

Meadow Management

Calvert County Parks & Recreation
Natural Resources Division



December 2020

Contents

PURPOSE OF MEADOW MANAGEMENT.....	4
BENEFITS OF MEADOWS.....	5
Wildlife Habitat.....	5
Climate Solutions.....	6
CONSERVATION.....	7
MANAGEMENT.....	8
Reestablish Native Meadows.....	8
Low Mow / No Mow Zones.....	9
Woody Plant Removal.....	11
Invasive Plant Control.....	11
Selected Herbicide Application.....	11
Controlled Burns.....	11
Marshes, Beaches and Other Open Habitats.....	11
INTERPRETATION.....	13
MAPS & DESCRIPTIONS.....	18
Calvert County Natural Resources Division Nature Park.....	18
Battle Creek Cypress Swamp.....	19
Biscoe Gray Heritage Farm.....	20
Gatewood Preserve.....	21
Kings Landing Park.....	22
Ward Farm Recreation & Nature Park.....	23
REFERENCES.....	25
APPENDICES.....	26
1. Sample Burn Plan.....	26
2. Plant Management Strategies for Milkweed.....	26

Managed Meadows

The natural vegetation throughout much of the eastern U.S. is deciduous forest, therefore cleared or open grassy areas that are not maintained as such will eventually revert back to forest. Once an area is left unmowed for a length of time, the process of ecological succession begins with an increasing diversity of grasses and grass-like plants; numerous wildflowers such as Goldenrods, Asters, and Milkweeds; Sumacs and other shrubs; and Eastern Red Cedar, Virginia Pine, and other pioneer trees. This natural succession to forest is what separates Maryland meadows from the meadows, prairies, and grasslands of the west.

In Maryland, the majority of meadows and grasslands require a disturbance regime to stunt wood vegetation growth. Historically this has included grazing by large herbivores, fires, and management by native peoples. Today, mowing superficially mimics grazing.

Meadows are complex ecosystems that support an abundance of wildlife and native plants. With ecosystem management and the preservation of Calvert County's natural resources and biodiversity the primary goals, the Natural Resources Division greatly expanded its Managed Meadows and "No-Mow" Areas program in the spring of 2020.

Examples of natural and semi-natural, open to partly-shaded areas dominated by grasses and herbaceous vegetation in Calvert County include low-lying, seasonally-flooded wet meadows along the Patuxent River, wet meadows and glades along open stream banks; woodland glades, artificially maintained open areas; open grassy areas along roadways; and areas of formerly maintained turf grass where mowing was gradually reduced to a low-maintenance level, allowing the re-emergence of native species.

Currently, within the nature parks, 164 acres are identified as managed meadows and "no mow/low mow" areas. High profile sites are marked with signage designating or interpreting the meadows.

PURPOSE OF MEADOW MANAGEMENT

The Division has a variety of objectives for our meadows, depending on the location, size and other characteristics of the site. How the meadows are used by the public, staff, education programs, and research projects also determines the appropriate management decisions.

In general, we manage meadows for one or more of the following objectives:

1. Habitat conservation and preservation
2. Ecosystem services
3. Habitat for pollinators, pollen specialists, and nectar plants
4. Nesting habitat, migration stopovers, or winter food and cover for grassland birds
5. Monarchs and milkweeds
6. Interpretation and Educational Programs



Figure 1. Calvert Steward Sue Huseby monitors Monarchs on Common Milkweed at Battle Creek Cypress Swamp

BENEFITS OF MEADOWS

Wildlife Habitat

Meadows are extremely important habitats for wildlife and serve as important preserves for native plants that were once common but are now increasingly rare. Meadows and open grassy areas are also important natural buffers in protecting waterways, wetlands, and water resources. As meadows and open areas continue to disappear throughout the east, many plant and wildlife species dependent on open conditions are also declining.



Figure 2. Spicebush Swallowtail on Swamp Milkweed

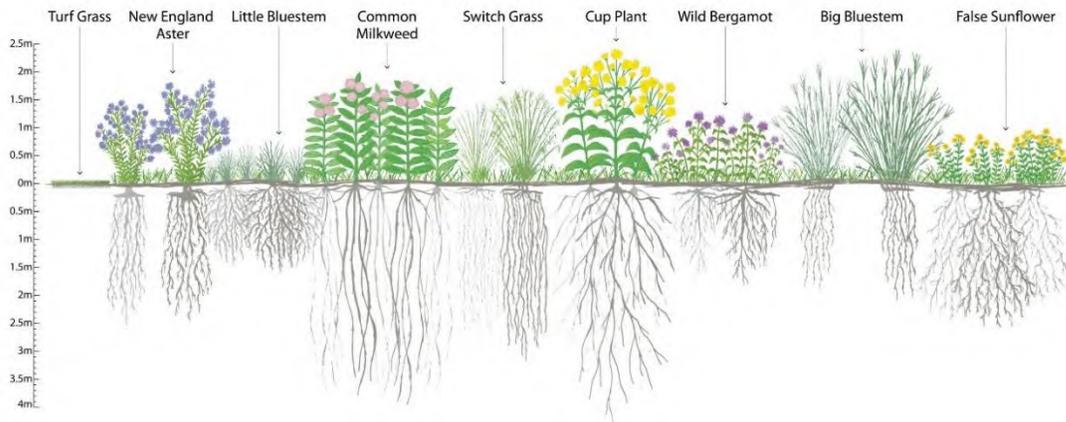
Climate Solutions

Meadows play a role in mitigating the impacts of climate change by sequestering carbon within their own biomass and through the development of healthy soils. Meadows are often appreciated for the blooms and foliage throughout the seasons. Unseen by most, the underground root system can account for more total biomass than the above ground plants. This means that more carbon is trapped within the plants and soil and not in the atmosphere.

BIOMASS: *The mass of living biological organisms in a given area or ecosystem at a given time. Biomass can refer to species biomass, which is the mass of one or more species, or to community biomass, which is the mass of all species in the community.*

CARBON SEQUESTRATION *is the process of storing carbon in a carbon pool. Carbon dioxide is naturally captured from the atmosphere through biological, chemical, and physical processes. Through photosynthesis, plants convert atmospheric carbon dioxide (CO₂) and water (H₂O) into carbon-based carbohydrates.*

Figure 3 Illustration of root system of meadow plants from <https://themeadoway.ca/>



CONSERVATION

An important step is taking action to protect the highest quality meadows found in the county. County land preservation goals are identified in the Land Preservation, Parks and Recreation Plan. Forests and streams are identified as habitats to protect, while farms are identified as the third area for preservation. Native meadows are not specifically identified within the land preservation plan, although they would be considered within the “environmental features,” “environmentally sensitive areas,” or “natural resources” mentioned throughout the plan. Efforts should be made to identify meadows as habitats to be protected.

The CCPR Strategic Plan established the department’s vision and five-year goals which included a specific Meadow Management Goal: *Develop a meadow management protocol, to include mowing, invasive species control, and restoration efforts, to enhance and increase habitat for grassland species such as Barn Owls, American Kestrels, Monarchs, and pollinators such as native bees.*

Land Preservation, Parks and Recreation Plan

County Land & Water Resources Objectives

Encourage preservation, protection, and conservation of natural resources.

Establish a comprehensive approach to environmental planning with special emphasis on watershed planning.

Protect environmental features that will help ensure continuance of a healthy and pleasant place to live for current residents and future generations.

Protect environmentally sensitive areas from development impacts.

Preserve stream valleys to maintain their important natural functions and to provide greenways throughout the county.

Practice community planning and site design that conserves energy, protects natural resources, and minimizes impacts on the landscape.

Encourage restoration of lost and/or damaged natural environmental features

Foster greater public awareness, education, and support of environmental concerns.

Develop an implementation plan to accommodate growth in Priority Funding areas while reducing nutrient loads in waterways to targeted levels.

Ensure sufficient water supply and water/sewer treatment capacity to serve future growth in Calvert County.

Protect the quality and quantity of groundwater aquifers.

MANAGEMENT

Under the Meadow Management Protocol, the Division modified the mowing schedules at certain sites from mowing during the growing season to a regimen of annual or infrequent mowing in late winter and early spring, controlled burns, and selective use of herbicides. Monitoring sites for invasive exotic plants and accompanying control efforts are integral components of the program. The combination of annual or infrequent mowing and control of invasive exotic plants is usually sufficient to maintain meadows in an open, healthy condition.

Maintenance programs will vary with differing site conditions, but the preservation of meadow habitats and the overarching concept of “do no harm” are centrally important to what activities are planned.

Reestablish Native Meadows

To effectively preserve natural resources, it is important to differentiate between natural sites and artificial or cultural landscapes and to allow existing seed banks of native plants to grow and sites to naturally re-vegetate. Over time, different plants may dominate but the overall landscape will remain beautiful and interesting.

Native plants are those that occur locally and naturally, without direct or indirect human intervention. On the rare occasion when seeding or planting is required, only appropriate native species should be used. It is not recommended to plant or overseed with wildflower “meadow mixes” as these often contain nonnative wildflower and grass seeds which may not be appropriate for local ecosystems.

Reintroducing and re-establishing native meadow plants that were historically known from the County or are rare or in serious decline is an important land management practice by the Natural Resources Division that helps maintain biological diversity throughout the landscape.

This involves responsibly collecting seed or rescued material from local natural sources (primarily in Southern Maryland counties) and planting in appropriately-matched habitats in Calvert County. Plant reintroduction should never be considered a viable substitute for protecting or properly managing existing plant populations.

Prior to establishing a meadow area, a vegetation analysis should be conducted to determine if a site is suitable and if initial invasive exotic plant removal efforts are necessary.

Low Mow / No Mow Zones

In general, meadows are mowed once annually in late winter or early spring so as not to disturb nesting birds, wildlife, and emerging or flowering plants. Occasionally, meadows may need to be mowed more frequently and during other times of the year.

To protect against soil compaction, disturbance, and the spread of invasive exotic plants, sites should not be mowed when the ground is wet. Wet grassy glades, meadows, and trails along streams and lowlands should not be mowed, except selectively with hand trimmers if needed. To prevent erosion and stream bank destabilization, vegetation along stream banks and steep slopes should never be mowed nor cleared non-selectively.

When mowing woodland glades, care should also be taken not to damage tree roots and bark, as well as saplings, shrubs, and other native plants. Invasive exotic plants also spread and become established in wooded environments through soil and habitat disturbance.

No mowing does not mean no maintenance. All managed meadows and maintained open areas need to be regularly monitored for invasive and unwanted plants that may become established once regular mowing has ceased. If not actively managed, invasive exotic plants will eventually replace the existing native vegetation and destroy the ecological and aesthetic values of the meadow.

Maintaining a regularly mowed trail within and around large meadows provides easy access while discouraging foot traffic in sensitive habitat areas.



Figure 4. Sign at Kings Landing Park to inform visitors of the meadow management practices.



Figure 5. Ward Farm Recreation and Nature Park: Trail Within the Meadow.

Woody Plant Removal

In some cases, rampant or unwanted growth of valuable native woody plants, such as Poison Ivy, Blackberry, Black Cherry, Sweet Gum, and Sycamore need to be thinned or controlled to maintain an open condition. Annually, small trees and shrubs should be removed, root and all, (except in meadows within the Critical Area) while larger trees and shrubs may require selective use of herbicides.

Invasive Plant Control

Invasive plants decrease the diversity of the meadows. By restoring meadows to native species, the meadows can support a wider diversity of plants and provide valuable habitat for grassland birds and other wildlife. Invasive plants include herbaceous and woody species.

Control methods include mechanical (bush hogging and digging), chemical (herbicides) and cultural (maintaining soil health and native plant diversity, timing of mowing).

Selected Herbicide Application

It is the practice of Division staff to use an absolute minimum of herbicides and instead employ the principles of Integrated Pest Management (IPM). Indiscriminate or blanket spraying of herbicides is not a control strategy for any reason.

Controlled Burns

Fire is a natural part of meadow ecology and plays a vital role in maintaining these ecosystems. Controlled burning helps rejuvenate meadow vegetation by removing excessive thatch buildup, removing invasive plant species and stimulating the germination of native warm season grasses.

In partnership with the Maryland Forest Service, burn plans are developed annually. The long-term goal is to have a three-year rotation whereby only a portion of the meadows are burned on any single year.

Marshes, Beaches and Other Open Habitats

This management plan is for terrestrial habitats dominated by herbaceous plants. Marshes, (herbaceous wetlands) and beach habitats require additional consideration and should have separate specialized strategies for conservation and preservation.



Figure 6. Controlled burn at Gatewood Preserve

INTERPRETATION

Interpretive signs about meadows and management strategies have been installed at Gatewood Preserve and Battle Creek Cypress Swamp.

Battle Creek Cypress Swamp, Flag Ponds Nature Park, and Kings Landing Park have established native plant gardens which act as small interpretive areas about meadows, pollinators and native plants. Each year, these gardens are expanded and enhanced to promote native plants and pollinators. Information about the plants found in the gardens can inform visitors on how they can create similar gardens at their homes.



Figure 7 Interpretive Meadow Signs

BENEFITS OF NATIVE MEADOW HABITATS



• **Lower Maintenance Costs**

Native meadows only need to be cut or mown once a year. This not only saves time and mowing costs, but also reduces emissions, gas and energy to operate lawn mowers, weed whackers and other lawn equipment.

• **Increased Water Infiltration**

Its deeper root system (when compared to a traditional lawn) reduces storm water runoff.

• **Carbon Sequestration**

Native plants are better able to store carbon in the soil than traditional lawns.

• **Habitat for Pollinators**

Flowers provide nectar for butterflies and bees and host plants for butterfly caterpillars.



• **Food for Songbirds and Wildlife**

Meadows provide seeds and insects for songbirds and other wildlife.



For more information visit www.calvertcountymd.gov/NaturalResources

This sign is funded by the Southern Maryland Heritage Area Consortium and the Maryland Heritage Areas Authority.



MEADOW RESTORATION AND MANAGEMENT

Due to a variety of factors including invasive species and natural succession, continued management is vital to restoring and conserving a meadow habitat. Fire is the primary means of meadow maintenance and restoration. Prescribed burns help recycle plant material back into the soil and remove the blanket of last year's dead plants, which facilitates vibrant new growth. Because most of the mass of native plants is in root systems underground, burning will help exclude the undesirable, more shallow-rooted non-native or woody plants.

We mow sections of meadows in the late fall and early winter, leaving some areas untouched to provide winter habitat for wildlife. This provides shelter for pollinator insects that are vital to our ecosystem.

Other important means of managing meadows include selective herbicide application, seed collecting and additional planting.



FIRE



MOWING



SEED COLLECTING



PLANTING



HERBICIDE



For more information visit www.calvertcountymd.gov/NaturalResources

This sign is funded by the Southern Maryland Heritage Area Consortium and the Maryland Heritage Areas Authority.



Figure 8 Interpretive Meadow Signs

Table 1. Actions to take for various threats to meadows. Adapted from “Pollinator-Friendly Park. Enhancing our communities by supporting native pollinators in our parks and other public spaces.” Xerces Society for Invertebrate Conservation. 2021.

Threats	Solutions
Habitat Loss & Degradation	<p>Recognize, restore and protect existing habitat</p> <p>Establish new meadows and connect meadows to create corridors</p> <p>Manage meadows for pollinator needs (diverse flowering plants for forage, nesting sites, host plants, overwinter sites)</p>
Pesticides	<p>Avoid pesticide use that is purely for aesthetic or cosmetic purposes</p> <p>Implement cultural, mechanical and non-chemical pest management practices</p> <p>Establish habit in areas protected from pesticide contamination</p> <p>If pesticides are used, take steps to mitigate their risks</p>
Invasive Species'	<p>Limit establishment and spread of invasive plants in habitat areas</p> <p>Encourage in situ plant growth</p>
Climate Change	<p>Select plants adapted to the region.</p> <p>Select local ecotypes of native plants.</p> <p>Avoid commercial seed mixtures</p> <p>Convert hardscapes to habitat when possible</p> <p>Plant native trees</p> <p>Connect habitat patches to create corridors</p>

Table 2. Steps for Meadow Restoration. Adapted from “Restoring Your Invasive Perennial-Dominated Grassland to Conservation Meadow.” The Nature Conservancy. 2017.

Steps	Actions
Site Assessment	Identify the site characteristics and define goals for the restoration.
Vegetation Removal	Remove existing weeds and undesired vegetation from the site to prevent aggressive weedy species from out-competing native meadow plants.
Seedbed Preparation	Prepare a seedbed to ensure good seed-soil contact and promote germination of planted seeds.
Seeding/Planting	Select seed mixes and seeding methods that are well suited to the site and project goals. Or, in the case of small sites of less than half an acre, consider hand-planting plugs for quicker results.
Hydrologic Restoration	Remove drainage features by breaking tile or plugging ditches to restore the site’s original soil moisture and seasonal flooding patterns.
Establishment & Aftercare	Control weeds and promote the establishment and growth of meadow plants through the first few years after seeding.
Long-term Management	Maintain the health and diversity of native meadow into the future.

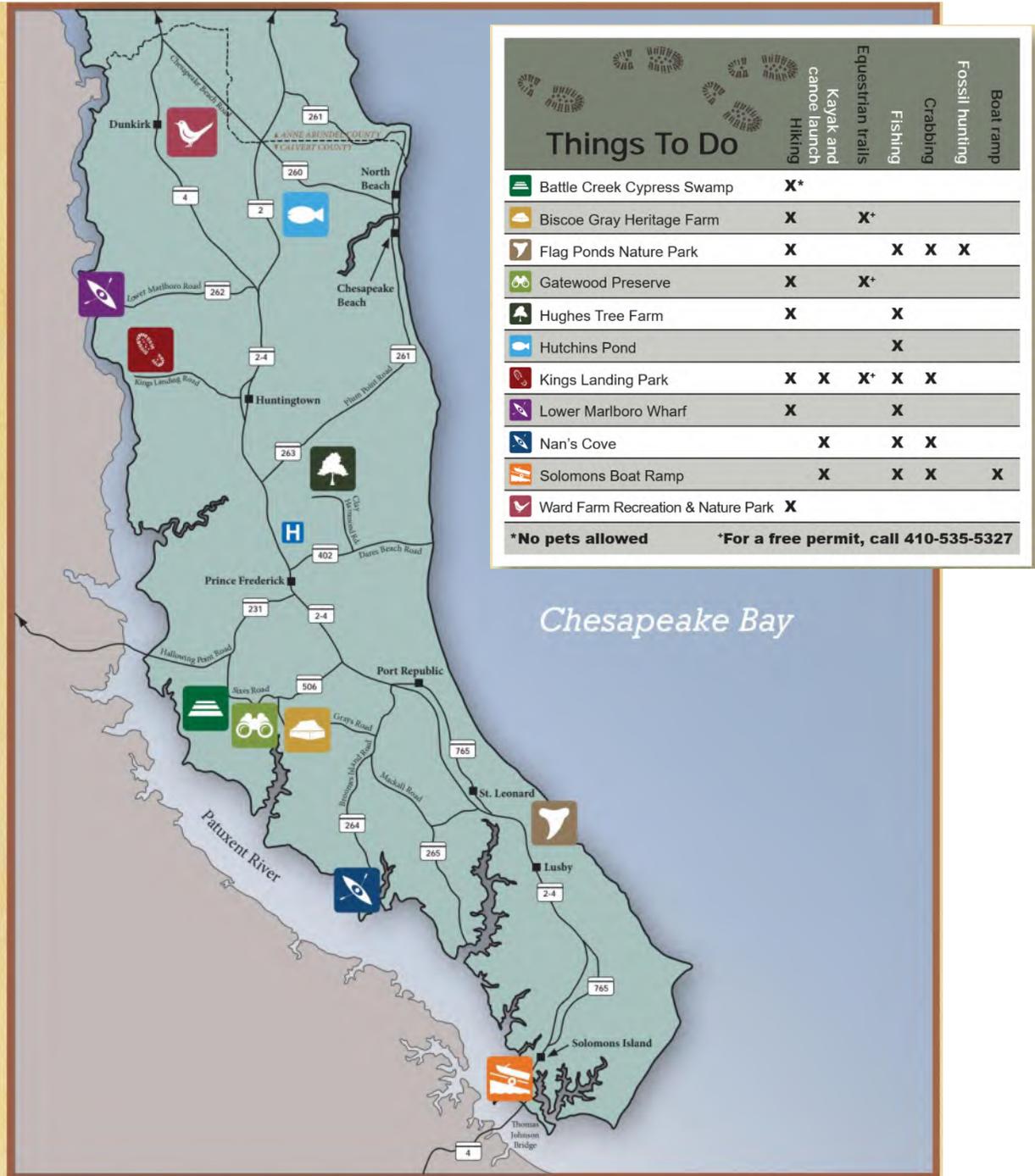
NATURE PARK HABITAT INVENTORY & MANAGEMENT STRATEGIES

Park	Acreage	Meadow, Fields	Natural Surface Trails	Boardwalks	Paved Trails	Forest	Other
Battle Creek Cypress Swamp Sanctuary	118	7	0.75	0.25		100	10
Biscoe Gray Heritage Farm	197	35	4.1			162	
Gatewood Preserve	48	17.5	1	0.05		21.95	8.9
Kings Landing Park	299	30	3	0.05		269	
Ward Farm Recreation & Nature Park	206	74	3.7	0.5	3.6	119	13
Flag Ponds Nature Park	528		3.75			506	22
Hutchins Pond	2						2
Lower Marlboro Wharf	1						1
Nan's Cove	1						1
Solomons Boat Ramp	1						1
Hughes Tree Farm	197		1			189	8
TOTAL	1598	164	17	1	4	1367	67

Park	Mow	Burn	Invasive Control	Primary Goal
Battle Creek Cypress Swamp Sanctuary	X	X	X	Interpretation
Biscoe Gray Heritage Farm	X	X	X	Grassland Birds
Gatewood Preserve	X	X	X	Monarchs
Kings Landing Park	X		X	Interpretation
Ward Farm Recreation & Nature Park	X		X	Interpretation

MAPS & DESCRIPTIONS

Calvert County Natural Resources Division Nature Park



Battle Creek Cypress Swamp

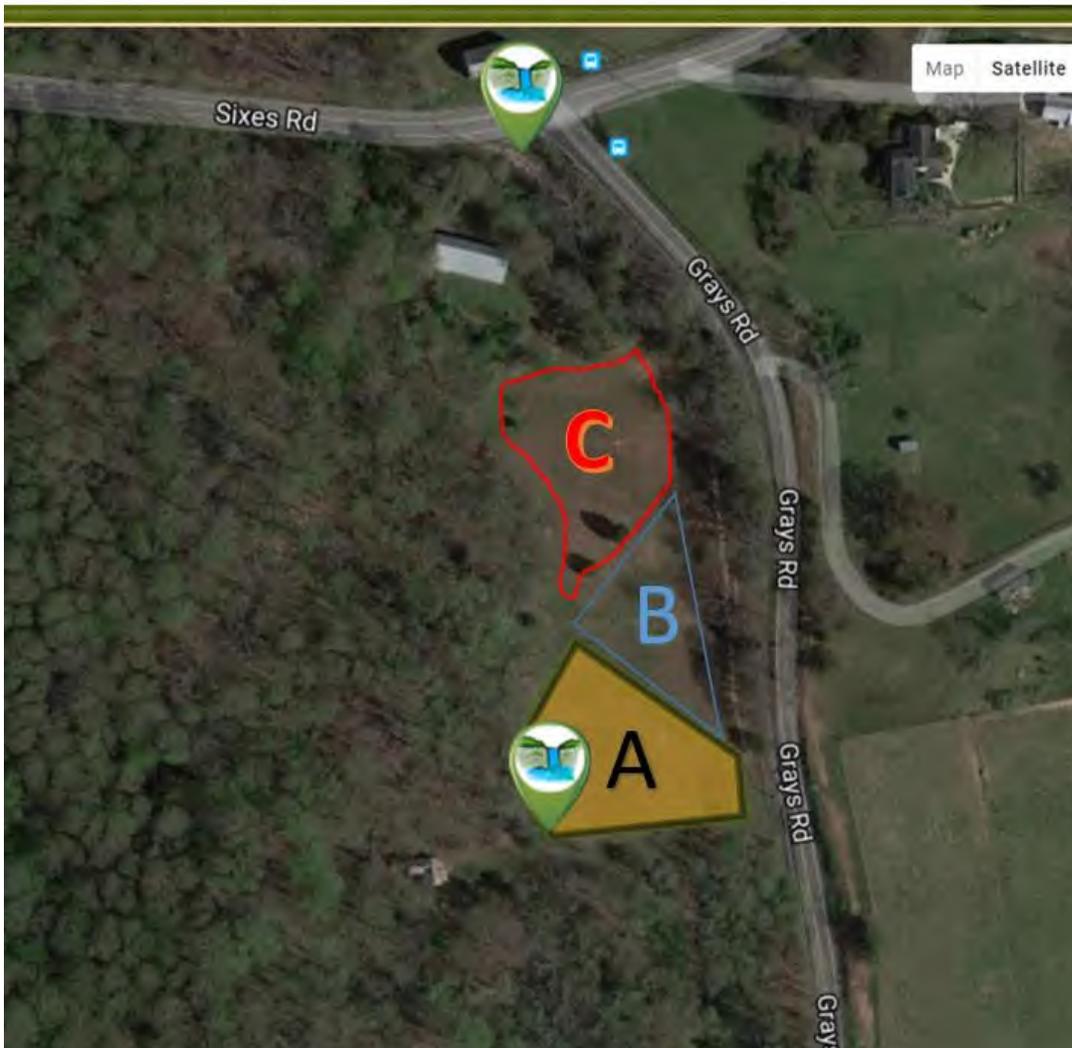
Area: 67,545 square feet (6,275 square meters), 1.55 acres; 0.002 square miles (0.006 square km). Perimeter: 1,173 feet (358 meter 0.222 miles (0.358 km))

See Appendix 2 for more information on the milkweed management of Areas A, B, & C.

A. Experimental area. Mow in spring and again in June to rejuvenate the milkweed.

B. Control area. Mow in spring but not in June. Compare monarch larva density in A vs. B.

C. Low-lying wet area, more difficult to bush hog. Keep this area as shrub habitat for birds.



Biscoe Gray Heritage Farm

1. Area: 68,800 square feet (6,392 square meters), 1.58 acres, 0.002 square miles (0.006 square km). Perimeter: 1,337 feet (407 meters), 0.253 miles (0.407 km)

2. Area: 131,351 square feet (12203 square meters), 3.02 acres, 0.005 square miles (0.012 square km). Perimeter: 1,372 feet (418 meters), 0.260 miles (0.418 km)

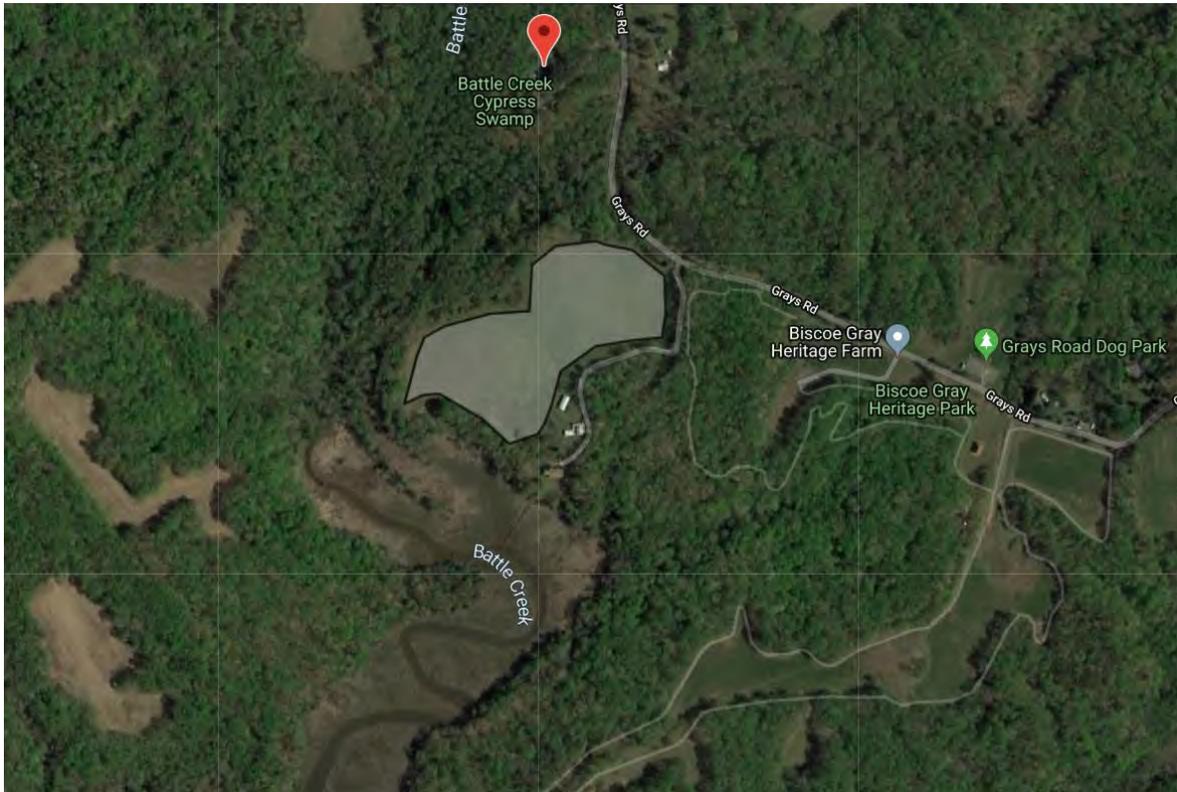
3. Area 540,230 square feet (50,189 square meters), 12.40 acres, 0.019 square miles (0.050 square km). Perimeter, 7,520 feet (2,292 meters), 1.424 miles (2.292 km)



Gatewood Preserve

Area: 623,986 square feet (57,970 square meters) 14.32 acres 0.022 square miles (0.058 square km). Perimeter: 3,664 feet (1,117 meters) 0.694 miles (1.117 km)

There is a mowed hiking trail along the perimeter of the meadow. Along the forest edge, we're creating a 20-foot soft shrub edge.



Kings Landing Park

Wisner Hall Meadow: Area: 230,868 square feet (21,448 square meters) 5.3 acres 0.008 square miles (0.021 square km).



Figure 9. Wisner Hall Meadow

Meadow Maze: Originally planned to provide an immersive experience for visitors, the maze will not be managed as a meadow pending decisions on replacement septic systems for the pool.



Figure 10. Meadow Maze

Ward Farm Recreation & Nature Park

1. Hillside Meadow: Area: 221,409 square feet (20,570 square meters), 5.08 acres, 0.008 square miles (0.021 square km). Perimeter: 2868 feet (874 meters), 0.543 miles (0.874 km)
2. Wet Meadow: Area: 65,688 square feet (6,103 square meters), 1.51 acres, 0.002 square miles (0.006 square km). Perimeter: 1102 feet (336 meters), 0.209 miles 0.336 km
3. Three Rooms Meadow: Area: 62,294 square feet (5,787 square meters), 1.43 acres, 0.002 square miles (0.006 square km). Perimeter: 2162 feet (659 meters), 0.409 miles 0.659 km
4. Another Hillside Meadow: Area: 50,442 square feet (4,686 square meters), 1.16 acres, 0.002 square miles (0.005 square km). Perimeter: 1,279 feet (390 meters), 0.242 miles (0.390 km)

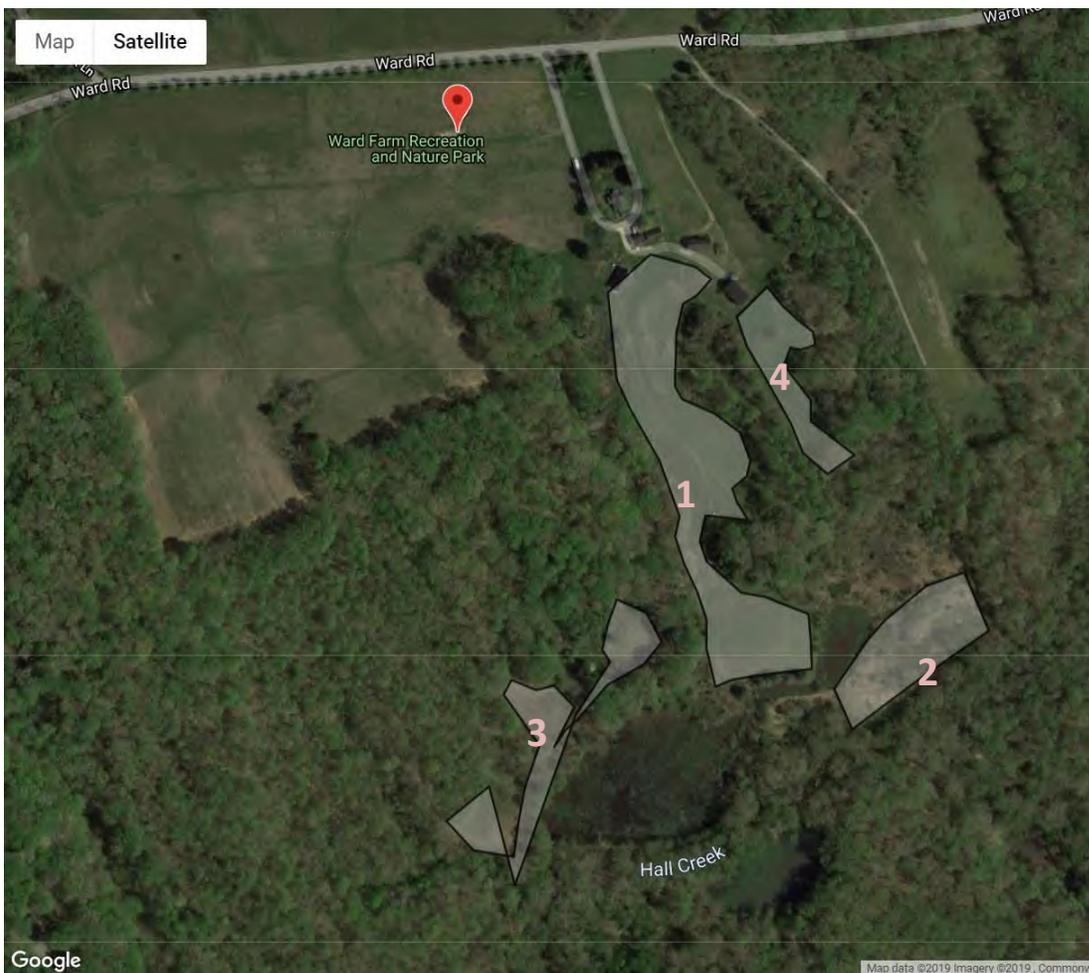


Figure 11. Ward Farm Nature Park Meadows



Figure 12 Ward Farm Recreation and Nature Park Meadow 1.

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APPENDICES

1. Sample Burn Plan
2. Plant Management Strategies for Milkweed



MARYLAND FOREST SERVICE
PRESCRIBED BURNING AGREEMENT



The Maryland Forest Service recognizes that under certain conditions the use of fire by prescription on specifically designated areas is a desirable procedure in preparing an area for reforestation, for controlling the growth of undesirable species of trees, shrubs and vegetation, wildfire hazard reduction, enhancing habitat and for other purpose.

The Maryland Forest Service, in an effort to aid landowners to develop the forest resources of the state, enters into an agreement with the landowner as follows;

It is mutually agreed by Board of Commissioners Calvert County (Landowner) on behalf of the organization, and the Maryland Forest Service, that the Landowner does herein request the advice and service of the Maryland Forest Service to carry out a prescribed burning project for forestry purposes, of an approximate 30.0 acres(s) in Calvert County, Maryland.

BURNS	ACRES	HRS.-Ft.	TOTAL
TYPE OF BURN: Understory, Grass, Marsh > 15 Acres - \$15/Acre	30.0		\$0.00
FIRELINE CONSTRUCTION and day of burn \$75/hr		0.0	\$0.00
TOTAL TO BE BILLED			\$0.00

A. The landowner agrees to:

1. Reimburse the Maryland Forest Service the total amount due for all services, supplies and equipment cost as agreed upon. Payment is due within thirty (30) days of receipt of an itemized statement. Rate schedule included.
2. Light the initial fire on the area to be burned.
3. To the extent permitted by law, the Landowner agrees to protect, indemnify, and save harmless the State of Maryland, its officers, agents, and employees against all claims, demands, causes of action and liability of any kind arising out of or sustained by virtue of the performance of this Agreement. This responsibility in no way may be deemed a waiver of any and all immunities the Department may have.
4. Notify all neighboring landowners, local fire departments, county air quality officials and others as may be deemed necessary by the Maryland Forest Service representatives no later than one day in advance of the burning operation.

5. Observe the forest fire laws and secure an open air burning permit and observe air pollution regulations of Maryland pertaining to this prescribed burning operation.
 6. Comply with the Prescribed Burning Plan approved by the Maryland Forest Service.
- B. The Landowner is advised to obtain comprehensive liability insurance to cover bodily injury and property damage.
- C. The Maryland Forest Service will:
1. Prepare or approve a Prescribed Burning Plan
 2. Prepare a sketch map and designate the prescribed burning area by flagging or other means. The sketch map will become a part of this agreement and show proposed locations of exterior and interior fire line on the tract.
 3. Make available, at previously prescribed rates, personnel and equipment of the Maryland Forest service to advise and assist the Landowner to conduct a safe and efficient prescribed burn.
- D. It is understood that this agreement becomes a part of the Prescribed Burning Plan for the above-described property. This Agreement shall be in effect from 3/2/2020 to 6/30/2020.
- E. SOVEREIGN IMMUNITY: By entering into this contract the County/Landowner, the Maryland Forest Service, and their "employees," as defined in the Local Government Tort Claims Act, §§5-301, *et seq.* of the *Courts and Judicial Proceedings Article* and in the Maryland Tort Claims Act, §§12-101, *et seq.* of the *State Government Article*, do not waive sovereign immunity, do not waive any defenses and do not waive any limitations of liability as may be provided for by law. No provision of this contract modifies and/or waives any provision of either the Local Government Tort Claims Act or the Maryland Tort Claims Act.
- F. THIRD PARTY BENEFICIARY: It is specifically agreed between the parties executing this Agreement that it is not intended by any of the provisions of this Agreement to create in the public or any member thereof, third party beneficiary status in connection with the performance of the obligations herein without the written consent of the County and notwithstanding its concurrence in or approval of the award of any contract or subcontract or the solicitation thereof in fulfilling the obligations of the Agreement.
- G. NO INDIVIDUAL LIABILITY: No elected official, appointed official, employee, servant, agent or law enforcement officer shall be held personally liable under this Agreement and any extension or renewals thereof because of its enforcement or attempted enforcement provided they are acting within the course and scope of their employment or governmental duties and responsibilities.

- H. SUFFICIENT APPROPRIATIONS: The County's financial obligations, if any, under this Agreement are contingent upon sufficient appropriations and authorization being made by the County or State for the performance of this Agreement. The County's decision as to whether sufficient appropriations are available shall be accepted by the other party or parties to this Agreement, and shall be final.
- I. TERMINATION WITHOUT CAUSE: Either party to this Contract may terminate the Agreement without cause by giving thirty (30) days written notice to the other party. The effective date of termination pursuant to this clause shall be the 31st day following the date of the written termination notice. In the event of such termination, all contract fees and charges incurred through the effective date of the termination shall be payable in accordance with the terms of this Agreement. In the event of such termination, neither party shall be liable for any damages, penalties, demobilization or contract termination expenses of any nature. In the event of a conflict between this clause and any other clause of this Agreement, this clause shall control.
- J. SEVERABILITY: In the event any portion of this agreement is found to be unconstitutional, illegal, null or void, by a court of competent jurisdiction, it is the intent of the Board of County Commissioners to sever only the invalid portion or provision, and that the remainder of the agreement shall be enforceable and valid, unless deletion of the invalid portion would defeat the clear purpose of the agreement, or unless deletion of the valid portion would produce a result inconsistent with the purpose and intent of the Board of County Commissioners in entering into this agreement.
- K. ENTIRE AGREEMENT: The parties hereto agree that the above writing constitutes the entire agreement between them concerning this matter and that there are no understanding, promises or arrangements binding either part hereto that have not been written herein. The parties further agree that this Agreement can be amended only by written agreement signed by the parties hereto.
- L. CHOICE OF LAW: This Agreement shall be governed by the internal laws of Maryland, without giving effect to its choice of law provisions.



MARYLAND DNR FOREST SERVICE
PRESCRIBED BURN PLAN



Burn Plan # 2020-2001

I LOCATION:

Region: Southern County: Calvert Ownership: Local
Property Owner: Calvert Co. Govt. Dept. of Parks & Recreation
Address: 2880 Grays Road
Prince Frederick, MD 20678
Property Location: Lat / Long 38.487064 x -76.590469
Address 2695 Grays Road
Prince Frederick, MD 20678

II PURPOSE and OBJECTIVE:

Purpose: Warm Season Grass Maintenance

Other: Training

Objective: To maintain warm season grasses and remove invasive species and other undesirable species.

III DESCRIPTION OF BURN AREA:

Acres ~~29.0~~ 30.0

Overstory: Type: N/A Density: _____ Size: _____

Understory: Type: Open Field Density: _____ Size: _____

Fuels: Type: Standing annual grass/shrubs ~3 - 4' (Model GR3)

Density: Moderately Thick Age: 3 Fuel Model: 3

IV WEATHER CONDITIONS:

Wind: Direction: Any (Az 315 - 120 preferred)

Wind Speed (Eye-Level): Min: 1 Max: 10

Relative Humidity: Min: 25 Max: 55

Temperature: Min: 30 Max: 70

Drought Index: Min: 0 Max: 400

Fine Fuel Moisture -1 hour: Min: 6 Max: 15

10 hour fuel moisture: Min: N/A Max: N/A

100 hour fuel moisture: Min: N/A Max: N/A

Mixing Height: Min: 2000 Max: 6500

Transport Wind Direction(s): Any (Az 315 - 120 preferred)

Live Fuel Moisture: Herbaceous: Min: NA Max: NA Woody: Min: NA Max: NA

Probability of Ignition of Adjacent Fuels: Low (10-40%)

V SMOKE MANAGEMENT PLAN:

Attached Smoke Management Maps with 1 & 5 mile radius

Distance and direction from smoke sensitive area(s): Biscoe Grav Heritage Farm will be closed to the public during burn. Nearest smoke sensitive area are three residences approximately 0-0.2 miles east

& north of the burn areas. Under preferred wind conditions, nearest smoke sensitive area downwind will be residences approximately 0.3 miles east of burn area. Due to light grass fuels, smoke impacts are expected to be minimal and short term.

NOTE: BURNING SHOULD NOT BE CONDUCTED DURING POLLUTION ALERTS AS DETERMINED BY THE NATIONAL WEATHER SERVICE.

VI PRE-BURN FACTORS:

Line Construction Method: Mowing

Exterior: 13,400' Interior: 3,700' Total: 17,100'

Line Firing: Feet

Exterior: 13,400' Interior: 3,700' Total: 17,100'

VII BURN CONDITIONS AND PROCEDURES:

Test Fire Location & Procedures: A test fire will be initiated on the downwind side of Field #1 within the control line. Fire intensity and smoke will be observed and evaluated to be within burn objective parameters before continuing with the burn.

Firing Method/Procedures: Fields will be burned one at a time. Backing fire will be set to strengthen downwind control line followed by strip headfires with drip torches. Interior control lines will be used to check fire as needed. If conditions allow, ring firing may also be used.

Expected Rate of Spread (chains/hr): In Burn Area: ~~11-285~~ In Adjacent Fuels: 1-5

Expected Flame Length: In Burn Area: ~~6-11'~~ In Adjacent Fuels: <1'

Estimated Burn Duration (hours): 8 ~~4-20~~

Starting Time: 1000 Estimated Time of Completion: 1800

Time of Year: February to May 2020

Equipment Required On Site: .

1 x Type 4 Engine

2 x Type 6 Engine

2 x UTV Engine

1 x UTV for logistics and fuel

Portable radios (7 minimum)

5 drip torches, 15-20 gallons fuel

Belt Weather Kit

Full PPE for all line personnel: Nomex clothing, hard hats, boots, gloves, goggles.

Rx Burn Hazard Signs: Number: 2 Location: (1) Grays Road at Sixes Road; (2) Grays Road 0.25 miles east of burn site.

Control Procedures: 10-foot mowed line around perimeter of each field, mowed down to 3 inches in height. Ignition line spacing will be adjusted as needed to keep flame lengths less than 10'. Fire will be allowed to burn to black and established control lines. Unburned areas inside control lines will be allowed to remain unless within 20' of perimeter. Watch for spot fires in adjacent wooded areas and fields.

Mop-up Procedures: Mop up is expected to be minimal due to the light fuels and minimal woody debris observed within burn units. Extinguish all fires 20' in from perimeter of burn area if necessary. Extinguish all spot fires immediately and completely.

Special Precautions: 2 structures adjacent to Field #2. Type 4 will be staged there for structure protection and water supply.

VIII BURN CREW ORGANIZATION:

Burn Boss: Brian Stupak
Firing Boss: Shannon Wolfe or Alternate.
Holding Boss: Justin Arseneault or Alternate
Weather Observer: David Gailey or Alternate
Number of Additional Personnel Required On Site: 4
Reinforcements Available: Location: Prince Frederick VFD Fire Dept.
Contact Name: Calvert Control Center Phone # 911 or 410-535-9875 (Prince Frederick VFD)

IX NOTIFICATION: (Minimum of 24 hours in advance of burn)

Adjacent Property Owners: Name: Phone #: Notified via Calvert Parks & Rec.
Air Quality Officer (if applicable): Name: Calvert Co. Health Dept. Phone #: 410-535-3922
Fire Manager: Name: Randy Kamp Office #: 301-478-2976 Cell #: 301-988-9837
Land Unit Manager (State Lands): Name: N/A Office #: _____ Cell #: NA
State Restoration Ecologist (ESA only): Name: NA Office #: NA Cell #: NA

Notification prior to Ignition of Test Fire

County Emergency Operations Center: Name: Calvert County Phone #: 410-414-3491
Maryland DNR Forest Service: Project Office: Calvert/PG Phone #: 410-535-1303
Other: _____

X ATTACHMENTS:

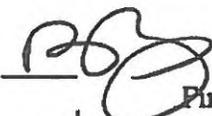
Area Map with Site Location: Map of Burn Area:
Smoke Impact Map (1 & 5 miles smoke radius):
ESA Management Map (state lands if applicable):
Pre-ignition or Go/No Go Checklist:
Prescribed Burning Agreement: (private property)

XI APPROVAL

ESA Management (State Lands only)) – Burn Plan requires review/ approval of WHS
 Check if WHS review & approval has been completed

Prepared By: Brian J. Stupak

Date: 1/7/2020

Approved By:  Fire Manager

Date: 1/7/20



MARYLAND FOREST SERVICE PRESCRIBED BURN CHECKLIST



YES	NO	Do you have an APPROVED prescribed burn plan?
YES	NO	Are ALL fire prescription elements met?
YES	NO	Are ALL smoke management specifications met?
YES	NO	Are ALL permits and clearances obtained?
YES	NO	Has an area fire weather forecast been obtained and is it favorable?
YES	NO	Are ALL required personnel in the prescribed fire plan on site?
YES	NO	Has the contingency planning process adequately considered fuels adjacent to and within a reasonable proximity to the burn area?
YES	NO	Has the availability of ALL contingency resources been checked and are they available?
YES	NO	Have ALL personnel been briefed on prescribed burn objectives and understand their assignment?
YES	NO	Have ALL personnel been briefed on safety hazards, escape routes, and safety zones?
YES	NO	Have ALL the required notifications been made?
YES	NO	Are the on-site holding forces adequate for containment under expected conditions?
YES	NO	Have on site weather observations been taken?
YES	NO	Are all personnel on site qualified and wearing appropriate PPE?
YES	NO	In YOUR OPINION, can the prescribed fire meet the planned objectives, and can it be carried out according to the approved plan?

I certify that I have reviewed the burn objectives and that all the above questions were answered "Yes".

Prescribed Burn Boss

Date / Time

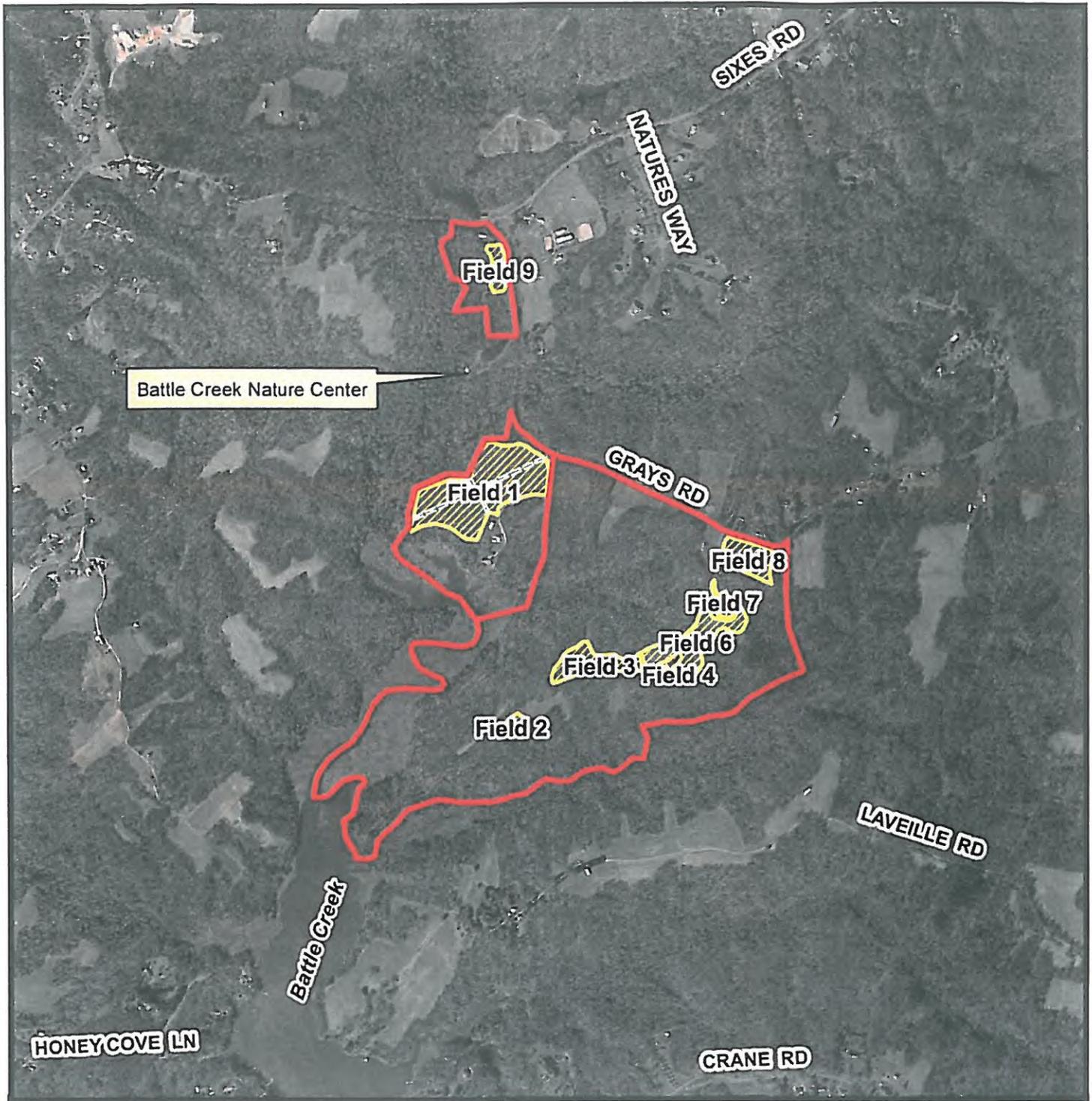
Witness

Date / Time

Proceed with a test fire and document the current conditions, location, and results.

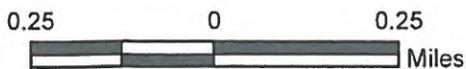
Pre-Burn On Site Weather Observations

Temp: _____ RH: _____ Wind Speed/Direction: _____ Sky: _____



Legend

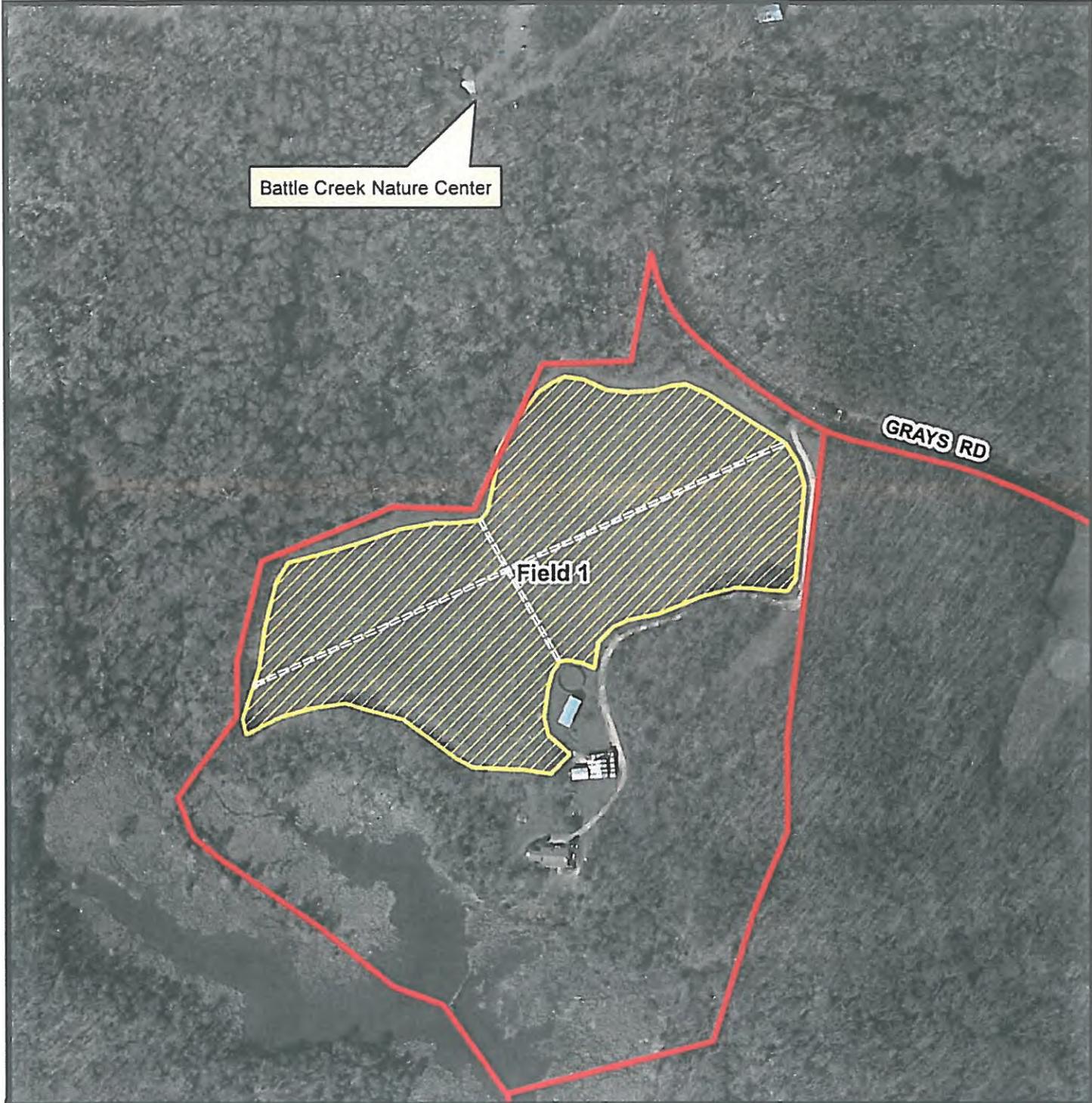
-  Property Line
-  Burn Area
-  Interior Control Lines



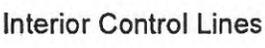
Burn Map
for
Biscoe Gray Rx Burn
County: Calvert
Burn Acres: 30.0
Scale: 1"=0.25 miles
Prepared by: B. Stupak
Date: 1/16/2020

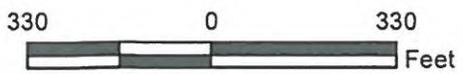


This map is for planning purposes only and is not a boundary survey. S



Legend

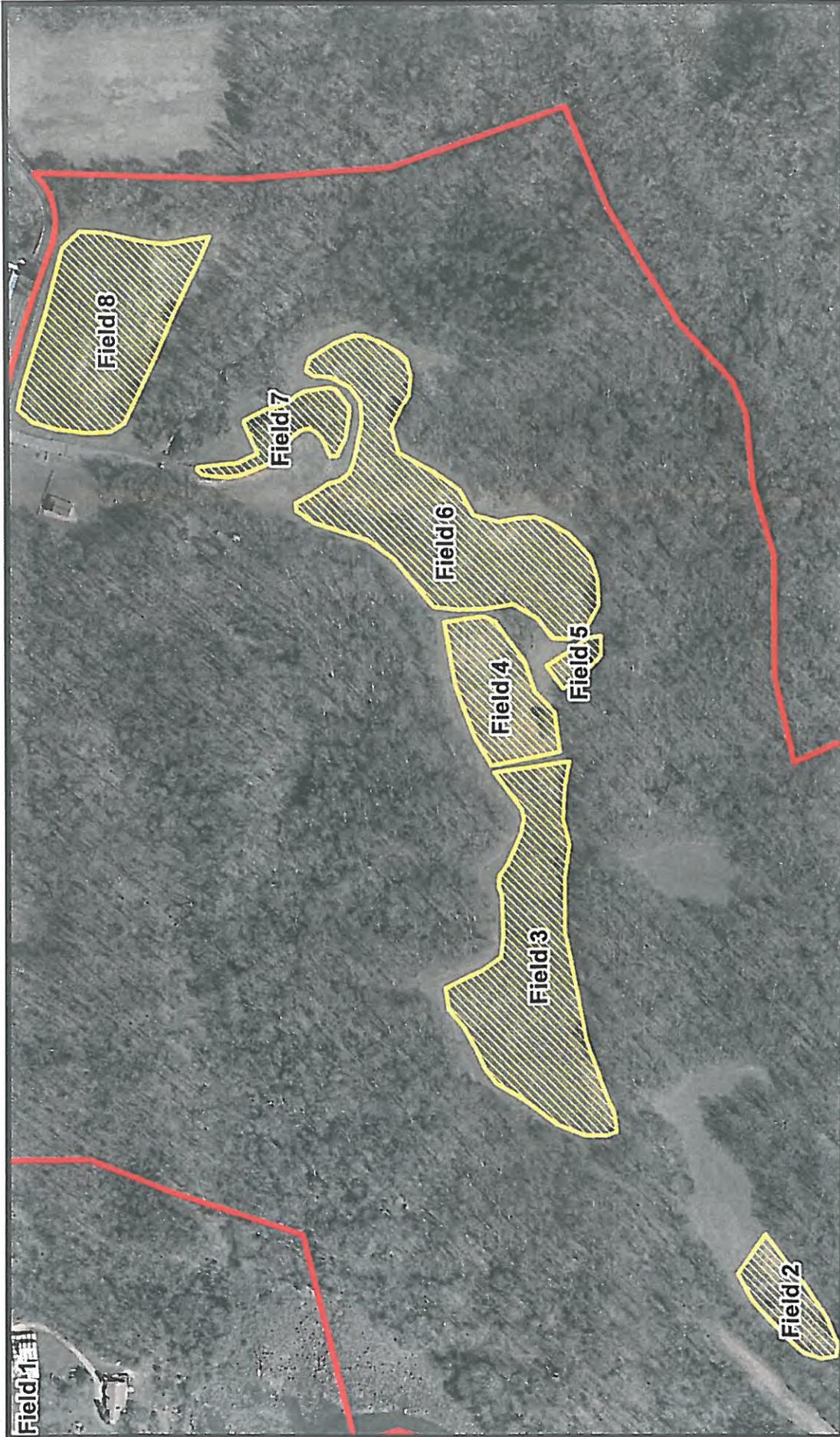
-  Property Line
-  Burn Area
-  Interior Control Lines



Burn Map
for
Biscoe Gray Rx Burn
County: Calvert
Burn Acres: 29.0
Scale: 1"=330'
Prepared by: B. Stupak
Date: 1/7/2020



This map is for planning purposes only and is not a boundary survey.



Burn Map
 for
 Biscoe Gray Rx Burn
 County: Calvert
 Burn Acres: 30.0
 Scale: 1"=330'
 Prepared by: B. Stupak
 Date: 1/16/2020



MARYLAND
 DEPARTMENT OF
 NATURAL RESOURCES



Legend

- Property Line
- Burn Area
- Interior Control Lines



This map is for planning purposes only and is not a boundary survey.



SIXES RD

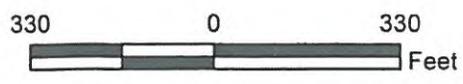
Field 9

GRAYS RD

Battle Creek Nature Center

Legend

-  Property Line
-  Burn Area
-  Interior Control Lines



Burn Map
for
Biscoe Gray Rx Burn
County: Calvert
Burn Acres: 30.0
Scale: 1"=330'
Prepared by: B. Stupak
Date: 1/16/2020



This map is for planning purposes only and is not a boundary survey.

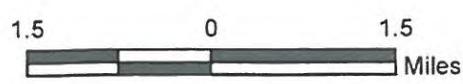


Chesapeake Bay

Patuxent River

Legend

-  5 Mile
-  1 Mile



Smoke Mgmt. Map
for
Biscoe Gray Rx Burn
County: Calvert
Burn Acres: 29.0
Scale: 1"=1.5 miles
Prepared by: B. Stupak
Date: 1/3/2019



This map is for planning purposes only. This map is not a boundary survey

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by a duly authorized representative by their hands and seals, intending to be so bound, as of the day and year first above written.

Witness Signature Date

Landowner Signature Date

Witness Signature Date

Regional Forester Date
Maryland Forest Service

Approved for form
and legal sufficiency

Patricia R. Lucia, Associate

Office of County Attorney 2/24/2020

Revised and Approved for Legal Sufficiency February 2020



FOREST SERVICE
OPEN AIR BURNING PERMIT
(Natural Resources Article 5-209 & 5-604 08.07.04.03)

FOREST SERVICE PHONE 410-535-1303/ FAX 410-535-5096 COUNTY Calvert

COUNTY 911 CENTER PHONE 410-535-3491 CALL PRIOR TO BURNING & UPON COMPLETION

APPLICANT NAME Board of County Commissioners Calvert County PHONE 410-535-5327

ADDRESS 175 Main Street, Prince Frederick, MD 20678

OWNER-AGENT

ADDRESS

BURNING LOCATION 2695, 2800 & 2870 Grays Road, Prince Frederick, MD 20678

EQUIPMENT AVAILABLE (2) Type 6 engines, (1) Type 4 engine, (2) UTVs

TYPE OF BURN Warm season grass burn

DATE STARTED EXPIRES BURNING TIME 24 hours/day

RENEWED EXPIRES OFFICER'S INITIALS

RESTRICTIONS:

I hereby agree to adhere to the open air burning regulations of the Maryland Department of Natural Resources - Forest Service (NR 5 08.07.04.03) as designated below:

- 1. There must be a natural or constructed fire break, free of flammable material, at least 10 feet wide completely around material to be burned.
2. There must be adequate personnel and equipment on the scene to keep the fire from escaping.
3. At least one responsible person must remain at the location of the fire until the last spark is out.
4. An authorized Forest Service agent may ban open air burning at anytime due to high fire danger or on excessively windy days.
5. ANY VIOLATION OF THIS PERMIT MAY RESULT IN LOSS OF PERMIT AND A SUMMONS.
6. Additional requirements may be prescribed in compliance of other MD DNR Forest Service laws & regulations.

APPLICANT IS RESPONSIBLE FOR COMPLIANCE WITH ALL OTHER FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND ORDINANCES RELATING TO OPEN AIR BURNING INCLUDING AIR QUALITY REGULATIONS. CONTACT YOUR LOCAL ENVIRONMENTAL HEALTH DEPARTMENT FOR MORE INFORMATION ON AIR QUALITY REGULATIONS AND PERMIT APPLICABILITY.

APPLICANT'S SIGNATURE

OFFICER'S SIGNATURE BADGE #

Approved for form and legal sufficiency
Office of County Attorney
2/29/2008



YOU ARE RESPONSIBLE FOR YOUR FIRE AND SMOKE, USE CARE
KEEP MARYLAND CLEAN AND GREEN!

Part 1 - Forest Service Copy Part 2 - Applicant's Copy



CALVERT COUNTY HEALTH DEPARTMENT
P.O. BOX 980, PRINCE FREDERICK, MARYLAND 20678
APPLICATION FOR AIR QUALITY CONTROL PERMIT

AP#

Permission is hereby requested to set an open fire in accordance with Section 26.11.07 – Regulations Governing the Control of Air Pollution in Area V of the Maryland State Department of Health & Mental Hygiene.

Name of Applicant: Board of County Commissioners of Calvert County

Address: 175 Main Street, Prince Frederick, MD 20678

Telephone: Home _____ Work 410-535-5327 Cell _____

Contact: Karyn Molines

----- Required Information for Proposed Burning Site -----

Address of Property: 2880 Grays Road, Prince Frederick *Battle Creek Cypress Swamp*

Directions From Route 4: Turn onto Sixes Road, Turn left onto Grays Road. Meadow is on the corner of Grays & Sixes

Subdivision Name: _____

Map: 27 Parcel: 335 Lot: - Block: - Section: -

Material Proposed To Be Burned: meadow vegetation and thatch

Purpose For Which Burning Is Deemed Necessary:

() Fire Hazard () Instruction In Fire Fighting

() Agricultural () Land Clearing For Construction

() Other (explain): MD DNR Forest Service Prescribed Burn Plan # 2020-2001

Distance on all sides between material to be burned and any wooded area, building, vegetation, etc.

North 12 ft. East 12 ft. South 12 ft. West 12 ft.

How Long Will The Project Last? 2 Days _____ Weeks _____ Months

Beginning Date: between 2/3/2020 Completion Date: through 5/31/2020

For Official Use Only	
Date Issued	_____
Beginning Date	_____
Completion Date	_____
Renewal	
Date Issued	_____
Beginning Date	_____
Completion Date	_____

Signature of Applicant

Date of Application

01 152513
Property Tax Account Number

Approved for form and legal sufficiency

CALL FORESTRY BEFORE BURNING AT 410-535-1303

Charles R. Lucas, Associate
Office of County Attorney 2/24/2020



MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

Dear Burn Permit Applicant,

In addition to the Calvert Count Environmental Health Department permit that is needed for any open-air burn, a MD DNR Forest Service permit may also be required, depending on the proximity of the burn pile to the woods. The Maryland Forest Service enforces the following open air burning regulations.

COMAR 08.07.04

Forest Fire Protection

Authority: Natural Resources Article
§§5-209 and 5-604, Annotated Code of Maryland

Definition

For the purpose of this regulation, Open Air Burning is defined as a fire where any material is burned in the open, except small recreational fires such as campfires.

Application

This regulation applies to activities in woodland and within 200 feet of woodland, or activities adjacent to or within an area where flammable materials, that could ignite and carry fire to woodland, are located. These regulations do not apply inside the limits of incorporated towns.

Open Air Burning

A. A person may not engage in open air burning *except* under the following conditions:

- (1) There is a natural or constructed fire break at least 10 feet wide completely around the material to be burned that is free of flammable materials;
- (2) Adequate personnel and equipment are present to prevent the fire from escaping;
- (3) At least one responsible person remains at the location of the fire until the last spark is out; and
- (4) Burning occurs between the hours of 4 p.m. and 12 midnight E.S.T., except that when the ground is covered with snow the burning may occur at any time so long as all other requirements are met.

B. A person may engage in open air burning, or prescribed burning, which does not comply with §A of this regulation, if the person has submitted a plan for that burning to the Department for review and the Department has issued a permit for that burning. The Director, in his discretion, may require conditions in the permit which are more stringent or less stringent than the requirements in §A of this regulation.

C. In addition to the conditions and requirements in A and B of this regulation, a person engaged in open air burning shall comply with all other requirements.

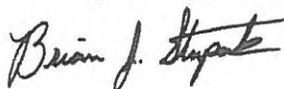


Burning Ban

Under prolonged or unusual conditions conducive to easy starting and spread of wildfire, the Director may declare a complete ban on all open air burning in woodland or in areas of flammable material likely to carry fire to woodland, through the state or in any specific area.

To obtain a permit, call the Maryland DNR Forest Service at 410-535-1303, Monday - Friday between the hours of 7:00 am and 3:30 pm at least 2-3 days prior to burning. The permit is good for one month and there is no fee for the permit. Immediately before burning, please contact the Calvert County 911 Center at 410-535-3491 and inform them that you are burning. If you have any questions, please feel free to contact the Forest Service at 410-535-1303 or go to <http://www.dnr.state.md.us/forests/fire/firenotes.asp> for more information about Maryland burning regulations.

Respectfully,



Brian J. Stupak
Project Manager

CALVERT COUNTY HEALTH DEPARTMENT
P.O. BOX 980, PRINCE FREDERICK, MARYLAND 20678
APPLICATION FOR AIR QUALITY CONTROL PERMIT

AP#

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Name of Applicant: Board of County Commissioners of Calvert County

Address: 175 Main Street, Prince Frederick, MD 20678

Telephone: Home _____ Work 410-535-5327 Cell _____

Contact: Karyn Molines

----- Required Information for Proposed Burning Site -----

Address of Property: 2800 Grays Road, Prince Frederick *Gatewood Preserve*

Directions From Route 4: Turn onto Sixes Road, Turn left onto Grays Road.
One mile on the right.

Subdivision Name: -

Map: 30 Parcel: 6 Lot: - Block: - Section: -

Material Proposed To Be Burned: meadow vegetation and thatch

Purpose For Which Burning Is Deemed Necessary:

() Fire Hazard () Instruction In Fire Fighting

() Agricultural () Land Clearing For Construction

() Other (explain): MD DNR Forest Service Prescribed Burn Plan # 2020-2001

Distance on all sides between material to be burned and any wooded area, building, vegetation, etc.

North 12 ft. East 12 ft. South 12 ft. West 12 ft.

How Long Will The Project Last? 2 Days _____ Weeks _____ Months

Beginning Date: beginning 2/3/2020 Completion Date: through 5/31/2020

For Official Use Only	
Date Issued	_____
Beginning Date	_____
Completion Date	_____
Renewal	
Date Issued	_____
Beginning Date	_____
Completion Date	_____

Signature of Applicant

Date of Application

01 009591
Property Tax Account Number

Approved for form and legal sufficiency

CALL FORESTRY BEFORE BURNING AT 410-535-1303

Jamela R. Lucas, Associate
Office of County Attorney
3/24/2020



Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

Dear Burn Permit Applicant,

In addition to the Calvert Count Environmental Health Department permit that is needed for any open-air burn, a MD DNR Forest Service permit may also be required, depending on the proximity of the burn pile to the woods. The Maryland Forest Service enforces the following open air burning regulations.

COMAR 08.07.04

Forest Fire Protection

Authority: Natural Resources Article
§§5-209 and 5-604, Annotated Code of Maryland

Definition

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This regulation applies to activities in woodland and within 200 feet of woodland, or activities adjacent to or within an area where flammable materials, that could ignite and carry fire to woodland, are located. These regulations do not apply inside the limits of incorporated towns.

Open Air Burning

- A. A person may not engage in open air burning *except* under the following conditions:
- (1) There is a natural or constructed fire break at least 10 feet wide completely around the material to be burned that is free of flammable materials;
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 - (3) At least one responsible person remains at the location of the fire until the last spark is out; and
 - (4) Burning occurs between the hours of 4 p.m. and 12 midnight E.S.T., except that when the ground is covered with snow the burning may occur at any time so long as all other requirements are met.
- B. A person may engage in open air burning, or prescribed burning, which does not comply with §A of this regulation, if the person has submitted a plan for that burning to the Department for review and the Department has issued a permit for that burning. The Director, in his discretion, may require conditions in the permit which are more stringent or less stringent than the requirements in §A of this regulation.
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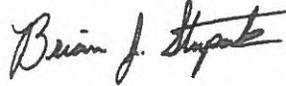


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Respectfully,



Brian J. Stupak
Project Manager

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----- Required Information for Proposed Burning Site -----

Address of Property: 2695 Grays Road, Prince Frederick *Biscoe Gray Heritage Farm*

Directions From Route 4: Turn onto Sixes Road, Turn left onto Grays Road.
One and one half miles on the right.

Subdivision Name: -

Map: 30 Parcel: 336 Lot: - Block: - Section: -

Material Proposed To Be Burned: meadow vegetation and thatch

Purpose For Which Burning Is Deemed Necessary:

Fire Hazard Instruction In Fire Fighting

Agricultural Land Clearing For Construction

Other (explain): MD DNR Forest Service Prescribed Burn Plan # 2020-2001

Distance on all sides between material to be burned and any wooded area, building, vegetation, etc.

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Date Issued	_____
Beginning Date	_____
Completion Date	_____
Renewal	
Date Issued	_____
Beginning Date	_____
Completion Date	_____

Signature of Applicant

Date of Application

01 240765
Property Tax Account Number

Approved for form and legal sufficiency

CALL FORESTRY BEFORE BURNING AT 410-535-1303

Samuel R. Lucas, Associa
Office of County Attorney *2/24/2020*



MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

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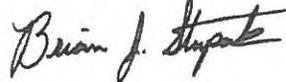


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Respectfully,



Brian J. Stupak
Project Manager

Plant Management: Milkweed

Managing Milkweed for Monarchs

PURPOSE: Enhance milkweed growth in meadows to support monarch populations.

TARGET SPECIES

- *Danaus plexippus*, Monarch
- *Asclepias syriaca*, Common Milkweed

LOCATION: Battle Creek Cypress Swamp, 2880 Grays Road, Prince Frederick



METHODS

Mid-season mowing has been shown to rejuvenate the milkweed so that it is healthier and more appealing to female monarchs as they look for suitable plants to lay their eggs. In general, by September, most of the milkweed is dead, and there may be caterpillars struggling to find the last few leaves.

Our plan is to mow or string trim the milkweed between June 20 and July 10, allowing the milkweed to re-sprout and providing milkweed leaves in August and September when larva density is at its highest.

The meadow at Battle Creek Cypress Swamp is divided into several areas. The treatment section is closest to the tenant house and while a second section of the field is the control site. We compare the monarch larva density and survivorship in the two sections. Immediately before mowing, staff and volunteers examine the milkweed for or larva so that we can relocate them to another section of the field. Weekly surveys of monarch larvae populations and observations of the milkweed regrowth will take place.

PRELIMINARY RESULTS

Tuesday, June 23, 2020: Volunteer Coordinator Grace Hanners, Naturalist Shannon Steele, and Calvert Steward Karen Ritchie spent 3 hours in one section of the meadow, carefully examining the milkweed and recording monarch data before completely cutting back the milkweed and surrounding plants.

Figure 1 A & 1 B. BEFORE and AFTER mowing of the milkweed patch.



Week ending July 3, 2020: The recently cut milkweed is sprouting (Figure 2)!

Week ending July 10, 2020: Monitoring Milkweed and Monarchs (Figure 3)



Week ending July 31, 2020: We had the biggest week yet this season for monarchs; 18 out of 150 plants monitored had monarch caterpillars (Figure 4) or eggs. The experimental tenant house sections are the most productive so far, and the milkweed that Naturalist Shannon Steele cut at the end of June is beginning to bloom again and attract more pollinators. Calvert Steward Lauren Kleist provided photos from her time in the meadow. It's fascinating that the animals who feed on milkweed all have warning coloration (Figure 5 A, B & C).



Week ending August 28, 2020: The experimental tenant house section where milkweed was cut in June still has milkweed with green leaves. Much of the milkweed in the remaining 5 sections was dead and brown; however, this week we discovered new milkweed popping up where access paths had been previously cut with the string trimmer. At least half of these new plants had monarch eggs on them. One plant had 3 eggs on it, and another had an egg accidentally laid on a blade of grass next to it. All in all, we found 32 eggs and 4 caterpillars out of 133 plants.

Figure 6 A & 6 B. The experimental cut section (left) and the uncut section next to it on September 1, 2020



Week ending September 18, 2020. The Monarch Watch season is winding down. Only one monarch caterpillar was found in the Cypress Swamp Meadow this week. Volunteers are consistently participating in this crucial study to help scientists determine what is happening with the monarch butterfly population. This week marked the 7th consecutive monitoring week for Jennifer Horsmon and the 16th consecutive week for Sue Huseby.

Week ending September 25, 2020. Calvert Stewards Karen Ritchie, Sue Huseby, and Jennifer Horsman along with Shannon Steele and Felicia Hallworth conclude the last day of monarch larva monitoring for the 2020 season. Over

the next few weeks, they attempted to capture and tag adult monarchs in order to help Project Monarch Watch learn more about their fall migration.

Summary:

Overall, the experimental tenant house (cut) section has the most milkweed left out of all 6 sections. It has 50+ plants with leaves whereas the other sections have 12 to 20, and only in the paths cut with the string trimmer. The experimental section had milkweed throughout and not just in the access paths.

This year there was not a significant difference between the monarch larva density in the experimental cut section compared to the uncut section beside it.

Comparing data from 2019, there were fewer caterpillars overall in late summer and early fall (Figure 8 a & 8 B) which we don't believe was the result of mowing of milkweed. Some possible factors which may have resulted in the lower numbers in 2020 were: we saw fewer adult monarchs than the previous two years, we had a rainy summer, we allowed less-experienced volunteers to monitor the experimental section, and we were unable to bush hog or burn the meadow this year which allowed the shrubs and trees to out-compete the herbaceous forbs that would attract adult monarchs to the meadow. However, based on our results, there is no question that the mid-season mowing or string trimming of the milkweed results in new growth and green leaves through August and September when larva density has been historically higher.

Figure 7. A typical year in the life of Monarchs:

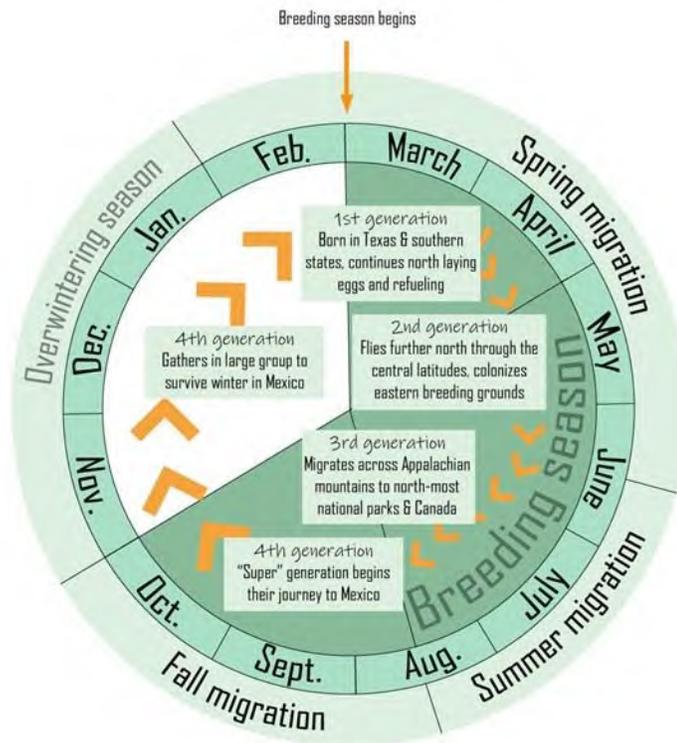


Figure 8 A and 8 B

