

**Vermont Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division**

**Class I Determination Rulemaking Decision
Issued Pursuant to Section 4.3 of the Vermont Wetland Rules**

In the matter of:

Agency of Natural Resources

**Justification for the reclassification of the Black Gum Swamp Wetlands
from a Class II to a Class I with an approximate 300 foot buffer zone.**

Located within the J. Maynard Miller Municipal Forest (Vernon Town Forest) and within the adjacent Roaring Brook Wildlife Management Area, Vernon

File #: 2016-261

The Secretary may, upon a petition or on his or her own motion, determine whether any wetland is a Class I wetland, pursuant to 29 V.S.A. § 410. The Secretary may establish the necessary width of a buffer zone of any Class I wetland as part of any wetland determination pursuant to the Rules. Section 4.2 of the VWR

As required under 29 V.S.A. § 410 and Section 7 VWR, this wetland determination is based on an evaluation of the extent to which the wetland serves the functions and values of the Rules, is **exceptional or irreplaceable in its contribution to Vermont's natural heritage** and, therefore, merits the highest level of protection. Public notice of this wetland determination has been given in accordance with Section 8.3 of the VWR.

Summary

1. The State of Vermont's Wetlands Program initiated this determination process in May of 2016. The Wetlands Program, acting under its own motion, has gathered various documentation and data for a Wetland Determination. Because there was no petition submitted by a third party, no petition was placed on notice. A pre-rulemaking meeting was conducted with the Vernon Town Selectboard on July 25, 2016, and contents of this determination and informational materials were sent to all landowners on July 15, 2016.

2. The Vernon Black Gum Swamp is located within the J. Maynard Miller Municipal Forest (Vernon Town Forest) and within the adjacent Roaring Brook Wildlife Management Area (WMA) owned by the VT Fish and Wildlife Department. Vernon Town Forest is a unique forest that contains at least seven swamps supporting black gum trees (*Nyssa sylvatica*) where one swamp is within the Town Forest and Roaring Brook Wildlife Management Area (WMA). A map showing the approximate location of the proposed Class I wetland is attached.

The combined 28 acres of swamp is composed of 7 distinct areas of Red Maple-Black Gum Swamp communities, as defined by the Vermont Fish and Wildlife Department, a rare natural community found at the edge of the normal range for this type of wetland. This wetland community contains some very old trees and natural disturbance regimes; some black gum trees aged at over 400 years old; The swamps are excellent examples of old forest.

3. District Wetland Ecologists Shannon Morrison, Julie Foley, and Rebecca Chalmers conducted a site visit to the subject property with Alan Quackenbush, the Wetlands Program Manager, Eric Sorenson with the VT Fish and Wildlife Department on May 8, 2013.

The wetland in question is currently identified as a Class II wetland on the Vermont Significant Wetlands Inventory (VSWI) map. The proposal is to reclassify this wetland from Class II to Class I, and to update the VSWI map to define the general location of the Class I wetland and buffer.

The proposal is to alter the buffer zone width to the default 100-foot buffer zone established under Section 4.2 of the VWR to a 300-foot buffer zone.

4. Within the most current Roaring Brook Management Plan (RBMP; 2012), the Red Maple-Black Gum Swamps have been identified as “some of Vermont’s important wetland natural communities...areas of a complex mosaic of water and light regimes, allowing for a broad range of plant and other species to inhabit the swamps.” The Management Guidance outlined for the Red Maple-Black Gum Swamps within the RBMP includes, “It is critical that these swamps be buffered from any impacts of timber harvest in the area [by increasing buffer width and equipment restrictions].” A specific buffer width was not identified within the RBMP; however, the Vermont Fish and Wildlife Department’s Natural Heritage Inventory (VNI) does provide a buffer recommendation within their 2004 Significant Hardwood Swamps of Vermont Report; Vernon Black Gum Swamps.

The VHI specifically refers to the protection of the Red Maple-Black Gum Swamps through protection of the buffer zone preferably by “managing portions of the town forest and state WMA as a natural area in which no further logging or trail construction will take place. A parcel of 500-750 acres could be delineated and such an area would allow both the swamp and upland forest ecosystems to flourish by natural dynamics.”

If an overall area, large parcel, can't be designated for restricted activities, "at the least, given that the swamps are such a natural treasure, they deserve a large buffer of unmanaged or minimally managed upland forest, ideally 100m (328-ft). The VHI further describes the reasons why this width is important, "besides providing a filter from possible runoff of nutrients and silt, the buffer would provide some protection from damaging storms and high winds." Additionally, they offer recommendations for timber harvest within this buffer, should it occur, "any cutting should be done in winter when the ground is frozen and done by single tree or small group selection so that a minimum of 75% of the canopy cover is retained. And furthermore "if any operations in the woods, either for trails or woods roads, or logging directly outside of this buffer but within the same watershed, the highest precautions to protect the water quality in the watershed should be taken. Buffers around streams, both permanent and intermittent, should be respected, and all potential sources of erosion or nutrient enrichment should be evaluated by the strictest standards."

5. These basin swamps in question is described as the best examples of this rare natural community as it is occurring at the edge of the normal range for this type of wetland. The Vernon Black Gum Swamp has been left alone for hundreds of years and supports one of the oldest forest communities in Vermont, with trees up to 400 years old. The Vernon Black Gum Swamps vary in size from approximately one to eight acres

The swamps contain a thick layer of peat. The peat and living vegetation in the swamps provide long-term carbon storage, playing an important role in mitigating climate change. The Vernon Black Gum Swamps have significant floodwater storage capacity due to their concave nature.

The swamps provide unique wildlife habitat, including suitable habitat for a high diversity of amphibians, three species of bat, a number of bird species, and mammals. The wetlands are home to at least five rare, threatened, and endangered and two uncommon plant species. There are insects whose life histories are entirely dependent on black gum trees and these may also inhabit the swamps.

Unlike some natural communities that may regenerate relatively quickly after a major disturbance, the Vernon Black Gum Swamps formed over thousands of years. The crowns of the old black gum trees and the fire scars along their trunks and seen in the peat layer are records of the weather events (e.g., wind, snow, ice and fire) that have shaped the swamps over time. This wetland is significant because of its contribution to Vermont's natural heritage as a rare community that is accessible to the public. The Vernon Black Gum Swamps are unique and irreplaceable.

Findings

As required by 10 V.S.A. § 914 and Section 8 of the VWR, this wetland determination is based on an evaluation of the functions and values of the subject wetland as described in Section 5 of the VWR. Section 5 provides that in evaluating whether a wetland is a Class II or a Class I wetland, the Secretary shall evaluate the functions that the wetland serves both as a discrete wetland and in conjunction with other wetlands by considering detailed functional criteria. Consideration shall be given to the number of and/or extent to which protected functions and values are provided by a wetland or wetland complex.

1. The protected functions of the subject wetland include the following: water storage for flood water and storm runoff as described in Section 5.1 of the VWR; surface and groundwater protection (Section 5.2); wildlife and migratory bird habitat (Section 5.4); exemplary wetland natural community (Section 5.5); rare, threatened and endangered species habitat (Section 5.6); education and research in natural science (VWR § 5.7), and recreational value and economic benefits (VWR § 5.8)..

2. The following protected functions are considered exemplary or irreplaceable: exemplary wetland natural community (Section 5.5).

3. **Water Storage for Flood Water and Storm Runoff**

Wetlands that provide for the temporary storage of floodwater or stormwater runoff to the extent that they make an important contribution to reducing risks to public safety, reducing damage to public or private property reducing downstream erosion or enhancing the stability of habitat for aquatic life are significant wetlands.

The Vernon Black Gum Swamp provides physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration. The wetland is significant for the water storage of flood water and storm runoff function.

4. **Surface and Ground Water Protection**

Wetlands that make an important contribution to the protection or enhancement of the quality of surface or of ground water are significant wetlands.

The accumulation of peat within the black gum swamps, seven to eleven feet in depth, is a natural water filter, improving water quality for both ground and surface waters. A thick layer of peat takes thousands of years to form naturally and is irreplaceable. The hydroperiod of the wetland is permanently flooded or saturated. The presence of seeps or springs was documented and the wetland contains a high amount of microtopography that helps slow and

filter surface water. The wetland is significant and irreplaceable for the surface and ground water protection function.

5. Wildlife Habitat

Wetlands that provide important habitat for wildlife and migratory birds are significant wetlands.

The Vernon Black Gum Swamp is owned in whole or in part by state and town government and managed for wildlife and habitat conservation and there is evidence that it is used by wetland dependent wildlife species.

The Vernon Black Gum Swamp supports a high diversity of amphibian species. The ten species observed within the Black Gum wetland are Eastern Newt, Wood and Green frogs, Gray Treefrog, Spring Peeper, American Toad, and Eastern Red-backed, Spotted, and Dusky Salamanders. A state-listed amphibian species was recorded in the surrounding upland forest and likely uses the swamps.

The wetland supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration. A rare bird was documented during a Breeding Bird Survey in 2003. The wetland, located in a forest mosaic, also provides important feeding habitat for black bear, and has the habitat to support muskrat, otter and mink. The wetland is significant for the wildlife habitat function.

6. Exemplary Wetland Natural Community

Wetlands that make an important contribution to Vermont's natural heritage are significant wetlands. These include wetlands that are identified as high quality examples of one of Vermont's recognized natural community types.

Red Maple-Black Gum Swamp is a very rare natural community that is at the northern extent of its range in southeastern Vermont. The wetlands support very old black Gum trees (+400 years) and other old forest characteristics. The deep peat accumulation reflects a long history of wetland formation. These Red Maple-Black Gum Swamps have been identified as high quality examples of this rare natural community type by the Natural Heritage Inventory of the Vermont Fish and Wildlife Department. The wetlands are significant, exceptional and irreplaceable for the exemplary wetland natural community function.

7. Rare, Threatened, and Endangered Species Habitat

Wetlands that contain rare, threatened, or endangered species of plants or animals are significant wetlands.

Vernon Black Gum Swamps are home to at least five rare, threatened, or endangered plant species. The Black Gum Swamps are home to two uncommon plant species and likely provides habitat for rare, threatened and endangered amphibians or reptiles. The wetlands are significant for the Rare, Threatened and Endangered Species Habitat function.

8. Education and Research in Natural Sciences

Wetlands that provide valuable resources for education or scientific research are significant wetlands.

Vernon Black Gum Swamps has a history of use for educational field trips, including by Windham Regional Woodlands Association and Antioch New England Graduate School. The old forests and rare natural community, in intact condition, make the Vernon Black Gum Swamps valuable and unique for education and scientific research. The wetland is significant for the Education and research in Natural Sciences function.

9. Recreational Value and Economic Benefits

Wetlands that provide valuable resources for education or scientific research are significant wetlands.

These Red Maple-Black Gum wetlands are among the oldest forest communities in Vermont. This wetland is significant because of its contribution to Vermont's natural heritage as a rare community that is accessible to the public. The Town of Vernon provides parking at the end of Basin Road and there is an easy walking trail through the forest surrounding the Vernon Black Gum Swamps. Roaring Brook Wildlife Management Area is used primarily for hunting, hiking, and snowmobiling, but has little available access. A visit to the Vernon Black Gum Swamps and surrounding forest offers a truly unique experience providing excellent opportunities for photography and aesthetic enjoyment, hiking, and bird-watching. The wetlands are significant for the recreational Value and Economic Benefits function.

- 10.** The Secretary shall also determine whether the wetland is exceptional or irreplaceable based on an evaluation of the extent to which the wetland contributes to Vermont's natural heritage. In determining whether a wetland is exceptional and/or irreplaceable in its contribution to Vermont's natural heritage the Secretary shall, at a minimum, consider the whether the wetland is categorized as one or more of the following: Representative Example of Wetland Type; Rare Community Type; Community Assemblage/Wetland Complex; and Landscape Association.
- 11.** The exceptional or irreplaceable characteristics of the wetland include the following: Representative Example of Wetland Type; Rare Community Type; Community Assemblage/Wetland Complex; and Landscape Association.

12. Representative Example of Wetland Type

Wetlands that are considered exceptional for this criteria exhibit a reference condition for the wetland type(s) with minimal evidence of human disturbance. Based on size, condition, quality and function, these wetlands represent a reference condition for wetland type, and are therefore exceptional.

These wetlands are representative examples of Red Maple-Black Gum Swamp and are in reference condition. The wetland is approximately 28 acres; composed of 7 areas of Red Maple-Black Gum Swamps and ranks 87/100 on the Vermont Rapid Assessment Method with very little human disturbance.

As a result of geology and geography there is a cluster of at least ten bedrock-basin Red Maple-Black Gum Swamps with a deep peat soil in the Vernon Town Forest and the Roaring Brook State Wildlife Management Area. The wetlands have been left alone for hundreds of years and are now among the oldest forest communities in Vermont. The swamps range in size from one to eight acres. The crowns of the old black gum trees, the fire scars along their trunks, and the peat layer are records of the weather events (e.g., wind, snow, ice and fire) that have shaped the swamps over time.

13. Rare Community Type

Wetlands that are considered irreplaceable for this criteria contain unique or rare wetland community type(s) which may be a rare community of plant species, slow-forming or near the extent of its natural range. There are over 40 wetland natural community types recognized in Vermont by the Vermont Fish and Wildlife Department's (VFWD) Natural Heritage Inventory and as published in "Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont", and revised classification lists by VFWD.

The wetlands are Red-Maple-Black Gum Swamp forested wetland that is unique in its plant species and slow-forming. Red Maple-Black Gum Swamp is considered an S1 (very rare) natural community type by VFWD. The Vernon Black Gum Swamps in Vermont are at its most northern extent of its range. They are the best example of this rare natural community and are an example of an old forest in Vermont. The wetland has been left alone for hundreds of years, with an accumulation of a deep (seven to eleven feet) peat layer that can take thousands of years to form.

The wetland acreage total approximately 28 acres; composed of 7 areas and ranks 87/100 on the VRAM. Old forests and wetlands provide unique habitat on the landscape, and both define the Vernon Black Gum Swamps.

14. In addition to the above criteria, when determining whether a wetland is exceptional and/or irreplaceable in its contribution to Vermont's natural heritage the Secretary may also consider the following qualities, functions and values that would contribute to a wetland being exceptional and irreplaceable: undisturbed condition, intact landscape and connectivity.
15. The exceptional or irreplaceable characteristics of the wetland include the following:

Undisturbed Condition: The Red Maple-Black Gum Swamps and buffer zones are undisturbed or minimally disturbed as demonstrated by the Vermont Rapid Assessment Method and described in the "Significant Hardwood Swamps of Vermont Report" prepared by the Vermont Fish and Wildlife Department's Nongame and Natural Heritage Program (now Vermont Heritage Inventory), 2004. Within the wetland areas, there appears to be no substrate disturbance or other habitat alterations. Overall habitat development is considered excellent.

Overall, the buffers around the Red-Maple-Black Gum Swamp are wide, averaging greater than 164 feet in width with a low to very low intensity level of land use occurring within the buffer, occurring in the form of selective and clear cutting forest management.

The Red-Maple-Black Gum Swamps occur in deep depressions in the bedrock. As a result of geology, geography and having little value for timber or other extractable resources, the wetland has been left alone for hundreds of years and is now among the oldest forest community in Vermont. Some of the trees are documented to be over 400 years in age and a deep peat layer exists, which can take thousands of years to form. The fire scars seen on some boles and in the peat, are testaments to the many, many episodes of wind, snow, ice and fire that have shaped the swamps over time.

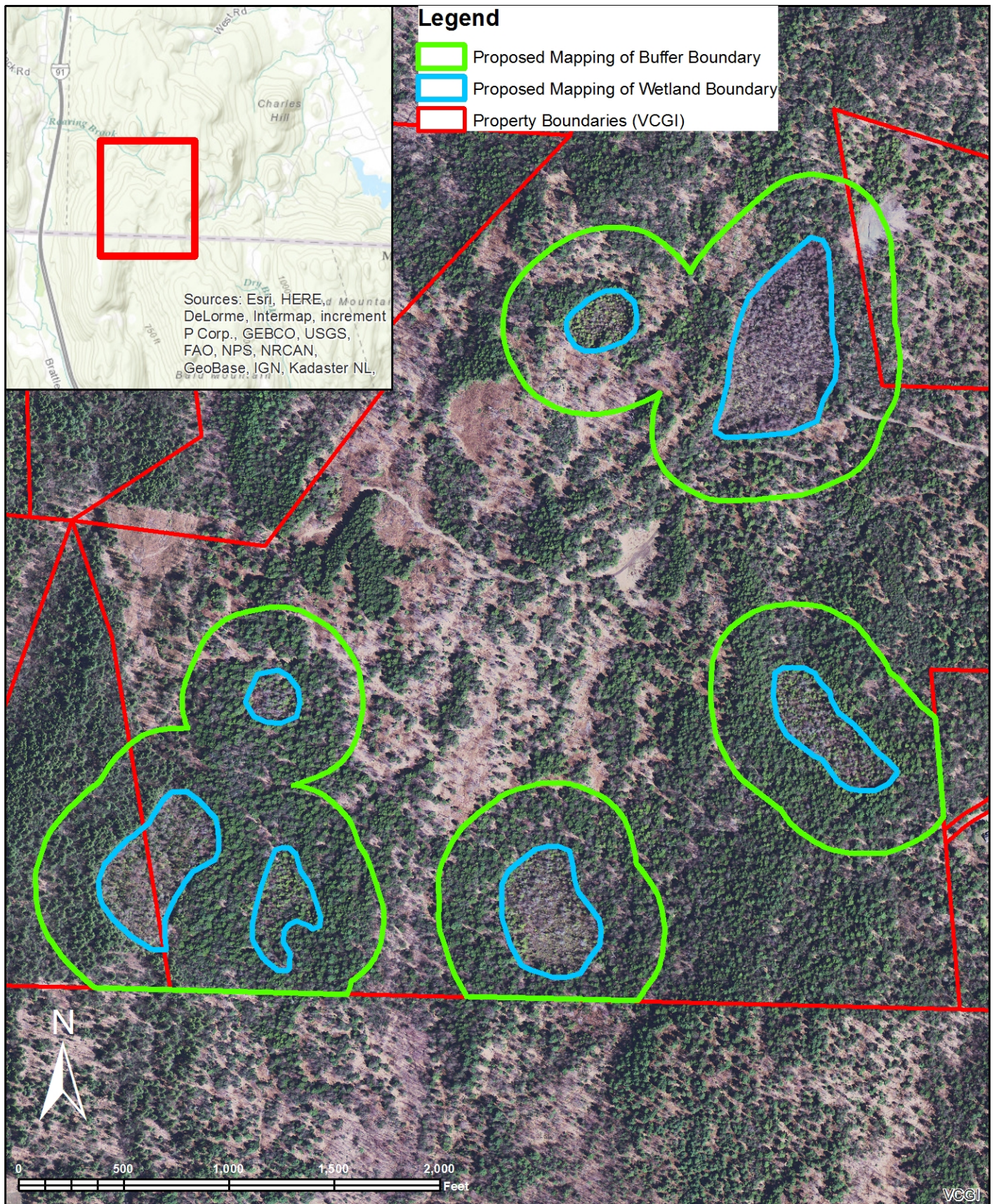
Recommended Buffer Zone

In order to protect the functions that make the wetland exceptional or irreplaceable, the Secretary has determined that a 300-foot buffer zone is required for the wetland. It has been recommended by the VT Natural Heritage Inventory that a large buffer of unmanaged or minimally managed upland forest, ideally 100 meters, be established. It is suggested that in this buffer area any cutting should be done in winter when the ground is frozen and done by single tree or small group selection so that a minimum of 75% of the canopy cover is retained. A larger buffer will provide a greater level of protection to the wetlands, serving as a filter from possible runoff of nutrients and silt, and the buffer would provide some protection from damaging storms and high winds.

Effect of Class I Wetland Determination

Activity in a Class I wetland or its associated buffer zone is prohibited unless it is an allowed use under the VWR, or unless it is authorized by a permit, conditional use determination or order

issued by the Secretary. The Secretary may impose any permit conditions as necessary to achieve the purposes of the VWR. Section 9.1 of the VWR. This wetland will remain Class II until a new version of the Rule is adopted to include these wetlands on the list of Class I wetlands in Appendix A.



Proposed Mapping of Class I Wetland
and 300-foot Buffer
Black Gum Swamps, Vernon



VERMONT DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
**WATERSHED
MANAGEMENT DIVISION**
WETLANDS PROGRAM

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