

USDA FOREST SERVICE

Questions Answered

Advisory Board Meeting July 22, 2015

USDA Forest Service

Advisory Board of Land Between The Lakes National Recreation Area

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August 13, 2015

Dear Advisory Board Members,

I ask that you review the following answers for clarity. In our effort to write in plain language and continue the process of communicating better to members of the public, your input will help us achieve that goal. Please let me know of any items that may need a better explanation.

We plan to release this document and subsequent questions and answers to the public after your review.

Thank you.

Sincerely

Tina Tilley

Advisory Board

The Land Between The Lakes Protection Act of 1998 transferred responsibility for Land Between The Lakes National Recreation Area from the Tennessee Valley Authority to the Secretary of Agriculture in 1999 to be managed as a unit of the National Forest System. The Protection Act called for the establishment of the Land Between The Lakes Advisory Board to advise on environmental education issues and help promote public participation in their land and resource management planning processes.

1) *The data from those monitoring sites. What reports or publications have resulted from these data? Your assessment of progress on this project. When will native grasses be established? If native grasses are not established, what will you do?*

- *A complete listing of all reports and publications are listed at the end of question #1.*
- *Work to reestablish native warm season grasses is an on-going process. In order to achieve the desired results, additional management activities such as prescribed burning will take place. All activities will be monitored for success.*

Monitoring data

Dr. Patrick Keyser an Associate Professor with the University of Tennessee and Director of the Center for Native Grasslands along with his PhD Graduate Research Assistant, Andy Vander Yacht, manage the research being conducted in Land Between The Lakes Oak-Grasslands Restoration Demonstration Areas. Their project documents responses of plants, birds, and bats to forest disturbances. Much of their research focuses on prescribed burning and timber harvest.



Dr. Keyser and Vander Yacht conduct their research at multiple sites across the mid-south as part of the *Cooperative Oak Ecosystem Restoration Project*.

Woodlands and savannas of the Mid-South have been identified as the most imperiled ecosystem in North America. Knowledge gaps involving recommended trees per acre, fire-season effects, and the tracking of long term management results require attention. There also exists a need to evaluate management in terms of effects on the quantity and quality of fuels, and the plant species providing and benefiting from them. The study project is specifically looking at:

1. Vegetation response to overstory disturbance and season of burning oak woodland and savanna restoration in the mid-south.
2. Factors influencing the recruitment of shortleaf pine and native grasses during woodland and savanna restoration.
3. Oak regeneration response to fire-season and canopy disturbance level in the mid-south.

4. Effect of fire-season and overstory disturbance on fuel dynamics and fire behavior during woodland and savanna restoration.

The goal of UT's study is to identify the most efficient strategy for restoring healthy and sustainable oak-grasslands, savannas, and woodlands in the Mid-South. Herbaceous ground layer gains (grasses and wildflowers) and woody encroachment controls (shrubs and trees) provide critical indicators of successful restoration strategies.

A copy of Mr. Vander Yacht's dissertation proposal can be found at <http://www.landbetweenthelakes.us/wp-content/uploads/2014/06/Final-UT-Accepted-Vander-Yacht-Thesis.pdf>

During the Advisory Board meeting in July, Dr. Keyser took the board members on a tour to the UT research locations within the south Oak-Grassland Restoration Demonstration Area. When presenting the University's overview of their research, they shared that 42 herbaceous species were noted prior to the 2008 timber harvest in our south oak-grassland area and in 2014 there was close to 150 different species. A report of these studies can be found at: <http://www.landbetweenthelakes.us/about/working-together/>

Another study conducted by UT is focusing on bird impacts to restoring grasslands. The loss of savannas has contributed to the decline of many grassland bird species. Despite the need to restore these habitats, research evaluating the effects of mechanical thinning (i.e., selective removal of overstory trees through commercial logging) and prescribed burning for oak savanna restoration is limited. Several investigators have concluded that fire alone may not be sufficient to restore oak savanna ecosystems and that mechanical thinning may reduce the time required for restoration to years, rather than the decades, when using burning.

Students collected data from 12 active savanna restoration projects in various stages of development in the Mid-South that included results from Land Between The Lakes. This study concentrated on better understanding plant and bird community responses to restoration. Specific objectives were to:

1. Document changes in herbaceous vegetation, woody vegetation, and birds of this specific region within mature, oak-dominated forests in the Mid-South in response to disturbances imposed for the purpose of savanna restoration,
2. Evaluate the influence of topographic variables on vegetation during the restoration process, and
3. Evaluate the relationship between breeding bird observations and vegetation during the restoration process.

A link to this research results can be found at: <http://www.bioone.org/doi/full/10.1674/0003-0031-169.1.194>

When will the grasses be established?

Warm season grasses can remain dormant in the soil for approximately 100 years waiting on the right soil and light conditions to grow. The re-establishment will take years or decades to complete and maintain.

Some timber harvesting and prescribed burning has taken place in the Oak-Grasslands areas and more are needed. Once the grasses are established they will require prescribed burning and periodic timber stand thinning to maintain these growing conditions.

Re-establishment of functioning ecosystems can take decades to evolve naturally. By utilizing tools as prescribed fire and timber thinning this process can be shortened. The results of future activities will be added to the information already collected by Dr. Keyser and his students.

If native grasses are not established then what?

The area will continue to be monitored to assess progress towards the desired condition. Monitoring will be used to modify management activities based on results.

Publications

Ecology and Management of Oak Woodlands and Savannahs

<https://extension.tennessee.edu/publications/Documents/PB1812.pdf>

Vegetation and Avian Response to Oak Savanna Restoration in the Mid-South USA

<http://www.bioone.org/doi/full/10.1674/0003-0031-169.1.194>

Oak Savannas Characteristics, Restoration, and Long-Term Management

<http://www.oaksavannas.org/>

The center for Native Grassland Management

<http://nativegrasses.utk.edu/projects/oaksavannahs.htm>

Oak Savanna Restoration: Oak response to fire and thinning through 28 years

<http://www.nrs.fs.fed.us/pubs/gtr/gtr-nrs-p-102papers/05masters-p-102.pdf>

Effects of oak savanna restoration on avian populations and communities in Illinois

https://www.ideals.illinois.edu/bitstream/handle/2142/10484/inhscwv01998i0000a_opt.pdf?sequence=2

2) *Over time, how many acres of LBL will be converted to the Pre-European landscape plan of grasslands, barrens, savannas and woodlands?*

- *Our Land and Resource Management Plan reserves 8,630 acres for oak-grasslands management. The 2004 Land and Resource Management Plan for Land Between The Lakes refers to the Pre-European landscape specifically for the Oak Grasslands Restoration Demonstration Areas, the Elk & Bison Prairie-700 acres, and the south Bison Range-180 acres.*

Land Between The Lakes is divided into multiple land uses, including administrative areas, recreation and environmental areas, and natural resource areas. These acres are designated to be managed for a range of ecosystems. Their location on the landscape was selected based on the ecology of the land. This includes historical data, such as the presence of remnant tree and plant populations. Barrens, savannas, and grasslands fall under the natural resource prescription of open lands. Management of these areas will remain consistent with the direction within its designation.

The prescriptions we follow can be seen visually on our online maps at http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/AltY_south.pdf for the southern half and for our northern half at http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/AltY_north.pdf. A table of the Prescription Area Acres can be found on page 48 of our Area Plan <http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LBLAreaPlan.pdf>

Pre-European

The physical composition of Land Between The Lakes offers a natural mosaic of vegetation types reflecting the topography, soil components, wildlife habitats, and other characteristics of the land. Currently we manage to maintain and improve existing diversity.

How we manage for wildlife habitats is based on a "pre-European" time frame because this reference to the past reflects a time of natural landscapes with native wildlife, abundant habitats, sustainable plant species, and clear flowing rivers and streams. This time frame came before farming took over our landscape and the iron industry depleted our forests. Both of these man-made activities changed the natural order at Land Between The Lakes. The pre-European period represents a period of high ecosystem diversity.

This pre-European benchmark allowed decision makers to compare our Area Plan alternatives to finalize the land allocation prescriptions described on page 48 in our Area Plan. It also gave us opportunities to restore some of the landscape that the first pioneers might have encountered in our region. Managing for a period of high diversity is a way to ensure that the most species persist, supporting a natural system that will be resilient to changes in the environment.

Grasslands

- **Definition Grasslands:** Areas on which vegetation is dominated by grasses, grass-like plants, forbs/wildflowers, and/or cryptogams like mosses, lichens, and ferns.
 - Area Plan page 89
 - **Source:** <http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LBLAreaPlan.pdf>
- **Definition Open Lands:** Land permanently maintained in a non-forested condition but not developed
 - Area Plan page 93
 - **Source:** <http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LBLAreaPlan.pdf>

- **Planned Acreage:**
 - Open Lands 5,300
 - Utility Corridors 760
- **Discussion:** Areas identified in our Final Environmental Impact Statement included currently maintained open lands, ecological restoration areas, old fields, hayfields, and utility and road rights-of-way.
 - Openlands are managed to provide a range of habitat to support a variety of wildlife. These areas include native grasses and forbs and support numerous wildlife, including small mammals, birds, game species such as deer, and pollinator species.
 - We are in the process of transitioning our riparian corridors into native grasses. Riparian corridors serve as administrative zones applied to both sides of a stream or alongside a pond, lake, wetland, seep, or spring. The total acreage is unknown at this point.

Barrens/Big Barrens Region of Kentucky and Tennessee

- **Definition** Big Barrens Region of Kentucky and Tennessee: Prairie lands maintained through fire by Native Americans.
 - **Discussion:** In historical research papers, “barrens” has been used to refer to “prairie” in the region as in *The Big Barrens Region of Kentucky and Tennessee*
 - The Big Barrens Region of Kentucky and Tennessee: Further Observations and Considerations by Jerry M. Baskin, Carol C. Baskin ,and Edward W. Chester, September 1994
 - http://www.jstor.org/stable/4033696?seq=1#page_scan_tab_contents
 - **Discussion:** We manage the Elk & Bison Prairie and the South Bison Range to provide historic native habitats for elk and bison herds. The Elk & Bison Prairie serves as a restoration of the "barrens" of Kentucky while the South Bison Range offers "pasture land" to support the Tennessee herd.
- **Planned Acreage:** 700 acre Elk & Bison Prairie and 180 acre South Bison Range

Savannas

Definition: Savannas are grasslands interspersed with open-grown scattered trees, groupings of trees of various age, and shrubs.

- **Planned Acreage:** 8,630 acres distributed into two areas - north and south
- **Why:** Oak-grasslands /oak-savannas were once a common vegetation type in the past which it is now believed to be "one of the rarest plant communities on earth"
 - "The diversity of plants in an oak savanna is higher than either a prairie or woodland, because it has species representing all three categories of plants: prairie plants, savanna plants, and woodland plants. " <http://oaksavannas.org/index.html>
 - The disappearance of a plant community equates to the disappearance of wildlife habitats. Prairie birds and mammals are in decline like the Bob White Quail once native to Land Between The Lakes.
- **Discussion:** Land Between the Lakes is home to two oak-grassland restoration demonstration areas. The demonstration areas create conditions over a large contiguous landscape to demonstrate the feasibility of ecological restoration of an oak-grassland forest and the benefits it can provide to native wildlife and public recreation.

- Historical accounts and ecological research indicates these areas had an open oak canopy and understory dominated by grasses created and maintained through the use fire by the American Indians.
- The demonstration areas totals 8,630 About 3,000 acres are in the north unit in Kentucky and about 5,000 in the south unit in Tennessee.
- Treatments focus on the tree thinning and prescribed fire. Fire effects monitoring and research will continue throughout the restoration effort.
- "Core" areas adjacent to the demonstration areas serve as controls to help gauge the effectiveness of the restoration.
- **Demonstration project update:**
 - <http://www.landbetweenthe lakes.us/oak-grassland-restoration-demonstration-areas/>

Woodlands

- **Definition from Area Plan:** Most often "woodlands" in our Area Plan refers to a more open canopy forest on page 313
 - "A plant community in which trees are often small, characteristically with a greater proportion of their total height being crown more so than clear bole (trunk), and having trees spaced far enough apart that the canopies of adjacent trees usually do not touch and with the ground vegetation being mostly herbaceous, commonly grass."
- **Why:** A vegetation management practice that provides for oak-hickory forest health, includes mix of open and closed canopy stands. Oak-hickory trees and short-leaf pines require sunlight on the forest floor to best survive through natural regeneration. Their seedlings can only compete with other trees and vegetation if they have access to sunlight. Oak-hickory forest also depends on fire to remove competition and open the forest floor to sunlight.
- **Discussion:** Over 82% of Land Between The Lakes' land base is forest cover, primarily mature forest dominated by oak and hickory tree species. General forest areas provide for a wide range of uses and conditions.
 - In 1991 Land Between The Lakes was designated an International Biosphere Reserve as part of the Man and the Biosphere Reserve program of the United Nation Education, Scientific and Cultural Organization (UNESCO). Great Smoky Mountains National Park and Mammoth Cave National Park also hold this designation.
 - Our 41,800 acres of Core is minimally managed and disturbed areas resulting in a closed canopy forest.

We manage the natural resources at Land Between The Lakes National Recreation to best serve our mission of multiple use recreation area, environmental education, wild life habitats and vegetation management, in addition to regional economic development. With over 1.5 million visitors, Land Between The Lakes serves as the number One attraction in Kentucky.

3) *Why is the Forest Service logging and burning outside the 8600 acre demonstration area?*

We manage the General Forest Area across Land Between The Lakes to support ecological needs for maintaining a strong, healthy forest mainly comprised of an Oak/Hickory forest type.

Much of our vegetation management program restores ecological conditions to those best suited for helping native wildlife species survive and visitors come to the recreation area to play and learn. Management has targeted restoration and maintenance of oak woodlands, open oak forests, regeneration of oaks, native shortleaf pine forest, canebrakes, and diverse structures that characterizes old-growth forests.

Restoration of riparian areas where land and water meet along river/stream banks also serves as a priority; we want to protect watersheds and water quality.

You'll find that land managers use many of the same tools to achieve different results. Harvesting trees and prescribed burning serve as two tools we use to promote different forest structures and age classes on the landscape. For example there's two different ways to thin trees – one way allows for a more closed canopy and the other for less canopy that opens up more of the forest floor to sunlight. We also burn the understory every three to five years when we want to promote native grasses and wildflowers. In other general forested areas we burn every three to five years until objectives are met. Once objectives are met in the general forest areas, we will burn every ten to twenty years.

- 4) *What is the anticipated costs and what is currently budgeted for maintenance of the existing '8600' acres of savanna/grass lands? Accounting data for the costs of this project (8,600)?*

We project out our costs for programs such as timber and fire then submit a request for funding annually. This is done as one budget item. We do not break it down into such detail. As land managers we take into account our areas that need treatments and plan for those areas several years in advance. You can find more information about where we spend our funds in one of our “Questions from the Public” articles at <http://www.landbetweenthelakes.us/where-does-the-money-go/>.

Our prescribed burning costs have been averaging around \$20 per acre. Prescribed fires serve as a best management practice for maintenance of oak-grassland and open canopy acreage. Fire is one of the most economical ways to treat the landscape and reach our desired conditions in our Oak-Grassland Restoration Demonstration Areas. We have projected these areas to be burned on a 3-5 year rotation depending on weather and research needs.

Timber harvesting also provides an economically efficient method to achieve the desired results in our Oak-Grassland Restoration Demonstration Areas. Because we use local master loggers who sell the timber for different wood products, harvesting also provides economic benefits to local communities. These costs vary depending on the site requirements and desired conditions.

5) *Given the number of times LBL has been logged in the past, are there any examples of mature canopy forest in LBL that would demonstrate what the understory would do if the forest is left alone for extended periods of time? Be prepared to give examples, if they exist or explain why they don't, and discuss pros and cons of this area and how they are utilized in relation to environmental education and educating the public in proposed/ utilized land management techniques.*

- *There are areas that have had little to no management since 1960s. They are identified in the Forest Land and Resource Management Plan as Core Areas. These areas represent what will occur in mature canopy forests that are left alone for extended periods of time. Our Core Areas comprise approximately 42,000 acres.*

Much of Land Between The Lakes consists of closed canopy forests. Our soil tends to be very acidic which a closed canopy helps to perpetuate. As Dr. Keyser stated on our Advisory Board Field Tour in July, "It's all about the light." Our oak/hickory forests need light to survive and fire to nourish the soil.

For more information about Oak Hickory Forest, check out the following research:

The Ecological Basis for Oak Silviculture in Eastern North America

<http://www.uky.edu/~jmlhot2/Resources/Oak%20Forest%20Ecosystems-McShea-ch.5.pdf>

Kentucky Statewide Assessment of Forest Resources

<http://forestry.ky.gov/LandownerServices/Documents/Issue%201%20-%20Forest%20Health.pdf>

Core Areas of Land Between The Lakes best represent what will occur in mature canopy forests that are left alone for extended periods of time. Our Core Areas comprise approximately 42,000 acres designed to facilitate greater understanding of forest environments through collaborative research, administrative studies, and other working partnerships. The larger blocks of core areas have had little to no management since TVA started to manage the national recreation area in the 1960's.

You can find these Core Areas by using our Area Plan's maps:

- [LRMP North Map](http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LRMP_north.pdf) http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LRMP_north.pdf
- [LRMP South Map](http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LRMP_south.pdf) http://www.landbetweenthelakes.us/wp-content/uploads/2014/05/LRMP_south.pdf

Our Core Areas bring another part of the desired patchwork of ecosystems to Land Between The Lakes. We placed our Oak-Grassland Restoration Demonstration Areas next to these Core Areas to provide a baseline-comparison learning tool between management and none to limited management practices. We do monitor our core as invasive species can spread out from these areas into our general forested areas. We also monitor weak and damaged tree stands for harmful insects and disease. Bird species, bats, and small mammals that rely upon open canopies, nuts and small plants for food will also disappear when their food sources disappear.



Photos 1 and 2 - Jenny Ridge area off of road 153: Core area shows understory of woody material such as oak, hickory, maple, and elm trees.



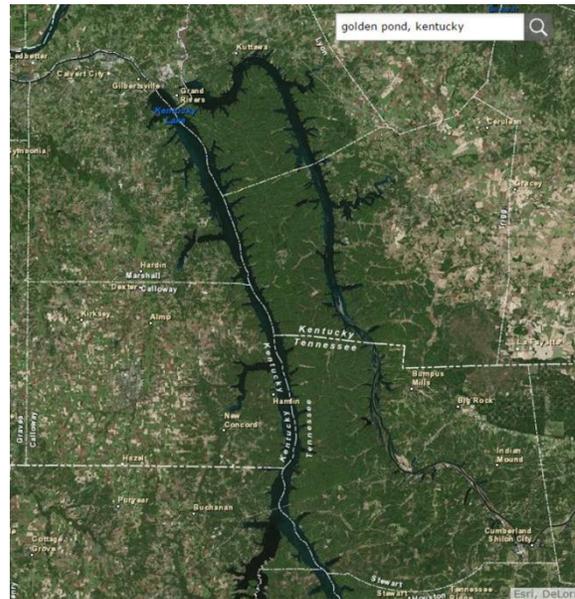


Photo 3 of Jenny Ridge area off of road 153: We also observe the forest reactions to natural disturbances like in photo #3 where the disturbance opened up the canopy allowing sunlight to reach the forest floor. As shown here, the stronger shade tolerant species of maples and elms have begun to take over the shade intolerant oaks and hickories. Oak and hickories take longer to establish and react to disturbance events. Also when denied sunlight for long periods of time, Oak and hickory have a hard time competing with shade tolerant species.

- 6) *The UN panel (Oct 2014) agreed that there is "conclusive evidence" that global warming is due to the burning of fossil fuels and deforestation. My question is why does the USDA Forest Service that now manages Land Between The Lakes want to go against the very Government EPA standards of excellence that want to preserve our air and land for the future?*

Laws, regulations, and policies direct Forest Service forest management and we comply with these including the National Environmental Policy Act (NEPA). You can find a list of these at <http://www.fs.fed.us/forestmanagement/aboutus/lawsandregs.shtml>.

From my understanding, “the burning of fossil fuels and deforestation” referred to by the United Nations calls attention to a global dependence on oil, gas, and coal for energy and the clearing of forested lands for farming and urbanization. I found additional information about these UN concerns on their website at <http://www.un.org/climatechange/summit/action-areas/>. Scroll down to find information under Energy and further down on Forests.



Satellite view of Land Between The Lakes on May 13, 2015 shows the forested areas next to our farming communities. Source: <http://landsatlook.usgs.gov/viewer.html>

We agree that we need to keep our forest healthy and vigorous. To do this, Land Between The Lakes will need to adapt quickly to the changing climatic conditions. Land Between The Lakes and the Forest Service incorporate the best ecological and climate science into our management practices to ensure we continue to produce the benefits that the American people enjoy. You can find more information at <http://www.fs.fed.us/science-technology/climate-change>.

Best available science indicates that in many cases, healthy and resilient forests will require active management and will help mitigate climate change by removing carbon dioxide from the atmosphere and storing it in plants and soils.

7) *What land management practices and goals can be utilized with minimal public resistance?*

The staff at Land Between The Lakes is committed to working collaboratively with members of the public on land management activities. This will involve engaging the public early and often before proposals are developed. This process allows the Forest Service to share potential management actions to be considered based on existing conditions on the ground.

A collaborative process involves a two way conversation. It will allow the Forest Service to better understand the concerns of the public and address those concerns during the development of a proposal. At the same time, it will allow members of the public to be informed about land and natural resource management at Land Between The Lakes.

8) *Ms. Tilley you were quoted as saying, "People like to be able to see through the woods." People feel more comfortable in nature when they don't feel boxed in. What survey or studies support this? Can you provide us with these documentations?*

- *Two research documents titled *The Development of Visual Preference for Natural Environments* by John Balling and John Falk and *Forest Inventory and Management-Based Visual Preference Models of Southern Pine Stands* by Victor A. Rudis.*

Two research documents titled *The Development of Visual Preference for Natural Environments* by John Balling and John Falk and *Forest Inventory and Management-Based Visual Preference Models of Southern Pine Stands* by Victor A. Rudis indicate that there is a tie to the environment and visual preferences. Both of these documents suggest that being able to see through the woods with low or no understory is a preferred setting.

Sources:

http://www.researchgate.net/publication/249623275_Development_of_Visual_Preference_for_Natural_Environments

<http://www.treesearch.fs.fed.us/pubs/30597>

Additionally, in his 2009 book *Last Child in the Woods*, author Richard Louv described the increasing occurrences of nature phobia, especially among children. As parents keep children indoors to keep them safe, the children lose their innate affinity for nature, and instead of familiarity and appreciation for nature, it is regarded with fear and suspicion. Studies would need to be conducted but this separation from the environment could be tied to how it is perceived.

According to the World Health Organization, a full 70 percent of the global population will live in cities by 2050. This will only add to our alienation from nature – and our fear of it.

Source:

http://www.who.int/kobe_centre/publications/hiddencities_media/p1_who_un_habitat_hidden_cities.pdf

Additional studies on scenic preference research can be found here:

<http://web.utk.edu/~vrudis/sbe.html>

http://www.fs.fed.us/cdt/carrying_capacity/landscape_aesthetics_handbook_701_no_append.pdf

9) *How are proposed land management practices, including logging, expected or anticipated to affect LBL's core mission of environmental education and recreation? Positives and negatives.*

- *Timber management activities create opportunities for wildlife viewing. The timber sale activities help with road maintenance, thus allowing for dispersed recreation opportunities such as hunting. With improved wildlife habitat conditions, the opportunity to utilize environmental education into the role of land management is increased. Restricting or eliminating the use of timber sales as a tool for land management could be perceived as having positive impact on visuals and noise.*

The Land Between The Lakes Protection Act (Protection Act) directs us to “manage the Recreation Area for multiple use as a unit of the National Forest System. The emphases in the management of the Recreation Area shall be to provide public recreational opportunities; to conserve fish and wildlife and their habitat; and to provide for diversity of native and desirable on-native plants, animals, opportunities for hunting and fishing, and environmental education.”

Land management includes a wide variety of potential activities including but not limited to: timber sales, prescribed burning, wildlife habitat enhancement, soil and water restoration work, heritage resource protection, and infrastructure work

Eliminating these activities leads to mature canopy forest. Elimination of land management would likely decrease habitat diversity and decrease animal and bird species creating conditions less desirable to hunting and wildlife viewing. Mature and dense forests have a tendency to be more susceptible to insect and diseases.

Restricting or eliminating the use of timber sales as a tool for land management could be perceived as having positive impact on visuals and noise.

Roads and trails would become more shaded and slower to dry after rain and snow adding to maintenance challenges and funding concerns. Timber sales and wildlife management currently support the roads program with funding for maintenance.

Prescribed fire opens up the understory allowing more sunlight to the forest floor. Some threatened, endangered, or sensitive species found at Land Between The Lakes require habitats with more native grasses, plants, and wildflowers. Acorns and hickory nuts from an oak/hickory forest also promote some species of wildlife.

Managing smoke from prescribed burning is a concern. In the last couple of years we have tightened the parameters before we can burn. We now use smoke monitors to help us make record smoke reaction to atmospheric weather and to help us make better decisions in the future.

The analysis of these activities directly supports surveys for the heritage program on the recreation area. Much of the area has yet to be surveyed.

There are a lot of opportunities to better incorporate environmental education into the role of land management. Better involvement with members of the public before proposals are developed will help prioritize these opportunities.

These are just a few broad effects of land management. Before activities can take place on the land, more site specific analysis will be completed. Better public involvement prior to the development of any proposal will help us identify potential concerns that will need to be addressed prior to making any decision.

*10) What land management practices do you anticipate suspending in light of public concerns? Pisgah Project?
How long will these practices be suspended?*

The Pisgah Bay project has been cancelled as proposed. The Forest Service will be moving forward with public involvement on some of the infrastructure related projects within the proposal. Some of the projects being considered include replacing culverts, while improving conditions on approximately 31.7 miles of Forest Service roads; rerouting of approximately 2.7 miles of the North/South Trail to stop degradation of the landscape; and incorporating road access to a backcountry campsite area.

Currently there are two timber sales – Old Ferry Road and Paradise – that have already been sold and will continue. Buffers have been placed along the Trace to address visual concerns that were brought up by members of the public.

Three other areas have been marked ready for sale, 2 in Kentucky and 1 in Tennessee. These have not been sold. The public will be engaged before these areas are proposed to be sold. They will not be offered for sale this Fiscal Year (through the end of September). It is more important right now to engage the public about management of the area for the long term.

New projects that are proposed will more fully involve the public. There will be an opportunity to share information prior to a proposal being developed. This will allow the Forest Service to create a proposal that is more aligned with the users of the area.

11) What will be the Advisory Boards role in relation to changes in land management and its effects on recreation and environmental education?

The Advisory Board will be more engaged on advising the Forest Service about the concerns of those individuals that they represent on land management planning. They can inform the Forest Service on who may need to be brought into a discussion concerning proposed management activities and how to better outreach to individuals and groups.

The board can also be a good source for sharing information. The Forest Service is working hard to shift to plain writing that can be understood by all in addition to using the public to help craft proposals. The board can help by asking questions and providing feedback from a more diverse group. It is important as we move forward to clearly share information and expectations.

12) How will you attempt to improve communication of land management goals and practices in the future, how do you sell it to the public?

Land Between The Lakes is working with the Advisory Board to develop a collaborative process that engages them in learning about and advising the Area on land management goals and practices. We will also work together to develop ways to effectively communicate with and inform the public.

At our September meeting, we plan to share with the Board what is in the Plan and answer questions on what type of management could take place in the different Desired Future Conditions.

13) Has the budget for campgrounds, and facilities such as Nature Station and Home Place been effected by costs of land management such as logging? Has spending on these areas increased or decreased over the past 10 years.

- *The budget for campgrounds and facilities stands independent of the budget for vegetation management, such as timber sale preparation and administration. As a result of that, recreation and facilities funding have not been effected. As with all National Forest's budget in recreation and facilities, over the past 10 years there has been an overall decline in appropriations. For the Land Between The Lakes, total funding has remain constant due to the Forest's ability to utilize retain receipts to augment the decreased funding from our appropriation.*

There is not a correlation between campground and environmental education funding and land management activities such as logging. The Washington office pre-determines appropriated funding amounts for specific activities, such as recreation and timber management, they then distribute to the regional office which then redistributes to the different National Forests, and this is where we receive our budget. Neither the regional office nor Land Between The Lakes has the ability to borrow from one funding area in order to bolster another.

Timber Management: the FY15 timber management budget was \$376,000, of which approximately \$120,000 supported timber sale activity. The remaining \$280,000 provided for activities that included common timber stand exams and the planting of 29,000 short leaf pine trees. The same funding line in FY06 was \$110,000 of which \$15,000 supported timber sale activity.

Recreation/Environmental Education: the table below shows the difference in funding for our campground and environmental education programs, comparing FY07 and FY15. Total funding has remained constant while the retained revenue spending has been increased to augment the decreased funding from our appropriation.

Funding Type	FY07	FY15	Difference
Appropriation	4,323,273	3,519,785	(803,488)
Retained Revenue	2,139,919	2,934,543	794,624
Total	6,463,192	6,454,328	(8,864)

More information about our budget can be found in one of our “Questions from the Public” articles at <http://www.landbetweenthe lakes.us/where-does-the-money-go/>.

14) How much money does Land Between The Lakes make off of timber sales and where does the money go from the sales?

Land Between The Lakes has averaged \$84,000 annually from timber sales since 2008. These annual receipts may come from one or more timber sales.

At the time a timber sale is sold, the purchaser bids on the amount of money that will be paid to the Forest Service for the sale. Sales are typically broken out into a varying number of units based on tree species or location on the land. The purchaser pays the Forest Service before they start cutting individual units of the timber sale not all at one time. Timber sales typically have a contract period of three years to complete. Therefore, money from any one timber sale could come in over a three year period of time.

100% of the receipts are retained at Land Between The Lakes. These dollars are reinvested into a variety of programs, and in Fiscal Year 2014 the timber receipts totaled \$102,209 and were distributed as follows:

Program	Distribution
Recreation	47,246
Roads	1,040
Environmental Education	26,091
Heritage	2,057
Resource Management	20,555
Visitor Centers	3,113
Advisory Board, Safety, Misc.	2,107
Total	102,209

14a) When the Forest Service puts together a Timber Sale how do they appraise the timber and develop a minimum bid? (i.e. how does the FS determine what it sells the timber for?)

- Most Forests, including Land Between The Lakes, use data from past sales and sale data from the surrounding area to determine the current market value of the timber that is called the base rate.
- Cost of work the contractor will do, such as road work, are subtracted from the base rate.
- If the trees are high quality trees, additional adjustments will be made to the base rate, to potentially increase the base rate, so the calculation of the minimum bid is base rate +/- adjustments.

Forest Service Handbook objectives of a timber appraisal, according to Forest Service Manual 2400, Chapter 2420.2, include:

1. To estimate fair market value for National Forest timber offered for sale.
2. To set an advertised rate that encourages sufficient competition for National Forest System timber that results in values fair to both the Government and purchaser.
3. To bring advertised values close to bid values.
4. To ensure that appraisals are sensitive to changes in the market for forest products.

By law National Forest timber must be sold at or above its appraised value (Federal Land Policy and Management Act of 1976). Most Forests, including Land Between The Lakes, use the ‘transaction evidence’ method to develop a minimum bid for a proposed timber sale. This method uses data from past sales and sale data from the surrounding area to determine the current market value of the timber. In our case, this includes data from the Mark Twain National Forest.

The market value of the timber can refer to two different things. The ‘mill’ value refers to what the timber is worth once it is already harvested and at the mill door. The ‘stumpage’ value refers to what the tree is worth still in the woods. The stumpage value takes into account the costs of getting the tree out of the woods and to the mill. Mill value is similar to retail value in business and stumpage value is similar to wholesale value.

In Forest Service contracts, the stumpage value is generally calculated by starting with what the timber is worth at the mill, which is called the base rate. The cost of work the contractor will be held responsible for under contract is then subtracted, and/or value is added based on quality or market changes. These items that may raise or lower the appraisal value are called Adjustments.

Adjustments may include:

- Maintenance of existing roads that will experience wear and tear,
- Haul costs,
- Temporary developments such as building temporary roads or landings,
- Erosion control like seeding, mulching, and fertilizing,
- Environmental and cultural protection, for example protection of threatened and endangered species habitats, cemeteries, heritage sites, etc.,
- Slash treatment which is work required of the operator to meet forest service aesthetic goals,
- Quality adjustment which takes into account if the trees in the sale are above or below average,
- Risk adjustment which takes into account damaged timber or accessibility, and
- Market adjustment which only applies to pine saw timber.

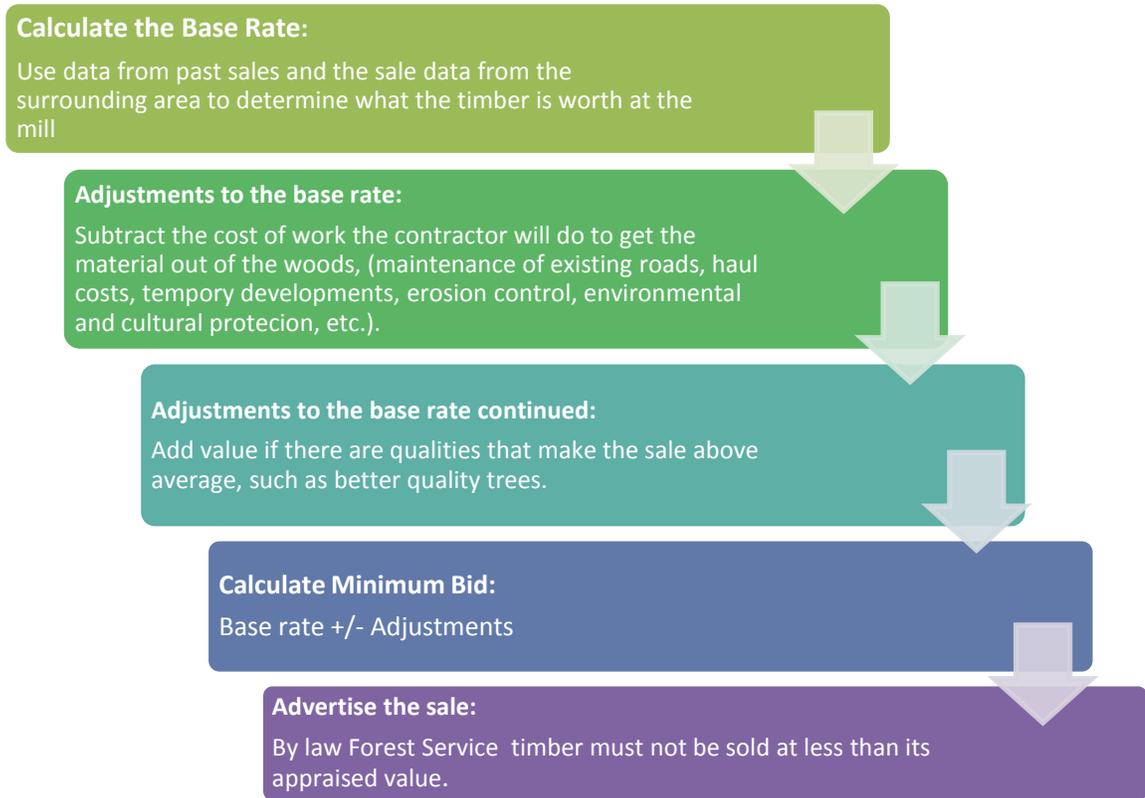
This stumpage rate then becomes the minimum bid for the sale.

Timber operators on public lands often assume additional costs as compared to working on private lands. These costs are based on increased environmental restrictions and required inspections when working on federal land.

Private land owners often use a method called ‘selling on shares’ to sell timber from their property. This is when loggers agree to pay land owners a percentage of the money they receive at the mill. This can make comparison across private and public timber sales difficult – we work with “stumpage” or wholesale numbers, while private timber sales usually refer to the mill value, or retail value.

Timber management on Forest Service land centers on ecological need versus commercial purposes. This means that we’ll often keep high quality trees for habitat and forest health reasons while offering lower quality, (from a market standpoint), trees for sale to loggers. As a result, our sale unit often appraises lower than it would if we marked trees solely to harvest the highest quality timber which is normal practice on private land.

Here is a visual that lays out the steps we take to develop a timber appraisal:



14b) Why do timber receipts not meet or exceed the timber budget?

- *Timber sale receipts are based upon the number of units within a sale boundary that have been paid for and are opened to be cut. A sale may have numerous units but only a few units are opened at any one time, normally no more than 3 units are opened at one time. The receipts are based upon the units that are opened and cut that year. The timber budget provides funding for timber sale administration on sales that were not only sold in the current year, but also sales sold in previous years and are still opened for activity. In addition to the timber sale budget being used for sales administration for current sales, it is used to prepare future sales.*

Timber sales are reported as 'sold' in the year they are purchased. Each sale is made up of multiple units. Operators only pay for each unit as it is opened up to be cut and a contract may allow that to occur across multiple years. The 'sold' price is the value of the entire sale, but receipts for that year are only for units actually opened and cut that year. This means that in a given year Land Between The Lakes may only realize receipts for a portion of the sale. However, the timber budget must support the preparation of future sales, managing the ongoing portion of the current sales, as well managing and inspecting work being done in past sales.

Timber sales are used as a tool to accomplish ecological goals. Laying the ground work for future sales is part of a long term planning process to protect forest health which takes place over many years. Money invested in the present to set up future sales contributes to many years of ecological benefits. These include:

- Improved wildlife habitat
- Protection of rare ecological communities
- Healthy watersheds
- Forests that are more disease, pest, and drought resistant.

This ecological work can be accomplished using a variety of tools, including prescribed fire and non-commercial harvest. Timber sales are a tool that allows the work that needs done to be accomplished while offsetting some, if not all, of the costs. The goal on Forest Service land is to meet ecological objectives therefore Forest Service timber sales often leave the largest and healthiest trees and harvest the lower quality trees. This differs from private land, where the trees with the greatest monetary value are harvested regardless of ecological benefits those trees might provide.

Identification of a Forest Service timber sale area is driven by an ecological need tied to wildlife habitat and forest health, as well landscape goals for eco-system diversity. In order to identify that ecological need a forest stand goes through a number of planning and analysis steps not completed on private land. This is done to ensure that environmental and cultural resources are protected and/or enhanced by the work being completed. The data collected during this part of the process contributes to overall forest management to ensure long term health. The costs to actually implement the timber sale includes paint and materials for marking timber, time spent marking, inspections as the unit is cut, fleet, and overhead. This is a small portion of the overall timber budget. The remaining timber budget is used for collecting data on the forest and forest health, planning and analysis of project areas, addressing forest health needs, and stand improvement work.

There are 6 steps, or ‘gates’ in the timber sale preparation process, which may be accomplished and paid for years before implementation costs are incurred or payments for timber are received. A table of the 6 gates with a short description is below:

Gate Activities

Gate No.	Gate Name	Process	Key Activities
1	Initial Planning of a Timber Sale Project	Timber Sale Project Development	Scoping, timber sale project plan development, silvicultural exams, area logging and transportation analysis, financial and economic analysis, budgeting, scheduling, and line officer certification.
2	Project Analysis, Design, and Decision Notice	Timber Sale Project Design	Environmental, financial, and economic analysis, if needed; resource reviews; project transportation/logging analysis; decision making; project activity plan preparation; silvicultural prescriptions; and line officer certification.
3	Preparation of a Timber Sale	Timber Sale Project Implementation	Identification of individual timber sales in the timber sale project; completion of all field layout activities; documentation of items for use in preparing appraisal, contract preparation, offering; and line officer certification.
4	Advertise a Timber Sale	Final Package Preparation, Review, Appraisal, and Offering	Preparation of appraisal, sample contract, bid form, prospectus, K-V plan, salvage sale fund plan, and brush disposal plan; advertisement of the timber sale; and line officer certification.
5	Bid Opening	Bid Opening	Opening of sealed bids, conduct of auction, review bids, identification of apparent high bidder, preparation of bid abstract, and certification by Forest Officer or Contracting Officer.
6	Award a Timber Sale Contract	Sale Award	Completion of award activities.

**Land Between The Lakes
National Recreation Area**

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