

**Resource Management Guides
Greene-Sullivan State Forest
30-day Public Comment Period (February 20, 2024 – March 20, 2024)**

The Indiana State Forest system consists of approximately 160,251 acres of primarily forested land distributed across the state. These lands are managed under the principle that we're stewards of this land for the future. This work is guided through legislation and comprehensive scientific national and international forest certification standards which are independently audited to help insure long-term forest health, resiliency, and sustainability.

Resource management guides (RMGs) are developed to provide long-term, scientific forest management planning tailored to each forest compartment (300-1,000 acres in size) and tract (10 - 300 acres in size). There are 1,590 tracts across the state forest system statewide. Annually, 50-100 tracts are reviewed, and these guides are developed based on current assessments. Through science-based management practices, we prescribe management actions on select tracts every 15-25 year, diversifying the forested landscape and sustaining ecosystems.

The RMGs listed below and contained in this document are part of the properties annually scheduled forest inventories under review for Greene-Sullivan State Forest.

Compartment 9 Tract 1
Prescribed Fire RMG - Compartment 10
Prescribed Fire RMG - Compartment 11

To submit a comment on this document, go to:

<https://www.in.gov/dnr/forestry/state-forest-management/public-comment/submit/>

You must indicate the State Forest Name, Compartment number and Tract number in the "subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered and review posted at:

<https://www.in.gov/dnr/forestry/state-forest-management/public-comment/>

Note: Some graphics may distort due to compression.

Greene-Sullivan State Forest
Forester- Zane Strubler
Management Cycle End Year 2043

Compartment 09
Date 05/03/2023
Management Cycle Length 20 years

Tract 01
Acres 42

Location

Tract 1, also known as 6330901 lies at the south end of Greene-Sullivan State Forest within Greene County. The tract is in Section 8 of Stafford Township, T6N R8W approximately 2 miles west of State Road 59, on County Road W 400 S, and 5.5 miles southwest of Linton, Indiana, and 1.5 miles northeast of Pleasantville, Indiana.

General Description

The tract has been previously strip mined for coal. Approximately 27 acres is composed of mixed hardwoods/conifer, 12 acres of bottomland oak-hickory, and the remaining 3 acres water (i.e., Aspen Lake).

History

- 1965 - 1975 – Strip mining occurred
- 1976 – Land Acquired from Peabody Coal Company
- 2003 – Boundary land survey completed by Jess Gwinn
- 2023 – Forest inventory and resource management guide completed

Landscape Context

The surrounding landscape of the tract is forest and agricultural land. The north and east sides adjoining the tract are privately owned agricultural fields. Across the road to the southeast is privately owned forest and southwest is tract 6330903.

Topography, Geology and Hydrology

Approximately 75% of this tract has been mined and is composed of stripper hills running east and west. In the northwest corner of the tract lies Aspen Lake, having only 3 acres of the lake within this tract and remaining acres in the neighboring tract and private land. There is no known outlet for this lake. Within the stripper hills, some of the low valleys hold water. The eastern and the northeast side of the tract is relatively flat and appears to be unmined.

Soils

FcG- Fairpoint very parachannery loam, 35 to 90 percent slopes

This very steep, deep, well-drained soil is in the uplands. They are series of narrow elongated mounds of spoil from surface mining for coal. This soil is poorly suited to trees due to slope. Site by site evaluation is needed to determine suitability for management activities. This soil has not been evaluated for site index.

VgA- Vigo silt loam, 0 to 2 percent slopes

This nearly level, deep, poorly drained soil is on flats in the uplands. It is fairly well suited to trees. Equipment limitation, seedling mortality, and windthrow hazards are main concerns that should be considered when planning management activity. This soil has a site index of 90 for pin oak and 100 for eastern cottonwood.

ScA- Shakamak silt loam, 1 to 3 percent slopes

This very gently sloping, deep, somewhat poorly drained and moderately well drained soil is on ridgetops and along drainageways. A fragipan is present and restricts root development. This soil is well suited to trees and has a site index of 75 for white oak and 90 for yellow poplar.

AvB2- Ava silt loam, 2 to 6 percent slopes, eroded

This gently sloping, deep, moderately well drained is on knolls and narrow ridgetops and on side slopes along drainage ways in the uplands. It is well suited to trees. This soil has a site index of 75 for white oak and 90 for yellow poplar.

CfC2- Cincinnati silt loam, 6 to 12 percent slopes, eroded

This moderately sloping, deep, well-drained soil is in the uplands on concave breaks or side slopes along drainageways and on knolls and ridges between steeply sloping draws. It is well suited to trees. This soil has a site index of 80 for northern red oak.

Access

Access to the tract is good along the southern boundary off County Road W 400 S.

Boundary

The boundary of this tract to the east and north is private property that has been surveyed and identified in the field with carsonite posts. Some of the carsonite signs remain from the original survey completed by Gwinn in 2003. Private landowner encroachment was identified in the northeast portion of the tract, where the landowner had been driving through a small strip to their adjoining field to the north. This encroachment is being addressed. The southern boundary of the tract is County Road W 400 S. The most recent county plat map identifies a strip of private property along the west border. This narrow strip divides tracts 6330901 and 6330902, which is under review dealing with mining rights.

Ecological Considerations

Throughout the tract wildlife and wildlife sign was observed. This includes but not limited to whitetail deer, Eastern wild turkey, squirrels, beaver, waterfowl, and various species of songbirds. The mix of cover types: open water, oak hickory, and mixed hardwood/conifer provide an array of opportunity for wildlife to flourish.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand. Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels. However, a slight underrepresentation of 19"+ snags was identified. It is expected that this size class will improve as the tract ages. Further, these are compartment level numbers and likely available elsewhere within the compartment.

The following invasive species were observed: autumn olive, bush honeysuckle, multiflora rose, Japanese honeysuckle and Japanese stilt grass. Invasive species management is recommended

throughout the tract.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation

Throughout the tract the main recreational activities include hunting, fishing, and foraging. A portion of the tract is currently within a no hunting zone and under review. As a whole recreation should benefit from management.

Cultural

Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

Mixed Hardwood/Conifer (27 Acres)

The majority of the tract is mixed hardwood/conifer cover type. This area has previously been strip mined, leaving behind stripper hills and a lake. The most common tree species found throughout the cover type were eastern white pine, yellow poplar, northern red oak, eastern cottonwood, and sweetgum. The recommended silvicultural prescription is a thinning timber harvest using single tree and group selection/patch cuts. This approach promotes the replacement of pine with hardwood species and establishment of new cohorts of trees. In addition to creating openings, another recommendation is to level stripper hills and replant following the timber harvest. This would improve both management and public access long-term while at the same time introducing beneficial mast producing trees like oak, hickory, walnut, and cherry. Most of the invasive species were found within this cover type. Invasive species management is recommended. Leveling the stripper hills would eliminate invasive species in those locations and the harvest itself would provide greater access to treatment within the tract.

Bottomland Oak-Hickory (12 Acres)

The terrain in this cover type was relatively flat compared to the rest of the tract. Shagbark hickory, black cherry, and shingle oak were the top three species identified. A thinning using single tree selection is the silvicultural prescription recommended for this cover type. This harvest would focus on the removal of trees with poor form, overmature, and or otherwise needed to release oak and hickory or other mast producing species to improve the overall vigor and health of the tract. Overall, the presence of invasive species was low, but invasive species management is recommended to address areas where present.

Water (3 Acres)

Roughly 3 acres of Aspen Lake falls within this tract. Management activities should consider future public access to the lake. Riparian management should follow guidance in the 2022 Best Management Practices Field Guide. Silvicultural prescriptions recommended in this management guide should not affect the quality of the lake.

The current forest resource inventory was completed on 05/03/2023 by Forester Zane Strubler. A summary of the estimated tract inventory results are located in the table below.

Tract Summary Data (trees >11”DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Black Cherry	120	4,600
Black Oak	19	1,558
Black Walnut	17	1,684
Eastern Cottonwood	204	34,898
Eastern White Pine	351	52,971
Loblolly Pine	21	1,489
Northern Red Oak	424	48,079
Pin Oak	20	6,509
Shagbark Hickory	233	30,932
Shingle Oak	37	10,245
Swamp White Oak	28	3,661
Sweetgum	306	17,639
Yellow-Poplar	693	121,466
Totals	2,473	335,733

Summary Tract Silvicultural Prescription and Proposed Activities

This tract would benefit from a thinning timber harvest throughout the tract. The overall tract volume would be reduced 30-50%. Timber marking would consist of group selection/patch cuts and single tree selection. This approach will help create a new cohort within the tract and release desirable tree species. Creating a multiple cohort tract is beneficial to all forms of wildlife.

Following the timber harvest, recommendations are to level the stripper hills, and each area planted to desirable tree species. This would improve species diversity and long-term wildlife benefits. Timber stand improvement (TSI) and invasive species management is recommended, in the first 3-5 years following the timber harvest. Skid trails should be utilized to access the tract for ease with invasive work. Both mechanical and chemical methods of control should be used. Regeneration openings created during the harvest should be revisited within 3 years for regeneration confirmation and planning of any follow-up work.

During and after completion of the proposed management activity best management practices (BMP's) will be implemented to minimize soil erosion. This tract should receive another inventory and management guide 20 years following the completion of the timber harvest.

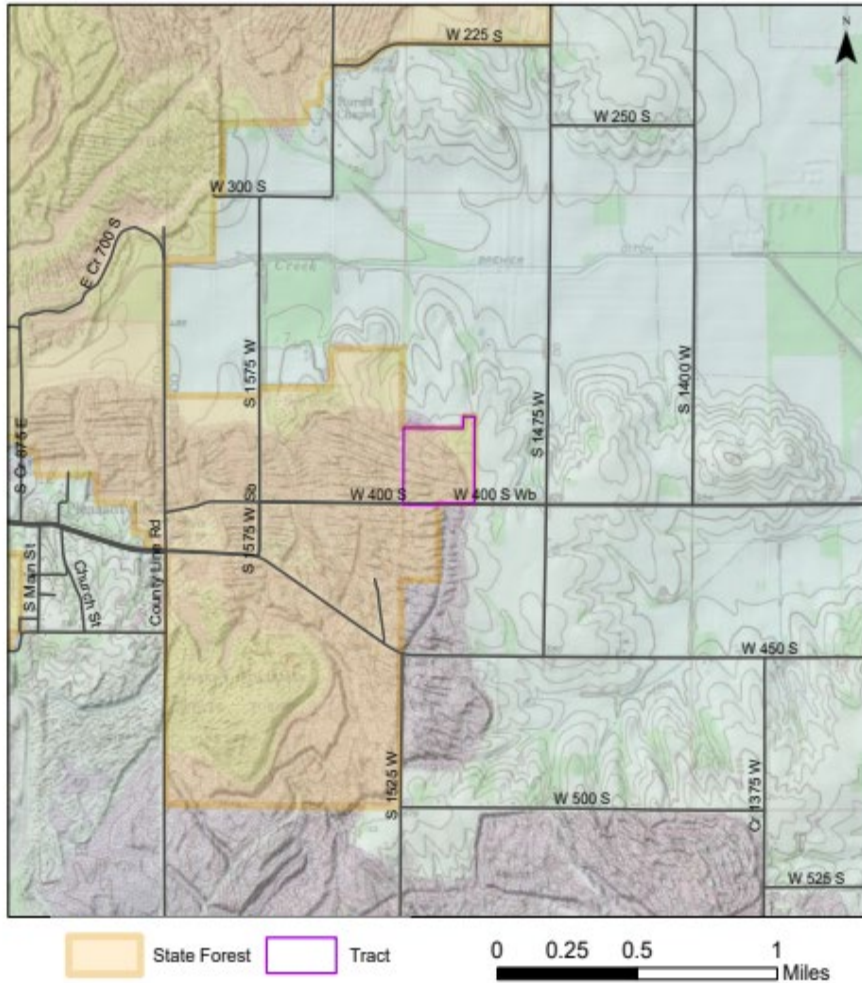
Proposed Activities Listing

Proposed Management Activity

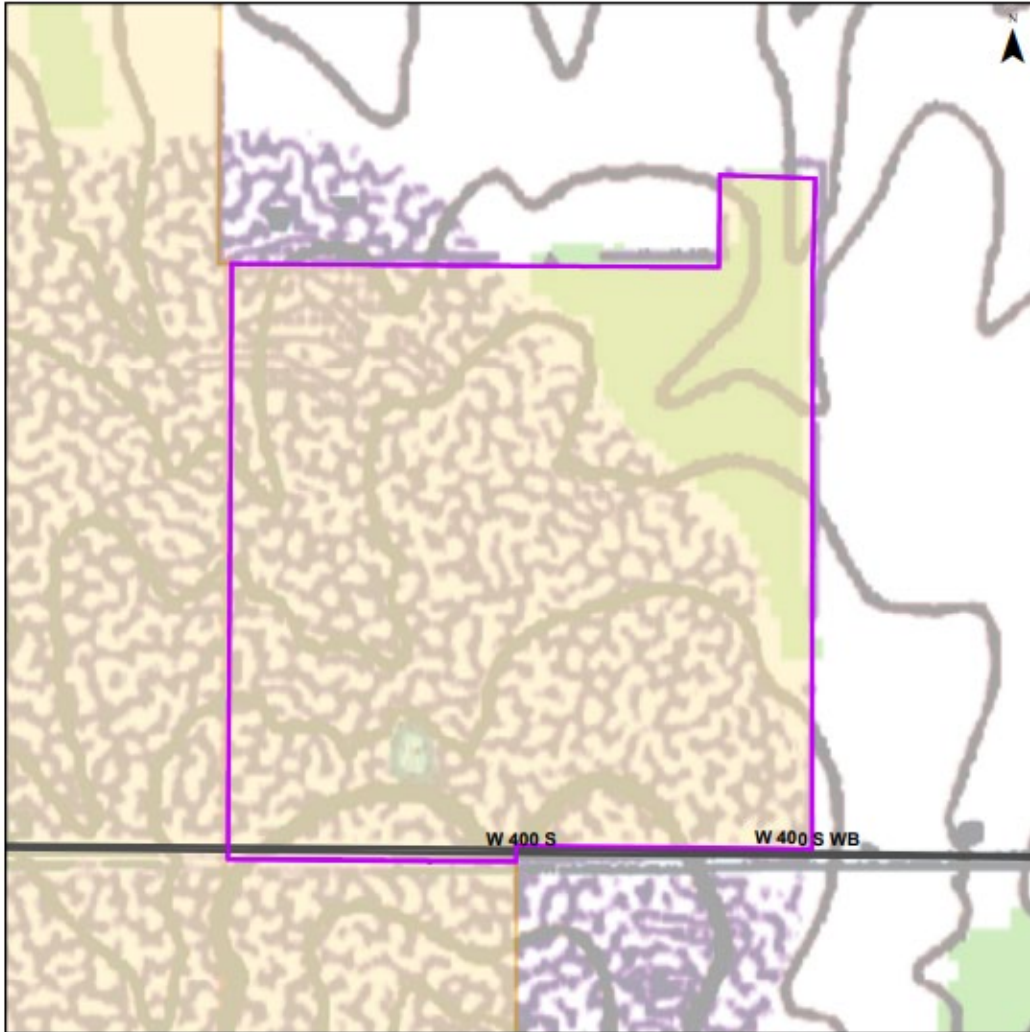
Proposed Date

Management Guide	2023
Mark/Sale Timber	2024-2026
Level stripper hills	following timber harvest
Supplemental planting	following site prep work
Post harvest TSI/Invasive Control	3-5 yrs following timber harvest
Regeneration checks/Monitoring	3-5 yrs following tree planting
Re-inventory	2043-2048

Greene-Sullivan State Forest
Location Map
Compartment 9 Tract 1



Greene-Sullivan State Forest
Compartment 9 Tract 1
Tract Map



 Tract boundary  State Forest

Greene-Sullivan State Forest Compartment 09 Tract 01 Cover Types Map



Legend

- County Road
- Water
- Bottomland Oak-Hickory
- Tracts
- Mixed Hardwoods/
Conifer

0 0.02 0.04 0.08 0.12 0.16 Miles

Greene-Sullivan State Forest **Compartment: 10** **Tracts(s): 1, 2, 3, 4, 5, 6, & 7**
Forester: Zane Strubler **Date: January 22, 2024** **Acres: 1,250**

Location

Compartment 10 is a part of the Dugger Unit. This area encapsulates the east unit of the Dugger Unit. East unit lies approximately 4 miles east of Sullivan, Indiana, and approximately 4.5 miles West of Dugger, Indiana.

Overview

Fire has been native to the landscape prior to the European settlement. Native Americans used fire as a tool for farming, hunting, and way of travel. But throughout the 1900's fire was widely looked down upon as a management tool. Roughly for the past 100 years, fire has been suppressed on the landscape. It is now seen that many of Indiana's ecosystems benefit from the presence of fire on the landscape. Prescribed fire is used to maintain native plant communities that benefit the landscape.

Prescribed fire will be used as a management tool to promote native grasses through most of compartment 10. Many of the tracts in compartment 10 have areas of warm season grasses. Prescribed fire used as a management tool on these sites will reduce the fuel load and make the landscape less susceptible to wildfire. Additionally, fire will help reduce woody and invasive species encroachment. Prescribed fire will be administered on a rotational schedule, burning areas every 2-5 years. This approach will promote a diverse array of plants while limiting regrowth of woody and invasive species.

With the majority of compartment 10 being a shrub/grassland type it provides an array of wildlife opportunities to flourish. This cover type benefits many ground nesting birds, small mammals, insects, and even larger game species. Prescribed fire benefits wildlife in many ways, such as mobility through the cover type by removing the thickness of vegetation, food by giving new growth and native plants, and cover from predators.

Recreation within this compartment is mainly but not limited to bird watching, kayaking, dog training, and fishing. Compartment 10 is currently managed as a no hunting area. Prescribed fire should promote bird watching as it benefits many birds in this landscape type. Rabbit population should flourish, enhancing dog training opportunities. Fishing and kayaking should not be impacted.

Smoke management will consider the presence of residential homes in the area as well as highway 54 during the planning and execution of the prescribed fire.

Cultural resources may be present, but their location is protected. Adverse impacts to significant cultural resources will be avoided during the prescribed fire.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered

species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

History

- 1968 – 1983 Strip mining occurred prior to State of Indiana land acquisition.
- 1995 Majority of land acquired from Peabody Coal Company.
- 2001 Southwest portion of tract 7 was acquired from Peabody Coal Company
- 1998 Use of prescribed fire in tract 4
 - Previous burn years: 1998, 2000, 2004, 2006, 2007, 2008, 2011, 2019, 2021
- 1998 Use of prescribed fire in tract 5
 - Previous burn years: 1998, 1999, 2000, 2001, 2002, 2005, 2007, 2008, 2010, 2022
- 1999 Use of prescribed fire in tract 2
 - Previous burn years: 1999, 2002, 2005, 2007, 2008, 2012.
- 2005 Use of prescribed fire in tract 6
 - Previous burn years: 2005, 2022
- 2007 Use of prescribed fire in tract 7
 - Previous burn years: 2007, 2009
- 2022 – 2023 Coal and methane wells drilled

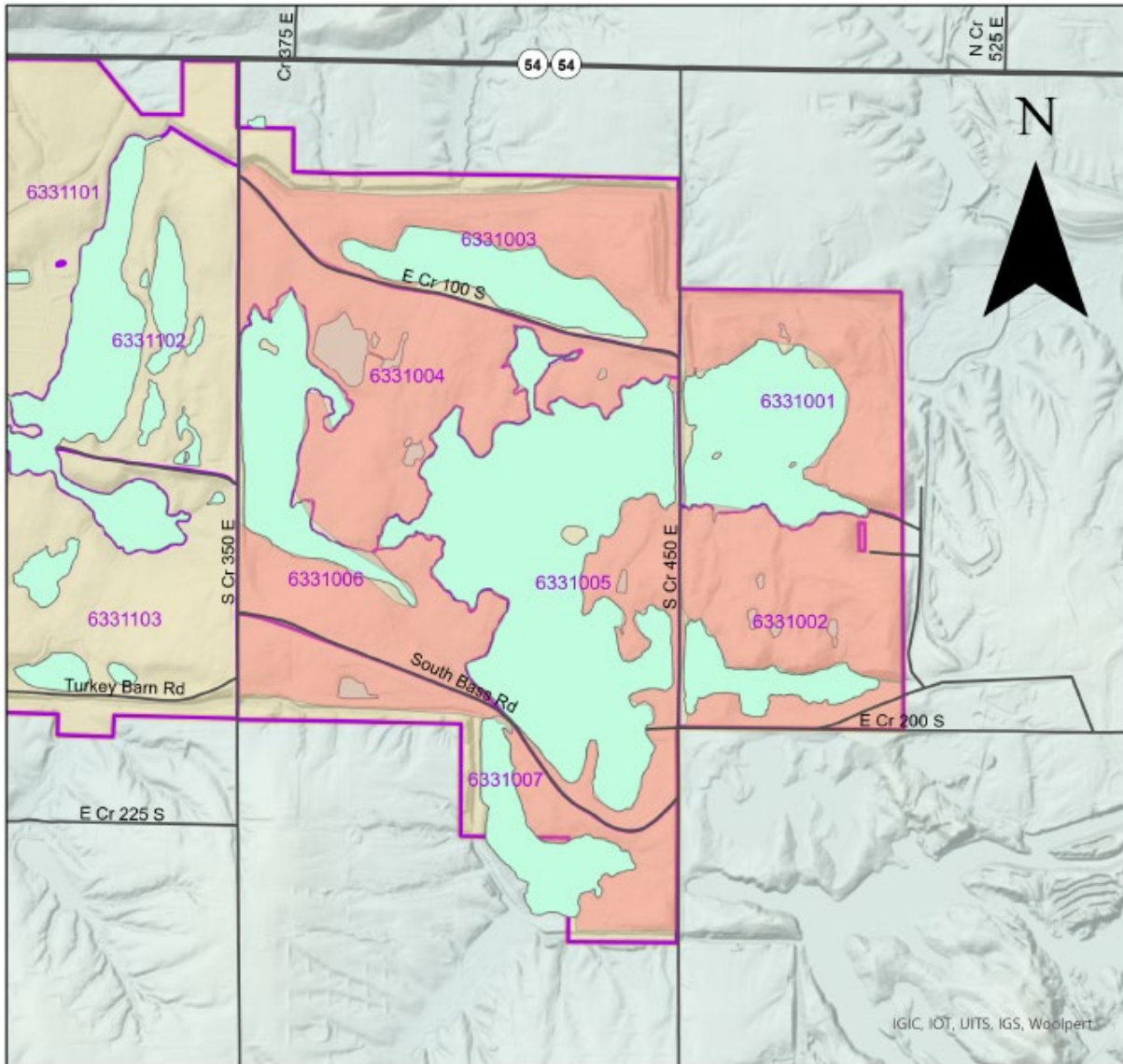
Invasives

Invasives are common throughout the Dugger Unit. Prescribed fire will be used in combination with mechanical and chemical control to assist in the control of the invasive species present. All chemical applications will follow forest certification standards.

Invasive species observed but not limited to; autumn olive, bush honeysuckle, sericea lespedeza, phragmites, ragweed, multiflora rose, Japanese honeysuckle.

Dugger Unit Burn Areas

Compartment:10 Tracts: 1-7



Legend

- County Road
- State Road
- Burn areas
- Lakes
- Tracts
- State Forest



Greene-Sullivan State Forest **Compartment: 11** **Tracts(s): 1, 2, 3, 4**
Forester: Zane Strubler **Date: January 22, 2024** **Acres: 929**

Location

Compartment 11 is a part of the Dugger Unit. This area encapsulates the west unit of the of Dugger Unit. West unit lies approximately 3.5 miles east of Sullivan, Indiana, and approximately 5 miles west of Dugger, Indiana, on the South side of highway 54.

Overview

Fire has been native to the landscape prior to the European settlement. Native Americans used fire as a tool for farming, hunting, and way of travel. But throughout the 1900's fire was widely looked down upon as a management tool. For the past 100 years, fire has been suppressed on the landscape. It is now seen that many of Indiana's ecosystems benefit from the presence of fire back on the landscape. Fire can be used to maintain native grasses, unwanted woody vegetation, and forbs while transitioning back to oak hickory forest.

Prescribed fire will be used as a management tool to promote native grasses through most compartment 11, which is in the Dugger unit. Prescribed fire will be administered on a rotational schedule, burning areas every 2-5 years, or as needed. The goal is to transition most of this area to hardwood forests through supplemental tree plantings. Prescribed fire will be used to remove any unwanted woody and invasive species that are present. Once areas have been planted with desirable species, the burn areas should provide optimal growing opportunities. Areas planted to trees will be removed from future prescribed fire treatments until the trees have reached maturity to withstand fire and conditions are suitable for the use of fire.

Planting of hardwoods has taken place in tracts 1 and 4. These tracts cover 421 acres and shall not receive fire until the planting stock has matured enough to withstand fire in the understory. Tree planting is planned in tracts 2 and 3 in 2025.

Recreation within this compartment consists of, but not limited to hunting, fishing, and wildlife viewing. Hunting should benefit from prescribed fire. Fishing should not be impacted.

Smoke management will consider the presence of residential homes in the area as well as Highway 54 during the planning and execution of the prescribed fire.

Cultural resources may be present, but their location is protected. Adverse impacts to significant cultural resources will be avoided during the prescribed fire.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

History

- 1995 Land acquisition from Peabody Coal Company
- 2001 – 2011 Tract 3 was part of the Re-leaf program with Purdue University and Division of Reclamation
- 2002 Use of prescribed fires in tract 3
 - Previous burn years: 2002, 2004, 2005, 2006, 2007, 2009
- 2020 – 2022 Tree plantings have occurred in tract 1
- 2023 – 2024 Tree planting occurred in tract 4
- 2023 Area approved for coal bed and methane wells

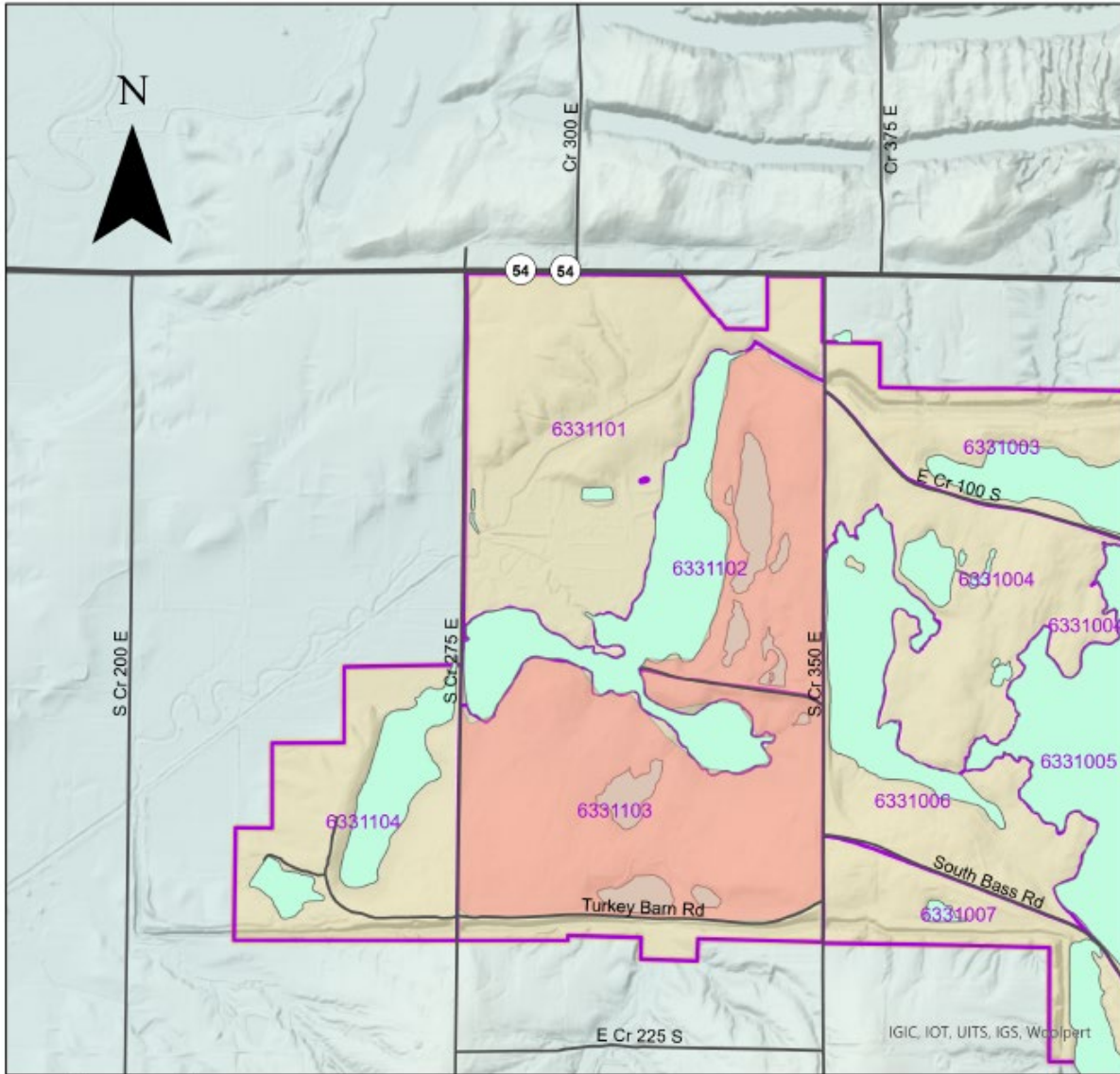
Invasives

Invasives are common throughout the Dugger Unit. Prescribed fires can be used in combination with mechanical and chemical control to work on reducing the invasives present.

Invasives observed but not limited to; autumn olive, bush honeysuckle, sericea lespedeza, phragmites, ragweed, multiflora rose, Japanese honeysuckle.

Dugger Unit Burn Areas

Compartment:11 Tracts: 1-4



Legend

- County Road
- State Road
- Burn areas
- Lakes
- Tracts
- State Forest

