

AUTHORIZATION OF THE ATLANTIC COAST PIPELINE AND APPROVAL OF RELATED FOREST PLAN AMENDMENTS: OBJECTION

Submitted as comments to the USDA Forest Service by Rick Webb, Program Coordinator, Dominion Pipeline Monitoring Coalition (DPMC), September 5, 2017

The attached maps and text concern the July 2017 Draft Record of Decision (DROD) to authorize construction of the Atlantic Coast Pipeline (ACP) on the Monongahela National Forest (MNF) and the George Washington National Forest (GWNF) and to approve project-specific Forest Plan amendments.

These maps are provided:

- In support of other comments on the DROD submitted to the Forest Service by or on behalf of the DPMC.
- To demonstrate the extent of Dominion Energy's failure to provide detailed site-specific plans and impact analysis for the ACP project and the Forest Service's apparent intent to proceed in the absence of detailed site-specific plans and impact analysis.

The maps are provided in four attachments related to separate topics:

- 1) **Best In Class Program: deferred planning, analysis, and review**
- 2) **Direct impact to National Forest streams**
- 3) **Risk to karst system hydrology**
- 4) **Extreme excavation requirements**

The maps were prepared using the DPMC Critical Zone Mapping System (CZMS). An online interactive version of the CZMS can be accessed [here](#). The online version of the CZMS provides additional information concerning data sources.

Our Primary Objection

In issuing the DROD, the Forest Service has adopted a deferred-analysis model of project review in which detailed site-specific plans and analysis of critical environmental issues has been delayed until after conclusion of the public comment period.

The Final Environmental Impact Statement (FEIS) for the ACP project concludes that impacts of the project will be “*reduced to less-than-significant levels*” due, in part, to later completion of a Construction, Operations, and Maintenance (COM) Plan “*that includes additional measures to minimize impacts on environmental resources on NFS lands, and the FS’ SUP process for Atlantic’s easement over federal lands would provide terms and conditions for construction and operation.*” (FEIS, page ES-16)

The Forest Service DROD proposes project approval based, in part, on mitigation measures described in the COM Plan, which is “*still undergoing refinement as we are continuing work with Atlantic to enhance the effectiveness of mitigation measures and will incorporate additional mitigation as needed.*” (DROD, page 7) The Forest Service further proposes multiple modifications of Forest Plan standards contingent upon implementation of “*applicable mitigation measures identified in the COM Plan*” and a Special Use Permit (SUP). (DROD, Table 2)

The Forest Service has repeatedly requested information about the ACP that Dominion persistently failed to provide.

- The Forest Service has asked Dominion to document the effectiveness of control methods for construction in areas that present high risks for slope failure, slippage, erosion, and sedimentation.
- The Forest Service has asked Dominion to demonstrate that the ACP can be built without unacceptable risk of resource damage by developing site-specific stabilization designs for selected high-hazard areas.
- The Forest Service has asked for specific documentation that justifies not considering post-construction stormwater management measures.
- The Forest Service has asked for proof that the open-trench limit causes a significant increase in disturbance and construction time for pipeline construction in steep mountainous terrain.
- The Forest Service has indicated that erosion and sediment control plans will be required for ACP access roads in the National Forest, and has indicated that detailed soil surveys and analysis of fill-slope stability will be needed.

The Forest Service proposal to authorize construction of the ACP on National Forest lands prior to provision and review of requested information and complete project plans relies on the presumption that practicable control technologies are available for mitigation of the most-extreme geohazards that confront the ACP. It precludes any possible conclusion that the risks are insurmountable or unacceptable.

Implementation of the National Environmental Policy Act (NEPA) requires an opportunity for public review and comment. The Forest Service DROD, however, repeatedly fails to address or provide the critical information required for meaningful review. The central Appalachian region presents a set of geophysical and hydrologic conditions that, in combination with the extreme earth disturbance required for the proposed ACP, present challenges that are not adequately addressed by a deferred-analysis to project planning and review.

Best in Class Program: Deferred Planning, Analysis, and Review

A critical part of the incomplete COM Plan is what Dominion calls a “*Best in Class Program*” (BIC) to address geohazards in the proposed pipeline corridor.

The BIC Program, as indicated in the draft COM Plan, will apply to areas of right-of-way (ROW) construction, and presumably access road construction, where ground-slope inclination equals or exceeds 30% for continuous distances of 100 feet or more. Thus, the BIC program focuses on the higher-risk, higher-hazard segments of the proposed project. This represents a substantial part of the project on Forest Service land.

Based on the BIC slope and distance criteria, the BIC Program will apply to 14.23 miles or about 70% of the pipeline ROW (125-foot wide disturbance) on the National Forest. The BIC Program will also apply to 11.36 miles or about 46% of the project access roads (40-foot wide disturbance) on the National Forest. A complete accounting of BIC areas would include additional work space and spoil deposit areas.

The 12 maps provided in Attachment 1, Best in Class Program Areas, indicates the BIC locations on the National Forests.

As described in the draft COM Plan, the BIC Program will convene a team of subject-matter experts to identify hazards and design mitigation measures. Mitigation measures will be selected from a menu of options. The extent to which Dominion has completed the related field surveys, geotechnical studies, and geohazard analyses is not made clear in either the FEIS or the DROD. It is also not clear which specific mitigation measures will be selected for specific BIC Program locations. Complete information concerning control measures for areas where construction will occur on long-steep slopes has not been provided in the draft COM Plan or elsewhere in either erosion and sediment control plans or stormwater management plans.

Thus the information needed for review of mitigation plans for significant critical areas of the proposed project have not been made available for public or agency review.

Note that the maps provided in Attachment 1, Best in Class Program Areas, also indicate the locations of BIC areas located on footslopes. These areas represent a risk of slope failure with direct impacts to streams. There are 26 such locations on or immediately downslope of National Forest land. In response to requests for detailed plans for high-hazard locations, Dominion has provided information for only two locations totaling 0.4 miles on National Forests, including a 0.1-mile foot-slope location on Lick Draft between ACP mileposts 85 and 86 (see Attachment 1, Best in Class Map 3). At this location Dominion proposes to cover the foot slope with heavy steel wire mesh held in place with 8 and 15-foot steel rods fastened with epoxy in 6-inch holes bored into bedrock. It is not known, based on the incomplete information provided to the Forest Service or the public, if Dominion will use the same technology at the other 25 foot-slope BIC locations on the National Forests. Information about the proposed use, long-term efficacy, effects on runoff characteristics, and wildlife impacts of this extreme technology should have been made available to the public prior to conclusion of the public comment period.

Note also that the DROD proposes modification of the Forest Plan standard that restricts the use of wheeled or tracked equipment on steep slopes (40-50%) and very steep slopes (>50%) (DROD, Table 2, page 9). Although the supporting information indicates that measures in the to-be-completed COM Plan and SUP are designed to avoid and minimize impacts associated with equipment use on these slopes, these steep areas are included in the BIC Program and no site-specific information has been provided. Again, this is critical information that has not been made available to the public for review and comment. The geographic scope of this deficiency is extensive.

For the ACP ROW (125 ft. corridor) on the National Forests, 9 miles or 44% includes slopes that exceed a 40% slope and 4.3 miles or 21% includes slopes that exceed a 50% slope.

For the ACP access roads (40 ft. corridor) on the National Forests, 7.3 miles or 31% includes slopes that exceed a 40% slope and 3 miles or 12% includes slopes that exceed a 50% slope.

Impact to National Forest Streams

Attachment 2, Direct Impact to National Forest Streams, indicates the locations of stream crossings, in-stream blasting, and streams with naturally reproducing brook trout at risk due to pipeline and access road construction. Pipeline and access road construction will include 26 stream crossings, 21 of which will require in-stream blasting, on the National Forests. At least 8 brook trout streams either on or downstream of the proposed construction are at risk due to sedimentation and changes in runoff characteristics.

See the separately submitted DPMC report concerning hydrologic impacts for analysis of aquatic impacts related to sedimentation and changes in runoff characteristics.ⁱ

Note that Dominion has indicated, in the above mentioned BIC information for the Lick Draft area, that it will backfill the stream crossing with concrete. Again, it is not known, based on the incomplete information provided to the Forest Service or the public, if Dominion will backfill with concrete at other stream crossing locations. Information about the proposed use of concrete in backfilling stream crossings and the effects on stream morphology, hydrology, and aquatic life should have been made available to the public prior to conclusion of the public comment period.

Note also that Dominion has indicated in the draft COM Plan that it will adhere to time-of-year restrictions on instream construction activity in streams that support sensitive aquatic species, including brook trout streams. However, Dominion proposes to proceed with construction during the winter months when time-of-year restrictions apply. The Forest Service should ensure compliance with protective time-of-year restrictions by requiring strict season-based construction scheduling prior to final decisions concerning pipeline construction.

Risk to Karst System Hydrology

Attachment 3, Risk to Karst System Hydrology, provides information concerning two locations on the National Forests where construction risks significant impacts to groundwater systems and ecosystem functioning.

Clover Creek:

Pipeline and access road construction in the Clover Creek area (see Attachment 3, Karst Impact Maps 1 and 2) involves excavation and disturbance of highly erodible and slip-prone soil with drainage to interconnected karst ground water.

Much of the high-excavation and steep-slope construction on the National Forest in the Clover Creek area will involve the Mauch Chunk formation. The shales and siltstones of the Mauch Chunk form expansive-clay soils that are highly erodible, producing a suspension of clay-sized particles that are slow to settle-out from runoff and receiving waters. The Mauch Chunk also has the highest potential for slippage of any geology found on the MNF.ⁱⁱ Large-scale excavation involving Mauch Chunk soils on steep slopes above and adjacent streams thus presents a high risk of environmental damage and violation of water quality standards.

Dominion conducted a high-resolution Order 1 Soil Survey on the National Forests that should contribute to informed evaluation of erosion, sediment transport, and slippage potential associated with earth disturbance during construction of the pipeline corridor, access roads, and related infrastructure in the Mauch Chunk region and other areas with steep slopes and problem soils. However, there is no evidence that Dominion has actually incorporated the Order 1 Soil Survey data in the analysis of risks or mitigation planning. The proposed Forest Service approval of the project precludes the use of the available high-quality soils data to inform route selection and mitigation planning.

The presence of the Greenbrier Limestone in the path and downslope of the proposed pipeline and access road corridors in the Clover Creek area presents a high risk of damage to interconnected hydrologic systems. Hydrologic connections have been studied to some extent throughout the larger Mauch Chunk and Greenbrier Limestone area that includes the Clover Creek watershed.ⁱⁱⁱ The karst groundwater connection indicated on the maps in Attachment 3, Karst Impact Maps 1 and 2, is one of many karst groundwater connections that have been identified in or near the pipeline path through the use of dye tracing.

Dominion and the Forest Service have failed to address the issue of risk to karst groundwater systems. Dominion has simply identified surface karst features in a 300 to 500-foot corridor centered on the pipeline path. Dominion

has focused on pipeline construction problems rather than risk of harm to water supplies or dependent ecosystems. Given the long-distance hydrologic connections (multiple miles) that have been identified in the Appalachian karst region, a 500-foot study area is insufficiently informative. More importantly, it does not appear that ACP pipeline or access road routing decisions have accounted for the location of wells and springs or karst features and groundwater connections.

Browns Pond:

Dominion proposes to “reconstruct” and use Forest Road 281 as an access road. Forest Road 281 drains to and intersects the Browns Pond Special Biological Area (SBA) (see Attachment 2, Karst Impact Maps 3, 5, and 6). As stated in the DROD, Dominion and the Forest Service are “negotiating” the use of this road and the requisite Forest Plan modification (Table 3, page 14). The only issue addressed in the tables supporting information is the issue of the “outstandingly remarkable values associated with the Cowpasture River.” It is remarkable that no mention is made of the risk to the Browns Pond SBA.

Browns Pond is a montane depression wetland in karst topography. The Browns Pond SBA has rare plants, multiple sinkholes, and a cave that provides habitat for special cave fauna. It has been designated as an SBA by the GWNF and is managed to protect those resources. Building or widening a road through karst topography would put Browns pond and the associated sinkholes and caves in the SBA at high risk. A long section of the access road would drain toward Browns Pond and the associated sinkhole complex. The area has not been studied using dye tracing methods and the hydrologic connections are unknown. In addition to the approximately three-quarter mile section of the road that drains directly to Browns Pond, drainage to Campbell Run, which the road closely follows for another approximately three-quarter mile section, has a sinkhole in the upper reach and may have hydrologic connections to Browns Pond and the SBA. The Forest Service should not consider “reconstruction” and heavy use of Forest Road 281 until hydrologic connectivity is studied with the readily available dye tracing technology.

Much of Forest Road 281 meets the BIC slope steepness and length criteria (see Attachment 2, Karst Impact Map 3), and site-specific construction plans have not been made available for public review. Other factors also add to the risk to the Browns Pond SBA. As indicated in Karst Map 4, most of the road is located on land classified as “Severe Erosion Hazard.”^{iv} As indicated in Karst Map 5, reconstruction of the route will require an extreme level of excavation. And as indicated in Karst Map 6, the gradient of much of the road exceeds the recommended 16% maximum grades for roads associated with oil and gas infrastructure development.^v

Extreme Excavation Requirements

Attachment 4, Extreme Excavation Requirements, indicates the National Forest locations where construction of the ROW and access roads will require significant excavation to create level work space. In the absence of site-specific cross sections and detailed plans for the project, it is assumed that level surfaces of 125 feet for the ROW and 40 feet for access roads will be created through excavation instead of construction with fill. This is a reasonable approximation given the steepness of side slopes on many ridges (see for example, Attachment 4, Extreme Excavation Map 4 and the narrow ridge line between mile posts 86 and 87).

For the ACP ROW on the National Forests, our analysis indicates that the depth of excavation will exceed 10 feet for 14.3 miles or 70% of the length of the ROW.

For the ACP access roads on the National Forests, our analysis indicates that the depth of excavation will exceed 10 feet for 14.9 miles or 61% of the length of the access roads.

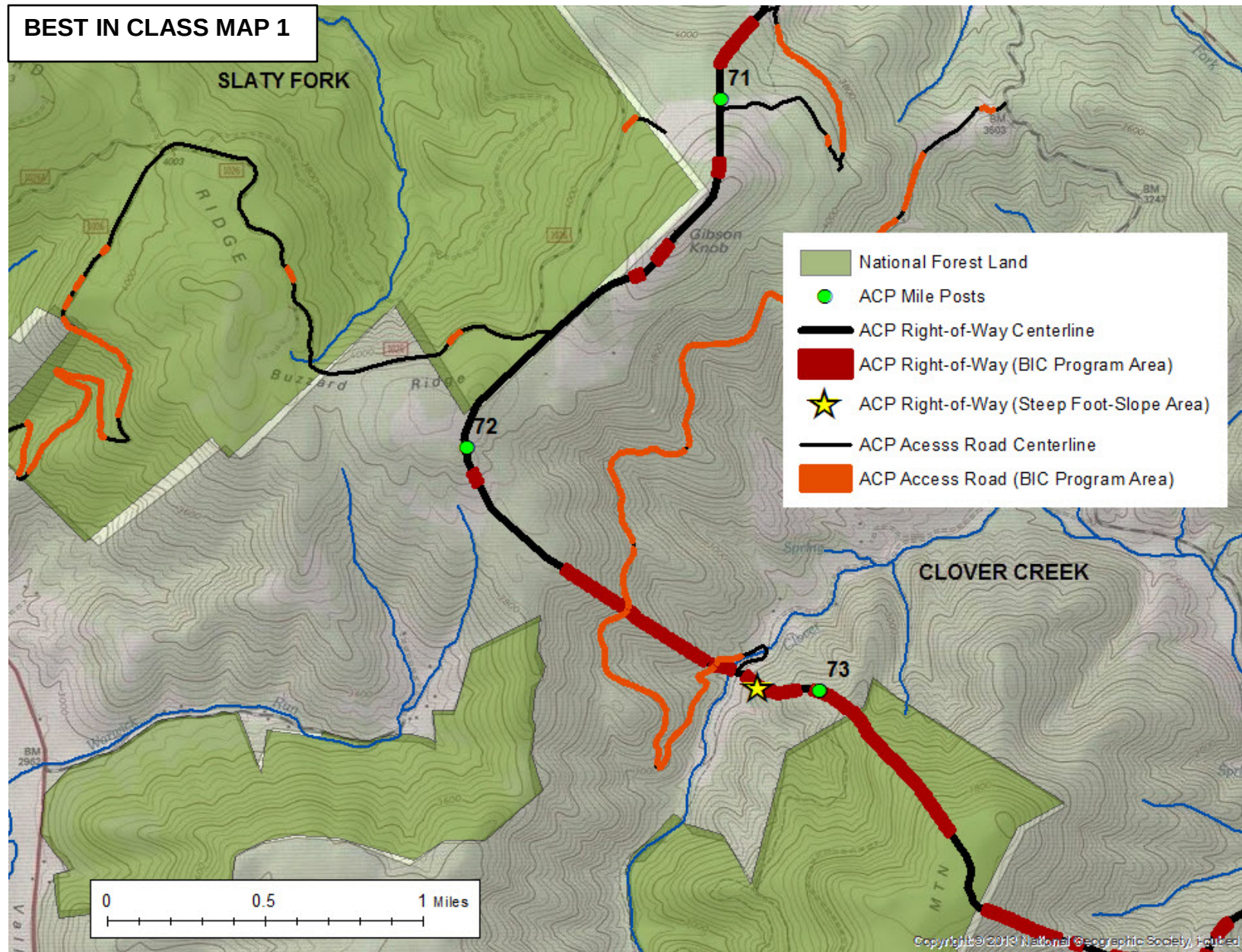
Details concerning the site-specific extent of excavation and the placement or disposition of spoil must be provided to the Forest Service and to the public before informed review of project impacts can be completed.

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- ⁱ Dodds, Pamela C., 2017. Notice of Objection to the Draft Record of Decision for the Atlantic Coast Pipeline Project Land and Resource Management Plan Amendments for the Monongahela National Forest, Pocahontas County, West Virginia, the George Washington National Forest in Highland, Bath, and Augusta Counties, Virginia (*submitted separately on behalf of the Dominion Pipeline Monitoring Coalition*)
- ⁱⁱ Forest Service Analysis of Landslide Data from a Recent Flood Event in the Monongahela National Forest. Submitted to FERC by the U.S. Forest Service, 12/23/16 (FERC Docket CP15-554-000, Accession No. 20161227-5025).
- ⁱⁱⁱ West Virginia Water Resources Management Plan Mapping Tool, West Virginia Department of Environmental Protection, <http://tagis.dep.wv.gov/WVWaterPlan/> (Accessed 3/29/17).
- ^{iv} Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <https://websoilsurvey.nrcs.usda.gov/>. (Accessed 1/18/16).
- ^v Surface Operating Standards and Guideline for Oil and Gas Exploration and Development, Bureau of Land Management and U.S. Forest Service, 2007).

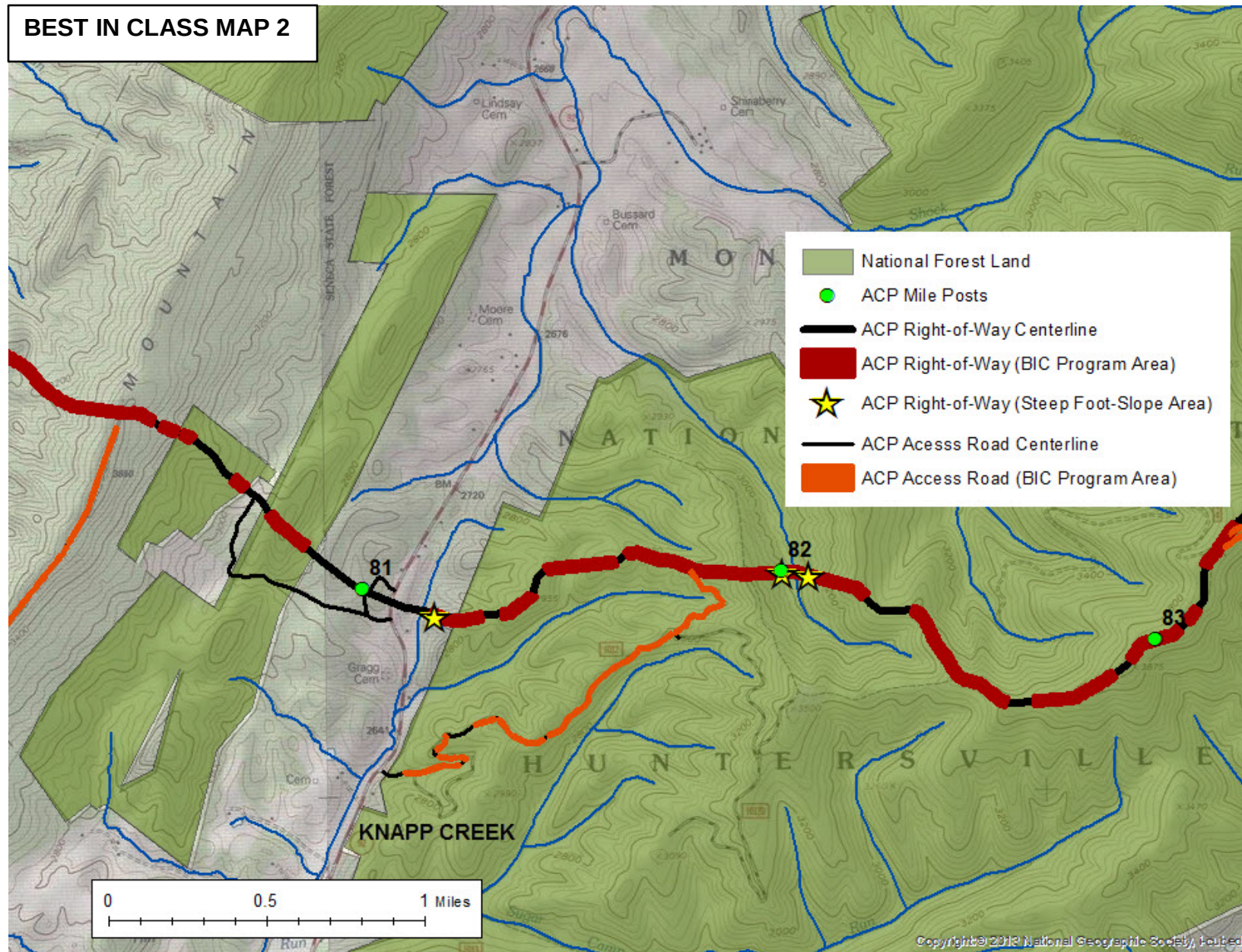
ATTACHMENT 1 – MAP SET

BEST IN CLASS PROGRAM: DEFERRED PLANNING, ANALYSIS, AND REVIEW

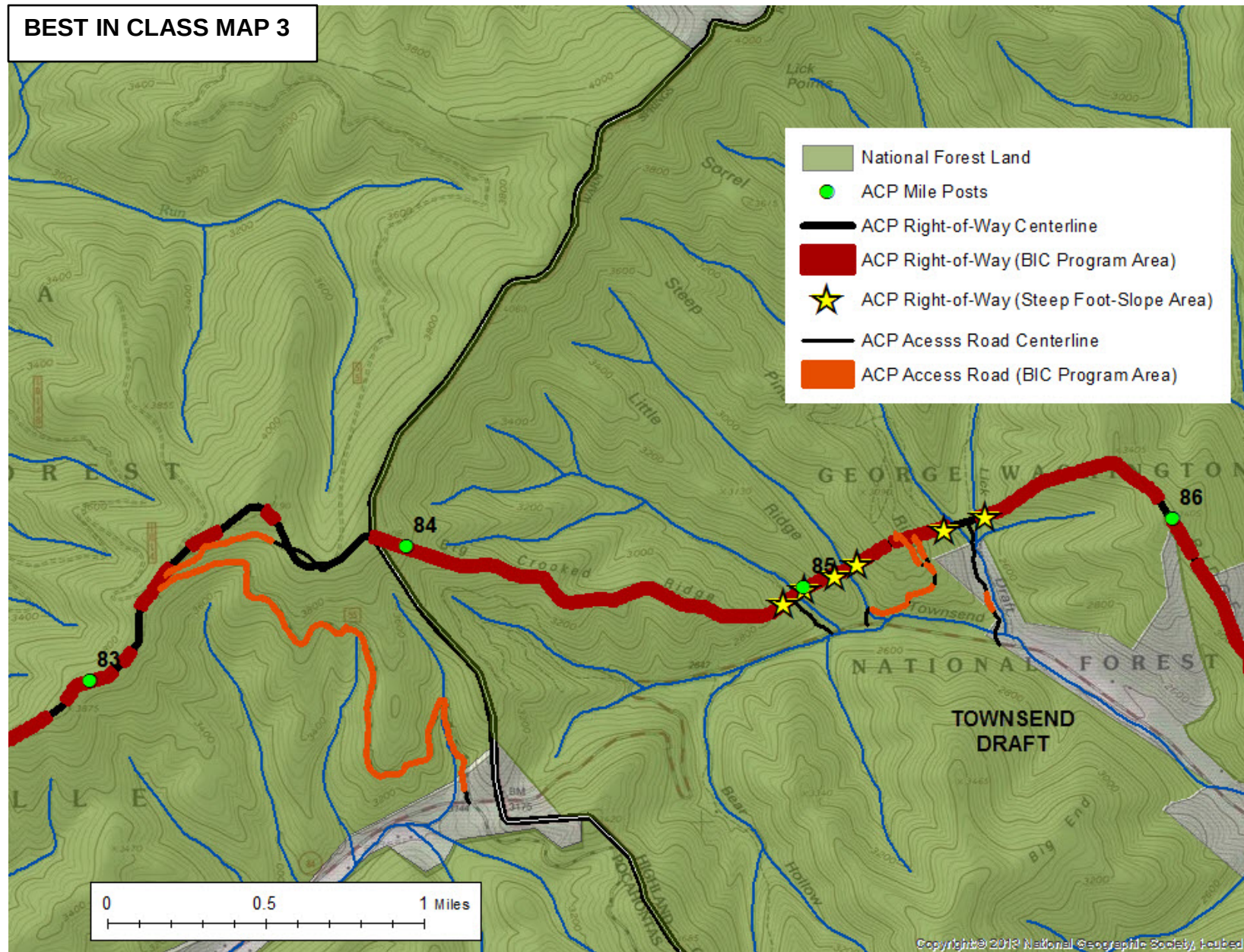
BEST IN CLASS MAP 1



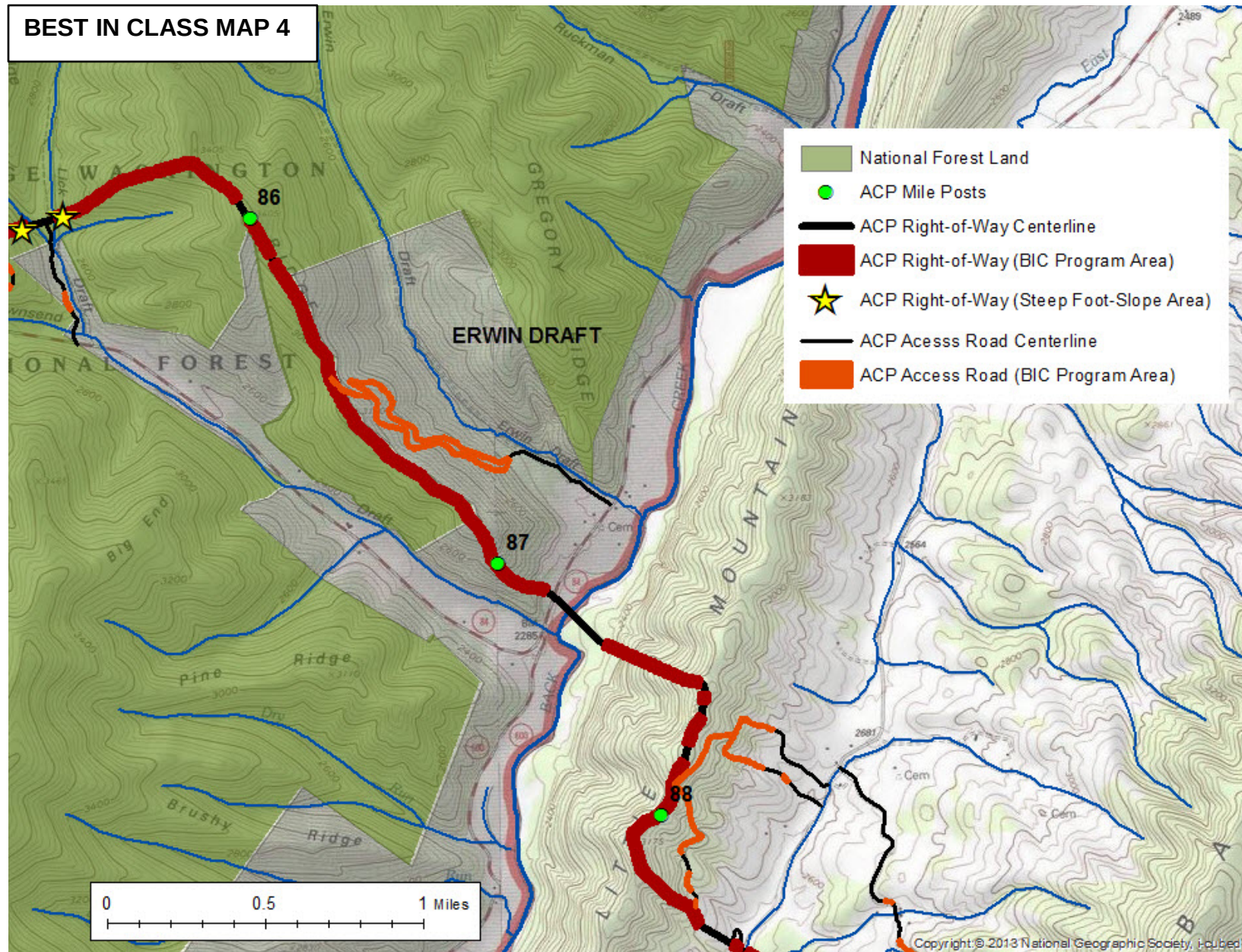
BEST IN CLASS MAP 2



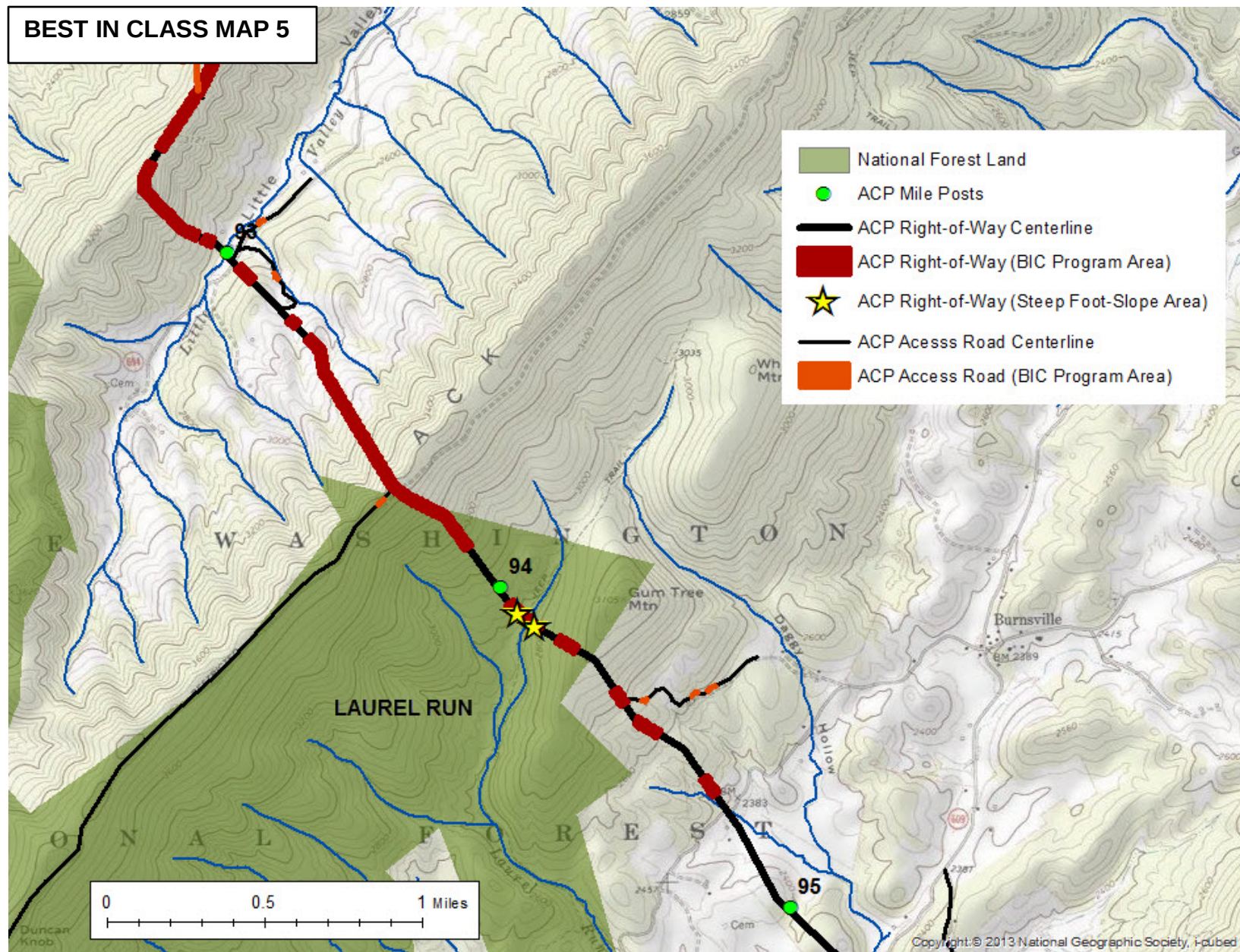
BEST IN CLASS MAP 3



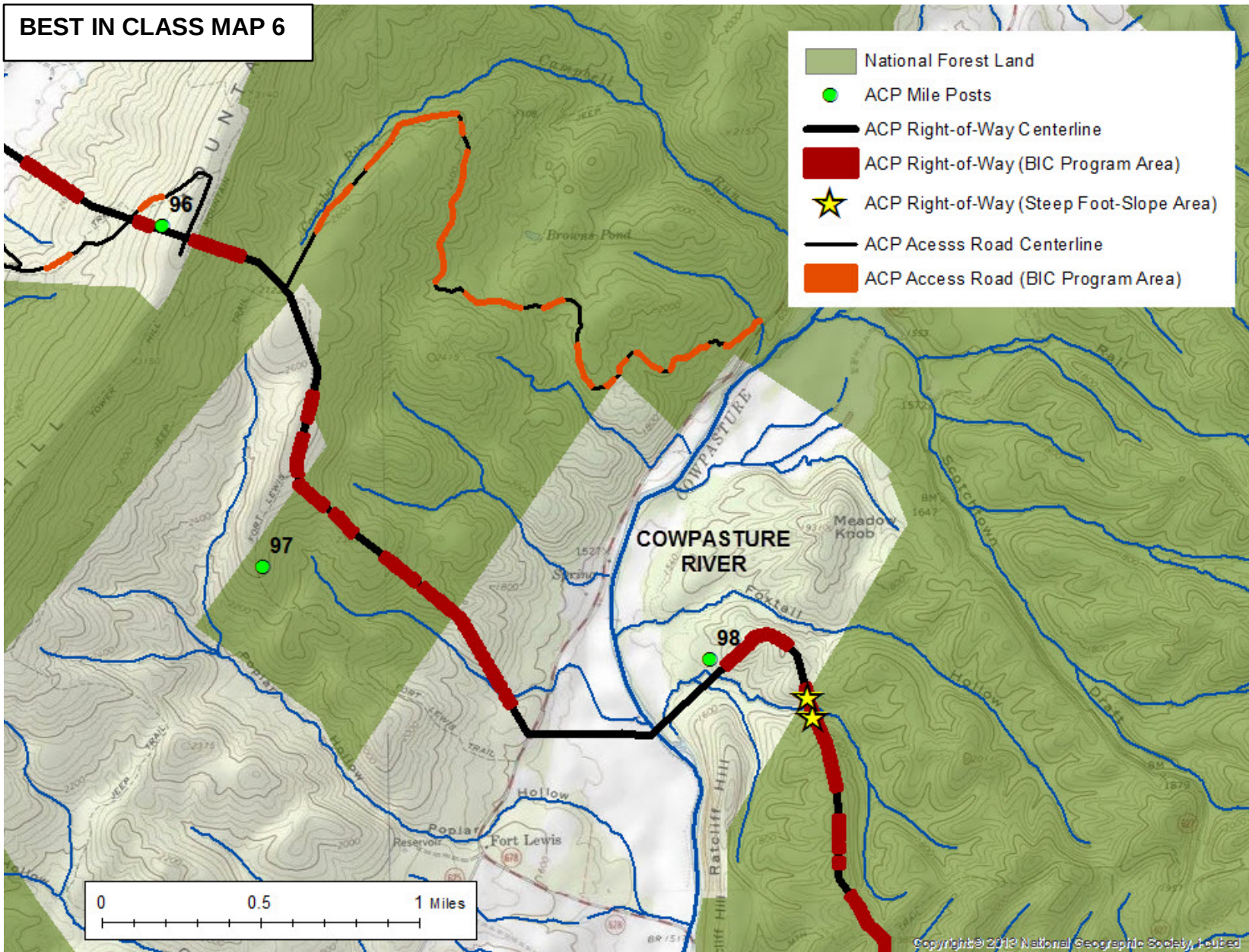
BEST IN CLASS MAP 4



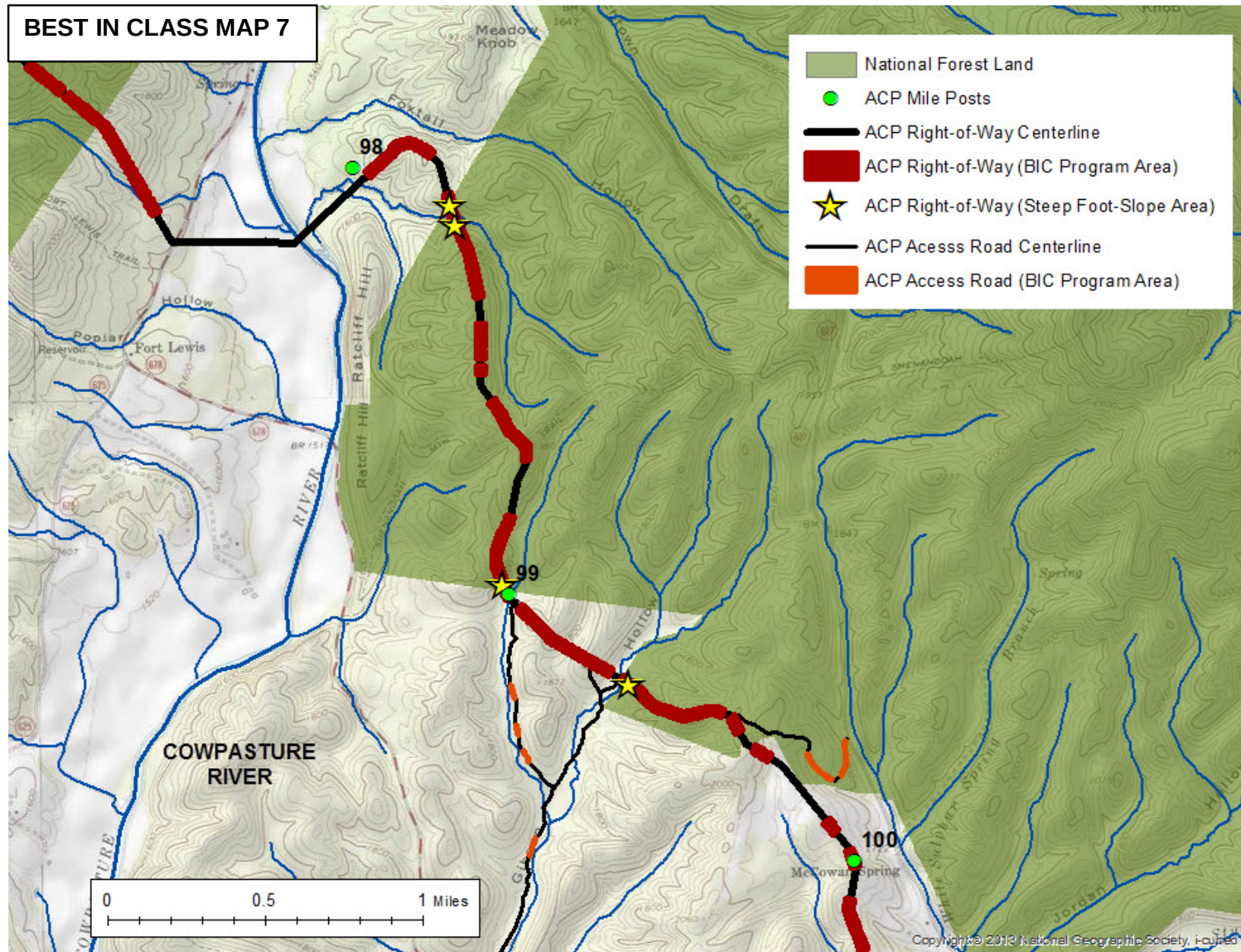
BEST IN CLASS MAP 5



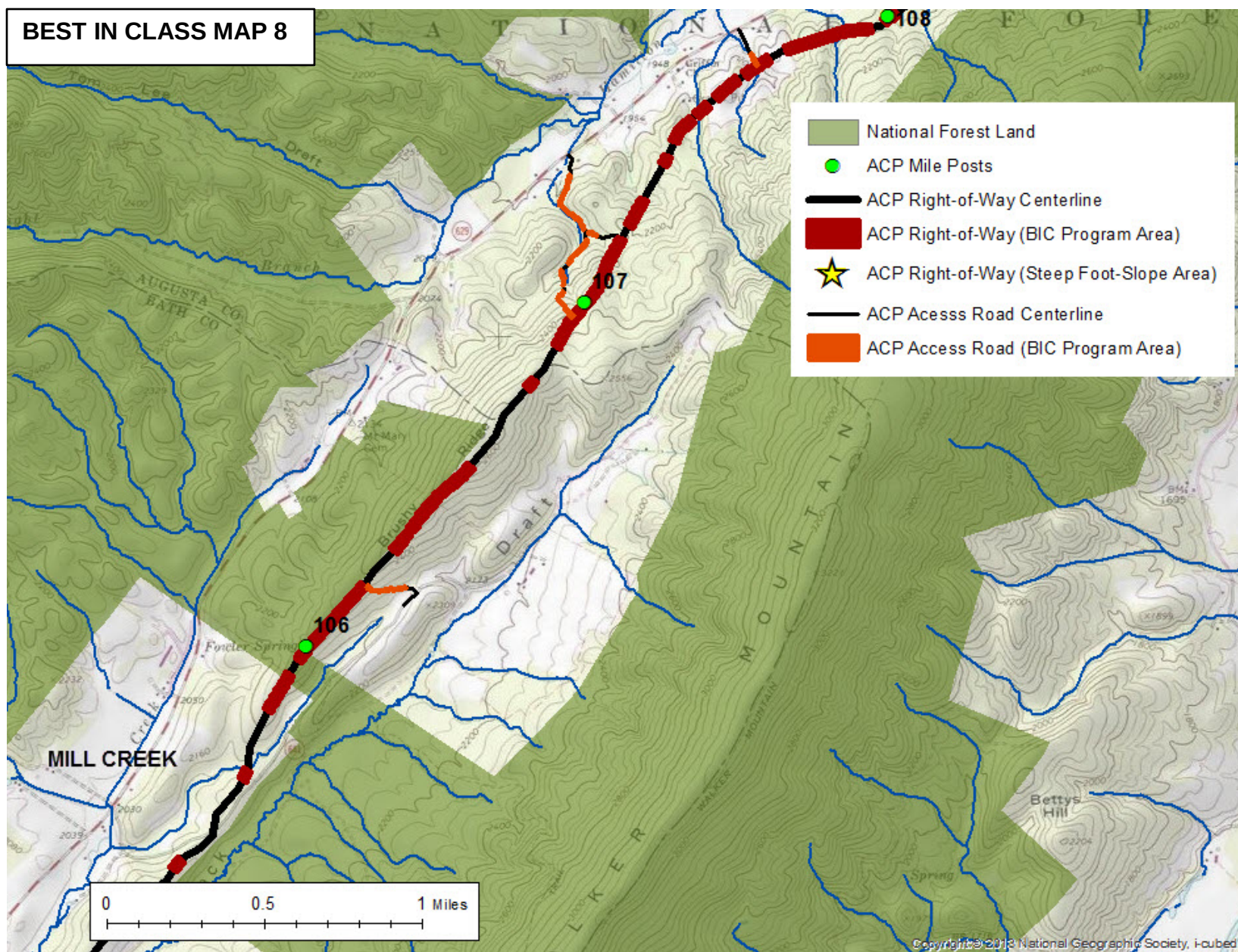
BEST IN CLASS MAP 6



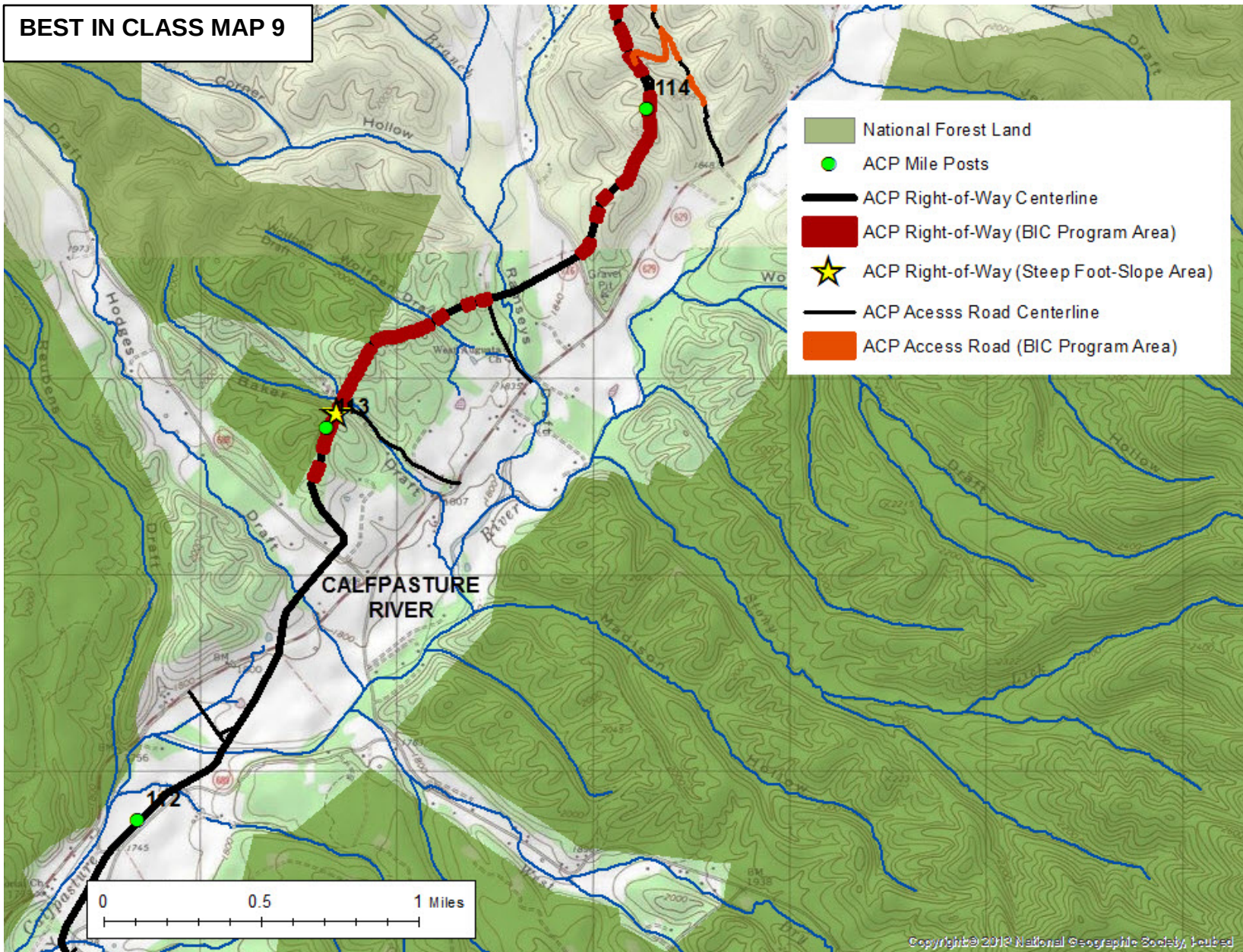
BEST IN CLASS MAP 7



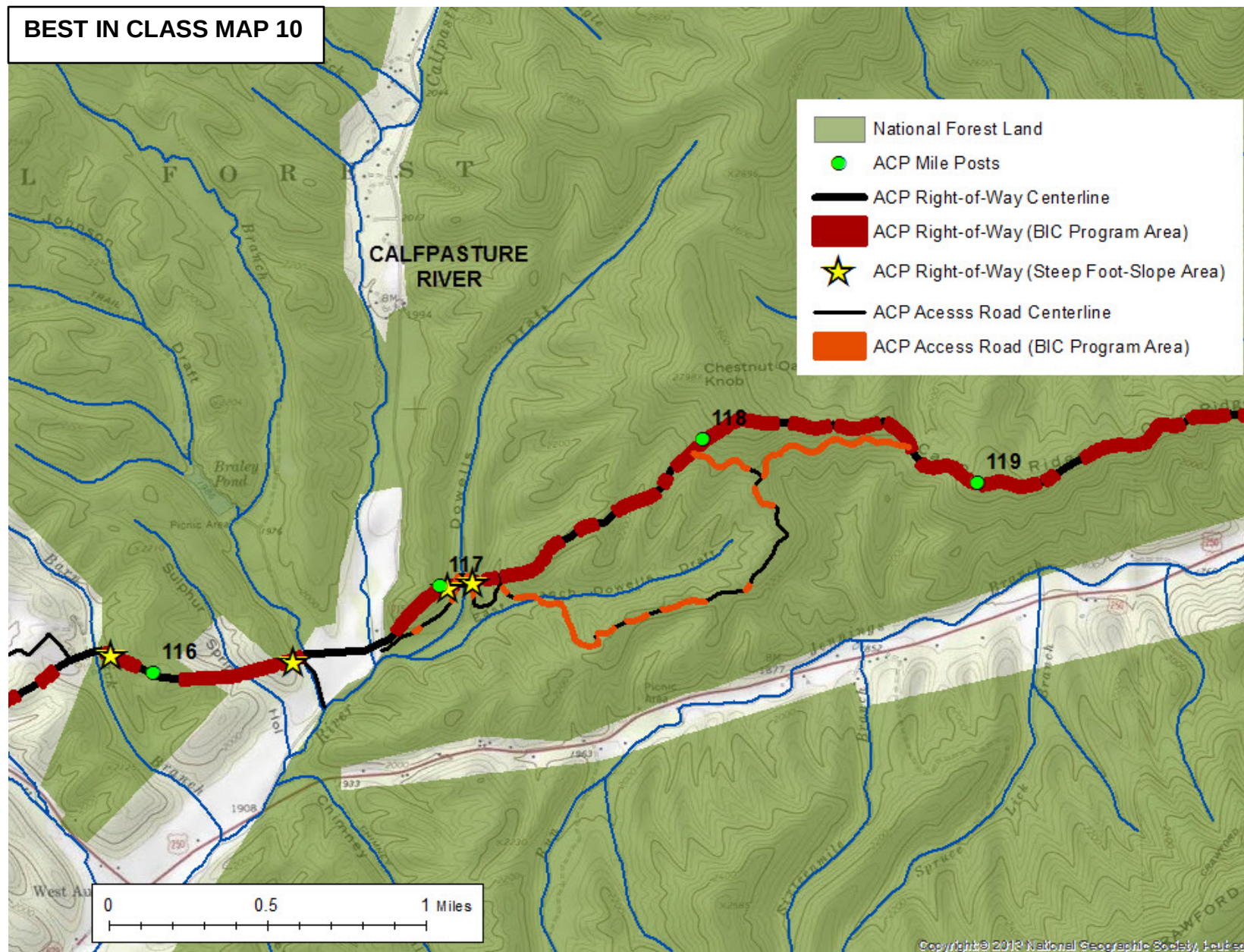
BEST IN CLASS MAP 8



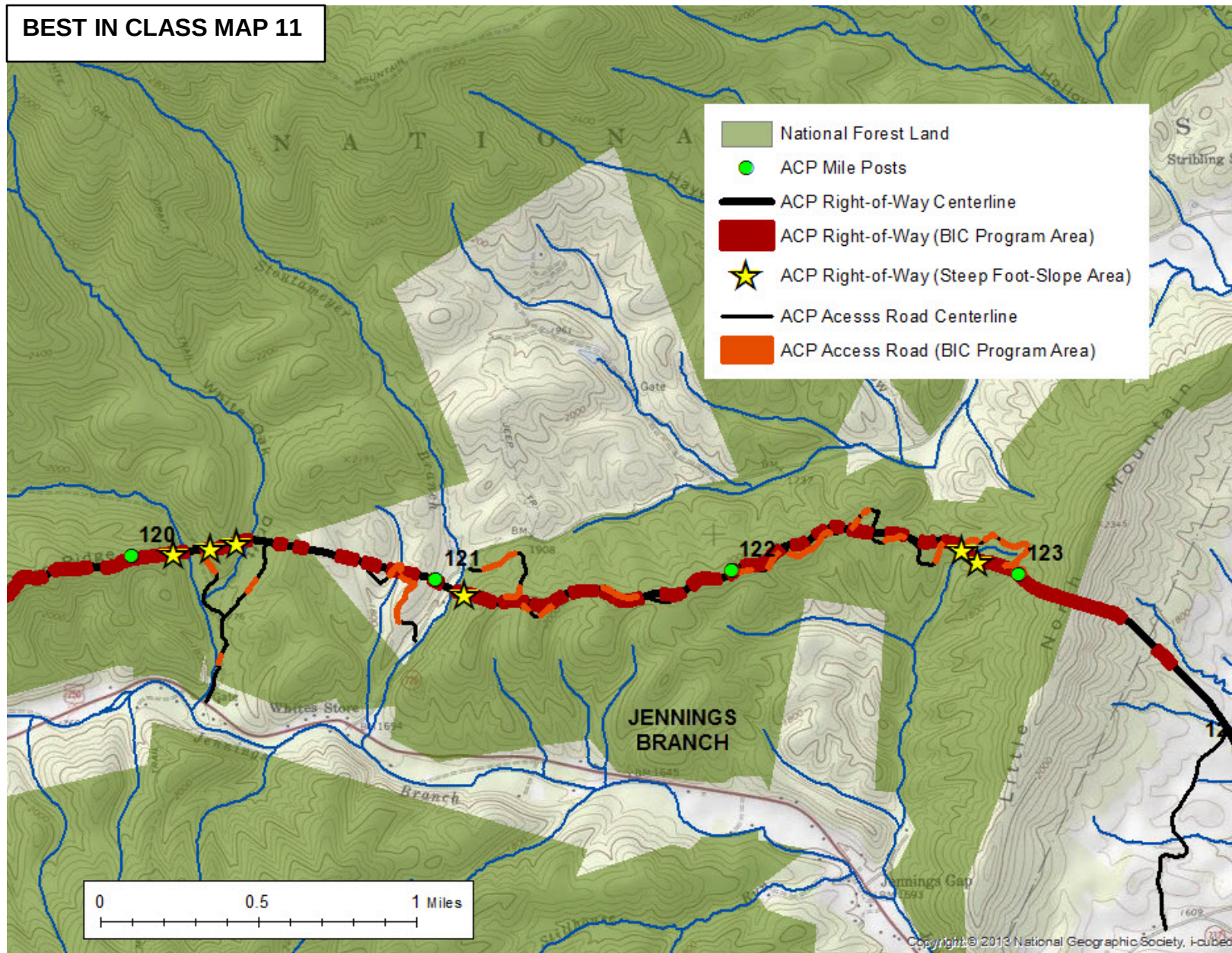
BEST IN CLASS MAP 9



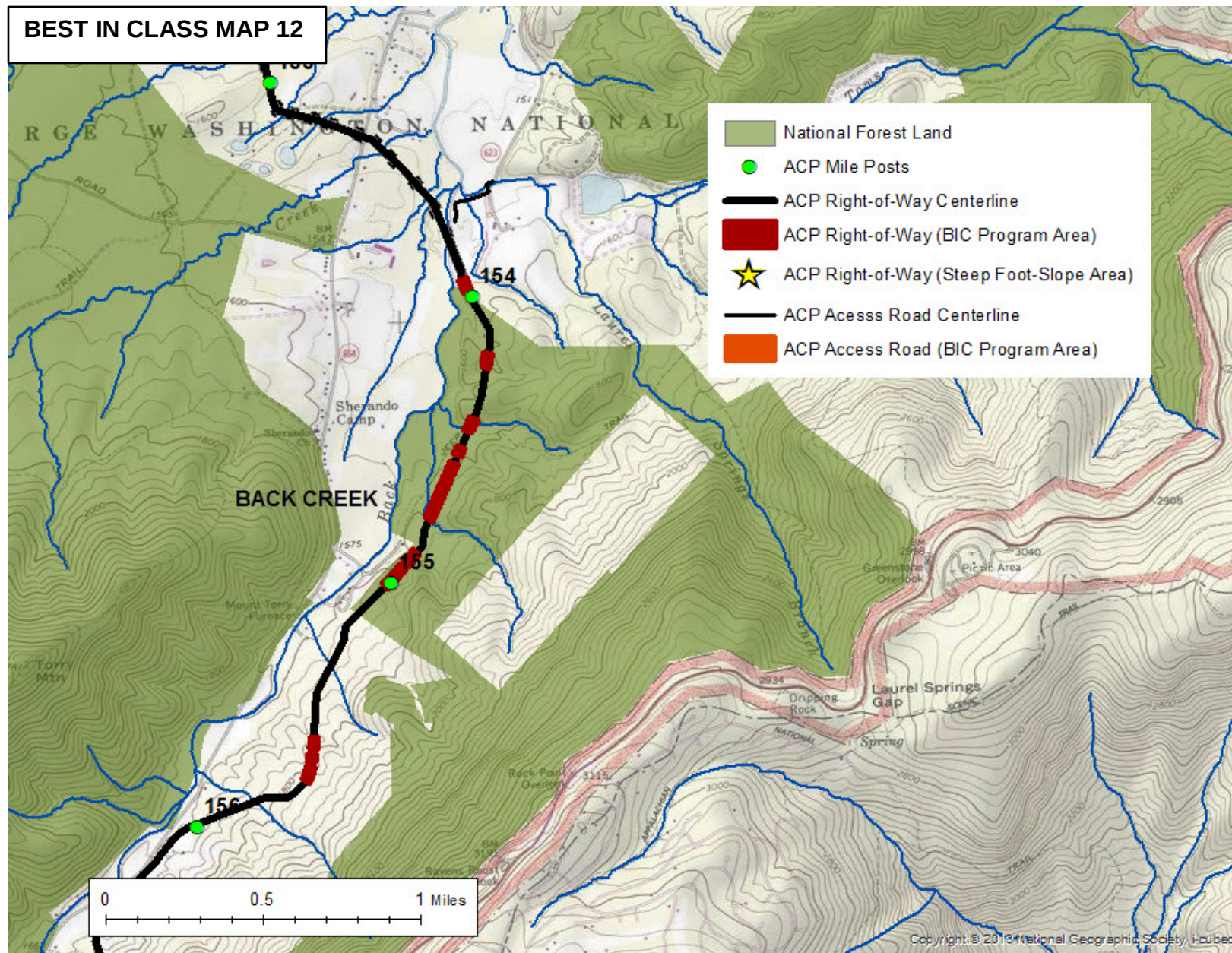
BEST IN CLASS MAP 10



BEST IN CLASS MAP 11



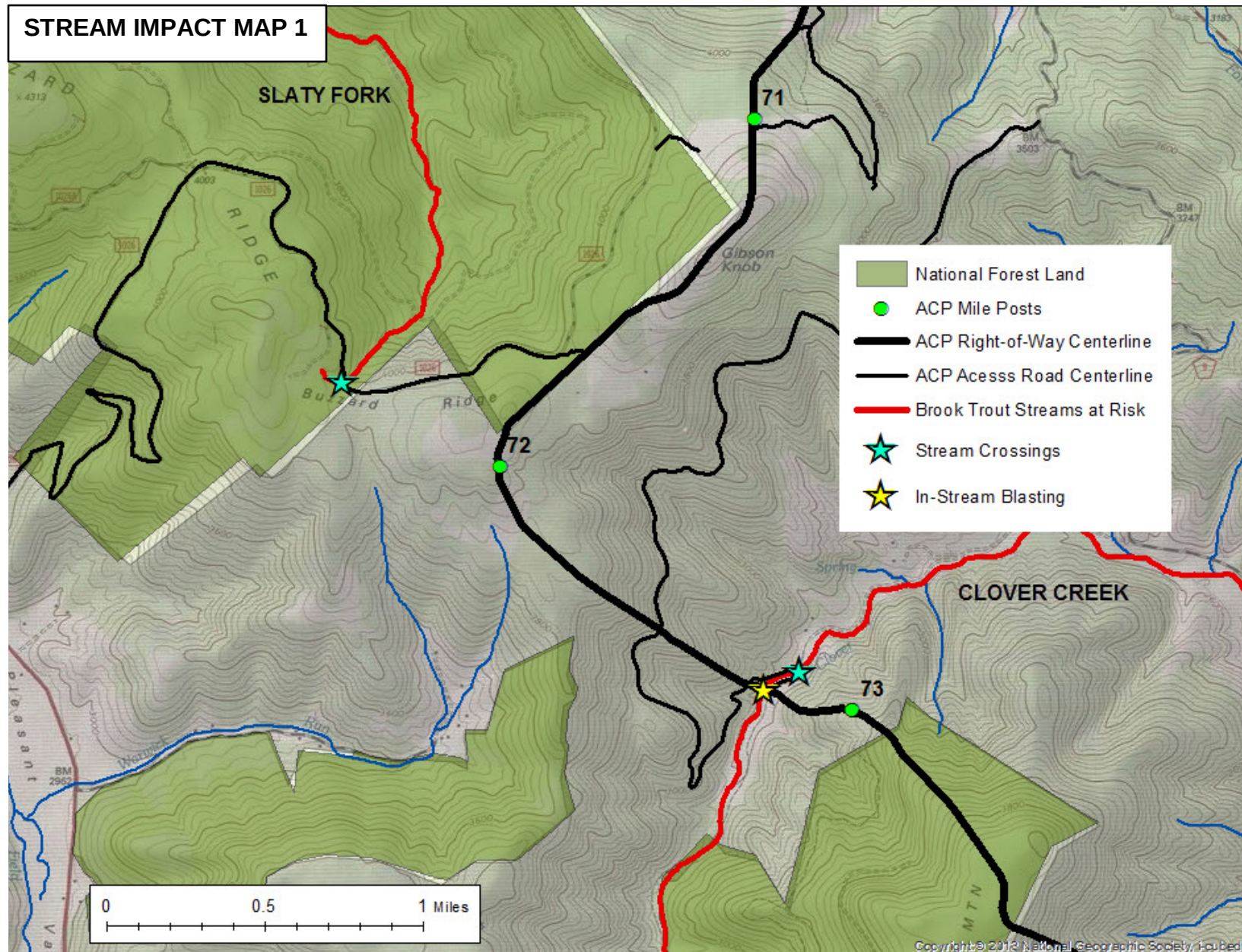
BEST IN CLASS MAP 12



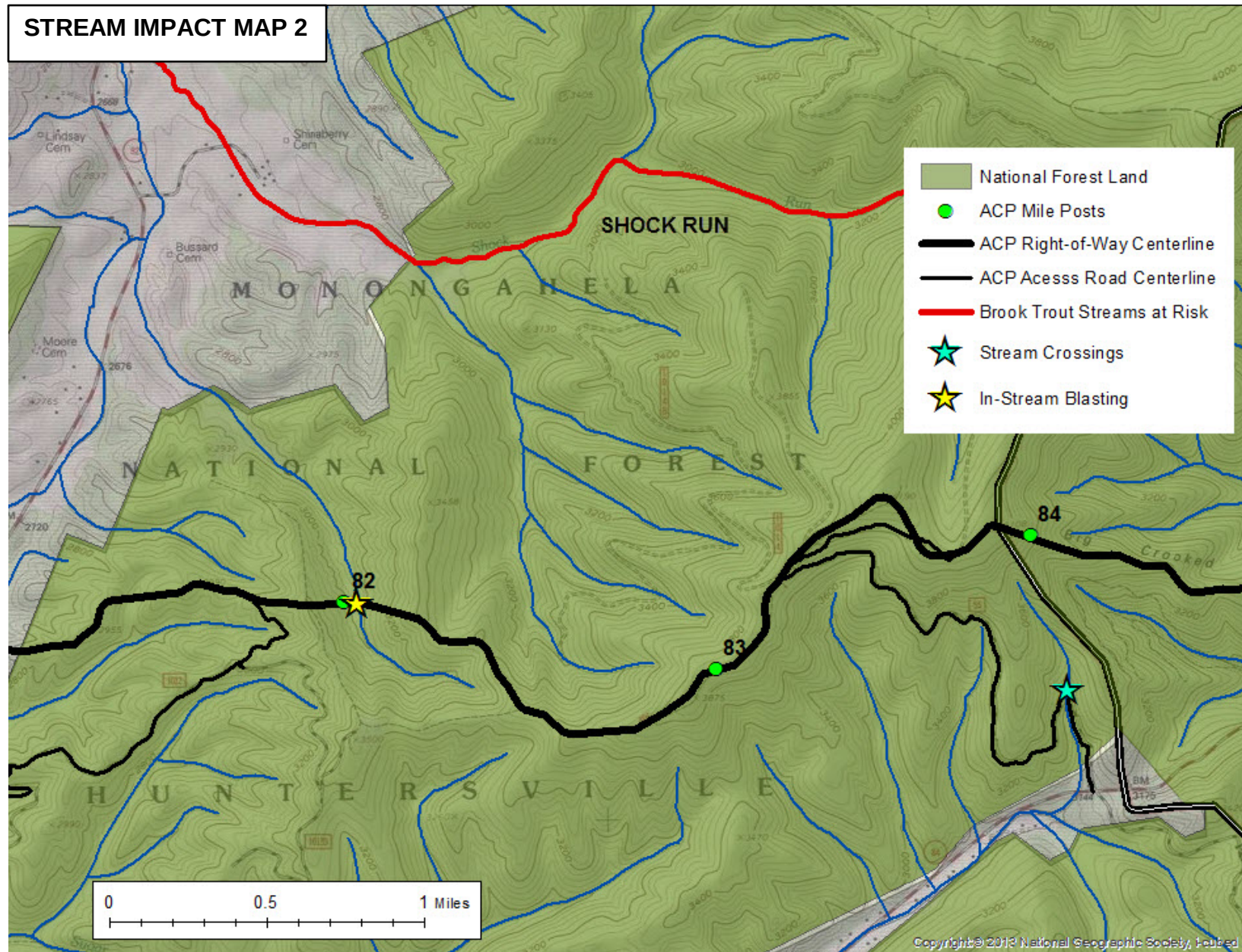
ATTACHMENT 2 – MAP SET

DIRECT IMPACT TO NATIONAL FOREST STREAMS

STREAM IMPACT MAP 1



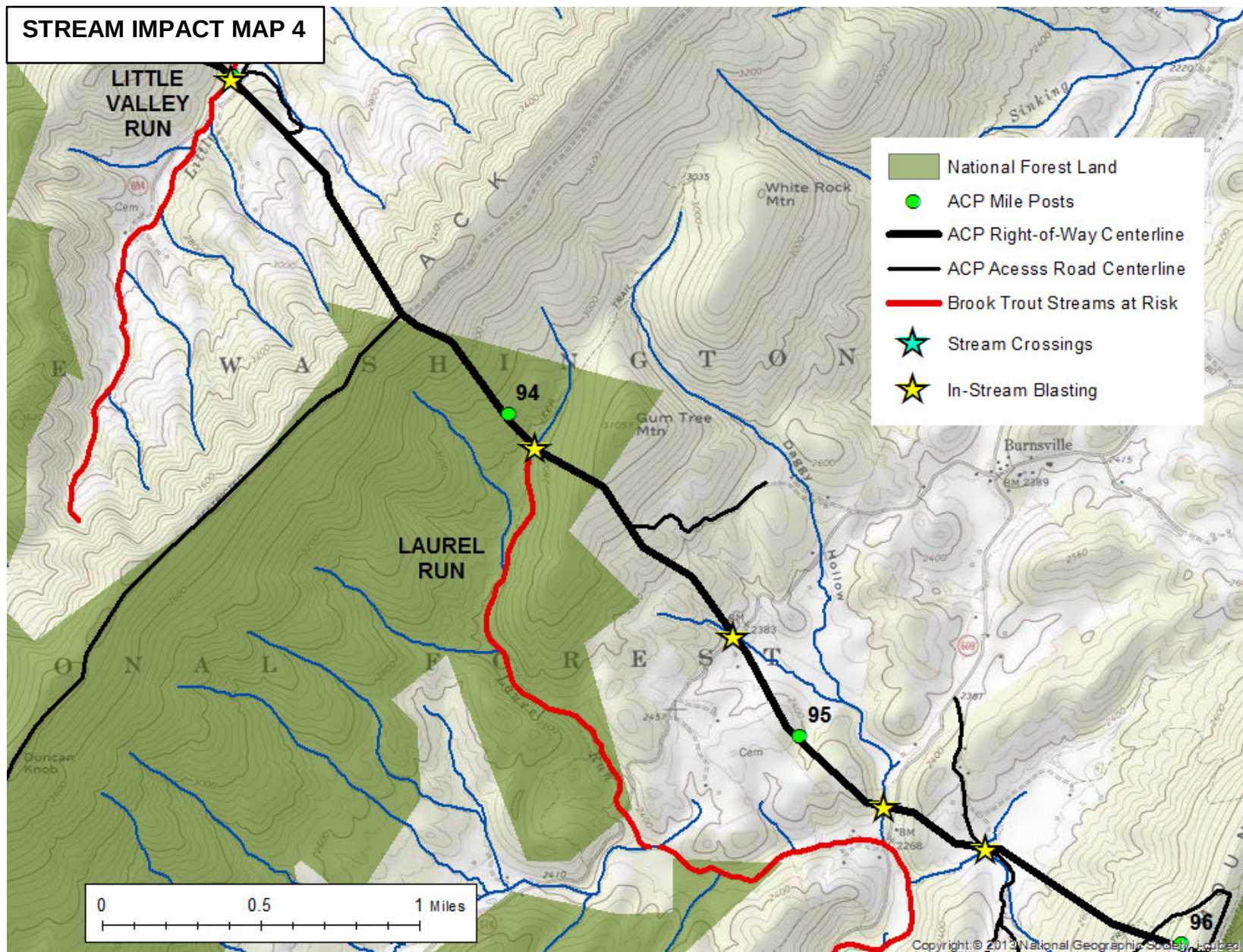
STREAM IMPACT MAP 2



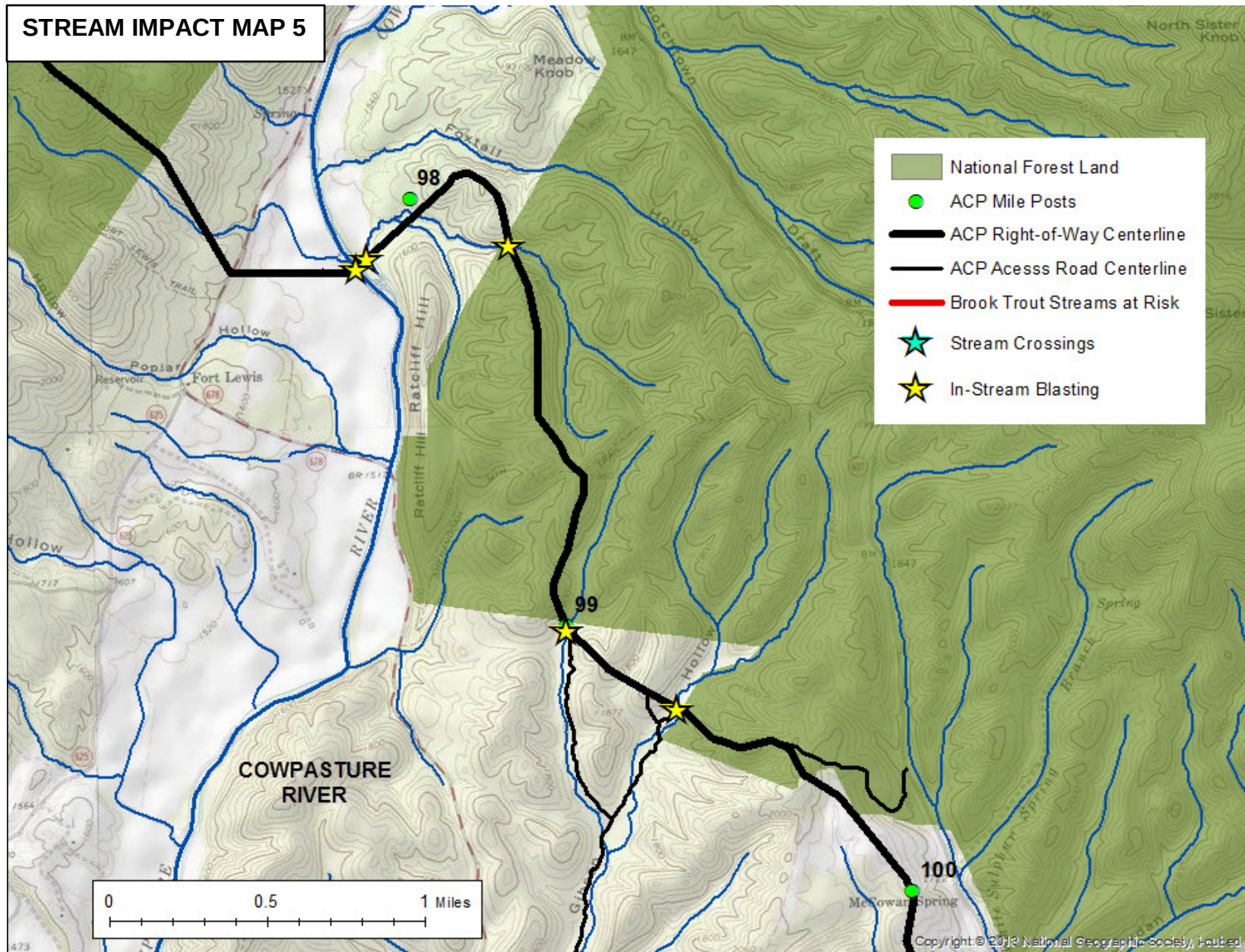
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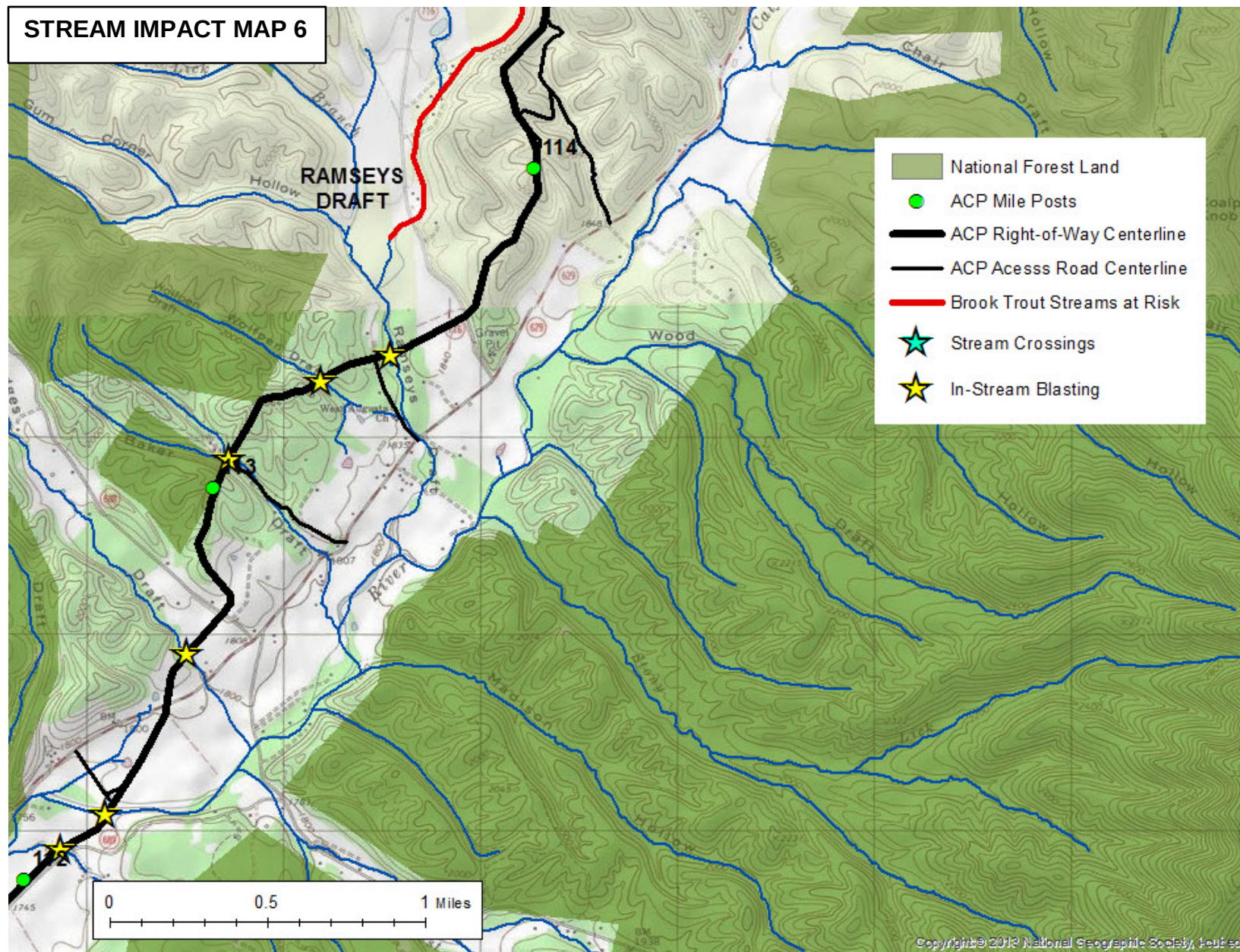
STREAM IMPACT MAP 4



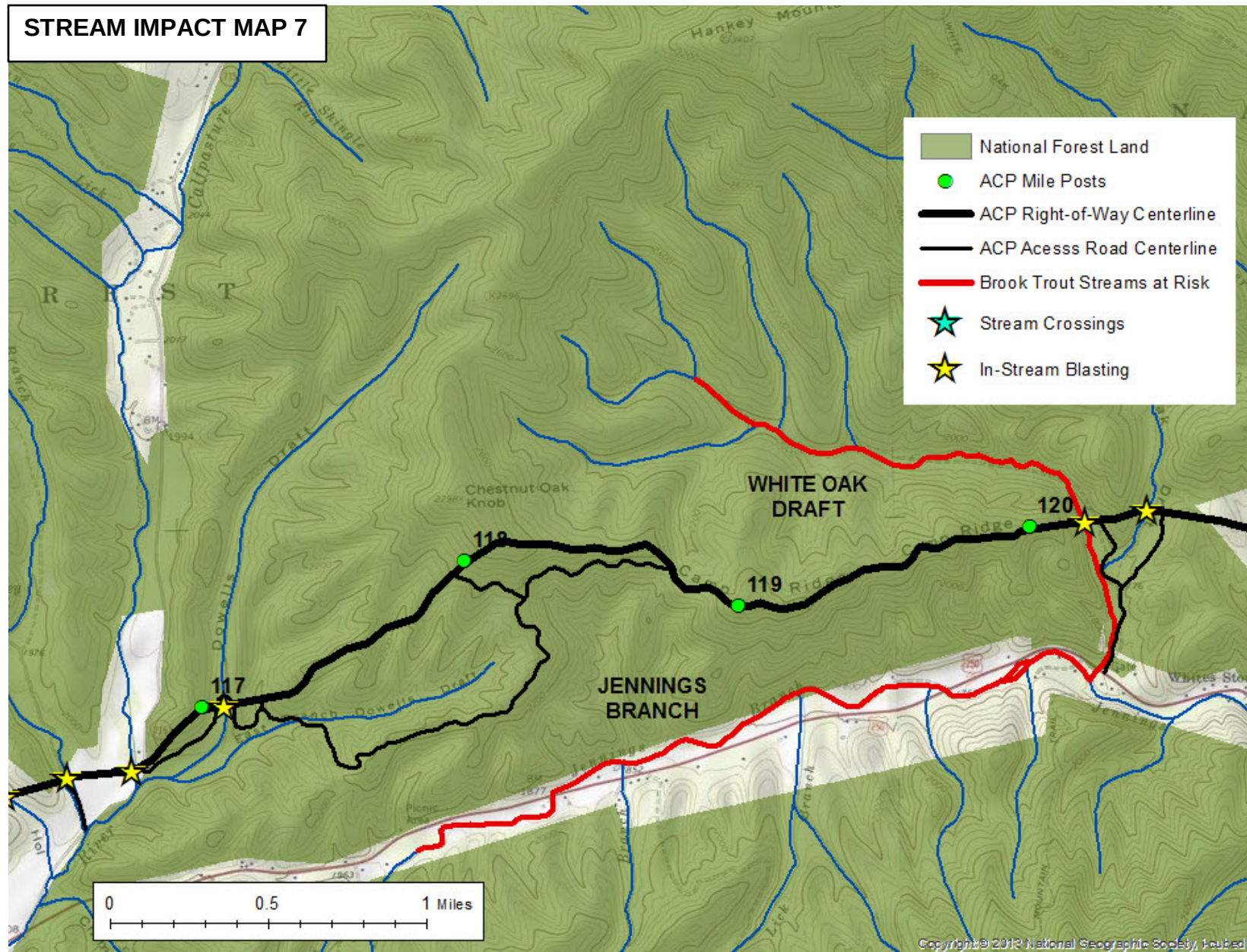
STREAM IMPACT MAP 5



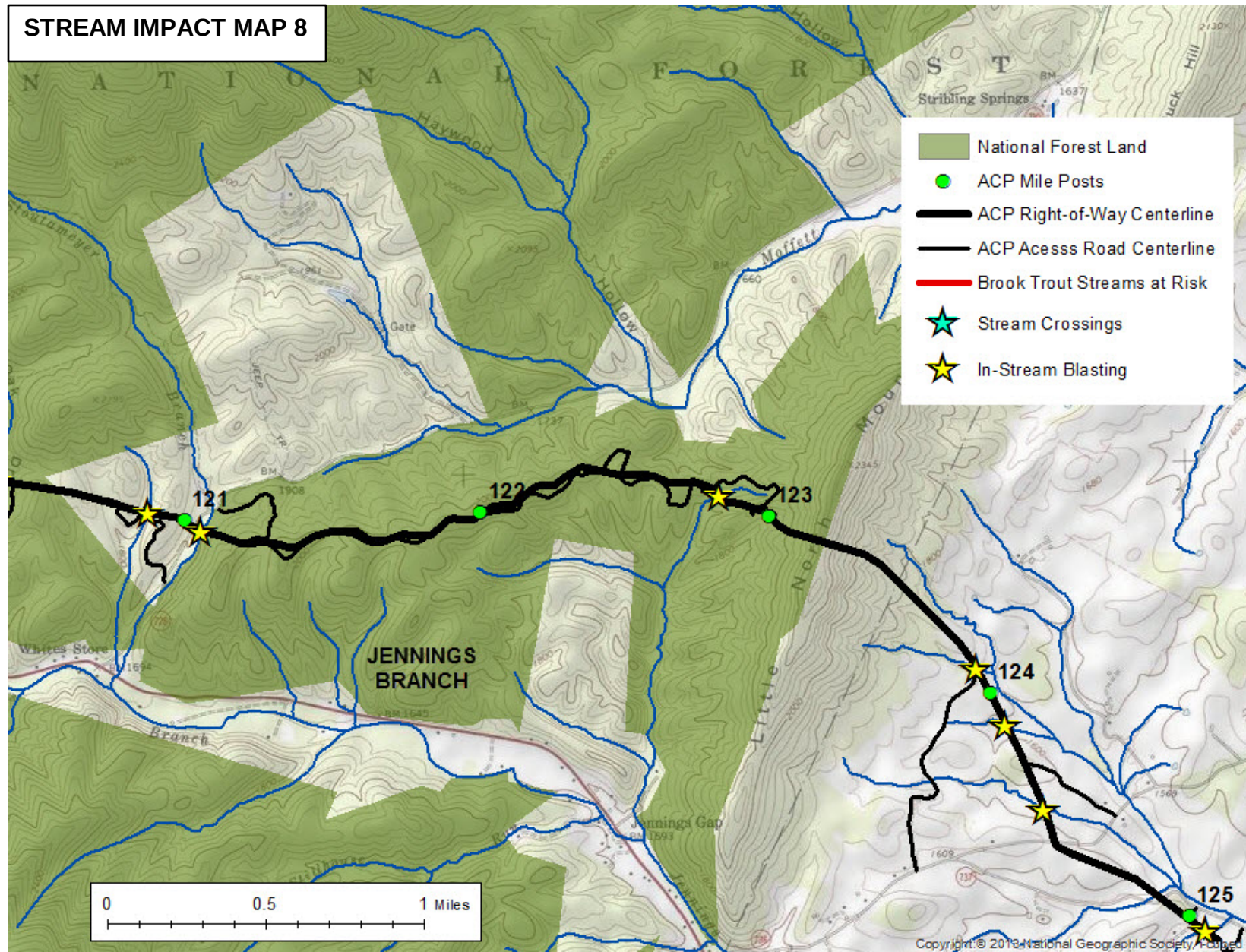
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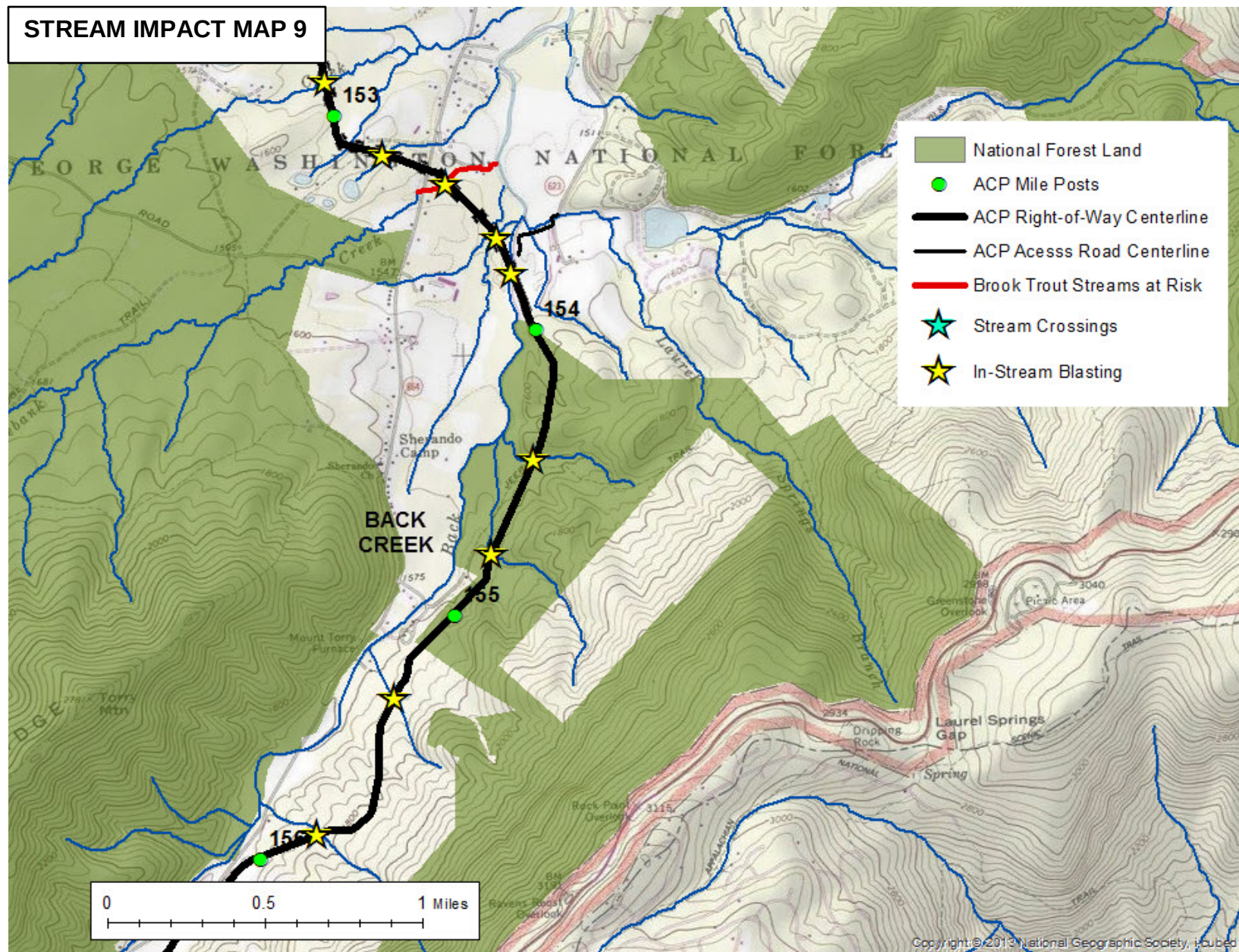
STREAM IMPACT MAP 7



STREAM IMPACT MAP 8



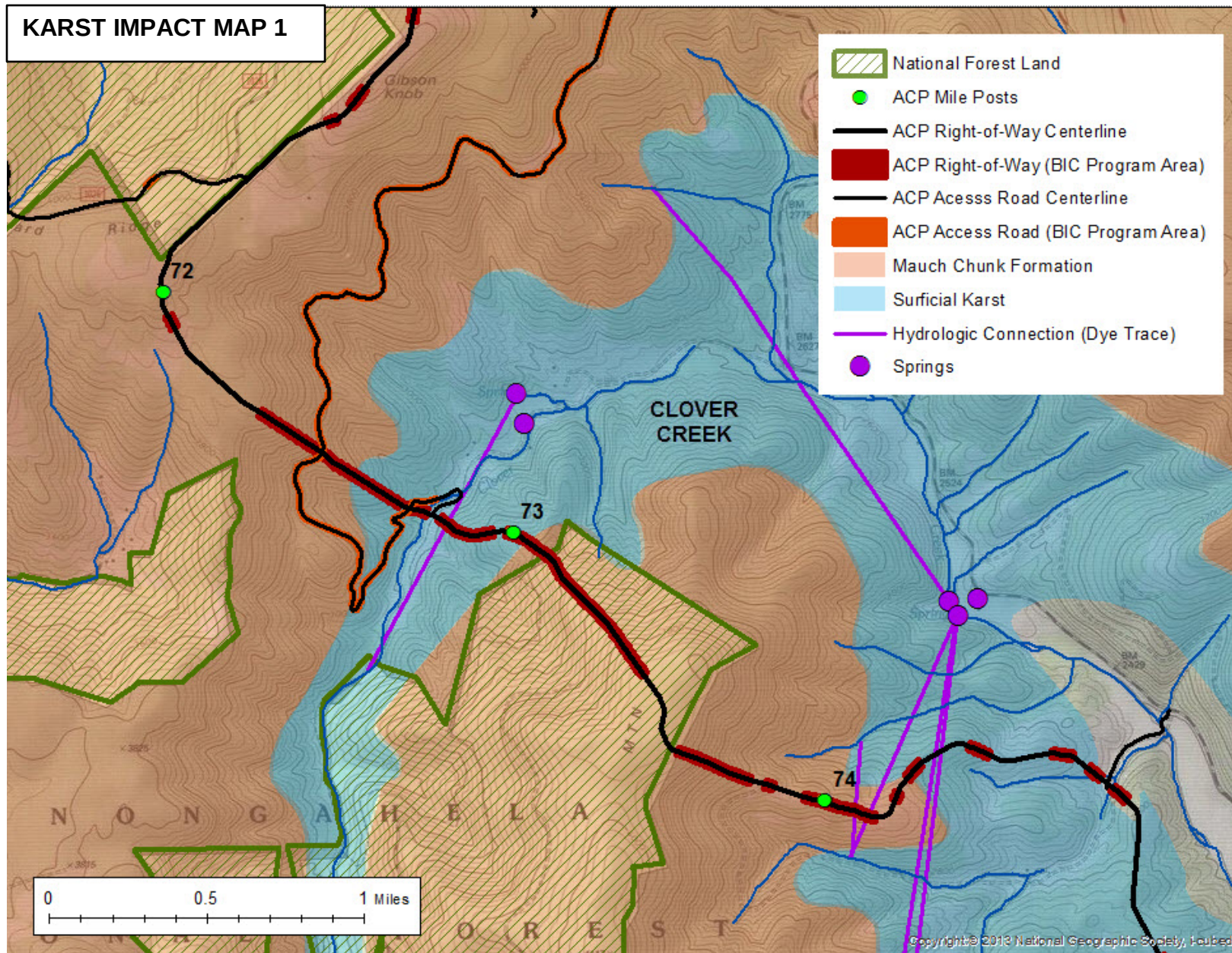
STREAM IMPACT MAP 9



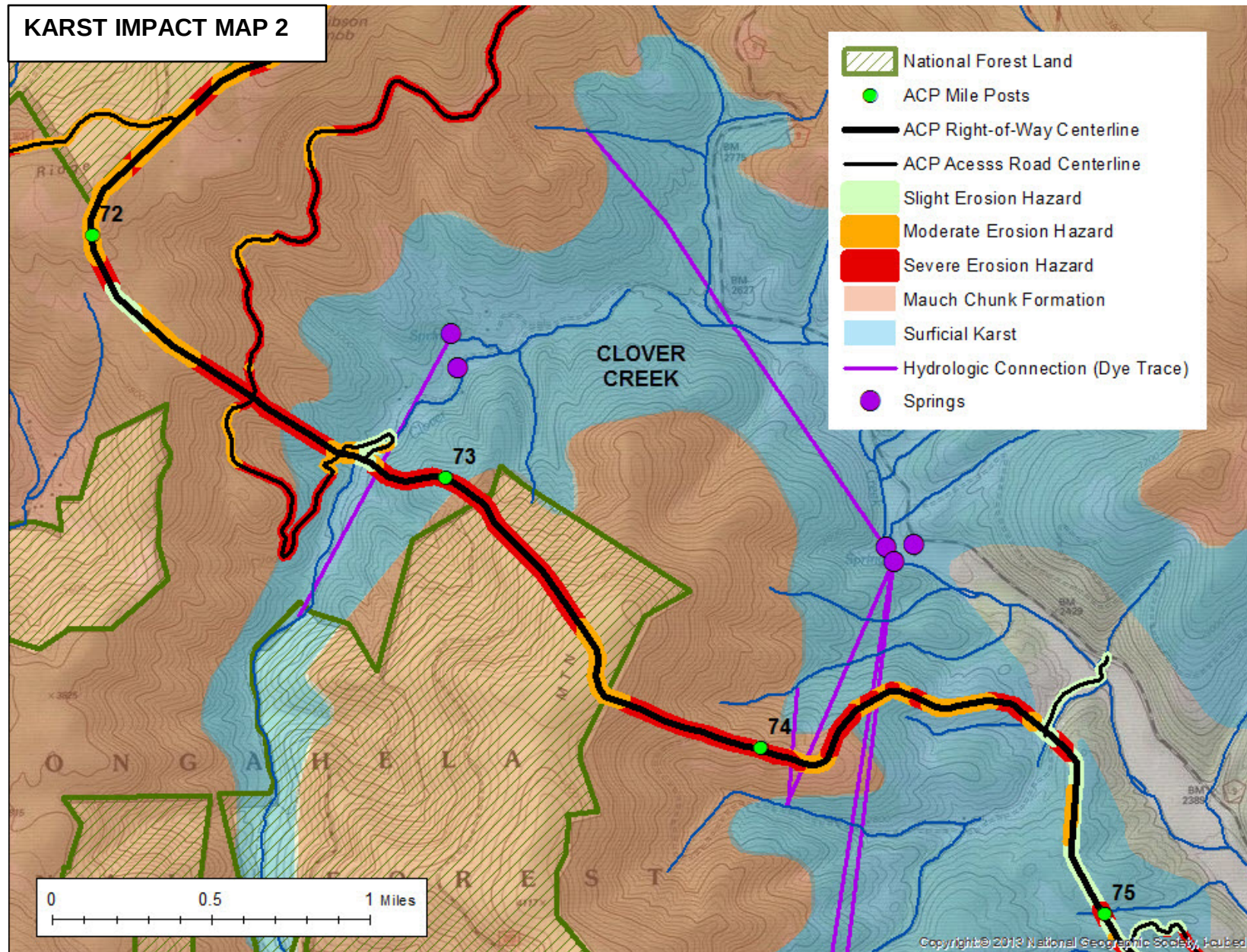
ATTACHMENT 3 – MAP SET

RISK TO KARST SYSTEM HYDROLOGY

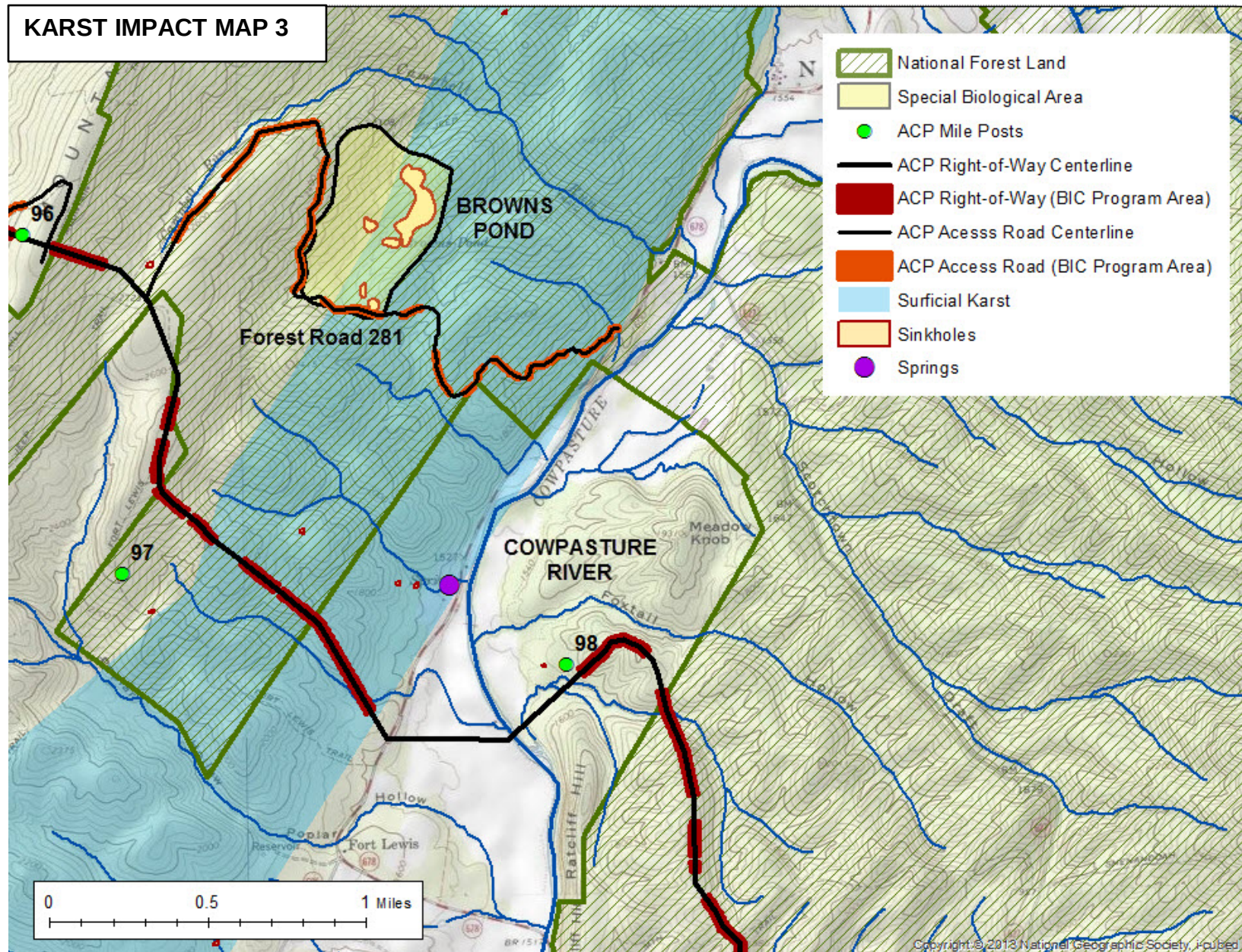
KARST IMPACT MAP 1



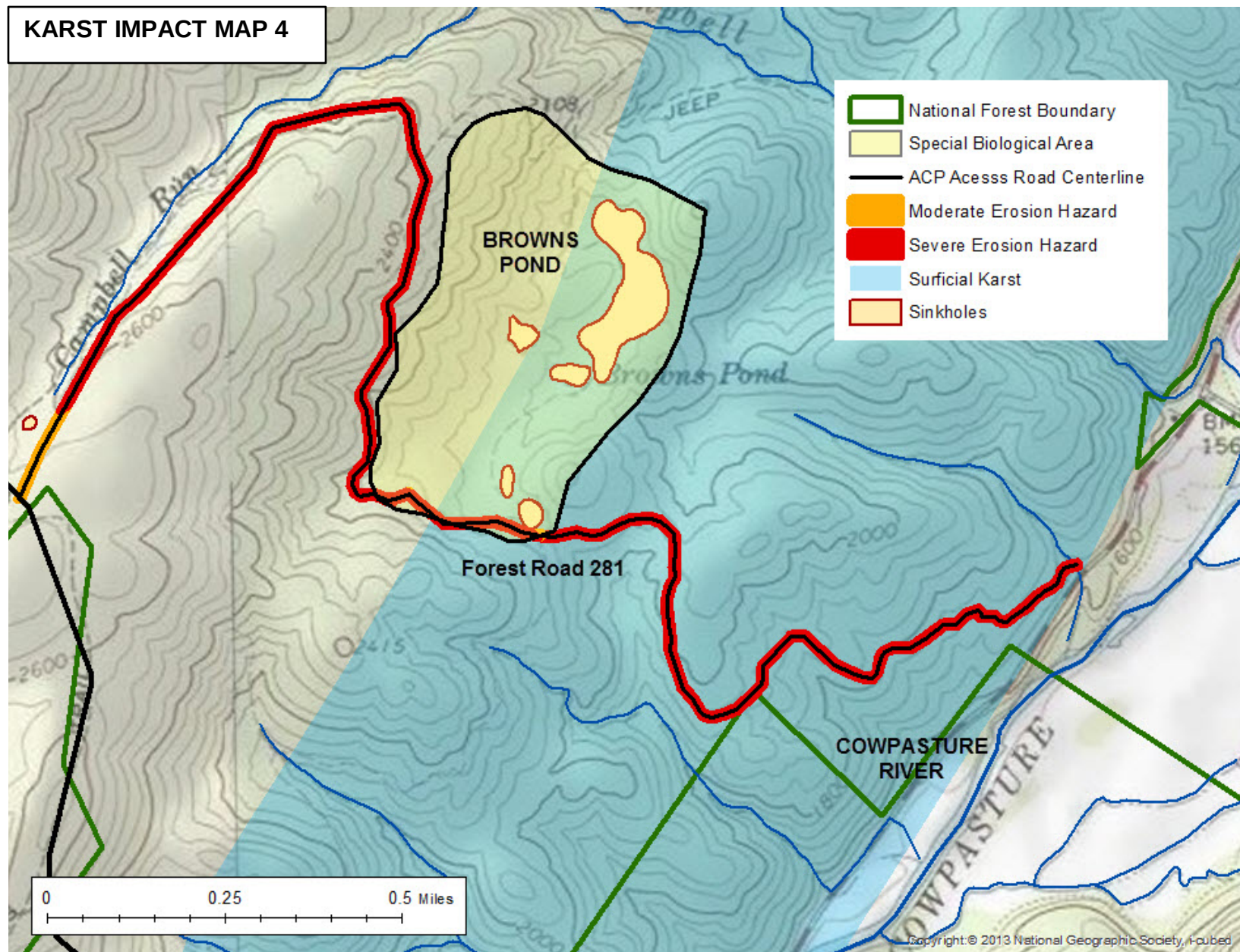
KARST IMPACT MAP 2



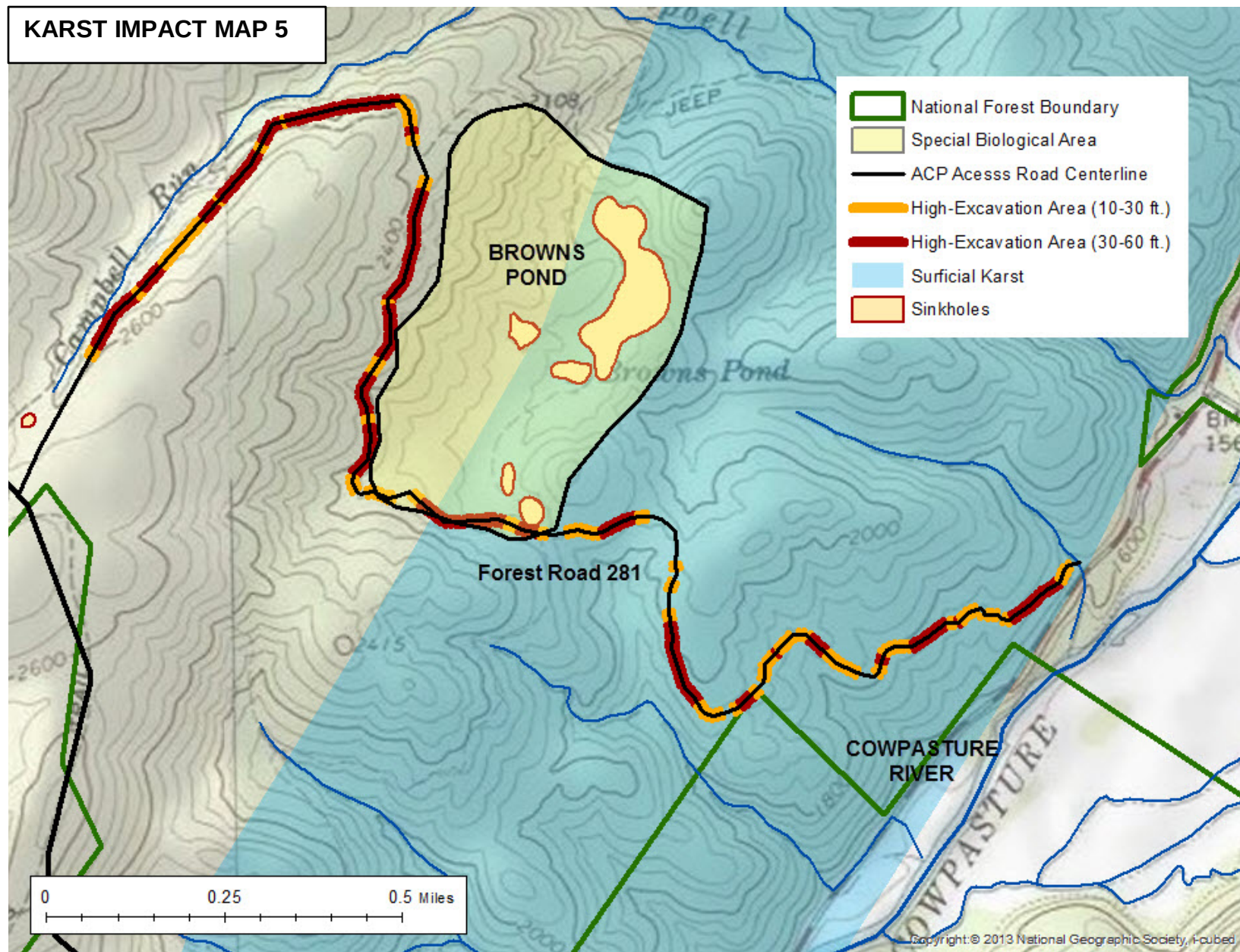
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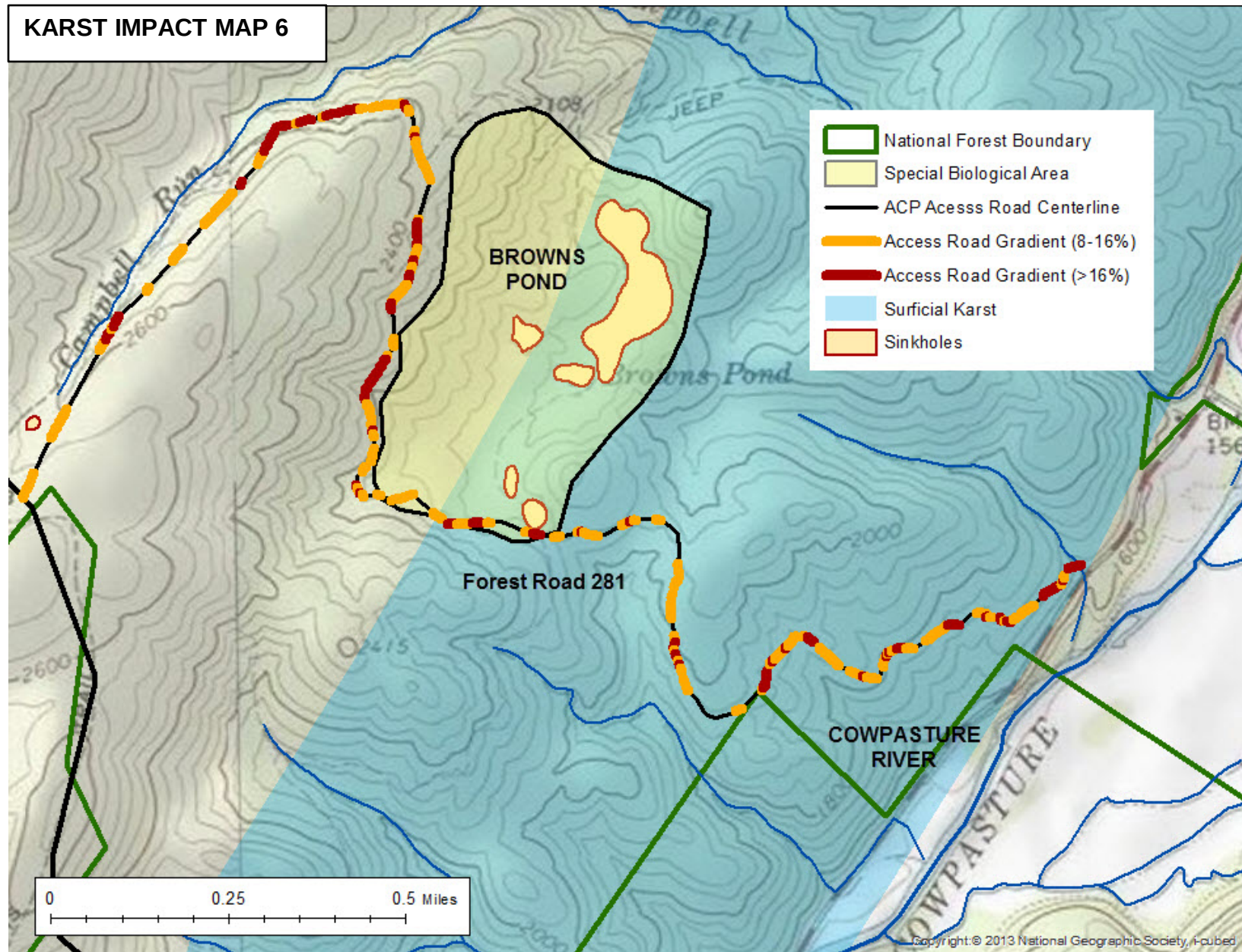
KARST IMPACT MAP 4



KARST IMPACT MAP 5



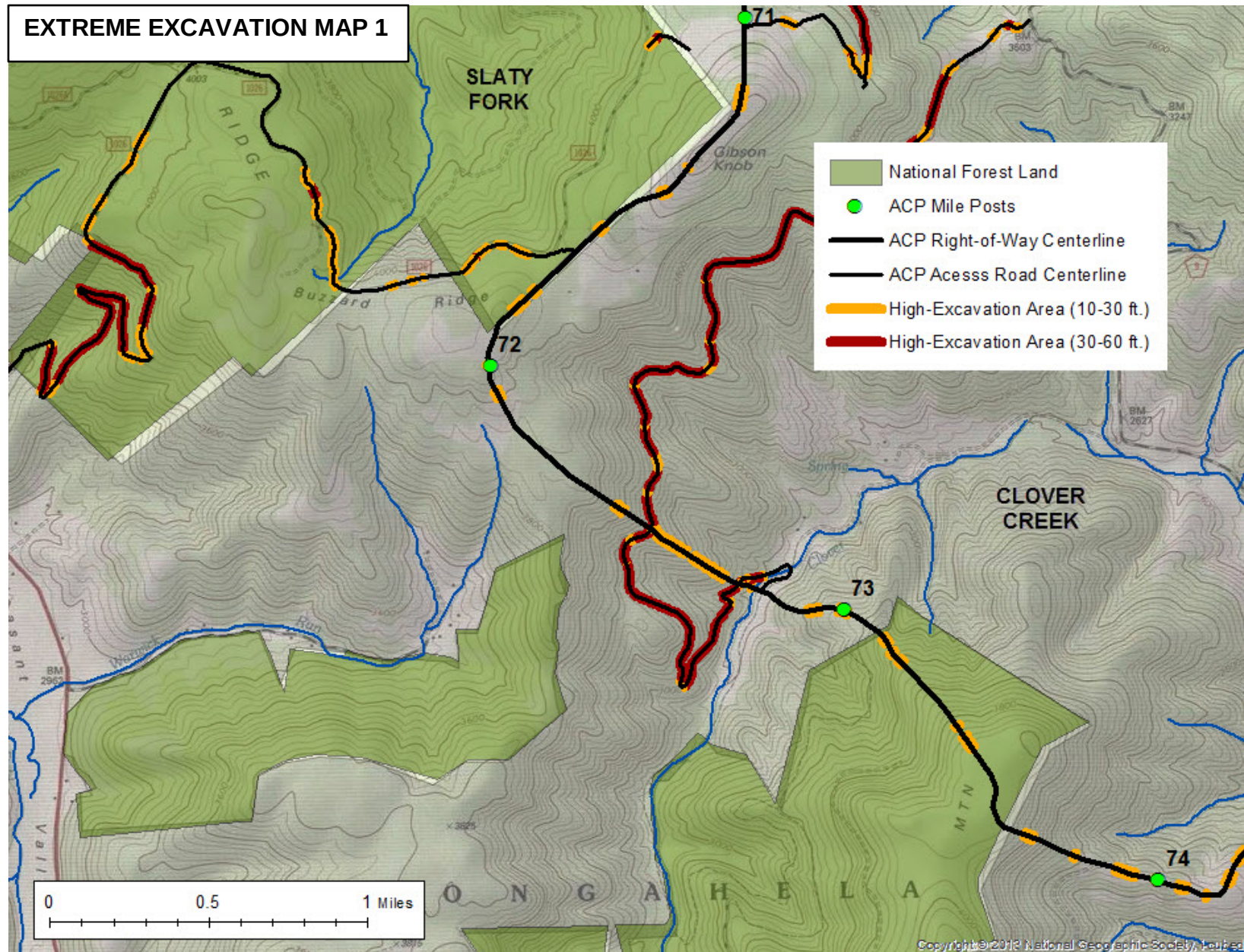
KARST IMPACT MAP 6



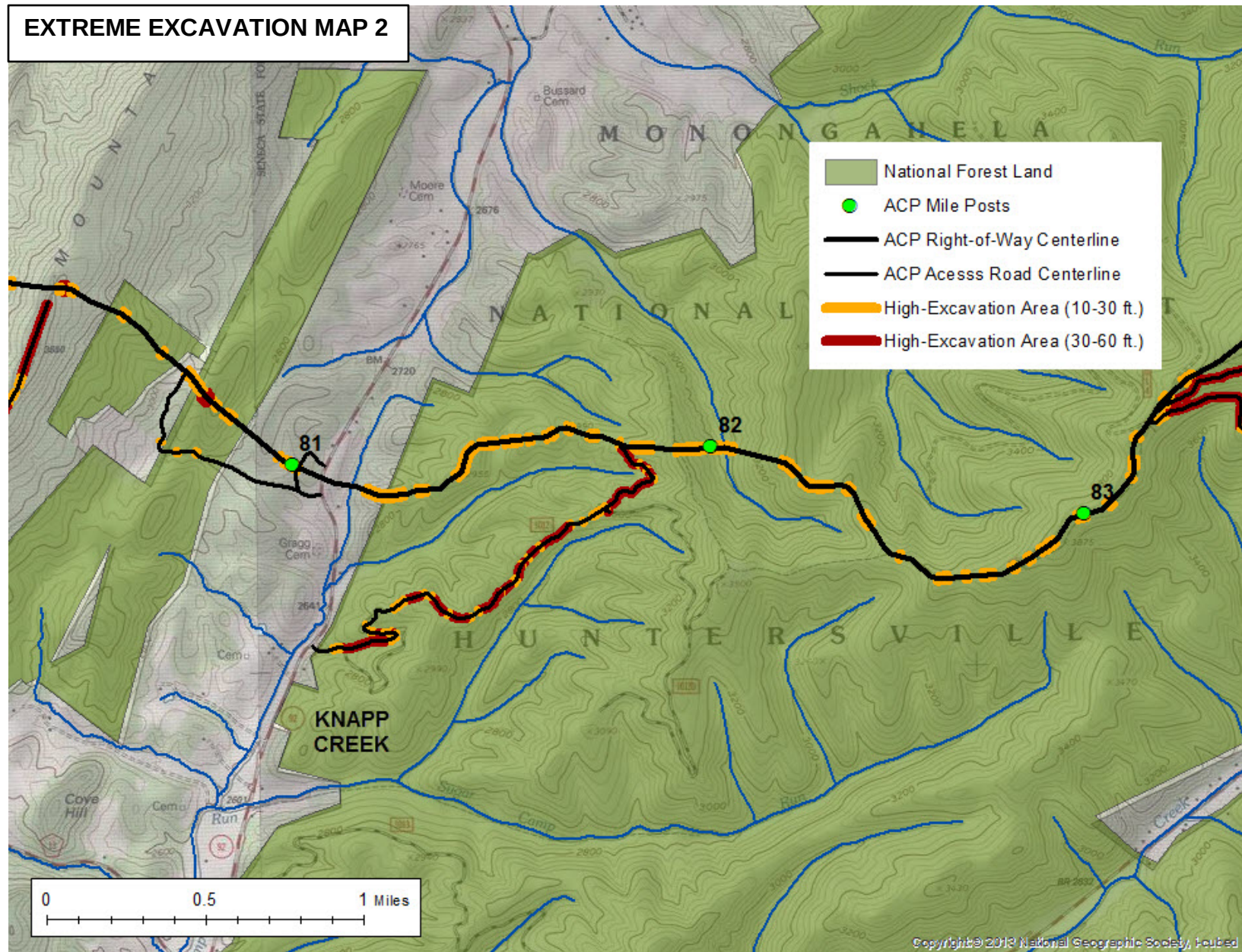
ATTACHMENT 4 – MAP SET

EXTREME EXCAVATION REQUIREMENTS

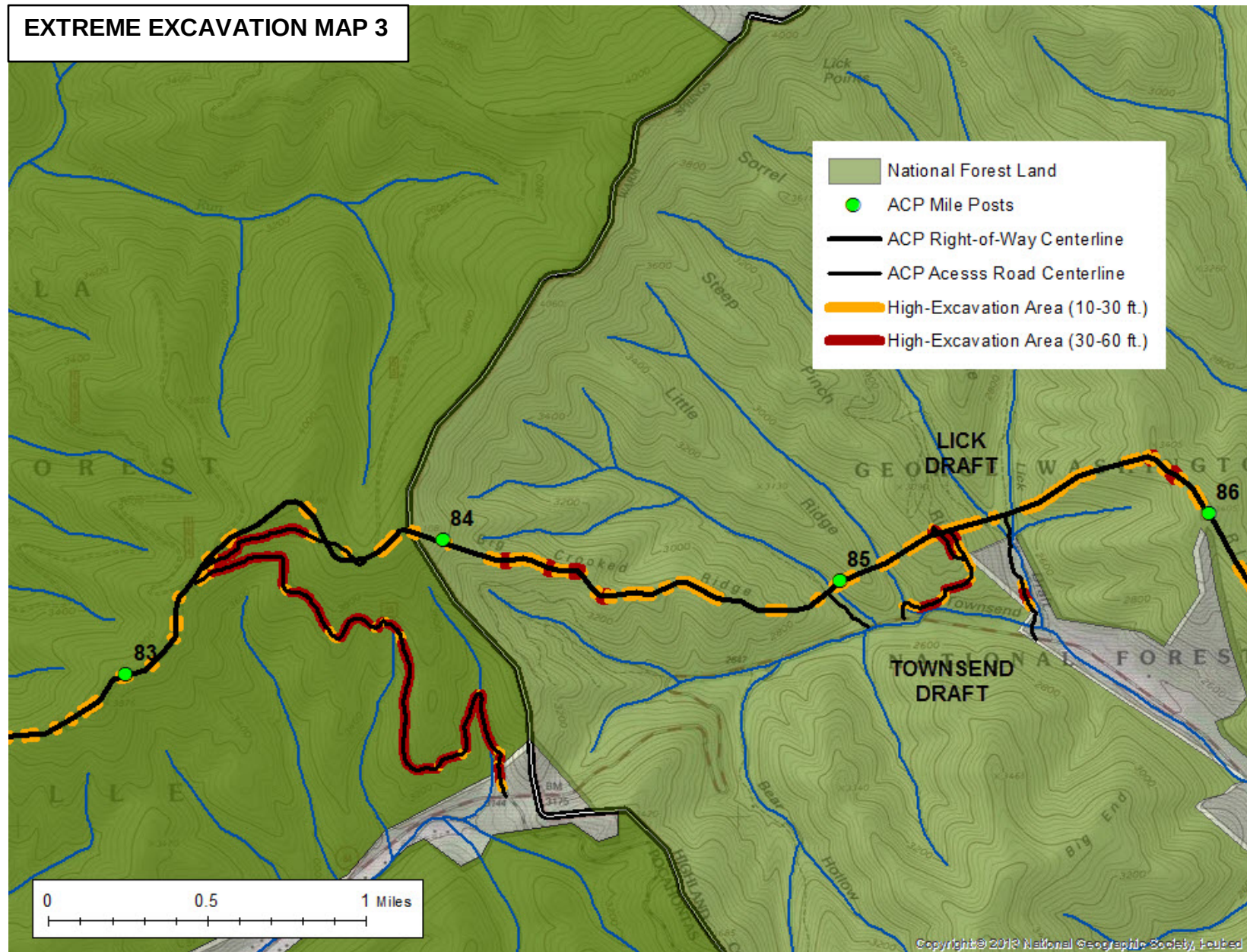
EXTREME EXCAVATION MAP 1



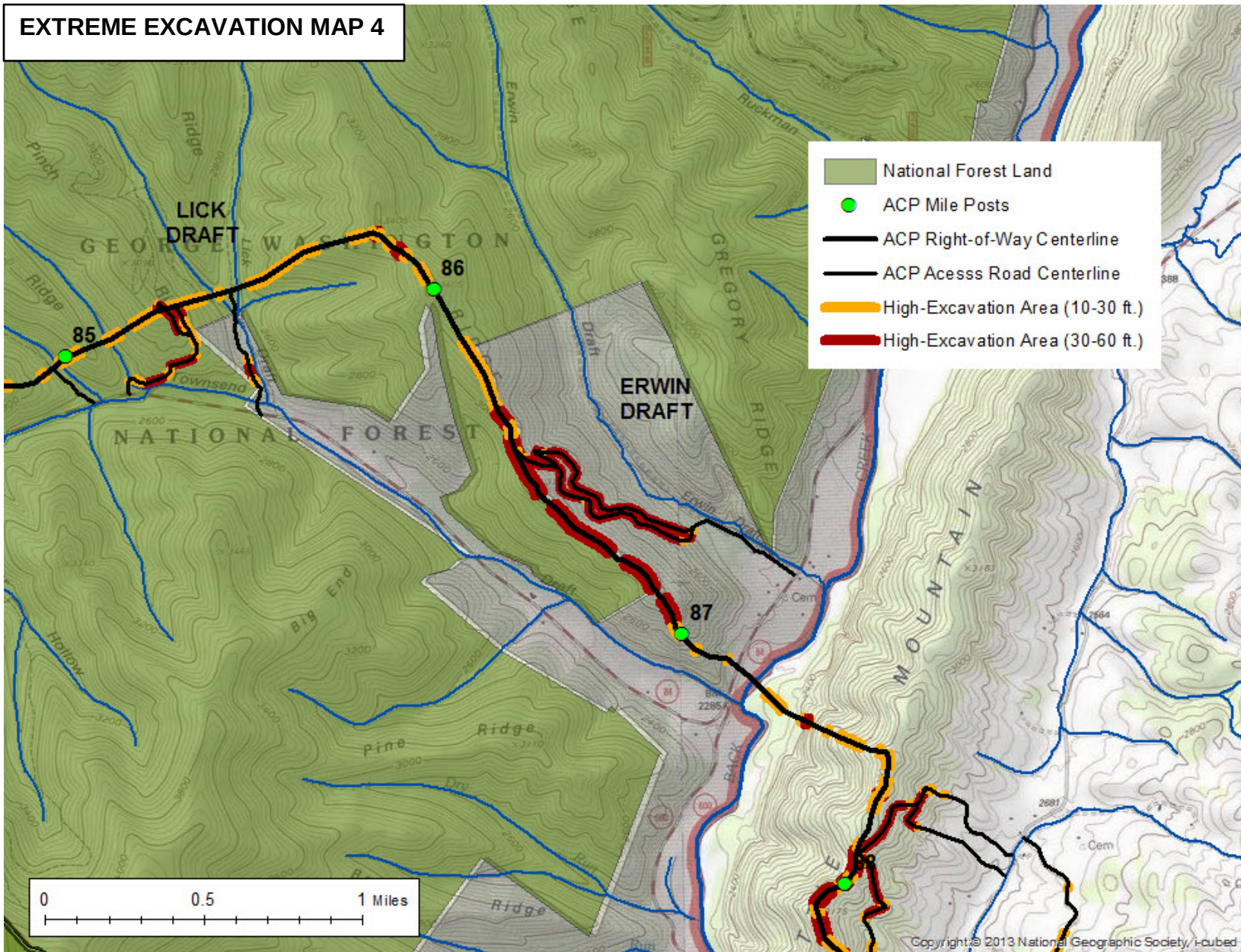
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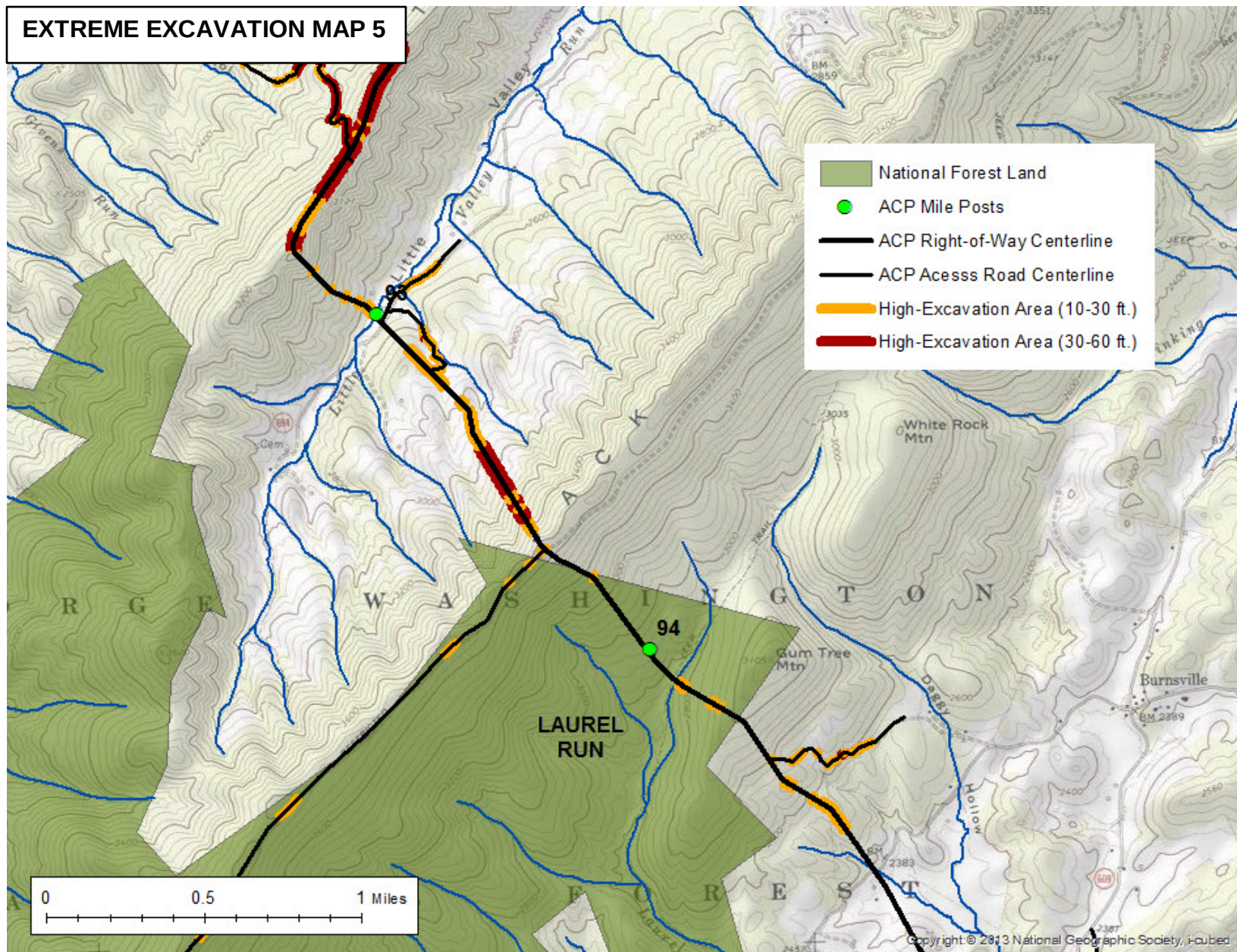
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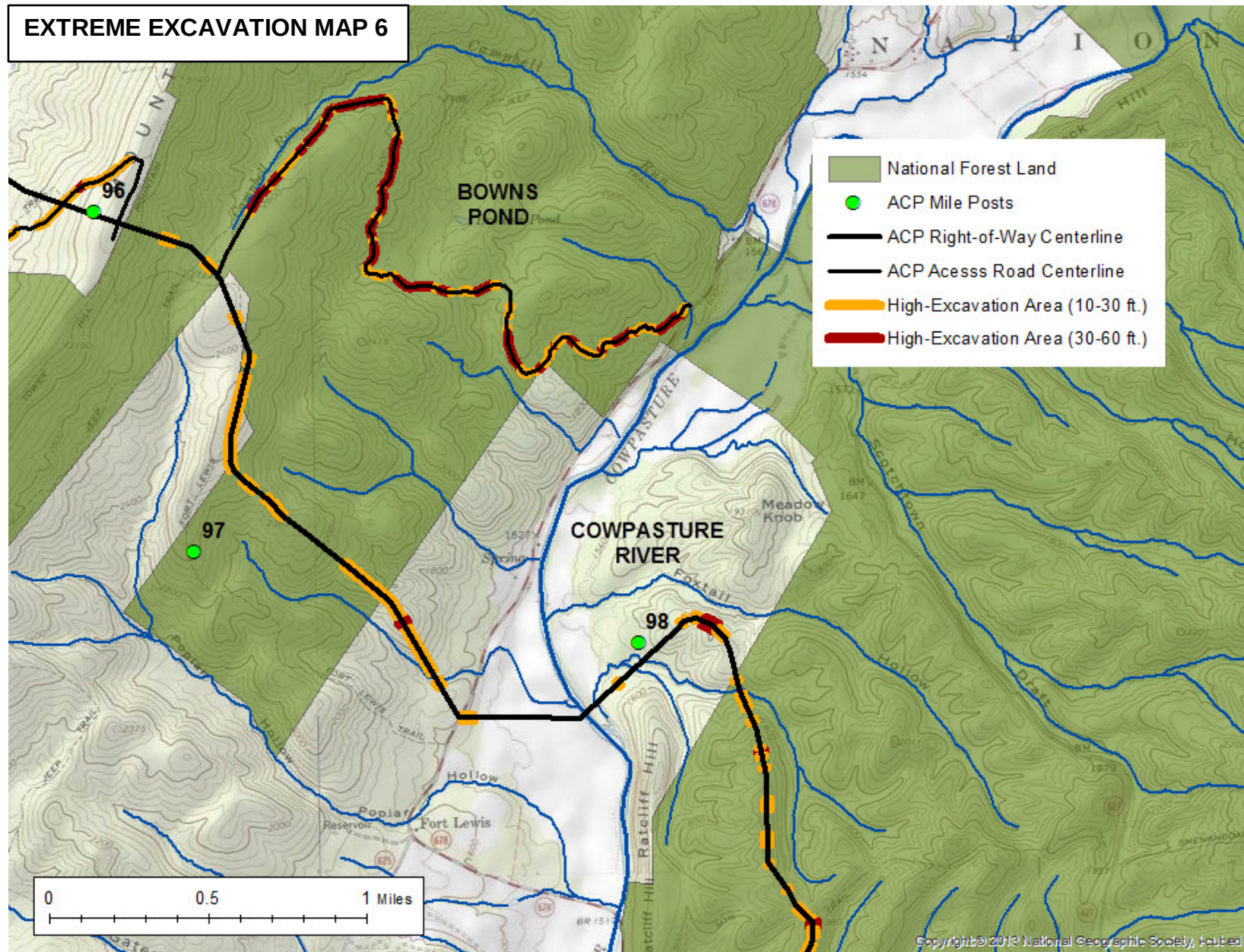
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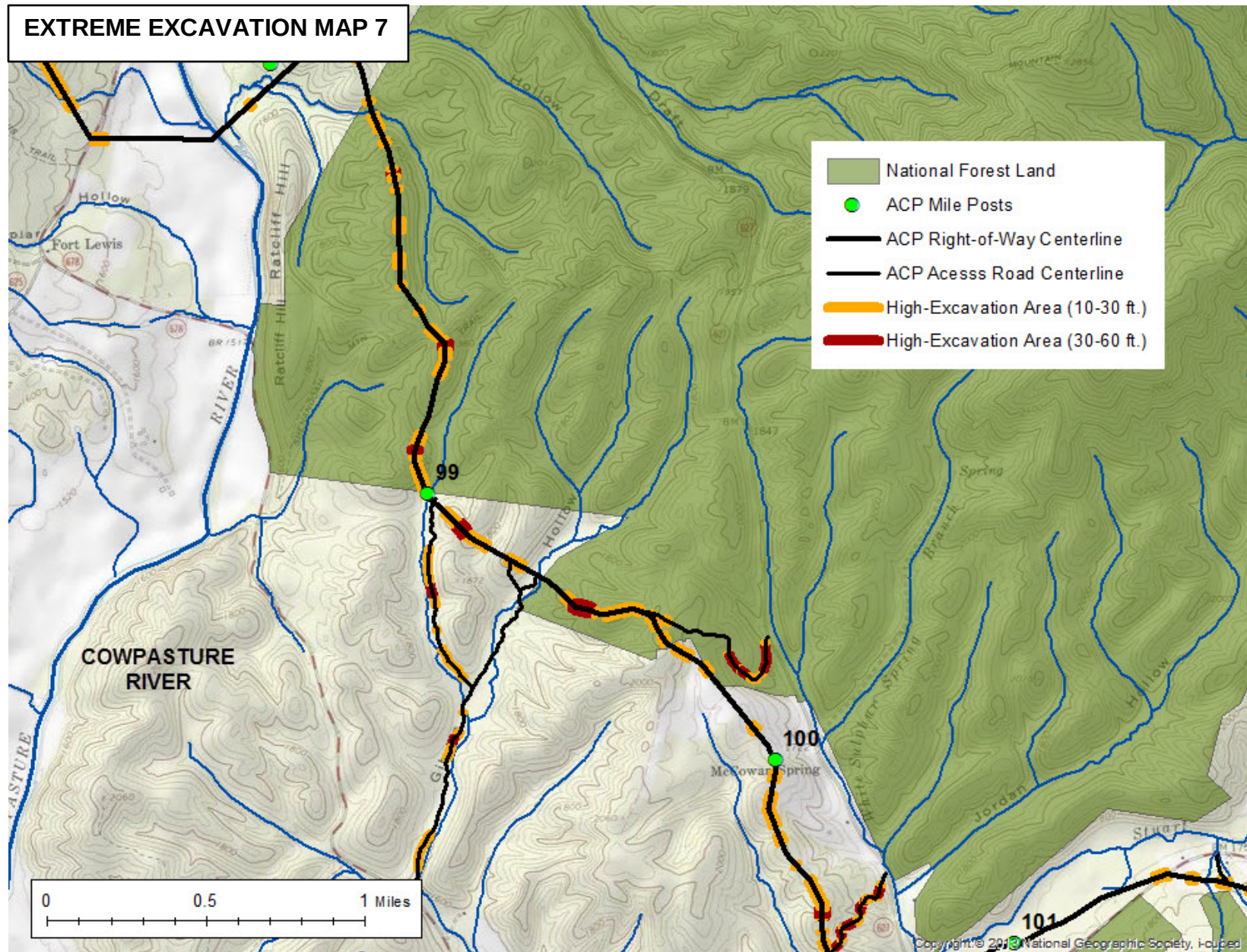
EXTREME EXCAVATION MAP 5



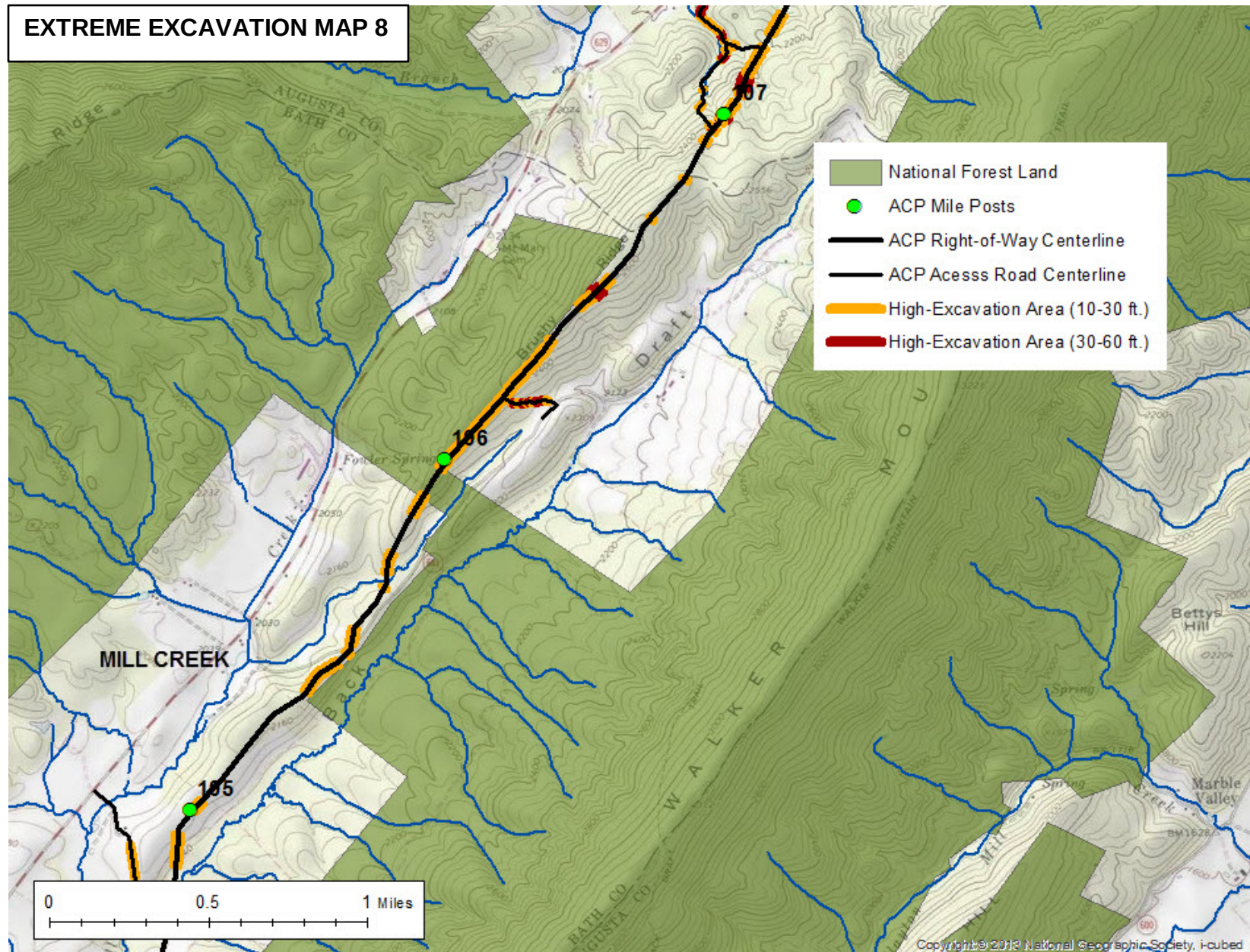
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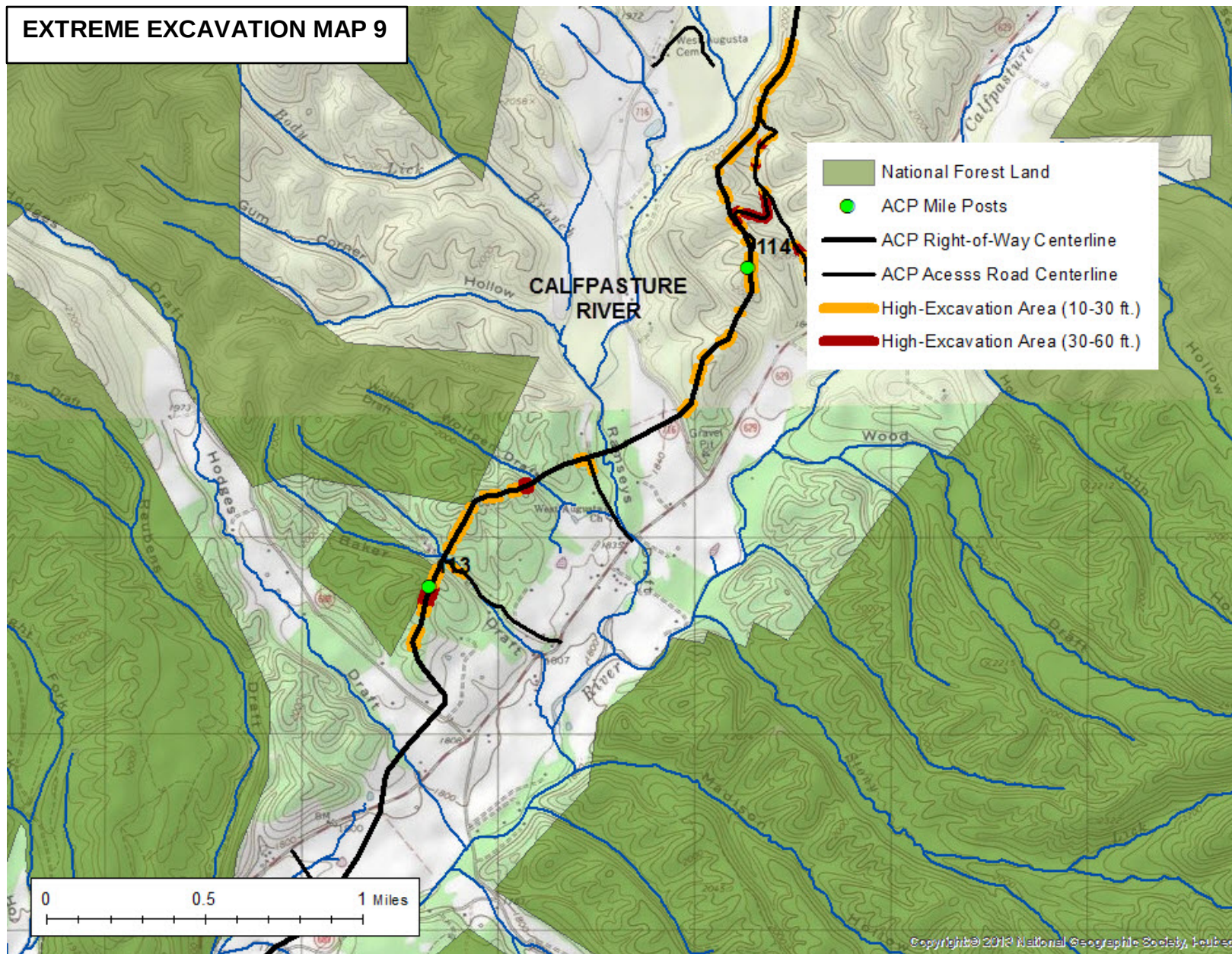
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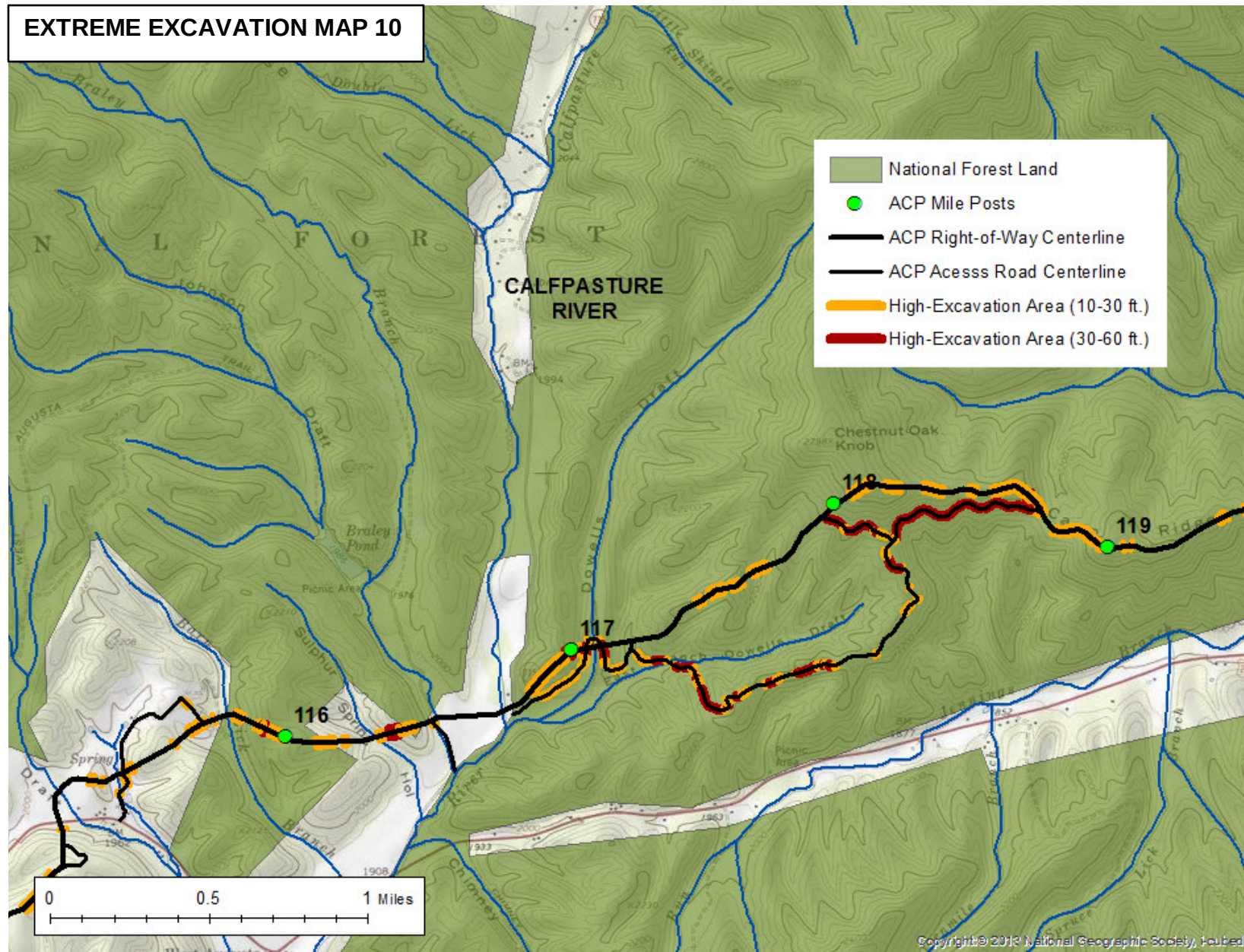
EXTREME EXCAVATION MAP 8



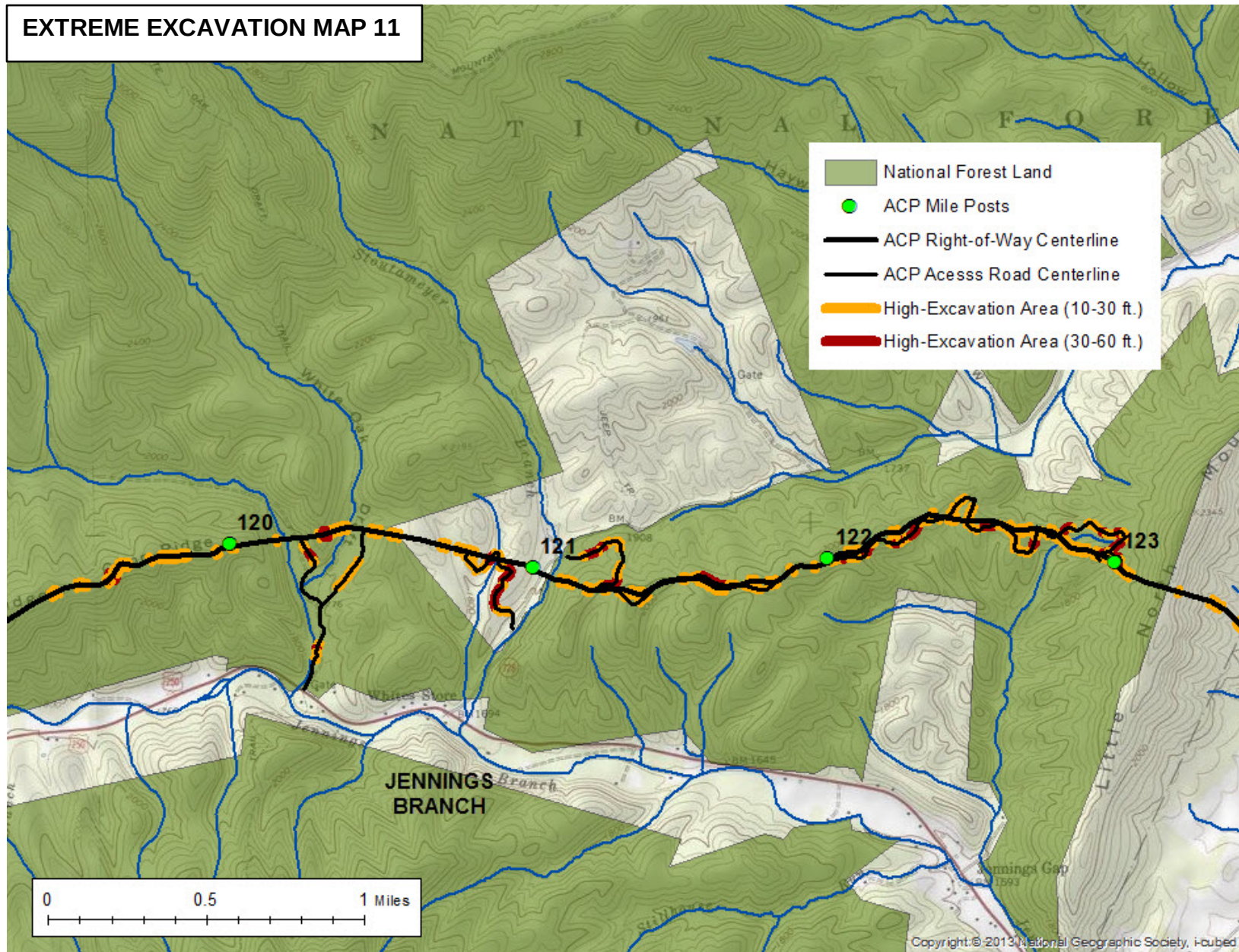
EXTREME EXCAVATION MAP 9



EXTREME EXCAVATION MAP 10



EXTREME EXCAVATION MAP 11



EXTREME EXCAVATION MAP 12

