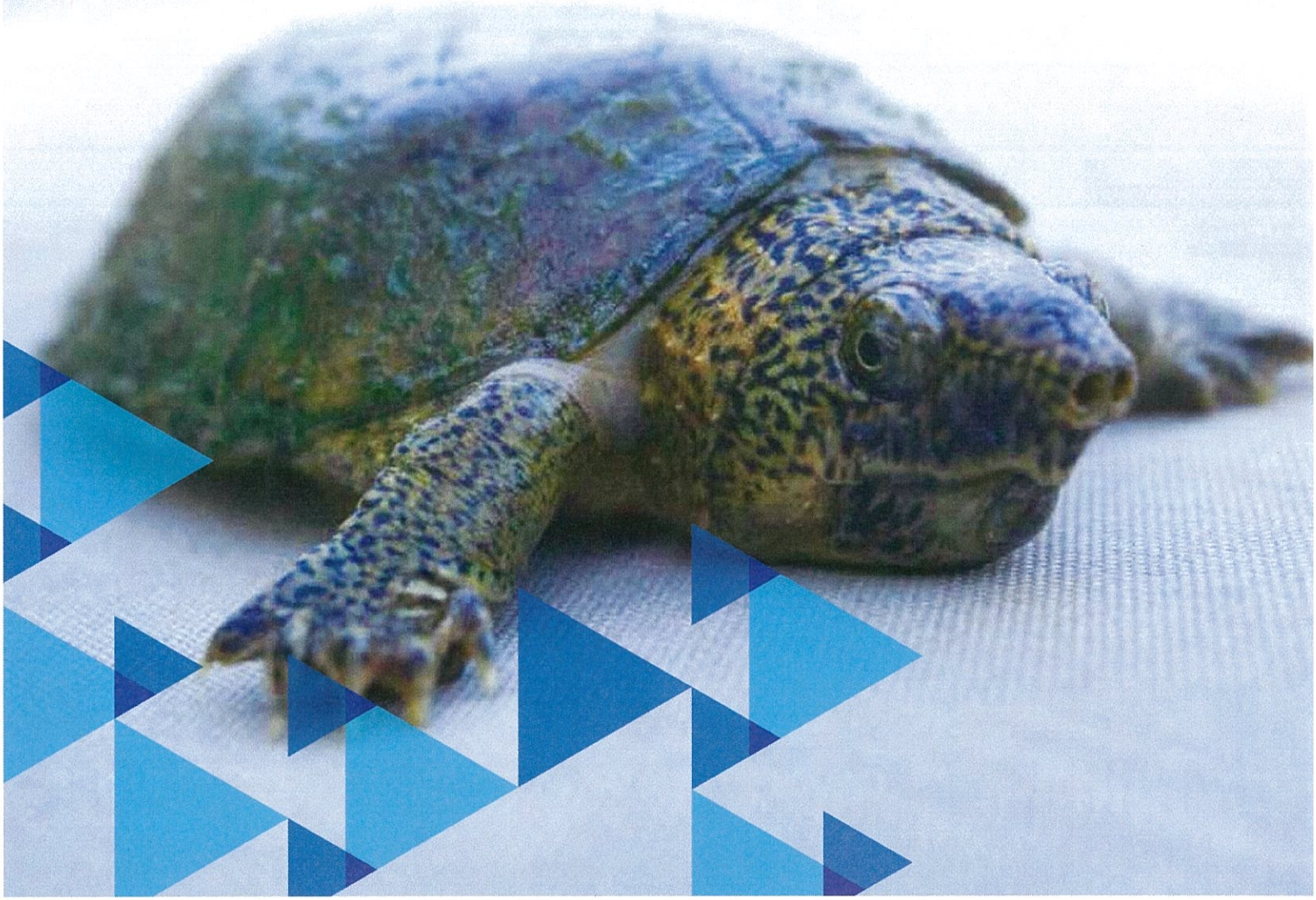
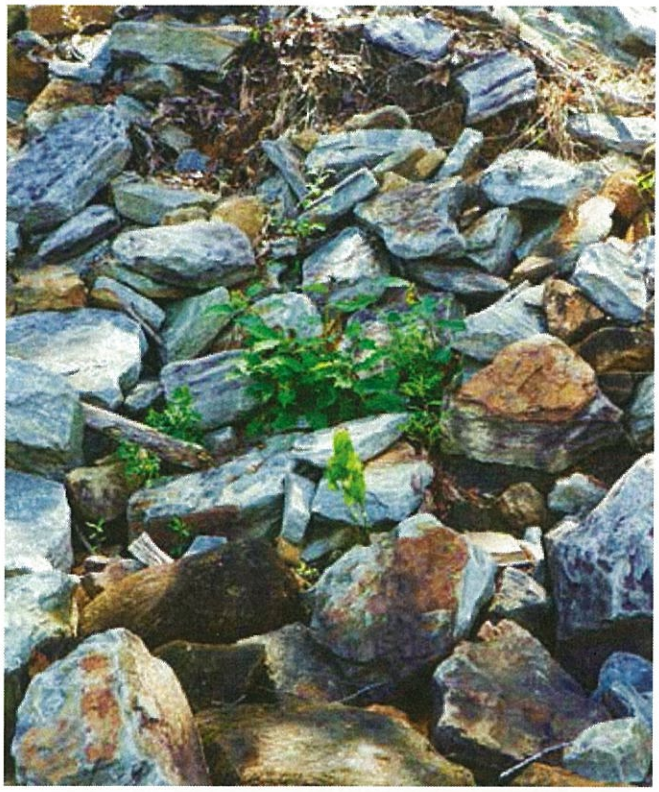
CONTRACTOR'S GUIDE

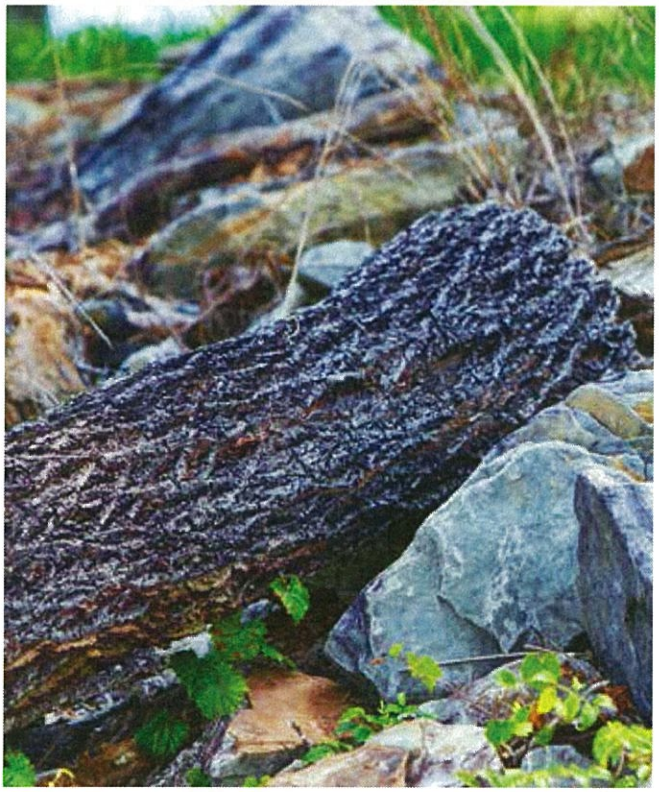
to enhanced natural stabilization in flattened musk turtle habitat.

Alabama Power

Alabama Power and our partners compiled the following guidelines for enhanced natural stabilization construction between Nov. 1 and March 31 in areas identified as potential flattened musk turtle (FMT) habitat on Smith Lake. For more information, contact the Smith Lake Shoreline Management Office at 205-384-7385.







Materials

• **Rock** – large angular stones can be purchased from your local quarry or gravel pit. do not take them from the shoreline (because they help prevent erosion) or from below the normal high-water line (because they provide habitat for aquatic life).

• **Crushed stone** – May be purchased from your local quarry or gravel pit. do not use unwashed stone.

• **Buffer plants** – Can be purchased from garden centers. a list of appropriate plant species is located in the suggested Vegetation list. alabama Power recommends that landowners contact a local nursery or person with expertise, such as a Cooperative extension service agent, for advice on which plants for a particular area.

· **Erosion control mix** (ECM).

Installation

Use shoreline stabilization practices where eroded bank slopes exceed a 50 percent slope – 2 horizontal (H) feet to 1 vertical (V) foot. Vegetation (i.e. native trees and shrubs) should be installed within treated area at a 15 percent minimum cover rate.
Use native rock for all slope stabilization and a minimum of the following sizes: 45 percent of Class 1, 35 percent of Class 2, 15 percent of Class 3 and 5 percent of Class 5. Do not remove existing vegetation. Create a trench in the bank toe that is at least as deep as Class 1 rock.

To prevent underlying soil movement, install a 6-inch layer of sand and crushed stone filter at the top of the shoreline edge and extend it into the toe trench. the crushed stone layer should range in size for 0.08-3 inches to create a cohesive base. Immediately install the shoreline rock layer. First place an anchoring row of large rocks in the trench at the toe of the bank. Rock should then be hand-placed, where possible, or very carefully dumped so that smaller stones fill the voids between the larger ones. The rock layering should be at least twice as thick as the average rock diameter.

Upon placement of rock, care should be taken to create crevices between rocks placed on each other. these crevices should account for at least 35 percent of the treated surface area with openings at a minimum of 4 inches (V) by 6 inches (H) and maximum of 10 inches (V) by 20 inches (H). If the shoreline slope allows for sufficient stabilization, and the landowner agrees, ensure that the rock extends up the slope no more than 2 feet above the normal high-water line at elevation 510 feet.

Installation of log material should be completed during installation of rock layer. logs should have a minimum diameter of 8 inches and a minimum length of 15 feet. Secure logs by anchoring between and under rocks on top of the underlyig native soil or rock material. Logs are to be placed mostly in a horizontal to slightly angled configuration and not lying on top of the rocks. This should prevent logs from floating following installation. A minimum of 5 percent coverage should be achieved in the treated area. Logs should have variable placement and shapes to allow openings (crevices) underneath. Minimum openings should be 4 inches and maximum of 8 inches.

Native trees and/or shrubs should be planted at the rock shoreline interface on 2-foot centers and randomly throughout the treated area at a 15 percent cover rate. Dominant shrubs species should at a minimum include buttonbush (Cephalanthus occidentalis) and native dogwood species. Vegetation provides soil stabilization and habitat with additional benefits of filtering nutrients and pollutants from runoff. Plants should maintain an 80 percent survivorship.

Disturbed soil above the treated rock shoreline stabilization area should be immediately stabilized with seed and hay mulch or permanently mulched, preferably with ECM.

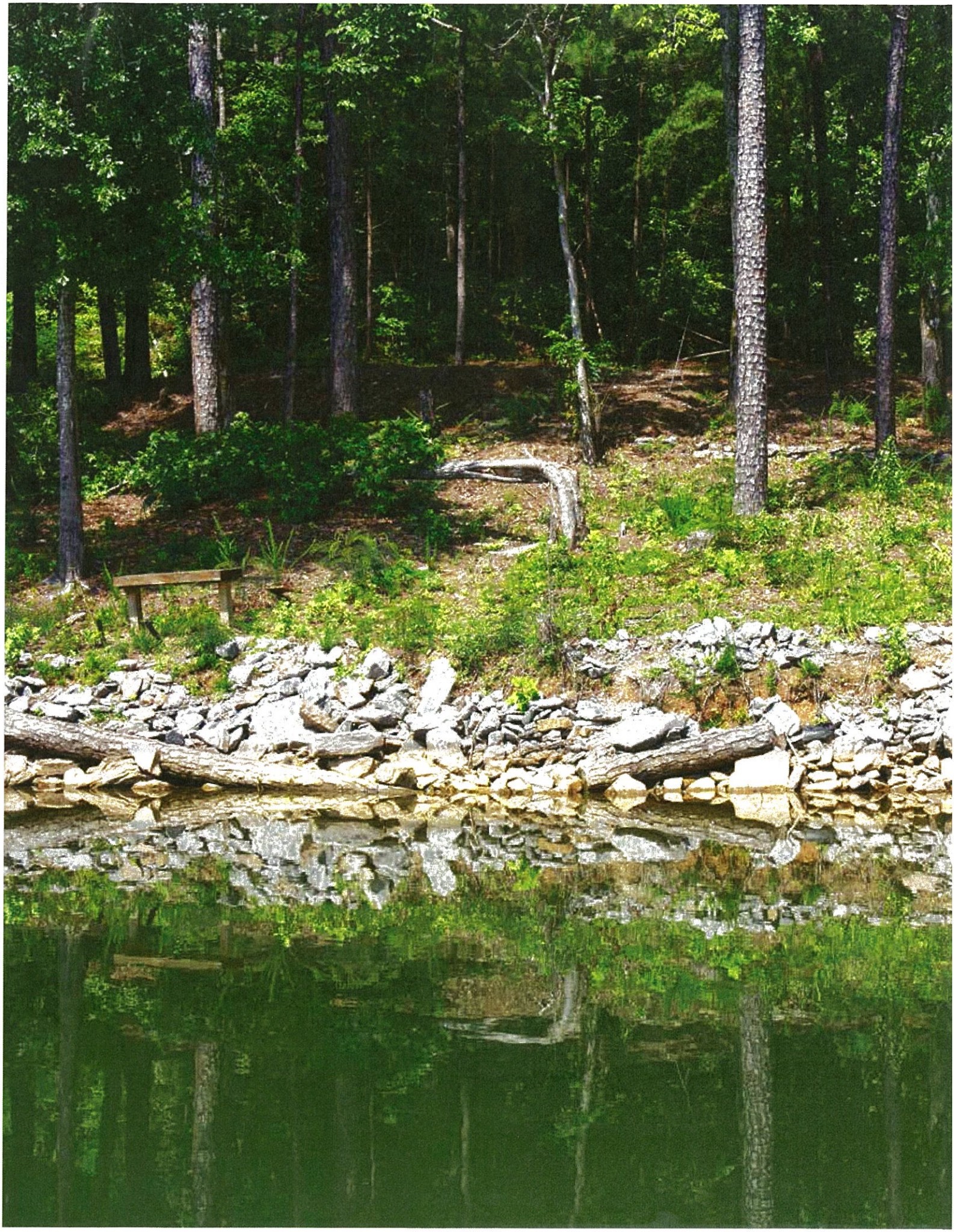
Suggested Vegetation List

Tree Species:
- Red Maple (Acer rubra)
- Silver Maple (Acer saccharinum)
- River Birch (Betula nigra)
- Tulip (yellow) Poplar (Liriodendron tulipifera)
- American Holly (Ilex opaca)
- Bigleaf Magnolia (Magnolia macrophylla)
- White Oak (Quercus alba)
- Overcup Oak (Quercus lyrata)

Shrub Species:
- Buttonbush (Cephalanthus occidentalis)
- Dogwood (Cornus native species)
- Lowbush Blueberry (Vaccinium angustifolium)
- Mountain Laurel (Kalmia latifolia)

Maintenance

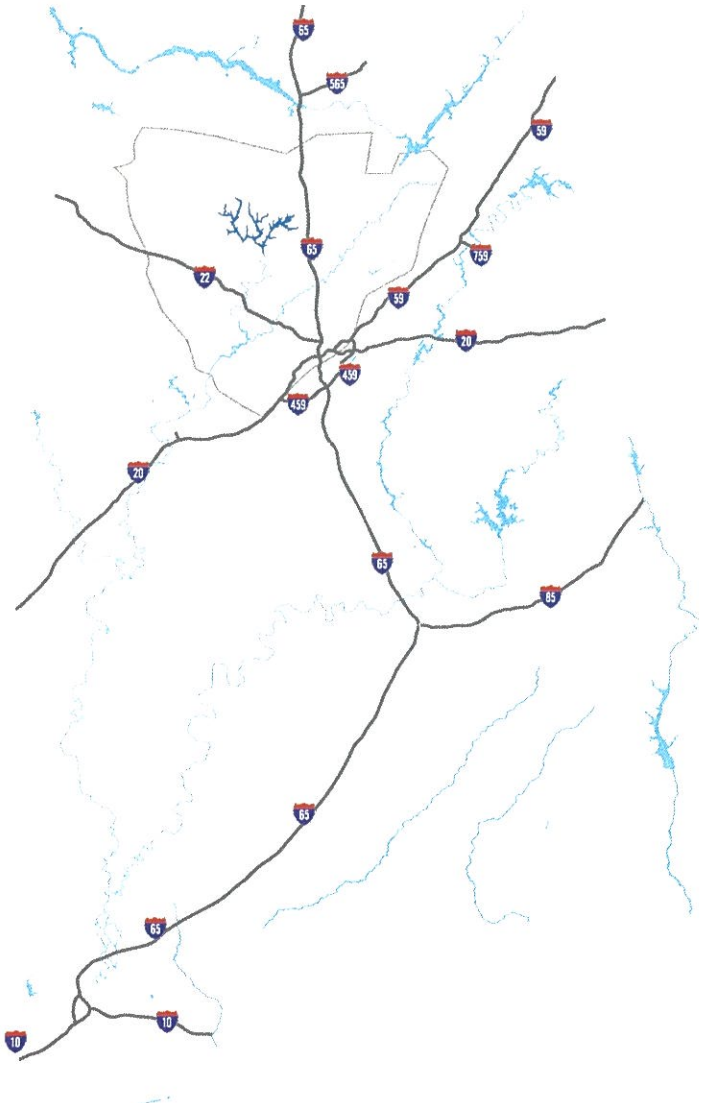
Some displacement after frost heaving, severe storms and wave action is expected. Return stones to their original positions as necessary. Monitor for slumping and erosion behind rocks. Inspect vegetation plantings for survival. Replace plants if necessary to maintain 80 percent survival rate.

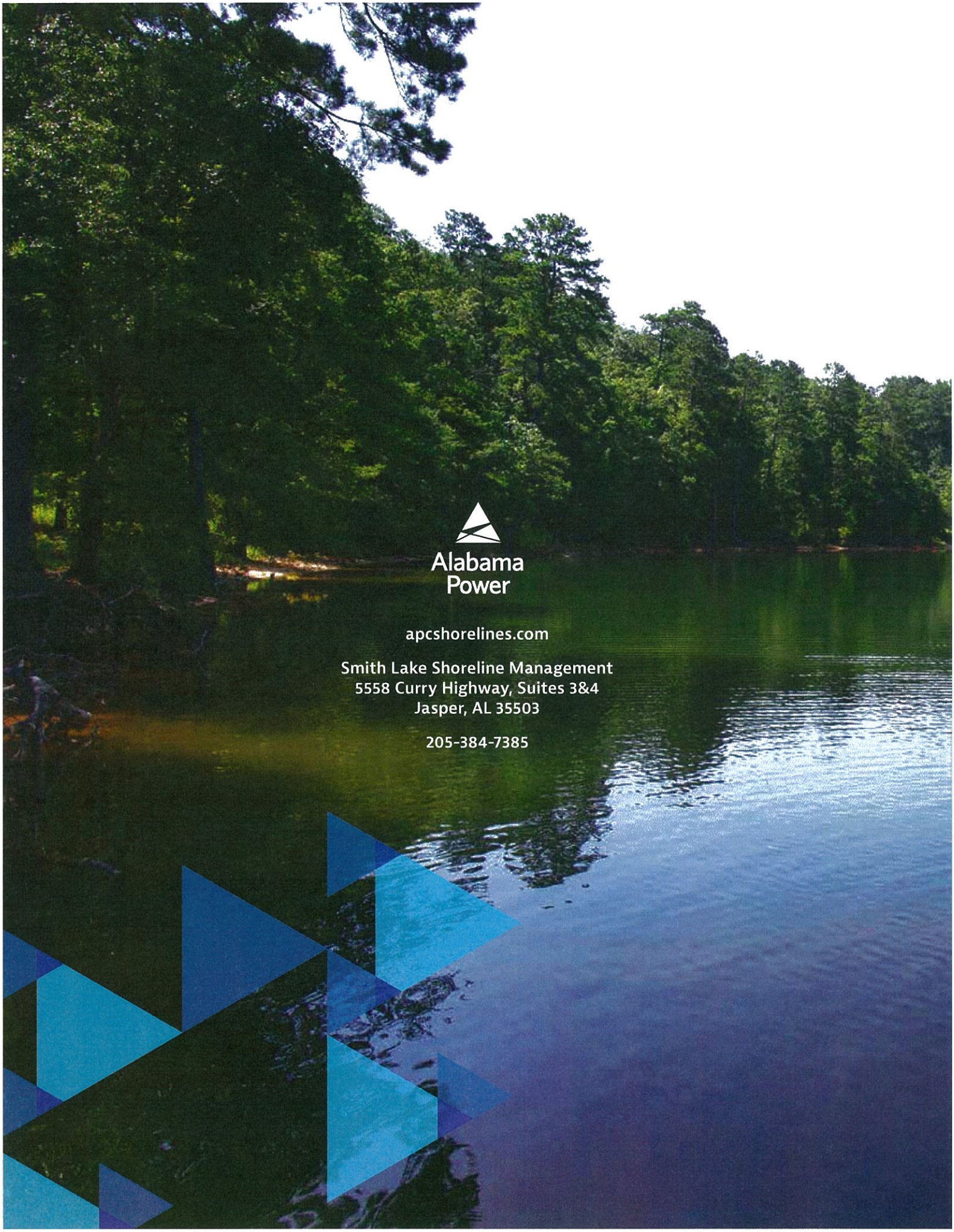


Construction Specifications

Timber used for construction shall be cypress, cedar, yellow pine or hardwood species (i.e. oak, maple, gum, hickory, ash, cherry and/or walnut). All stabilization structures shall be constructed with rock quarry stone, gravel pit stone, or native rock material.

Known Range of the Flattened Musk Turtle





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