could also pose a risk to the snail.

**Table 1. Biological Opinions that have been issued for adverse impact to the armored snail and/or slender campeloma.**

| OPINIONS[1] | SPECIES | NUMBERS[2] | HABITAT[3] | |
|---|---|---|---|---|
| | | | Critical Habitat | Habitat |
| 2008/1 Sanitary sewer and water main project within Piney and French Mill Creeks, Limestone County, AL | armored snail and slender campeloma | All listed snails within no more than 325 linear feet of stream habitat. | NA | 325 linear ft |

[1] Year/Number of Opinions
[2] The number of individuals of the species that will potentially be killed
[3] Acres, cubic yards, miles of stream or shoreline of critical habitat and non-critical habitat that would be lost or modified.

## ENVIRONMENTAL BASELINE

### Status of the species within the action area

Haggerty and Garner (2008) conducted qualitative surveys for the armored snail and slender campeloma during August-September 2006 and January 2007 within Limestone and Piney Creeks, and estimated catch per unit effort. They found the armored snail in relatively good numbers if suitable habitat was present. Of the 13 Limestone Creek sites surveyed during that

study, nearly 70% (n=9) had the armored snail present. All sites where the armored snails were present contained approximately 10 to 50+ individuals (Haggerty and Garner 2007) and a mean catch per unit effort of 34 individuals/hour/observer (Haggerty and Garner 2008). The slender campeloma was found in all of the six sites within Limestone Creek near river mile 14.5 and downstream with a catch per unit effort between 1 to 8 individuals/hour/observer (Haggerty and Garner 2008).

On May 25, 2011, AST conducted a survey within Limestone Creek for Anthony's riversnail, the armored snail, and slender campeloma. The survey was conducted at the proposed sanitary sewer line crossing to 100 yards upstream and 300 yards downstream of the crossing. Appropriate substrate types for the target snail species were present within the survey reach, however no protected snails were observed within the proposed project footprint. However, 12 armored snails and 1 slender campeloma snail were collected below the proposed crossing within the survey reach, while 2 slender campeloma snails were collected upstream of the proposed crossing (AST 2011).

The armored snail is currently only known from Limestone and Piney Creeks, Limestone County, Alabama. The slender campeloma is currently known from Limestone, Piney, Beaverdam, and Round Island Creeks.

**Factors affecting species' environment within the action area**

Human-related activities and development within the basin have continued to threaten the snails' habitat and resources. Some of the threats include: habitat modification from increased development (commercial and residential), indiscriminate logging, agriculture (row crops and livestock), withdrawal of water, road and bridge construction, open cut trenching, and various other point and nonpoint pollution discharges. These impacts continue to increase as human activities expand outward from the cities of Huntsville, Madison, Decatur, and Athens into the Limestone and Piney Creek watersheds.

The area surrounding Limestone and Piney creeks remains heavily agricultural (e.g., cotton production, livestock, sod farming), potentially making the armored snail and slender campeloma susceptible to pollution from agricultural pesticides and fertilizers, excessive irrigation, and sedimentation (Garner 1993, Haggerty and Garner 2007).

**EFFECTS OF THE ACTION**

**Factors to be considered**

The proposed construction will occur within the known range of both the armored snail and slender campeloma. However, the May 2011 survey indicated that neither snail was present within the proposed footprint of the project. While the snails do occur adjacent to the project footprint in both the upstream and downstream directions, a significant buffer does exist, and proper best management practices will need to be followed so that the potential for negative impacts to the species are minimized.

There is still the potential for the armored snail and the slender campeloma to be found within the footprint of the project given the presence of suitable habitat and the possibility of snails migrating into the area, so it should be expected that any listed snails entrapped by the cofferdam in the vicinity of the two proposed instream piers (at sewer line crossing) could be dewatered, and/or accidentally crushed or buried in rock or sediment during water and/or sediment removal activities for pier construction.

The instream construction activity may also result in the release of sediment and silt from the project footprint. In addition, sediment may also be released from the streambank during operation of the crane or other heavy equipment.

To minimize these potential effects, the Applicant and their contractors intend to conduct the work during low-flow periods and to the extent feasible, complete any work that results in exposed earth during periods when significant rainfall is not predicted, and follow the best management practices, as described in the August 2011, Construction Best Management Practices Plan (ASTCC 2011).

**Analysis for the effects of the action**

Direct Effect

Direct effects are anticipated for any listed snails occurring within the 10 ft x 20 ft steel cofferdam that will be lowered into place at the proposed sewer line pier locations. Any listed snails occurring within the cofferdam at the time of construction activity will be subjected to dewatering and then potentially crushed or buried when the sediments are excavated and the pier foundations poured in place. It is anticipated that any snails located within the approximately 680 square feet of stream bottom impacted by these construction activities will suffer take in the form of mortality.

Indirect Effect

Indirect effects may result from increased turbidity and sedimentation caused by either sediment becoming dislodged during the installation of the sanitary sewer line or during other construction activities associated with the sewer line and support piers. Silt in the form of increased turbidity and suspended sediment transport is detrimental to aquatic snail health and habitat because it reduces depth of light penetration leading to alteration of primary productivity, decreases oxygen levels, increases water temperature, irritates or clogs gills, and deposits silt on the substrate. Silt deposition could also affect the armored snail (egg layer) by smothering their eggs and also may result in reduced dissolved oxygen and increased organic material at the substrate level.

However, these effects should be minimized by the proper utilization of best management practices. It is anticipated that any snails located up to approximately 100 yards downstream of construction activities could suffer take in the form of harassment.

## CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Habitat destruction or modification resulting from urbanization is presently the largest threat to these snail species (FWS 2008, 2010). The affects of development including associated point and non-point discharges increase within the basin as human activities migrate out from the growing cities of Huntsville, Madison, Decatur, and Athens. Presently forested lands and agricultural (present and historic) fields are increasingly becoming converted to commercial or residential developments. For example, the adjacent property, due east of the project area, is currently being developed for commercial purposes. This sewer project is most likely a byproduct of growth. As population density begins to increase, land is developed, native land cover is converted and impervious surfaces increase (e.g., infrastructure, residential/commercial developments), leading to altered instream variables such as: habitat, hydrology, temperature, chemistry (Cuffney et. al 2010). These effects from urbanization have occurred over many years and are likely to continue and worsen and will further stress these snails' reduced range and finite habitats.

## CONCLUSION

After reviewing the current status of the armored snail and the slender campeloma, the environmental baseline for the action area, the effects of the construction activities associated with the proposed municipal aerial sewer line, and the cumulative effects, it is the Service's biological opinion that the proposed construction of the proposed municipal sewer line crossing on piers is not likely to jeopardize the continued existence of the armored snail or the slender campeloma. No critical habitat has been designated for the species; therefore, none will be affected.

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act

provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary for listed species and must be undertaken by the U.S. Army Corps of Engineers (lead agency) and Tennessee Valley Authority (cooperating agency) so that they become binding conditions of any permit issued to the City of Huntsville, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps and TVA have a continuing duty to regulate the activity covered by this incidental take statement. If the Corps and TVA (1) fail to assume and implement the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps or the City must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

## AMOUNT OR EXTENT OF TAKE ANTICIPATED

The Service anticipates any armored snails or slender campeloma snails located within the approximately 680 square feet of stream bottom impacted by the footprint of the cofferdam, and any snails located up to 100 yards downstream of the construction may be taken as a result of the aerial sewer line construction activities. Take will be in the form of mortality for any snails within the footprint of the cofferdam and in the form of harassment for any snails up to 100 yards downstream of the pier construction as result of turbidity and sedimentation in the water that may temporarily but significantly disrupt the snails' normal behavioral patterns.

## EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of expected take is not likely to result in jeopardy to the armored snail or slender campeloma.

## REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize impacts of incidental take of the armored snail and slender campeloma.

1. Limit the footprint of the area to be dewatered and excavated to approximately 680 square feet of stream bottom. By limiting this form of impact to these enclosures and this small area of stream bottom, take in the form of mortality to these snails should be limited.

2. Reduce the amount of sedimentation into the stream by conducting the construction work during low-flow periods and to the extent feasible, complete any work that results in exposed earth during periods when significant rainfall is not predicted, and follow the best management practices, as described in the August 2011, Construction Best Management Practices Plan (ASTCC 2011).

3. Conduct clearing and snagging of any accumulated debris from the constructed instream piers at least once per year to minimize snail colonization and usage of this debris as habitat. Debris jams that are left to establish over time could be colonized by listed snails. Removal of established debris jams could result in additional take of listed snails, and the need to reinitiate formal consultation.

## TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Corps and TVA must comply with the following terms and conditions, which carry out the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. Limit the dewatered and excavated instream area to the construction area encompassed by the cofferdam at the two instream pier construction locations. This area should not exceed 680 square feet of stream bottom.

2. Implement best management practices during the proposed construction as described in the August 2011, Construction Best Management Practices Plan (ASTCC 2011).

3. Clearing and snagging should be conducted at a regular interval (minimum annually) in order to minimize the chance of colonization on debris by listed snails (future take) and to prevent excessive debris jams which would threaten the structural integrity of the construction. If a debris jam is minor (less than 10% channel blockage), the debris can be dislodged into stream flow. Large debris jams should be removed from the stream channel. Conditions of Operation:
   a. Remove debris at least annually, but more frequently if needed.
   b. Methods to remove flow obstructions may include sawing, cabling, winching, lifting, or dragging.
   c. No heavy equipment will be permitted within the stream.
   d. All heavy equipment will operate from beyond the top of stream banks.
   e. Provide written and photo documentation of this action annually to the lead action agency (Corps) and Service. Also, document any newly observed streambed scour or bank erosion in the vicinity of the piers within the annual report.

Upon locating a dead, injured, or sick individual of an endangered or threatened species, initial notification must be made to the Fish and Wildlife Service Law Enforcement Office (USFWS LE-Millbrook, AL (334/285-9600 ext.1). Additional notification must be made to the Fish and Wildlife Service Ecological Services Field Office (251/441-5181). Care should be taken in handling sick or injured individuals and in the preservation of specimens in the best possible state for later analysis of cause of death or injury.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. The Service believes that any armored snails or slender campeloma snails located within the approximately 680 square feet of stream bottom impacted by the footprint of the cofferdam and that any snails located up to 100 yards downstream will be incidentally taken. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Corps and TVA must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help carry out recovery plans, or to develop information.

The Service recommends that the action agency consider implementing the following conservation recommendations:

1) Continue working and coordinating (i.e., early coordination) with the resource agencies to monitor armored snail and slender campeloma snail populations across their range within the Limestone, Piney, Beaverdam, and Round Island Creek drainages, where they occur in areas adjacent to their permit projects.

2) Fund studies aimed at recovering, conserving, and restoring these snails and/or their habitats within their current range.

3) Develop a spill response plan for this pipeline crossing in the event of a rupture and spillage of raw sewage into the creek.

## REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the July 12, 2011, request. As written in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Corps or TVA involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is later modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In

instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease until reinitiation.

For this biological opinion the incidental take would be exceeded if take migrates beyond approximately 680 square feet of stream bottom impacted by the footprint of the cofferdam and up to 100 yards downstream from this construction during the construction activity period required for instream pier construction, which is what has been exempted from the prohibitions of section 9 by this opinion. The Service appreciates the cooperation of the Corps during this consultation. For further coordination please contact Mr. Anthony Ford at (251) 441-5838.

Sincerely,

Dan Everson
Deputy Field Supervisor
Alabama Ecological Services Field Office

cc: Gary Davis, U.S. Army Corps of Engineers, Nashville District
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## LITERATURE CITED

AST Consulting & Contracting, LLC [ASTCC]. 2011. Construction best management practices plan, US Hwy 72 drainage improvements between Limestone Creek & Bryan Hill Road (Including construction of 1800 LF of sanitary sewer) in Limestone County, Alabama. Prepared for Christopher Plumbing and Electric, Inc (ASTCC Project No. ACC11-153). 171 pp.

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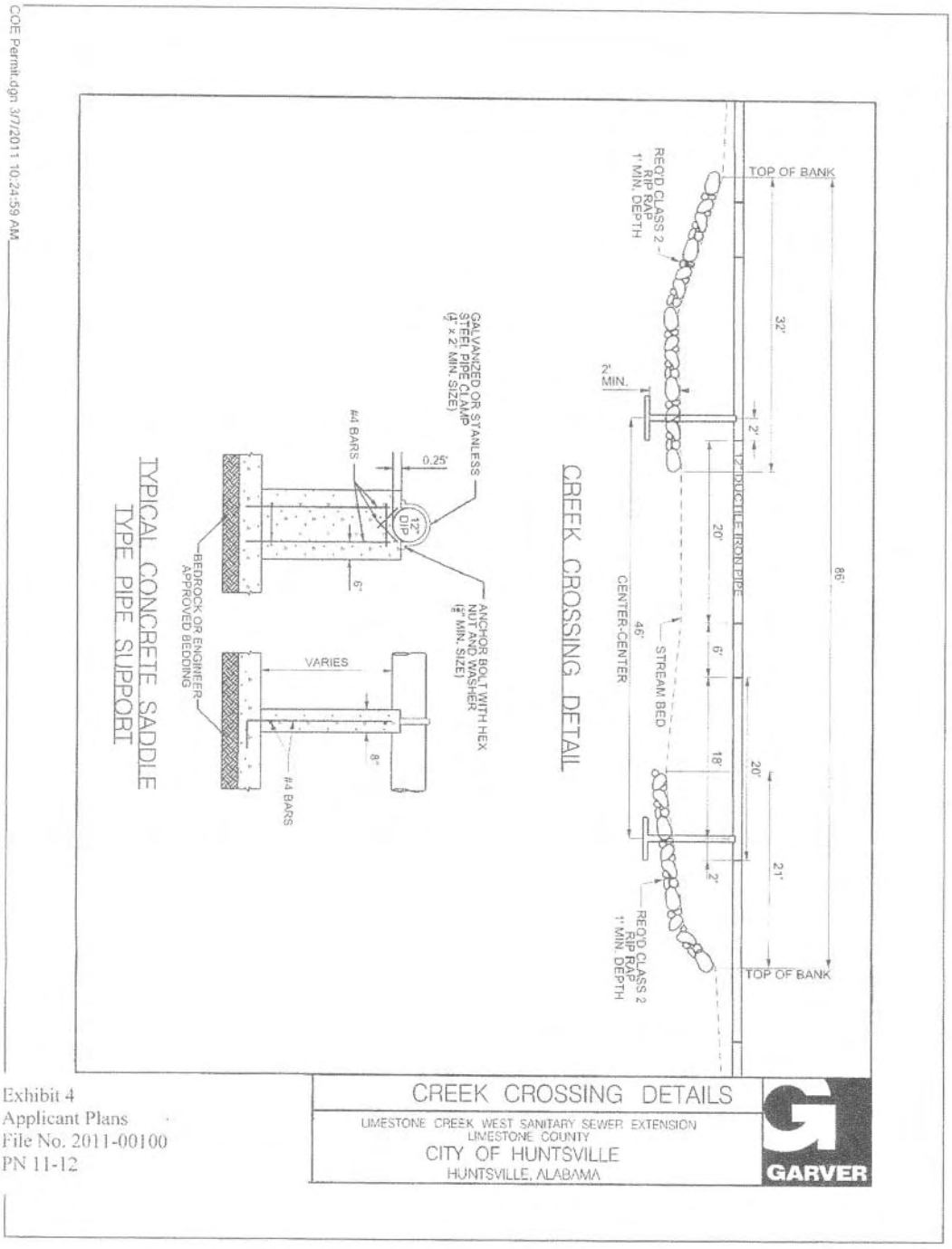



Exhibit 4
Applicant Plans
File No. 2011-00100
PN 11-12

Figure 1: Structural diagram of creek crossing, Limestone Creek west sanitary sewer extension, Huntsville, AL. (Credit: Garver LLC)

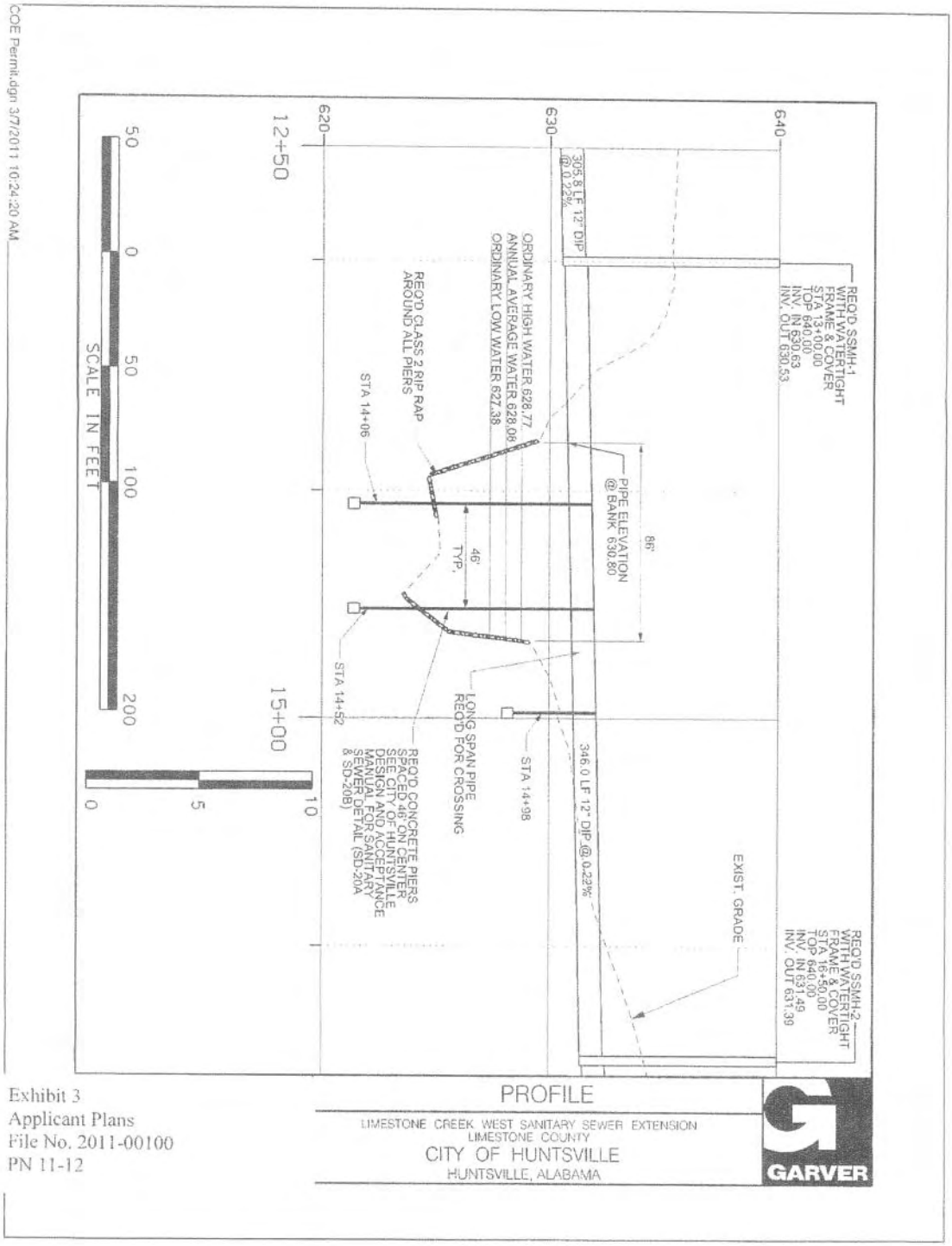
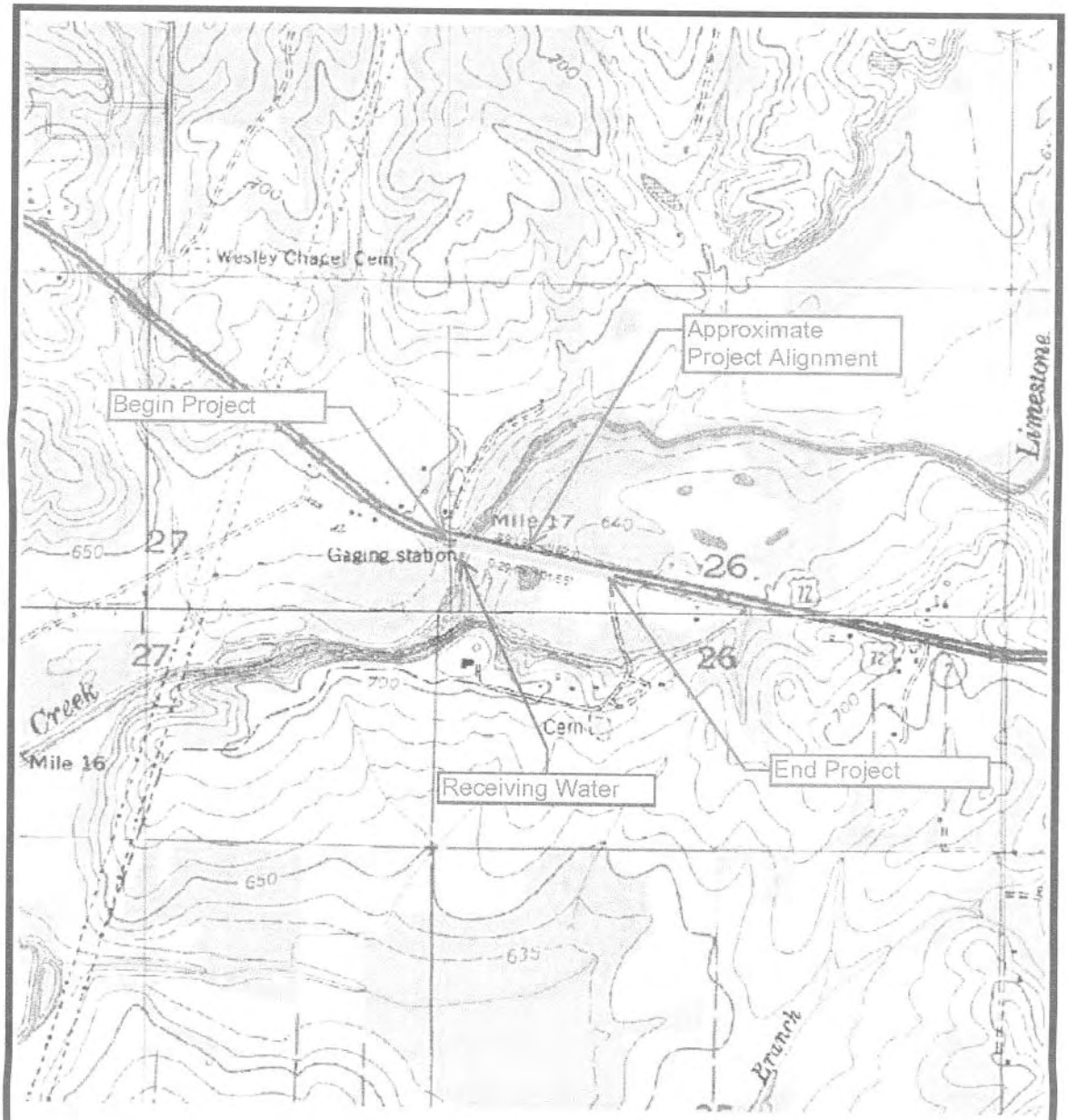



Exhibit 3
Applicant Plans
File No. 2011-00100
PN 11-12

Figure 2: Profile of creek crossing, Limestone Creek west sanitary sewer extension, Huntsville, AL. (Credit: Garver LLC)




Source: USGS.

Scale: ≈ 1:16,455

This drawing was prepared for the purpose of visually representing information at the subject site. No additional information is expressed or implied. All locations and dimensions are approximate.

SITE LOCATION TOPOGRAPHIC MAP

**US Hwy 72 Drainage Improvements between Limestone Creek & Bryan Hill Road**
**T3S,R3W,Sec.26**
**Limestone County, Alabama**
**May 2011**

AST CONSULTING AND CONTRACTING

Figure 3: Project site location map. (Source: ASTCC 2011)

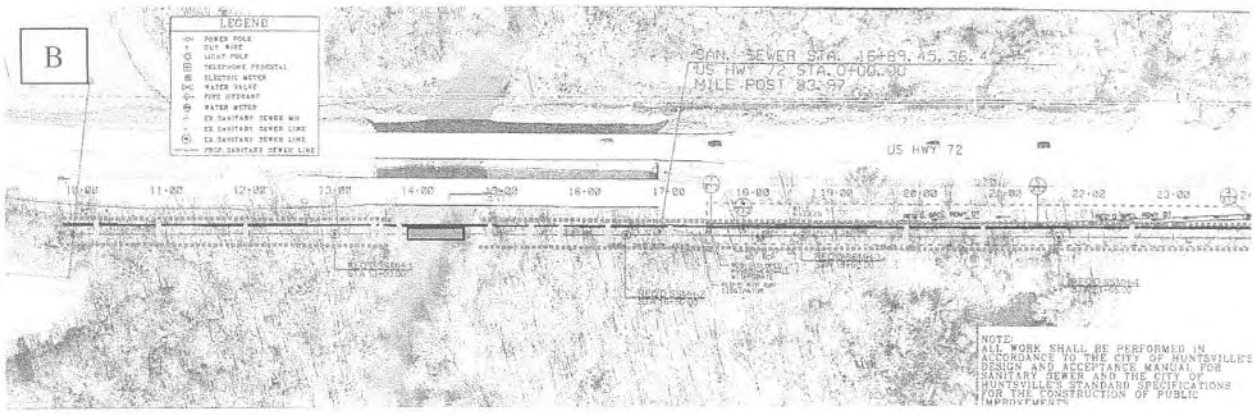


Figure 4: A) Action area location map.
B) Sediment and erosion control location map. (Source: ASTCC 2011)

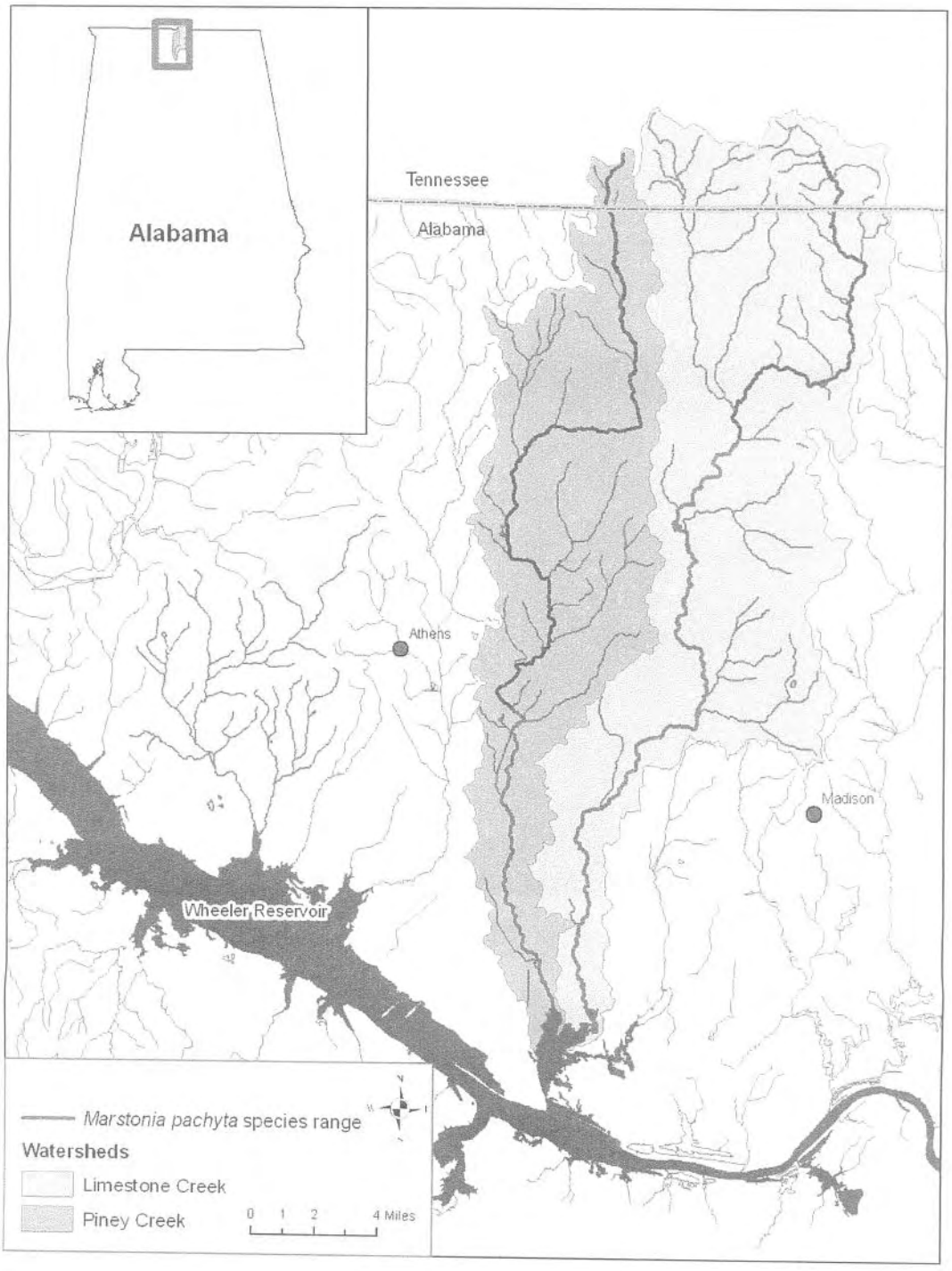


Figure 5: Range of the armored snail.

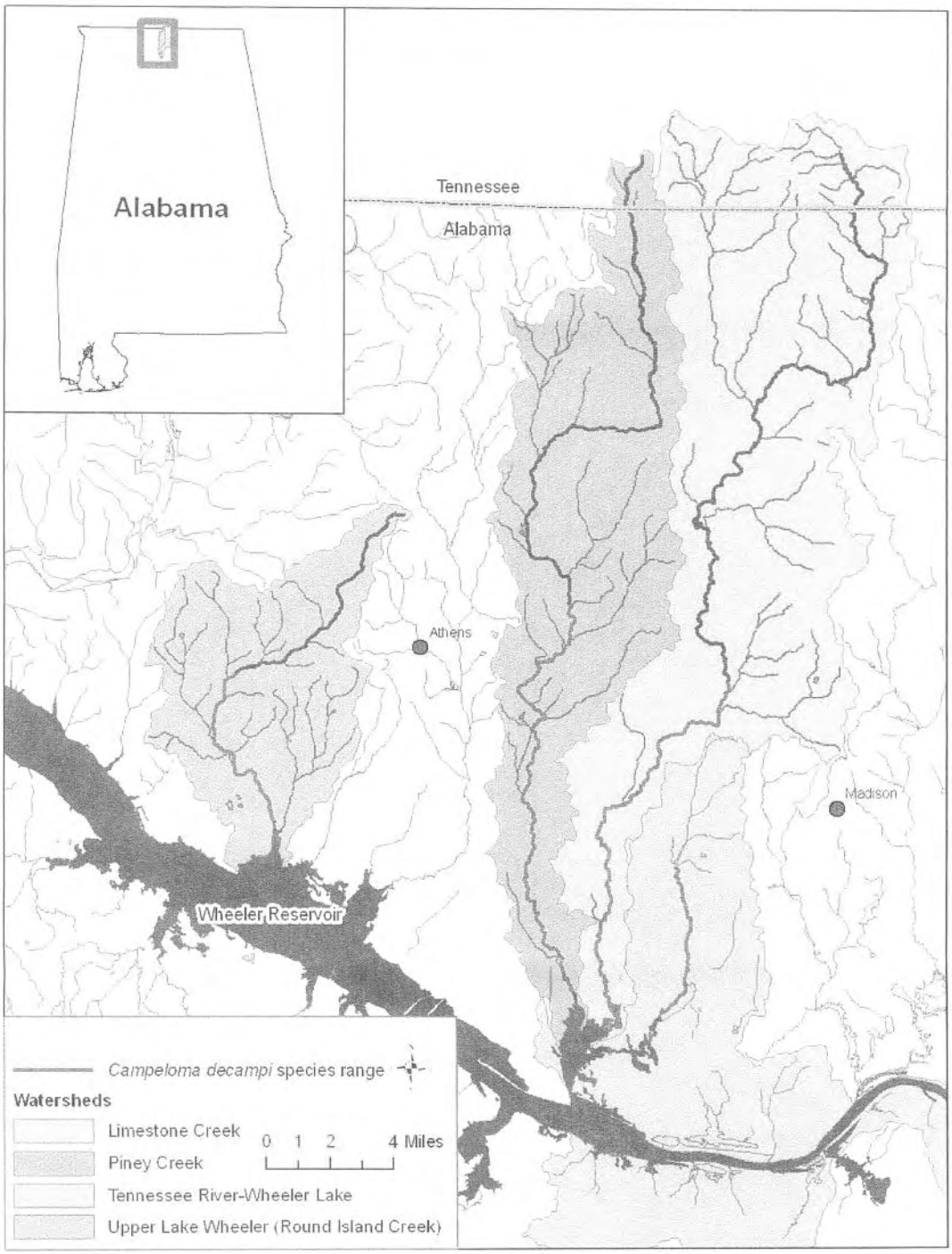


Figure 6: Range of the slender campeloma snail.