

Maine Association of Wetland Scientists  
Vernal Pool Technical Committee

Vernal Pool Survey Protocol

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## ACRONYMS AND ABBREVIATIONS

ABA	Amphibian Breeding Area
CAD	Computer-Aided Design
CEO	(Municipal) Code Enforcement Officer
CMR	Code of Maine Regulations
CWA	Clean Water Act
Corps	United States Army Corps of Engineers
EPA	United States Environmental Protection Agency
GIS	Geographic Information System
GP	General Permit
GPS	Global Positioning System
IBA	Indicator (species) Breeding Area
LUPC	Land Use Planning Commission
MAWS	Maine Association of Wetland Scientists
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries & Wildlife
MRSA	Maine Revised Statutes Annotated
NRPA	Natural Resources Protection Act
PVP	Potential Vernal Pool
SLODA	Site Location of Development Act
SOP	Standard Operating Procedure
SVP	Significant Vernal Pool
SWH	Significant Wildlife Habitat
USC	United States Code
USFWS	United States Fish and Wildlife Service
VPMA	Vernal Pool Management Area
VPTC	Vernal Pool Technical Committee (a MAWS technical sub-committee)



## 1.0 INTRODUCTION

This Protocol was developed for professional biologists and consultants to provide a consistent and efficient method for conducting vernal pool surveys in Maine. In 2007, the Maine Department of Environmental Protection (MDEP) authorized changes to the Natural Resources Protection Act (NRPA), 38 Maine Revised Statutes Annotated (MRSA) §§ 480-A to 480-FF, adding *Significant Vernal Pools* (SVP) to the list of habitats protected as Significant Wildlife Habitat (SWH), 06-096 Code of Maine Regulations (CMR), Chapter 335. As discussed further in Section 2.0, the MDEP defines *Significant Vernal Pools* as naturally occurring, temporary or semi-permanent<sup>1</sup> pools that provide habitat for a specific abundance of vernal pool amphibian indicator species, fairy shrimp, or certain state-listed rare, threatened, or endangered species. The United States Army Corps of Engineers (Corps) also regulates vernal pools through Section 404 of the Clean Water Act and Maine's General Permit (GP). The Corps' definition of vernal pools varies from that of the MDEP in that it does not rely upon the existence of specific indicator species to assume federal jurisdiction. Additionally, non-natural (or manmade) vernal pool habitats are not excluded from the Corps definition of a jurisdictional feature, as the MDEP rules do.

These regulatory differences, along with many practical challenges in applying the regulatory guidance to sometimes complex and atypical ecological systems, prompted a dialog between practicing professionals and the regulatory community. As a result, the Maine Association of Wetland Scientists (MAWS) facilitated a series of meetings with regulators and other stakeholders likely to be involved with implementing Maine's vernal pool regulations including practicing field scientists, the Corps, MDEP, Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Land Use Planning Commission (LUPC), United States Environmental Protection Agency (EPA) and biologists at the University of Maine. Following these communications, it was agreed that the consensus reached in these meetings would best be applied through development of a Standard Operating Procedure (SOP), or field survey protocol that could be universally applied by those working with Maine's vernal pool regulations. As a result, the MAWS Vernal Pool Technical Committee (VPTC) was formed and the initial draft *2010 Interim Vernal Pool Survey Protocol* was prepared. This draft Protocol was provided to regulators from MDEP, the Corps, EPA, United States Fish and Wildlife Service (USFWS), LUPC, and vernal pool biologists from MDIFW and the University of Maine for review and comment prior to publication. It was then released to the MAWS membership at the 2010 Annual Meeting. Following the 2010 field season the VPTC reconvened and MAWS hosted additional round table meetings with regulators and stakeholders to discuss lessons learned through practical application of the 2010 interim Protocol in the field. The results of these communications were then incorporated into a second *2011 Interim Vernal Pool Survey Protocol*. Since publication of the 2011 interim Protocol, field use, regulatory and stakeholder interpretations, and Maine's vernal pool regulations continued to evolve.

This *2014 Vernal Pool Survey Protocol* incorporates the lessons learned through field use of the interim Protocols, feedback from regulators using field data for the purpose of making regulatory determinations, and regulatory changes since authorization of the original vernal pool regulations. The 2014 Protocol also includes seven appendices that facilitate use of the Protocol and provide guidance and documentation of the dialogue with regulators that led to guidance provided in the Protocol. These include in Appendix 1, the MAWS Vernal Pool Survey Decision Tree; Appendix 2, the current Maine State Vernal Pool Assessment Form; Appendix 3, MAWS Vernal Pool Survey Protocol Glossary of Terms; Appendix 4, MDEP Standards for Accuracy in (survey) Locating Wetland Delineations; Appendix 5, *Vernal Pools - Milestones and Misconceptions* by Phillip DeMaynadier, Ph.D; Appendix 6, *Vernal Pool Regulation in Maine: Answers to Frequently Asked Questions*; and Appendix 7, Meeting Minutes: Regulator and Stakeholder Roundtable Discussions on Implementation of Maine's Vernal Pool Regulations.

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<sup>1</sup> Throughout the Protocol readers will notice underlined words. Please note that underlined words are defined in the Glossary of Terms in Appendix 3.

## 2.0 VERNAL POOL REGULATIONS

There are state and federal regulations that provide protection of certain vernal pools. There are also some municipalities in Maine that have additional local regulations or ordinances that protect vernal pools. Part of the challenge in ensuring appropriate and consistent regulation of Maine's vernal pool resources is that the Corps, MDEP, and applicable municipalities (i.e., local governments with vernal pool regulations in place) have different definitions for vernal pools, take jurisdiction over different subsets of pools and employ different approaches for protecting these resources. These differences are further described in the following sections.

### 2.1 STATE REGULATIONS

Vernal pools are regulated at the state level in accordance with Maine's NRPA, MRSA, §§ 480-A to 480-FF), and the Site Location of Development Act (SLODA), 38 MRSA §§ 481-490.

#### 2.1.1 Natural Resources Protection Act

Maine's NRPA protects certain natural resources determined to be of State significance including coastal sand dune systems, coastal wetlands, fragile mountain areas, freshwater wetlands, great ponds, rivers, streams and brooks, and significant wildlife habitats. In 2007, Maine's 123<sup>rd</sup> Legislature passed *An Act to Streamline the Administration of Significant Vernal Pool Habitat Protection* (Public Law, Chapter 533, H.P. 1390 - L.D. 1952) authorizing MDEP and the MDIFW, through routine technical rulemaking, to modify their respective definitions of protected significant wildlife habitat (SWH) to include significant vernal pools as described in the following sections.

MDEP's Chapter 335 Rules for SWH outline the requirements associated with a NRPA permit for activities impacting SWH.<sup>2</sup> According to the NRPA (38 MRSA § 480-BB), only those vernal pools that meet the criteria of an SVP receive regulatory protection as SWH. To be considered an SVP, a resource must first meet the definition of a vernal pool. Chapter 335 provides the following definition of a vernal pool.

*"A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvaticus*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.<sup>3</sup>), as well as valuable habitat for other plants and wildlife including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.<sup>4</sup>"*

The criteria for identifying an SVP include:

- Indicator amphibian species abundance (number of egg masses, see Table 2);
- Presence of fairy shrimp (in any life stage); and/or
- Use of the pool by one or more of a specific list of state-listed threatened, endangered or species of special concern that commonly require a vernal pool to complete a critical life stage (Table 3).

As a protected natural resource, SVP habitat consists of the vernal pool depression and that portion of the critical terrestrial habitat within 250 feet of the spring or fall high water mark of the vernal pool depression. The critical terrestrial habitat is defined in Chapter 335 as "*Uplands and wetlands associated with significant vernal pools used by pool breeding amphibians for migration, feeding, and hibernation, in*

<sup>2</sup> The same procedures should be applied to surveys conducted in both MDEP and LUPC jurisdictions.

<sup>3</sup> Following publication of the NRPA vernal pool regulations, the scientific genus name for wood frogs changed to *Lithobates*, and fairy shrimp changed to *Branchinecta* (sp.). Because this section of the Protocol refers to the regulatory citation these species names follow the current text of the regulations.

<sup>4</sup> Man-made features in wetlands or uplands (not created for the purpose of compensatory mitigation), even if they provide breeding habitat for vernal pool indicator species, are not included in the NRPA definition of a vernal pool.

*particular, forested wetlands and forested uplands that provide deep organic litter, coarse woody debris and canopy shade.”*

For more information on the NRPA, visit <http://www.maine.gov/dep/land/nrpa/index.html>.

### 2.1.2 Site Location of Development Act

Maine’s SLODA requires MDEP review of developments that may have a substantial effect upon the environment. These types of development include projects disturbing more than 20 acres, metallic mineral and advanced exploration projects, large structures and subdivisions (i.e., over 14 lots), and oil terminal facilities. Permits are issued when the project meets applicable standards addressing areas such as stormwater management, groundwater protection, infrastructure, wildlife and fisheries, noise, and unusual natural areas.

Vernal pools are regulated in accordance with Chapter 375, the “no adverse environmental effect” standard of SLODA. Specifically, SVP (and some non-SVPs) are protected in accordance with Section 12, preservation of unusual natural areas and Section 15, protection of wildlife and fisheries. SLODA uses the same vernal pool definitions as NRPA Chapter 335 discussed above. Because of the potential high degree of disturbance associated with projects requiring a SLODA permit, MDEP may assert jurisdiction over activities occurring beyond the 250 foot SVP critical terrestrial habitat. For more information on SLODA, visit <http://www.maine.gov/dep/land/sitelaw/index.html>.

## 2.2 FEDERAL REGULATIONS

At the federal level, vernal pools may be regulated by the Corps, EPA, or the USFWS under Sections 404 and 401 of the Clean Water Act (CWA); 33 United States Code 401 et seq.; Code of Federal Regulations, Part 325, Processing of Department of the Army Permits.

The New England District of the Corps implements its CWA jurisdictional authority for minimal impact work in freshwater wetlands and inland waters of the United States via the GP. The GP establishes a collaborative process of permit review between applicable federal agencies (depending on issues specific to a project) and the MDEP. For projects not qualifying for authorization under the GP, an Individual Permit (i.e., Department of Army Permit) would be required from the Corps. Projects with vernal pool impacts that require an Individual Permit often also fall within the regulatory purview of both the EPA and USFWS.

### 2.2.1 Maine General Permit

The Corps regulates vernal pools in accordance with the Maine GP (2010-2015). Section 28 of the GP, “Protection of Vernal Pools,” states: *“(a) Impacts to VP Management Areas for all VPs on, and known VPs surrounding, the project site shall be minimized to the maximum extent practicable.”*

Appendix A of the GP provides the following definition of a vernal pool.

*“A vernal pool, also referred to as a seasonal forest pool, is a temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish.*

*A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.)<sup>5</sup>, as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition. For the purposes of this GP, the presence of any of the following species in any life stage in any abundance level/quantity*

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<sup>5</sup> Following publication of Maine’s General Permit, the scientific genus of wood frogs changed to *Lithobates*, and the species name for fairy shrimp changed to *Branchinecta* (sp.). Because this section of the Protocol refers to the regulatory citation, the species name was not changed in the Protocol.

would designate the waterbody as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs.....”

This designation requires that a vernal pool occur within a federal jurisdictional wetland, unlike the NRPA Chapter 335 definition, which is inclusive of natural pools that may occur within upland depressions. However, under the Maine GP, vernal pools are regulated whether or not they meet the NRPA significance criteria.

The GP regulates the vernal pool and the area within 750 feet of the pool as a Vernal Pool Management Area (VPMA). Impacts within this area must be minimized to the maximum extent practicable. The amount and type of impact to the VPMA determine the level of permitting required for the project (e.g., Category 1, 2, Individual Permit). In addition to other limitations on disturbance within the VPMA, any impacts within the “vernal pool envelope,” the area within 100 feet of the vernal pool basin, may negate compliance with Maine’s General Permit conditions and require an Individual Permit from the Corps. Consultation with the Corps Maine Field Office is recommended in these cases for jurisdictional determinations.

The Corps regulations also require applicants to avoid and minimize impacts to “spawning areas,” a term that includes *amphibian breeding areas* (ABAs). In this context, ABAs include vernal pools (natural and man-made), permanent ponds, lakes, slow moving streams, beaver (*Castor canadensis*) flowages, and other areas that provide breeding habitat for any species of amphibian. While ABA is a useful term to describe non-ephemeral or man-made waterbodies that provide breeding habitat for vernal pool indicator species, the term ABA also describes a host of other habitats and is not specific to vernal pools. Other terms for features that meet the GP definition of vernal pool but that do not meet the NRPA definition include “Corps pools”, “man-made (or *anthropogenic*) vernal pools” or “vernal pool indicator species breeding areas” (IBAs) Otherwise, these features may best be described literally (e.g., “permanent pond with wood frog egg masses” or “skidder ruts with spotted salamander egg masse”).

In practice, ABA and IBA have evolved into terms used to characterize water resources that do not meet the state or federal vernal pool definitions but that do provide habitat for indicator species. Because the Corps (and some municipalities) employ a holistic landscape-scale approach to regulating water resources and wildlife habitat, it is important to characterize and report these resources to regulatory agencies. However, to avoid confusion when characterizing a site, it is best not to categorize these resources (i.e., skidder ruts, permanent ponds, roadside ditches with egg masses) as vernal pools. The Vernal Pool Survey Decision Tree (Appendix A) was developed to assist with classification and labeling of both vernal pool and other aquatic resources that may provide breeding habitat (i.e., ABA and IBA).

For more information, visit the New England District’s website for the current version of Maine General Permit:

<http://whhttp://www.nae.usace.army.mil/Missions/Regulatory/StateGeneralPermits/MaineGeneralPermit.aspx>

In 2013, the Corps issued a draft data form and vernal pool characterization form for review and comment. These documents are still under review by the Corps and have not been authorized for use as of publication of this 2014 Protocol revision.

## 2.3 LOCAL REGULATIONS

Some towns have adopted individual ordinances pertaining to vernal pools or have adopted ordinances similar to the MDEP NRPA, Chapter 335 rules. Local ordinances vary between municipalities, and contact with the local Code Enforcement Officer (CEO) is encouraged. The Maine Municipal Association also maintains a list of town ordinances on their website, which can be accessed at:

<http://www.memun.org/TrainingResources/LocalGovernment/OrdinancesHomeRule.aspx>

## 3.0 VERNAL POOL SURVEY PROTOCOL

### 3.1 SURVEY CATEGORIES

Vernal pool surveys fall within one of two categories: 1) surveys completed during the spring amphibian (wood frog and spotted salamander) breeding season, and 2) surveys conducted outside of the spring breeding season. Surveys that occur during the spring breeding season are considered standard surveys, and are required to accurately assess pool productivity and its regulatory status in accordance with NRPA for the purpose of determining if the pool qualified as a SVP. Vernal pools observed outside of the season where productivity and evidence of amphibian breeding activity cannot be fully assessed are characterized as potential vernal pools (PVPs) and may require a breeding season survey. The following paragraphs describe each survey type.

#### 3.1.3 Breeding Season Surveys

Surveys conducted during the spring breeding season document vernal pool activity and determine significance in accordance with NRPA, Chapter 335, SWH Rules. The optimal identification period shortly follows the peak amphibian breeding period for the three vernal pool indicator species and is described further in Section 3.2.

At each pool surveyed, observers should provide a physical description of the pool, document evidence of vernal pool species breeding activity and abundance, and note evidence or observation of potential rare species that may occur within vernal pool habitat. Further guidelines on how to conduct vernal pool surveys and how to document pool data are located in Section 3.4.3.

#### 3.1.4 Non-breeding Season Surveys

Surveys for vernal pools can be conducted outside of the spring breeding season; however, in order to determine productivity, PVPs that meet the NRPA definition of vernal pool but are identified outside of the breeding season often require verification during a subsequent breeding season. Alternatively, applicants for an NRPA permit have the option of assuming pools are Significant in lieu of conducting a breeding season survey (with the MDEP approval). Corps-defined vernal pools may be identified outside of the breeding season, although these pools also may need to be re-surveyed to determine the level of breeding activity and relative resource functions and values in accordance with federal regulations. Guidance for non-breeding season surveys is located in Section 3.4.4.

### 3.2 TIMING OF SURVEYS

The breeding season for vernal pool indicator species in Maine generally begins in late March and ends in late May. The breeding season starts when temperatures begin to rise above 40 degrees Fahrenheit (~40°F nights) and warm spring rains occur. Amphibian larvae may be observed into the summer, but egg mass counts early in the spring are the best indicators of vernal pool productivity and jurisdictional significance. According to NRPA Chapter 335, the egg mass abundance criteria for identifying an SVP should be determined during what is referred to as the identification period.

For wood frogs, the identification period to count egg masses is approximately one to two weeks after full chorusing begins. Optimal egg mass counts for spotted salamanders and blue spotted salamanders occur approximately two to three weeks following an appropriately-timed wood frog egg mass survey. Thus, because of the staggered breeding periods of wood frogs (earlier) and salamanders (later), two or more site visits are often required for a comprehensive assessment of vernal pool use by the indicator species. NRPA guidelines for optimal breeding season identification periods for three defined geographic regions of Maine are presented in Table 1.

Table 1. Guidelines for optimal breeding season identification periods in three Maine<sup>6</sup> regions.

Geographic Region <sup>7</sup>	Wood Frogs	Spotted & Blue Spotted Salamanders
Northern Maine	May 5 – May 20	May 15 – June 5
Central Maine	April 25 – May 10	May 5 – May 25
Southern Maine	April 10 – April 25	April 20 – May 10

Source: NRPA, Chapter 335 Rules, Section 9.B (3).

It should be noted that these are *suggested* timing windows for performing vernal pool surveys. Unusually warm or wet springs or dry winters may speed up and unusually cold springs may slow down the biological processes that lead to vernal pool breeding activity. Temperature and precipitation also should be considered when planning surveys. Optimal egg mass counting dates for high elevation areas are likely to be one to two weeks later than the dates provided for each respective region. Even within a relatively small project area, breeding activity in pools may peak at different times depending on the location, elevation, aspect, vegetation cover, and microclimate. Breeding activity in sunny, open pools will typically peak much sooner than pools under a closed forest canopy. Wood frog and salamander egg masses can hatch quickly in warm sunny pools, and can become increasingly difficult to count as the season progresses. Best professional judgment and colleague consultation should be used to determine when the best survey period is for a particular project. The Maine Association of Wetland Scientist's Facebook page is a good source for colleague communications regarding amphibian breeding activities throughout the state. The MAWS Facebook page can be accessed here:

<https://www.facebook.com/groups/mainewetlands/>

### 3.3 NUMBER OF SURVEYS

To accurately characterize breeding activity in vernal pools, more than one visit may be necessary. Biologists should document amphibian activity such as wood frog chorusing to appropriately time egg mass counting surveys (Table 1) within a given geographic area. Observers should plan to visit PVPs *at least* twice to capture peak egg mass conditions for both wood frogs and salamanders. However, the MDIFW and MDEP have indicated that if pools meet the NPRA significance criteria during the first survey (due to wood frog egg mass counts exceeding 40, presence of fairy shrimp, or observance of any of the species listed in Table 3), a second survey is not required.

### 3.4 IDENTIFICATION & INVENTORY OF VERNAL POOLS

#### 3.4.1 Fieldwork Planning

##### Assessor Training/Qualifications

Preliminary vernal pool investigations and surveys for PVPs can be conducted by observers with basic environmental science qualifications and training in vernal pool observations and regulations. MAWS suggests that determinations of Significance or non-Significance, however, should only be made by qualified individuals. "Qualified individuals are natural resource scientists with training in wetland science or wildlife ecology. These individuals include professional consultants, naturalists, and others specifically trained in the identification of qualifying pools and the wildlife observed using them. MDIFW staff screen observer qualifications during their review of all survey data" (*MDEP January 23, 2009 Report to the*

<sup>6</sup> The three geographic regions used in Table 1 are as follows.

- (i) The Northern Maine region is approximately that part of the state north of a line extending from Rangeley to Dover-Foxcroft to Howland to Calais.
- (ii) The Central Maine region is approximately that part of the state south of that same line and north of a line extending from Fryeburg to Augusta to Belfast.
- (iii) The Southern Maine region is approximately that part of the state south of the line extending from Fryeburg to Augusta to Belfast.

<sup>7</sup> See Appendix 8 for a MDIFW graphic with Recommended Periods for Vernal Pool Egg Mass Survey by Geographic Region.

*Legislature on the implementation of Significant Wildlife Habitat rules under the Natural Resources Protection Act.)*

#### Property Boundary Confirmation

Prior to field investigations, it is important to understand the location of property boundaries for the site subject to vernal pool investigations. Field scientists should consult with clients and landowners to ensure field surveys are performed only in areas where landowner permission has been granted. See Section 5 for procedures to be used when a PVP straddles a property line. This is important because regulatory determinations can be different if the entire pool is not considered jurisdictional.

#### Field Equipment

Several pieces of equipment are suggested to facilitate safe, efficient, and effective vernal pool observations and documentation of vernal pool physical and biological characteristics. Field crews should be equipped with the following items:

- Hip or chest waders;
- Polarized sunglasses;
- Ruler/measuring tape;
- Binoculars;
- View tube/bucket/specimen observation tray;
- Mapping grade Global Positioning System (GPS) unit (see Section 4.0);
- Dip net;
- Collection vials and preservation medium;
- Field guides;
- Digital camera;
- Notebook in which to record observations;
- Decontamination Solution (see following paragraph); and
- Vernal Pool Data Collection Forms (see section 3.4.5)

#### Decontamination

Field biologists should implement decontamination procedures when conducting numerous vernal pool surveys across multiple watersheds. The primary disease organism of concern is a fungus, *Batrachochytrium dendrobatidis*. The chytrid fungus *B. dendrobatidis* has been implicated as the causative agent of mass mortalities, population declines, and the extinctions of breeding amphibian species worldwide, including the Northeast (Longcore *et al.* 2007).

To alleviate the potential spread of the chytrid fungus *B. dendrobatidis* and other amphibian pathogens (e.g., Ranavirus), when moving between drainages and at the end of each day, crews should either a) spray down waders, boots, nets and any other field gear (e.g., dip nets) that have come into contact with surveyed pool water with a 4-5 percent solution of bleach and water, followed by drying without rinsing, or b) allow all field gear to completely dry for a period of at least 3 hours. Both the *B. dendrobatidis* and Ranavirus have confirmed mortality using bleach solutions of at least 4 percent, while only the fungus is known to be killed by prolonged equipment drying (Berger *et al.* 2004; Speare *et al.* 2004; Webb *et al.* 2007).

#### 3.4.2 Assessing Potential Vernal Pools

Once a PVP feature is identified during field surveys, vernal pool observers should stop, put down their equipment, and perform a careful scan of the pool perimeter with binoculars to look for the presence of protected species (see Section 3.4.3). The pool should then be approached slowly, and the area within 25 feet of the pool edge should also be observed for protected species. Once at the pool, gather data and photo-document the pool's physical characteristics and position in the landscape. Prior to entering the pool, the following field determinations should be made. The answers to these questions will determine the survey methodology used to access the resource. The MAWS Vernal Pool Decision Tree (Appendix 1) can be helpful in determining how much data should be collected at each PVP. **It is important to thoroughly document all aspects of the resource and surrounding area when making recommendations that a resource does not meet state or federal jurisdictional requirements.** The regulators with responsibility for making final jurisdictional determinations rely on this information to support their decision.

### Unclear Property Boundaries

Is the vernal pool depression on or wholly within the site/property boundary? In some cases the boundary of the site that an individual is hired and/or allowed to inspect is poorly or possibly not marked in the field. Without ground survey markings (*boundary flags, tree blaze, property pins*) or the use of a mapping grade GPS with a background file it might not be possible to know if a pool is on, straddling or off the site. In cases where this is a close call use best professional judgment and contact the client/landowner to seek additional boundary information.

### Straddle Pools - pools bisected by a property boundary

If a vernal pool depression is bisected by a property boundary and a vernal pool inspector does not have permission to enter the abutting property, only that portion of the vernal pool depression located on property owned or controlled by that landowner may be considered in determining whether the vernal pool is significant. In these situations the MDEP assumes the vernal pool inspector attempted to obtain permission to investigate the entire pool and may require evidence that the abutting property owner was contacted. In these cases use best professional judgment and contact the client/landowner, inform them of the straddle pool and seek their guidance on contacting the abutting land owner. **It is extremely important that both the landowner and abutting property owner be fully informed of the regulatory consequences and potential land use restrictions should the subject vernal pool straddling the property line be classified as significant.**

### Is the vernal pool naturally occurring?

In some instances, this is a relatively easy determination to make. For example, in existing power line corridors, it is common to see vernal pools within excavations adjacent to utility poles (“borrow holes”). In this situation, a small pool at the base of a utility pole in an otherwise upland area is most likely man-made. In other situations, this determination may be more difficult. Observers should assess the larger landscape around the pool. Has the project area clearly been altered by development or other anthropogenic (i.e., resulting from the influence of humans) activity? Is the pool located within a skidder trail or is it immediately adjacent to and impounded by a road? If the answer is yes to these or similar questions, Observers should consider the likelihood that the pool is not naturally occurring. In many situations, historic landscape alterations are not as clear, and natural succession can obscure past land uses. Look at the general landscape position of the pool. Does the surrounding topography look unnaturally abrupt, possibly suggesting a previous small scale borrow (i.e., removal of soil)? Is there evidence of side-cast (e.g., piles of rock, soil mounds) from a previous excavation that is now overgrown with trees? Take the time to walk around the pool and look at the setting. If the setting is such that it is not clear if the pool is naturally occurring, Observers should document any features and, for surveying purposes, treat the pool as if it were natural. Although the State’s definition does not include man-made pools (other than those created as compensatory wetland mitigation), man-made pools are included in the Corps definition. Observers should make sure to consider if the pool is man-made or rather an existing pool impacted by development or use. Disturbed or human impacted vernal pools are still considered natural. For additional discussion and example photographs, see the definition of “Origin” in the Glossary of Terms (Appendix 3.)

### Does the pool lack a viable population of (predatory) fish?<sup>8</sup>

If fish are observed within the pool, a determination should be made on whether the population is likely to be viable. A population can be assumed ‘viable’ if field observations indicate that a population of fish inhabit and may complete all levels of their life cycle (feeding, reproducing and hatching young) within the aquatic resource; **or** that fish may readily enter the resource via a hydrologic connection to another viable habitat. Landscape position of the pool should be taken into account, particularly in assessing the presence of fish. For example, following a flood event, an isolated pool located in a floodplain may have a few fish present, but this is unlikely to represent a viable population of fish. In contrast, a pool that forms behind a beaver dam likely supports viable populations of fish. Solely observing the presence of fish within a PVP does not mean that it is a viable population.

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<sup>8</sup> You do not need to know if the fish species you observe are predatory. Focus your efforts on assessing if the fish population is likely to be viable.



Is the vernal pool a temporary to semi-permanent body of water (i.e., not permanent)?

Based upon guidance provided by the MDEP, a permanent body of water is one that remains inundated throughout the year in a year with normal precipitation. A regulated vernal pool does not necessarily dry out completely in a given year, but there should be a significant reduction in size (and depth) of the pool from spring through summer, and it should be completely dry in drought years. Observers may need to make this decision based upon relatively limited site familiarity, but there are some characteristics of the pool that can help. No single characteristic alone should be used to make a determination as to whether a pool is a permanent body of water, and there may be characteristics other than those listed below involved in making a decision.

- The size and depth of the pool: Extremely small (less than 16 square feet) shallow pools, or pools of any size with only a few inches (e.g., < 6 inches) of water depth during spring high water conditions are not likely to persist throughout the breeding season.
- Other evidence of hydrology: For example, are water marks on trees higher than the water level in the pool at the time of the site visit? Similarly, are there sediment or debris lines around the edge of pool suggesting that the water level in the pool has dropped?
- Vegetation: Are there *live* trees present throughout the pool? In Maine, even wetland-associated trees do not survive permanent inundation (unless situated on hummocks), and their presence generally indicates only a limited period of standing water. Similarly, the lack of any woody vegetation (trees or shrubs) *may* indicate permanent inundation that prevents the establishment of these species. Non-woody aquatic plants that are often associated with permanent inundation include pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria spp.*), and several floating or submerged aquatic species [e.g., water lilies (*Nymphaeaceae*), water shield (*Lemna spp.*), and bladderwort (*Utricularia spp.*)].
- Pool substrate: Deep organic matter (peat and/or muck) tends to accumulate in situations where inundation persists throughout the year.
- Biological indicators: The presence of fish, painted turtles (*Chrysemys picta*), bullfrog (*Rana catesbeiana*) tadpoles, or green frog (*Rana clamitans*) tadpoles *may* suggest that the pool is permanent. Bullfrog tadpoles take two to three years to fully develop, and green frogs typically take a year to fully develop and are therefore most often associated with permanent waters, but it is possible to find these tadpoles in semi-permanent pools.
- For additional discussion and picture examples of different types of hydrology, see “Hydrology” in the Glossary of Terms (Appendix 3.)

Does the pool lack a permanently flowing inlet or outlet?

In general, if a pool has a permanent inlet or outlet, the pool itself will have permanent hydrology, and thus it will not meet the NRPA definition of vernal pool. It is important to remember that this question refers to the pool itself and not to the larger wetland system where the pool may be located. The entire perimeter of the pool should be surveyed to locate any apparent inlet or outlet. If there is a channel that appears to flow into or out of the pool, a determination on whether the water is permanently flowing should be made. The presence of more than one of the below-listed field characteristics can help determine whether an inlet/outlet is permanently flowing. There may be other characteristics than those listed below involved in making a determination.

- Bank and channel definition: A permanently flowing stream will typically have well defined banks and channel for its length.
- Riffles and pools: A permanently flowing stream will more commonly have repeating sequences of riffles and pools than an intermittent stream.
- Biological indicators: The presence of larval salamanders such as the northern spring salamander (*Gyrinophylus p. porphyriticus*), which takes up to four years to metamorphose, or the northern dusky salamander (*Desmognathus fuscus*), which takes up to 12 months to metamorphose, suggest that the stream is permanently flowing.

Does the pool occur within a jurisdictional wetland?

If the area has not been previously delineated, determine if the resource meets the definition for a federal jurisdictional wetland (i.e., has hydric soils, wetland hydrology, and a dominance of hydrophytic

vegetation.) Note that this section is in regard to determining Corps jurisdiction over non-natural vernal pools. For NRPA purposes, the vernal pool does not need to be a jurisdictional wetland.

### 3.4.3 Gathering Data on Vernal Pool Indicator Species

Once the observers have established that in-pool surveys are prudent, vernal pool observers should look for egg masses, fairy shrimp and the presence of certain state-listed rare, threatened, endangered, or species of special concern.

#### Egg Mass Counts

Based upon the abundance criteria, occurrences of any one of or a combination of the following egg mass counts documented in any given year confirms the State defined Significance of a vernal pool.

Table 2. Presence and abundance of vernal pool indicator species that determine state significance.

Species	Abundance Criteria
Blue spotted salamanders ( <i>Ambystoma laterale</i> )	Presence of 10 or more egg masses
Spotted salamanders ( <i>Ambystoma maculatum</i> )	Presence of 20 or more egg masses
Wood frogs ( <i>Lithobates sylvatica</i> )	Presence of 40 or more egg masses

Source: NRPA, Chapter 335 Rules, Section 9.B (1).

Egg mass surveys should be conducted on sunny or partly sunny days when possible. Pools should be entered slowly and with the intention of causing the least amount of turbidity possible. The entire pool, or in the case of pools straddling as property or site boundary the entire portion of the pool on the site, should be surveyed comprehensively (including the center) to ensure that all egg masses are counted. This can be done by surveying in concentric circles throughout the pool, by transects across the pool, or by other means that ensure coverage of the entire pool. If the pool is too wide and deep to safely survey the center, surveyors should document areas that could not be surveyed. Data should be compiled as described in section 3.4.5. Egg masses should be tallied by species and photo-documented. Also, egg mass maturity has proven to be a valuable indicator for regulators assessing the appropriateness of survey timing. Be sure to record egg mass maturity using the guidelines provided on the State Vernal Pool Data Form (Appendix 2):

- F = Fresh (< eggs thought to laid within 24 hours)
- M = Mature (round embryos)
- A = Advanced (loose matrix, curved embryos)
- H = Hatched or Hatching

#### Fairy Shrimp Assessments

Fairy shrimp typically hatch shortly after ice-out of vernal pools. Adult fairy shrimp only live for one to two months in Maine because they cannot tolerate water temperatures above 70°F. Thus, the optimal window for observing fairy shrimp ends in late May or early June in most years (Maine Entomologist, 2009). The presence of fairy shrimp in any given year qualifies a vernal pool as Significant under NRPA. If possible, sampling efforts for fairy shrimp should focus on sunny patches in pools as shrimp tend to congregate in these areas. Field surveys should be conducted by dipnet, view tubes and general observation throughout the pool. Polarized glasses are a strongly recommended tool.

#### Rare Species Assessments

Based upon the significance criteria, a vernal pool that has documented use in any given year by a state-listed threatened or endangered species or by a species of special concern needing a vernal pool to complete a portion of its life-history will be considered an SVP. The list of vernal pool-dependent rare, threatened or endangered species defined in Chapter 335 are shown in Table 3.

Table 3. Species and general geographic distribution of state listed species that trigger significance through observed use of vernal pools.

Species	State Distribution	State Status
Blanding's Turtle	Southern	Endangered

<i>(Emydoidea blandingii)</i>		
Spotted Turtle <i>(Clemmys guttata)</i>	Southern & Central	Threatened
Ringed Boghaunter dragonfly <i>(Williamsonia lintneri)</i>	Southern	Threatened
Wood Turtle <i>(Clemmys insculpta)</i>	Statewide	Special Concern
Ribbon Snake <i>(Thamnophis sauritus)</i>	Southern & Central	Special Concern
Swamp Darner dragonfly <i>(Epiaschna heros)</i>	Southern	Special Concern
Comet Darner dragonfly <i>(Anax longipes)</i>	Southern	Special Concern

Source: NRPA, Chapter 335 Rules, Section 9.B (2).

To make a specific effort to survey rare species, observers should approach pools slowly and quietly while scanning the margin of the pool with binoculars. While conducting the vernal pool assessment, observers also should scan land adjacent to the pool (i.e., within 25 feet) for rare species.

#### 3.4.4 Non-Breeding Season Survey

Surveys conducted outside of the breeding season typically rely on evidence of hydrology and landscape setting. Presence of a permanent inlet and/or outlet, permanent inundation, or a viable population of fish may also be documented at any time of the year. Using best professional judgment, a qualified individual may use this information to make a determination of non-Significance for consideration by regulators pursuant to the NRPA, or for determining if a breeding season survey is required. The presence of fairy shrimp and/or presence of one of the species listed in Table 3 can be used to identify an SVP outside of the amphibian breeding season. Additionally, in the springtime leading up to salamander breeding season (Table 1), spermatophore searches can be conducted in and around PVPs. While the presence of spermatophores alone cannot be used as an indicator of pool productivity, the presence of spermatophores can help observers identify salamander breeding pools.

A PVP surveyed outside of the breeding season may or may not contain water at the time of the survey. Therefore, it is important to search for depressions in the landscape with signs of previous hydrology. Surficial signs of hydrology may include water staining or water lines on grass, buttressing of tree trunks or multi-trunks, presence of hydrophytes, and presence of hydric soils. Signs of certain invertebrates [i.e. caddisfly larvae cases (*Trichoptera*), shells of freshwater clams or snails (*Pisidiidae* or *Basommatophora*) or shed exoskeletons of dragonfly or damselfly larvae,] in a depression may also be indicative of seasonal flooding.

Additionally, when a natural vernal pool habitat has not previously been determined to be Significant by MDEP or MDIFW, a determination of non-significance may be considered by MDIFW and MDEP if the vernal pool is located in northern Maine<sup>9</sup> and dries out before July 31 (after spring filling), or is located in southern Maine and dries out before July 15. Vernal pool observers must document when the pool dries out and submit data and photographs to MDIFW in order to certify that the pool is non-Significant. Once a pool has been certified as non-Significant by the MDIFW, it is permanently regulated as a non-Significant Vernal Pool. This drying time “kick out” does not affect Corps jurisdiction but is important to document nonetheless, as it may provide clues to the relative functions and values of the particular pool.

Finally, an out-of-season vernal pool assessment of a particular parcel can take place to determine if the parcel will have any potential SVP. If no natural PVPs are found within the project area, then the project may be eligible to proceed through MDEP permitting without regard to vernal pool oversight. Corps regulations with regard to non-natural vernal pools still apply, however.

<sup>9</sup> The Northern Maine region is approximately that part of the state north of a line extending from Rangeley to Dover-Foxcroft to Howland to Calais. The Southern Maine Region is that part of the state south of the Northern Maine Region.

### 3.4.5 Data Compilation

#### Maine State Vernal Pool Assessment Form for MDEP & Corps-Regulated Vernal Pools (version DEPLW0897-82008 05/09/2013)

When MDEP jurisdiction is confirmed or there is a component of determination that is questionable, the entire Maine State Vernal Pool Assessment Form (see Appendix 2) should be filled out. All forms should be completed in their entirety or to the greatest extent possible at the time of the survey. Data required for certain projects may vary, and should be discussed prior to conducting field work with the appropriate MDEP, MDIFW, and Corps representatives. In general, for smaller projects, MDIFW requests that vernal pool observers submit data forms for all pools observed (potential, significant, man-made, and otherwise). For larger projects, MDIFW requests that vernal pool observers submit the following:

- data forms for all natural and non-natural pools that have the requisite number of egg masses to meet NRPA Significant criteria *or* that contain rare, threatened, or endangered species (e.g., ribbon snake, Blanding's turtle); and
- data forms for any natural "pool" regardless of presences/absence of indicator species or egg masses.

#### Suggested Data Collection for Corps-only Regulated Vernal Pools

When collecting data on non-natural habitats, permanent hydrology vernal pool habitats, or other types of habitats that do not meet the NRPA definition of vernal pool (e.g., skidder ruts, permanent ponds, beaver flowages), and that do not contain the requisite number of egg masses to meet the NRPA Significance threshold, observers are not required to fill out the Maine State Vernal Pool Assessment form. However, if features provide amphibian breeding habitat, these features are important wildlife habitats and should be noted in your wetland functional assessment. Additionally, the Corps generally requires permit applicants to collect spatial data and other information on these features. For habitats that do not meet the NRPA definition but for which observers are required to gather information for Corps purposes, observers should collect the following data:

- Photographs;
- GPS location of the pool boundary or center point (as described in Section 3.5.1);
- Hydrology including size (depth and area) of the pool;
- Vernal pool indicator species productivity;<sup>10</sup>
- Data on the presence of fairy shrimp or rare, threatened or endangered species;
- Vegetation type in, over and around the pool; and,
- Other pertinent data such as the pool's origin or evidence of ongoing impacts.

Similar to surveys of MDEP-protected vernal pool habitats, observers should check with the Corps project manager before beginning field surveys to verify that the information to be gathered is sufficient for the particular project.

## **4.0 MAPPING**

### 4.1 GPS DATA COLLECTION IN THE FIELD

Once a vernal pool has been documented, its location should be recorded using a mapping-grade GPS unit.<sup>11,12</sup> The boundary of the spring high water mark of the vernal pool depression should be recorded for all vernal pools requiring documentation. Flags and their corresponding GPS points should be spaced in a frequency to accurately depict the spring high water mark of the vernal pool depression. For vernal

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<sup>10</sup> If a survey occurs during the breeding season and a Corps permit is required for the project.

<sup>11</sup> Vernal pool locations also can be documented using maps (U.S. Geological Survey topographic maps or USFWS National Wetlands Inventory Maps, 24k scale), aerial photographs (12k scale or better), or GPS units incapable of sub-meter accuracy. However, MAWS strongly recommends retaining the services of a Professional Land Surveyor to locate flags if mapping-grade GPS units are not available to the observer. Vernal pool locations obtained by maps, aerial photographs, or without mapping-grade GPS units must be submitted using the standard MDIFW SVP Data Collection Form.

<sup>12</sup> When applicable, spatial data shall conform to the *MAWS General Guidelines for Locating/Mapping Wetland Delineations* attached as Appendix 4.

pools less than 10 feet in diameter and small pockets of water associated with larger wetlands, GPS data collection may be limited to single reference points in the center of the depression. Flags will be labeled with the vernal pool identification name or number and sequential alpha-numeric characters. The label of the flag should match that of the GPS point name. The unique vernal pool identification name or number should correspond with the labeled flags, GPS points, and MAWS Vernal Pool Data Collection Forms.

The file naming conventions presented in this protocol were established through correspondence with MDIFW. Individual organizations have some flexibility in naming and data collection, but the VPTC suggests correspondence with applicable regulators to ensure the methodology is acceptable. The following naming conventions are presented as examples of collecting data on generic “vernal pools.” Projects or observers may choose to collect separate files for pools with different regulatory status (e.g., natural vernal pool (non-Significant), SVP, Corps pool). Appropriate modifiers can be used in place of “VP” in the following discussions (e.g., “NVP”, “SVP”, “CP”, “ABA”).

#### 4.1.1 Submission of Electronic Spatial Data

Submission of electronic Spatial Data to MDIFW must be in computer-aided design (CAD)/geographic information system (GIS) shapefile format (i.e. “.shp”). The CAD/GIS shapefile projection and coordinate systems must be in the format of: North American Datum of 1983, Universal Transverse Mercator (UTM), Zone 19 North, meters. Two types of shapefile geometry will be accepted by MDIFW: points and polygons. Shapefile attribute table configuration will differ based on geometry. Shapefiles and electronic MAWS Vernal Pool Data Collection Data Forms should be sent to: vernalpools.mdifw@maine.gov. In most cases, the MDIWF also requires that data forms be submitted in hard copy.

##### Polygon Shapefile Creation

For a variety of reasons, organizations may choose to connect differentially corrected GPS points around pools in CAD/GIS to create single vernal pool polygon features. All vernal pool polygon features pertaining to a single project should be contained within one polygon shapefile. Projects are likely to have multiple vernal pools with an identification naming scheme such as VP#1, VP#2, or VP-A, VP-B, etc. The attribute fields in polygon shapefiles must include a unique vernal pool identification field labeled VP\_ID. The naming scheme of the vernal pools within the VP\_ID attribute field must be in the format: Organization Name\_Project Name or Number\_Vernal Pool Identification Name or Number (note: the VP\_ID name is the exact label to be used on the MAWS Vernal Pool Data Collection Form). Flexibility exists within the VP\_ID field to incorporate various organization's internal naming schemes for vernal pools, but consistency between projects should be used for each organization, and the format of the attributes in the VP\_ID field must be (Organization Name)\_(Project Name or Number)\_(Vernal Pool Identification Name or Number).

For example, the first vernal pool documented by ACME Wetland Company for Project # 10-001 on Turtle Mountain could be coded in the VP\_ID field in the polygon shapefile as the following:

```
ACME_10-001_VP-1  
AWC_TM_A  
ACME_TM_VP#1
```

##### Center Point Shapefile Creation

For vernal pools located by points, a single differentially corrected GPS point should represent the center of each vernal pool. The location of the center of a vernal pool maybe collected directly in the field, or it may be generated in CAD/GIS after processing the differentially corrected GPS points collected around a vernal pool's perimeter. Submission of vernal pools by point geometry to MDIFW should be in center point shapefiles. All vernal pool center point features pertaining to a single project should be contained within one center point shapefile. The attribute fields in the center point shapefiles must include northings and eastings for each vernal pool, labeled UTM\_N and UTM\_E, respectively. The populated northing and easting fields for each vernal pool should be rounded to the nearest meter.

Projects are likely to have multiple vernal pools with an identification naming scheme such as VP#1, VP#2, or VP-A, VP-B, etc. The attribute fields in center point shapefiles must include a unique vernal pool identification field (the field name should be VP\_ID). The naming scheme of the vernal pools within

the VP\_ID attribute field must be in the format: Organization Name\_Project Name or Number\_Vernal Pool Identification Name or Number (note: the VP\_ID name is the exact label to be used on the MAWS Vernal Pool Data Collection Form). Flexibility exists within the VP\_ID field to incorporate various organizational internal naming schemes for vernal pools, but consistency between projects should be used for each organization and the format of the attributes in the VP\_ID field must be: (Organization Name)\_(Project Name or Number)\_(Vernal Pool Identification Name or Number). For example, the first vernal pool documented by ACME Wetland Company for Project # 10-001 on Turtle Mountain could be coded in the VP\_ID field in the center point shapefile as the following:

```
ACME_10-001_VP-1  
AWC_TM_A  
ACME_TM_VP#1
```

### Shapefile Naming Conventions

The shapefile naming convention outlined below should be used for both polygon and center point shapefiles. Some projects may have vernal pools located by both center point and polygon shapefiles. The shapefile naming convention must be in the format: Organization Name\_Project Name or Number\_Geometry\_Date.shp. The name of the shapefile that contains a specific vernal pool must be included on the corresponding MAWS Vernal Pool Data Collection Form. Using the examples for ACME Wetland Company for Project # 10-001 on Turtle Mountain, the names of shapefiles to be submitted to MDIF&W could be:

```
ACME_10-001_POLYGONS_2010April9.shp  
AWC_TM_CENTERPOINTS_2010April9.shp  
ACME_TM_POLYGONS_2010April9.shp  
ACME_10-001_CENTERPOINTS_2010April9.shp
```

Flexibility exists within the shapefile naming convention to incorporate various organizations' internal naming schemes, but consistency between projects should be used for each organization.

## **5.0 ANOMALIES AND DIFFICULT FIELD CALLS**

Inevitably, vernal pool observers will encounter situations in the field that do not fit any of the criteria, procedures, or suggestions found in this protocol. Anomalies and challenges may include determinations of origin (man-made versus natural), difficult determination of spring high water line (vernal pool boundaries), determining if there is a "viable" population of fish, accurately assessing productivity when counting degraded or predated egg masses, flooded conditions, and timing of field work during abnormal climate situations. Observers should rely on best professional judgment when making field determinations in these difficult situations. Additionally, seeking the assistance and experience of other working professionals (i.e. colleague consultations) will often help observers find solutions. Field scientists are strongly encouraged to use the MAWS Vernal Pool Information Forum that can be accessed at <http://www.maine wetlands.org> or the MAWS Facebook page that can be accessed at <https://www.facebook.com/groups/mainewetlands/> to post questions and request feedback on vernal pool anomalies. If professional judgment and colleague consultation fail to provide adequate, confident solutions to vernal pool identification problems, observers should gather as much data as possible on the resource in question (including detailed photo documentation) and seek the assistance of state and federal regulators.

If the pool extends off the survey property, do not trespass on properties for which you do not have landowner permission. See Section 3.4.2, Unclear Property Boundaries and Straddle Pools for guidance on how best to handle vernal pool surveys where property boundary information is unclear or if pools are bisected by a property line.

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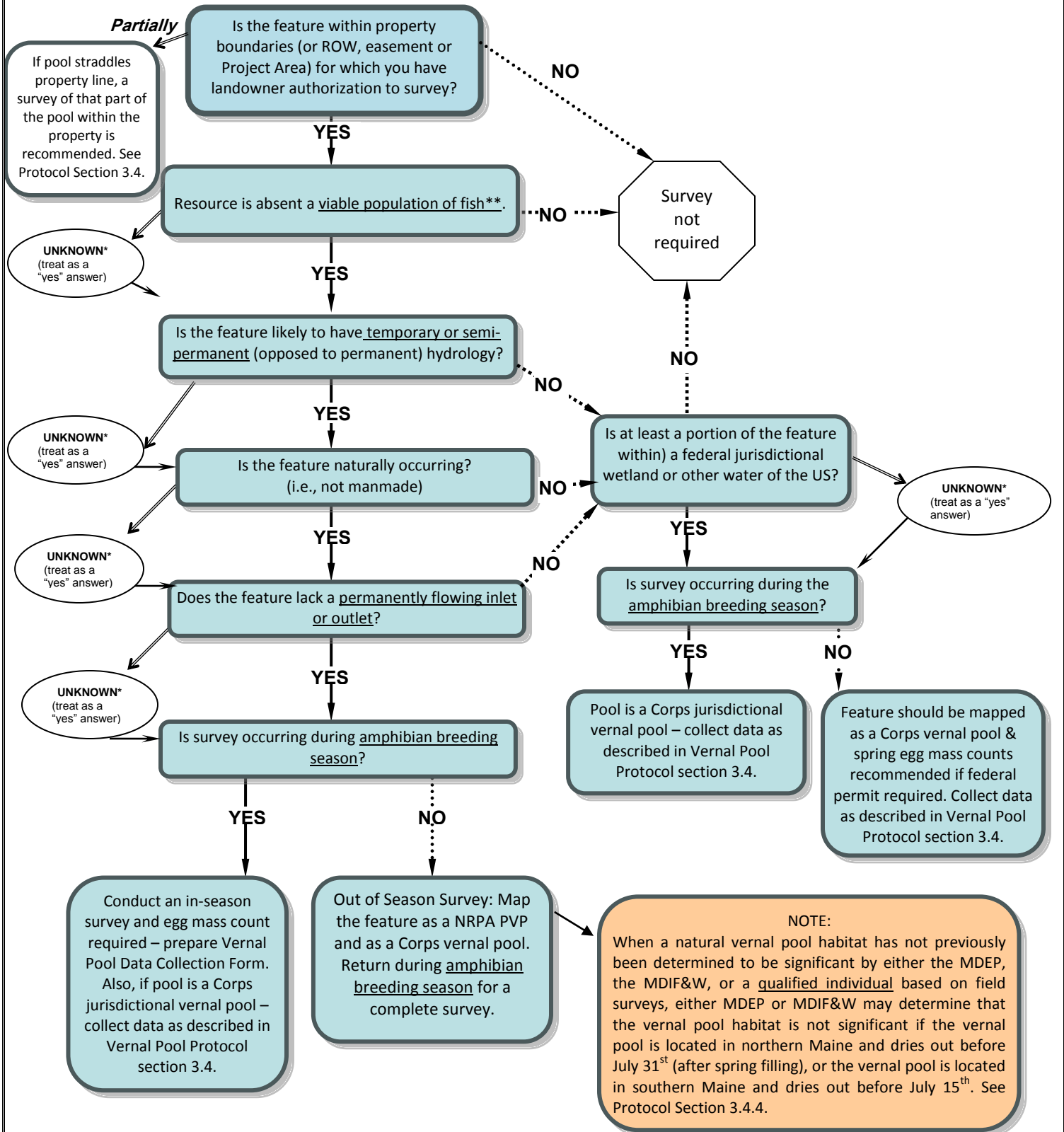
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## **APPENDIX 1**

### MAWS Vernal Pool Survey Decision Tree

**Maine Association of Wetland Scientists (MAWS)  
VERNAL POOL SURVEY DECISION TREE (rev. April 2014)**



\* For all "unknown" determinations – MAWS suggests that observers assume a "yes" answer and thus jurisdictional determination. Observers should collect ample data (e.g. photographs and descriptive field notes) for post-fieldwork discussions with regulators to assist them in making jurisdictional determinations.

\*\* Underlined words are defined in the MAWS Vernal Pool Survey Protocol.

## **APPENDIX 2**

Maine State Vernal Pool Assessment Form  
(DEPLW0897-05/09/2013)



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: \_\_\_\_\_ MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: \_\_\_\_\_

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: \_\_\_\_\_

Brief site directions to the pool (using mapped landmarks):

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

#### GPS location of vernal pool

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

- Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)
- The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (good)
- The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression                       Pool associated with larger wetland complex  
 Floodplain depression                       Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Forested swamp        | <input type="checkbox"/> Wet meadow               | <input type="checkbox"/> Slow stream   |
| <input type="checkbox"/> Shrub swamp           | <input type="checkbox"/> Lake or Pond Cove        | <input type="checkbox"/> Floodplain    |
| <input type="checkbox"/> Peatland (fen or bog) | <input type="checkbox"/> Abandoned beaver flowage | <input type="checkbox"/> Isolated pool |
| <input type="checkbox"/> Emergent marsh        | <input type="checkbox"/> Active beaver flowage    | <input type="checkbox"/> Other: _____  |

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent       Semi-permanent (drying partially in all years and completely in drought years)       Ephemeral (drying out completely in most years)       Unknown

Explain:

■ Maximum depth at survey:  0-12" (0-1 ft.)     12-36" (1-3 ft.)     36-60" (3-5 ft.)     >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: \_\_\_\_\_  m  ft    Length: \_\_\_\_\_  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- |   |   |
|---|---|
| <input type="radio"/> Mineral soil (bare, leaf-litter bottom, or upland mosses present) | <input type="radio"/> Organic matter (peat/muck) shallow or restricted to deepest portion |
| <input type="radio"/> Mineral soil (sphagnum moss present)                              | <input type="radio"/> Organic matter (peat/muck) deep and widespread                      |

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- |   |   |
|---|---|
| <input type="checkbox"/> Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)                      | <input type="checkbox"/> Wet site ferns (e.g. royal fern, marsh fern)   |
| <input type="checkbox"/> Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)                     | <input type="checkbox"/> Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)      |
| <input type="checkbox"/> Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern) | <input type="checkbox"/> Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)         |
| <input type="checkbox"/> Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)     | <input type="checkbox"/> Aquatic vascular spp. (e.g. pickerelweed, arrowhead)                                   |
| <input type="checkbox"/> Sphagnum moss (anchored or suspended)  | <input type="checkbox"/> Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort) |
|   | <input type="checkbox"/> No vegetation in pool  |

■ Faunal indicators (check all that apply):

- Fish       Bullfrog or Green Frog tadpoles       Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet       Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Intermittent inlet or outlet       Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** \_\_\_\_\_

**b. Indicator abundance criteria**

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog												
Spotted Salamander												
Blue-spotted Salamander												
Fairy Shrimp <sup>3</sup>												

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

**c. Rarity criteria**

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

**d. Optional observer recommendation:**

SVP    Potential SVP    Non Significant VP    Indicator Breeding Area

**e. General vernal pool comments and/or observations of other wildlife:**

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only**

Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  **Significant**    **Potentially Significant** but lacking critical data    **Not Significant** due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

## **APPENDIX 3**

### MAWS Vernal Pool Survey Glossary of Terms

(revised April 2014)

**Amphibian Breeding Areas (ABAs):** see “non-typical breeding habitats,” page 5 of the glossary

**Attributes:** Information about an individual feature contained in a GIS or CAD file.

**CAD:** Computer-Aided Design software (e.g., AutoCAD, IntelliCAD and MicroStation).

**Corps Pools:** see “non-typical breeding habitats,” page 5 of the glossary

**Easting:** Geographic coordinate for a point referring to the x-coordinate.

**Egg Mass:** “Three or more individual eggs clumped in a gelatinous matrix constitute an egg mass. Egg masses often occur in clusters, but each mass within a cluster must be counted as an individual egg mass.” (NRPA Chapter 335, Section 9A – Definitions)

**Ephemeral:** See **Hydrology**

**GIS:** Geographic Information System software (e.g., ArcGIS).

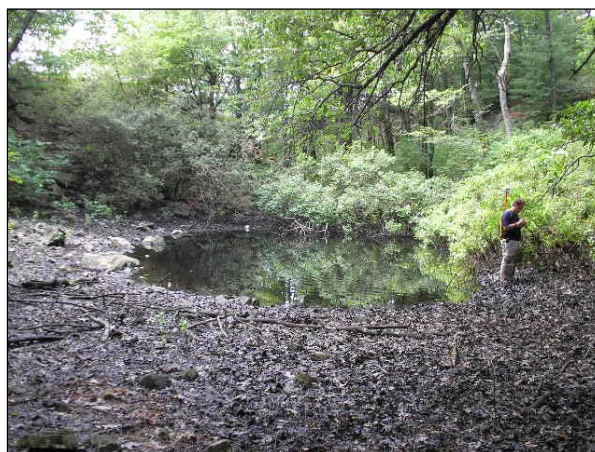
**Hydrology:**

**Permanent Hydrology:** Pool is continuously inundated with standing water throughout the year (a.k.a. “pond”).



Large permanently flooded, forested pond (*John Thompson*)

**Semi-Permanent Hydrology:** Portions of the pool remain inundated continuously, portions dry completely in all years and the entire pool dries completely in drought years.



Vernal pool habitat with semi-permanent hydrology (photo taken in August during a “normal year”).



**Ephemeral Hydrology:** Pool dries completely for at least some time period in most years.



Vernal pool depression inundated in spring (left). Same vernal pool depression of September of same year (right).

**Identification Period:** The time of the year when amphibian breeding activity can be accurately assessed, occurring during the spring months. The following is from NRPA Chapter 335, Section 9A – Definitions: Optimal times for counting egg masses of pool-breeding amphibians vary according to geographic location and weather. For instance, during cold springs, breeding can begin as much as 2 weeks later than it does in warm, wet springs. The optimal time to count masses is just past the peak breeding period. For wood frogs, this occurs approximately 2 weeks after they start full choruses. Wood frog egg masses hatch very quickly and are difficult to count much past peak breeding. Salamanders have a more extended breeding period and their eggs do not hatch as quickly as those of wood frogs.” See the Protocol Section 3.2 for more information on timing.

**Jurisdictional Wetland:** This describes a wetland protected under the Clean Water Act or the Natural Resources Protection Act. See further definitions provided in these laws.

**Mapping Grade GPS unit:** A global position system (GPS) unit capable of sub-meter accuracy data collection.

**Natural (or Naturally Occurring):** see **Origins**

**Natural-Modified:** see **Origins**

**Non-Natural:** see **Origins**

**Northing:** Geographic coordinate for a point referring to the y-coordinate.

**Origins – Natural, Natural-Modified, and Unnatural:**

**Natural (or Naturally Occurring):** The vernal pool depression is a naturally occurring feature in the landscape. “A natural vernal pool includes pools of natural origin that have been modified or excavated. A natural vernal pool does not include other natural wetland types (wet meadows, marshes, etc.) that have been altered and currently function as vernal pools” (NRPA Chapter 335, Section 9A - Definitions). Note, however, that both MDEP and Corps regulations do include protection over vernal pools created intentionally for compensation purposes.



Natural vernal pool depression in high elevation glacial till soil (left). Natural vernal pool depression in upland deciduous forest (right).

**Natural-Modified:** Natural pool altered by anthropogenic activities (i.e., all terrain vehicle trails, woods roads, cultivation) but not considered to be the solely result of anthropogenic alterations.



Natural vernal pool basin with skidder ruts traversing the basin. This was an existing and natural vernal pool prior to impacts and is considered “natural modified.”



**Non-Natural:** Shallow depressions in the landscape that hold water and are solely the result of anthropogenic activities i.e., logging roads, skidder ruts, excavations, impoundments, etc.



Ponded depressions in skidder ruts.



Ponded depressions in a woods road.



Wet road ditch.

**Permanently Flowing Inlet or Outlet:** This refers to a permanently flowing body of water that establishes a continuous hydrologic connection between the vernal pool and other water resources. For the purpose of vernal pool jurisdictional determinations, the presence of a physical feature that functions as an inlet or outlet does not exclude the pool from jurisdiction if water is not flowing at the time of survey or if it is likely to discontinue flow at any time during the year. Non-jurisdictional features such as ditches, culverts, and non-jurisdictional streams can establish a permanent hydrologic connection to be considered as a permanently flowing inlet or outlet. For difficult situations where either determination of permanency or other factors complicate the assessment of an inlet or outlet, MAWS recommends MDEP/Corps/MDIF&W or colleague consultation.

**Qualified Individual:** “An individual who has experience and training in either wetland ecology or wildlife ecology and therefore has qualifications sufficient to identify and document a significant vernal pool.” (NRPA Chapter 335, Section 9A - Definitions)

**Shallow Depression:** A topographic feature in the landscape that holds water and - at maximum spring depth - is greater than six (6) inches deep and larger than 16 square feet.

**Spatial Data:** The geographic representation of a known location and information associated with that location.

**Spring (or Fall) High Water Mark:** In the context of this protocol, the spring high water mark is the vernal pool boundary or edge of spring high water field surveyed during the Identification Period. The mapped

high water mark should represent the pool's boundary during the vernal pool indicator species breeding season. In abnormally dry or wet seasons, when the pool may be wetter or drier than in normal seasons, the high water mark can be measured at the point where the shallow depression ends and the surrounding prevailing grade begins. For other pools, such as those located in flooded pit-and-mound wetlands, floodplain lowlands and large basin swamps, there may be only minor topographic changes between the pool and the surrounding area. In these situations, observers should utilize best professional judgment and colleague consultation when determining the pool boundary. When the spring high water mark is indistinct, observers should collect several photographs, take copious notes and request MDEP, Corps and/or MDIF&W assistance.

**Temporary or Semi-permanent:** see **Hydrology**

**Viable Populations of Predatory Fish:** Solely observing the presence of fish within a potential vernal pool does not necessarily mean that it is a viable population. A population can be assumed 'viable' if:

- a) field observations indicate that a population of fish inhabit and may complete all levels of their life cycle (feeding, reproducing and hatching young) within the feature; *or*,
- b) fish may readily enter the feature via a permanently flowing inlet or outlet that connects the pool to a viable habitat.

**Visually Confirmed Use of the Pool:** In order to confirm use of the feature, observers must see the species in the pool or coming out of the pool; the pool being located within the ¼ mile MDIF&W consultation zone of a rare species does not necessarily count. (MAWS suggests consultation with MDIF&W if species are observed close to the pool or if the pool is located within the consultation zone).

---

**Non-Typical and Unnatural Wood Frog, Spotted Salamander, Blue-spotted Salamander, or Fairy Shrimp Breeding Habitats:**

- **Non-natural features that may provide breeding habitat for vernal pool indicator species and that meet the Corps definition of Vernal Pool but not the MDEP's. These may also be referred to as: "Corps Pools," "Non-Natural Vernal Pools (NNVPs)," or "Anthropogenic Vernal Pools (AVPs)," among other names.**

This includes federally jurisdictional wetlands and waterbodies that may provide habitat for vernal pool indicator species and that meet the Maine GP definition (includes non-natural) but do not meet the NRPA Chapter 335 definition of Vernal Pool (precludes non-natural features). This may include ruts, unmaintained road ditches, abandoned quarries, etc.

In order to avoid confusion of these federally-jurisdictional features with state-jurisdictional vernal pools, it may sometimes be prudent to avoid use of the word "vernal pool" altogether. Thus, these features may also be catalogued for data collection and permit purposes and labeled as what they are; e.g., "skidder ruts with breeding VP species", "road ditch with breeding VP species", "shallow depression with no breeding VP species", etc.

- **Natural, non-natural or natural-modified features that provide breeding habitat for vernal pool Indicator Species but that do not meet either the Corps or MDEP definition of Vernal Pool. These may also be referred to as "Amphibian Breeding Areas (ABAs)," "ponds with breeding VP species," or "slow-moving stream with breeding VP species," among other names.**

These features are federally-jurisdictional wetlands and waterbodies that provide habitat for vernal pool indicator species (and *possibly* fish and other amphibians) but that **do not** meet the Corps or MDEP definition of Vernal Pool.

Examples of these features include any habitats with known, viable populations of predatory fish; deeper ponds (>4 feet deep at time of survey or clearly permanent hydrology ponds (NOTE: unverified by agencies at time of printing)); slow-moving streams; beaver flowages; etc.



**Egg Mass Maturity:** Refers to development stage and degradation of the egg masses and helps indicate the length of time since the egg masses have been laid. For the purposes of completing the MDIF &W data collection form, the four maturity descriptors are defined below.

**Fresh** - Egg masses estimated to be laid within 24 hours of survey.



Wood Frog



Spotted Salamander



Blue Spotted Salamander

**Mature** - Egg masses showing signs of maturity i.e., round embryos.



Wood Frog



Spotted Salamander



Blue Spotted Salamander

**Advanced** - Egg masses exhibiting signs of advanced maturity i.e., loose matrix and curved embryos.



Wood Frog



Spotted Salamander



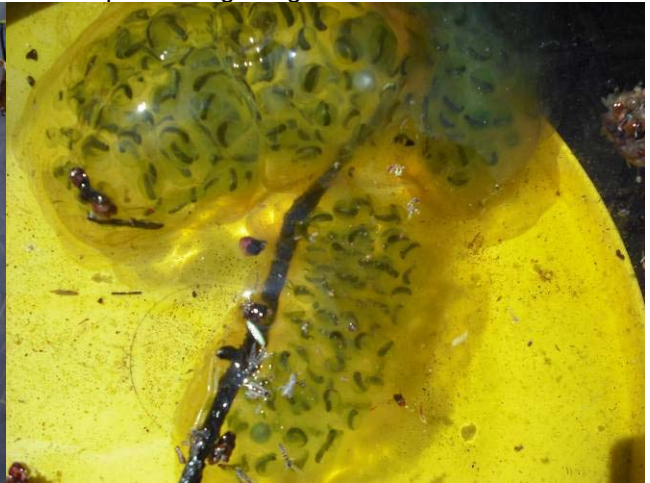
Blue Spotted Salamander



**Hatched or Hatching** - Egg masses broken down with tadpoles emigrating from masses.



Wood Frog



Spotted Salamander



Blue Spotted Salamander

**Hatched and Fully Metamorphosed (Adult)** Vernal Pool Indicator Species:



Wood Frog

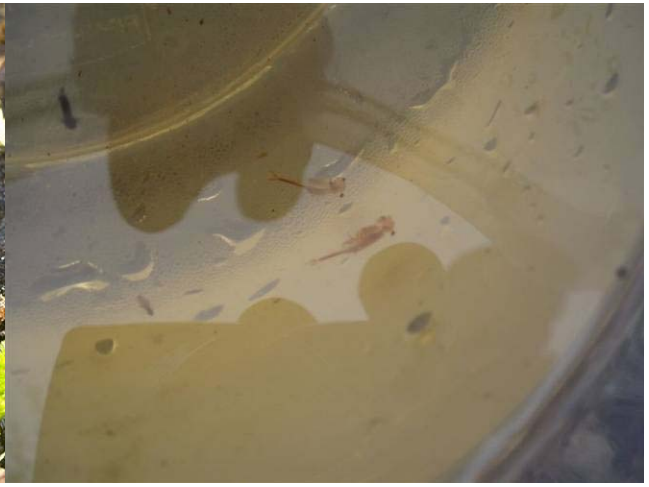


Spotted Salamander





Blue Spotted Salamander



Fairy Shrimp

**Non-Vernal Pool Indicator Species Egg Masses**



American Toad Egg Strands



Northern Leopard Frog Egg Mass

**Examples of Some Non-Vernal Pool Indicator Species Adult Native Frogs and Salamanders:**



Northern Leopard Frog



Pickerel Frog





Spring Peeper



Grey Treefrog



Mink Frog



American Toad



Green Frog



Bullfrog





Eastern Newt



Northern Spring Salamander



Two-Lined Salamander



Northern Dusky Salamander

Other species include northern redback salamander, four-toed salamander, and common mudpuppy.

## **APPENDIX 4**

MDEP Proposed Standards  
for Accuracy of Locating Wetland Delineations (4/18/2001)

April 19, 2001

Ms. Judy Gates  
Land & Water Quality Bureau  
Department of Environmental Protection  
17 State House Station  
Augusta Me 04333

**Proposed Standards for Accuracy of Locating Wetland Delineations**

Dear Ms. Gates:

Attached are two documents from the DEP Consulting Professionals Task Force. The first is a proposed standards for accuracy of locating wetland delineations. The second document is a proposed general guidelines for locating/mapping wetland delineations.

Also attached is a copy of a letter from the Maine Association of Professional Soil Scientists (April 4, 2001) endorsing the proposed accuracy standards and a comment letter from the Maine Association of Wetland Scientists (December 13, 2000). This April 18, 2001 version of the proposed standards should incorporate all comments received.

The Task Force hopes that the DEP will incorporated the standards into the Rules, information, or application process so that future submissions adhere to these standards.

Respectfully submitted on behalf of the Task Force,



William P. Brown, P.E.

**DEP CONSULTING PROFESSIONALS TASK FORCE**  
**PROPOSED STANDARDS FOR ACCURACY OF**  
**LOCATING WETLAND DELINEATIONS**

(Final Draft - 4/18/2001)

Background

Based on the results of several meetings and review of comments received from active professionals, the Task Force recommends the establishment of two standards for locating wetland delineations. These standards focus on the **accuracy** and **documentation** of the wetland maps that are submitted to the DEP by professionals for final project planning, design and permitting. Maps that are to be used only as a preliminary planning aid will not be held to this standard. We anticipate that the DEP, and possibly other regulatory agencies, will adopt these standards or a revised draft in the future.

Please note that these standards are simply a recommendation at this time intended to improve the quality of wetland maps that are submitted and the consistency with which they are produced. We understand that wetland identification and delineation of a site may vary among professionals given its subjective nature. That variability is a separate issue. We believe that the variability with which the delineation is located, after the wetland boundary is marked in the field, can be reduced and the accuracy improved significantly given the technology in practice. Subsequent project planners, engineers, regulatory staff and others can then assume a certain level of confidence in the wetland maps that they are receiving.

Standards

1. The location (mapping) of a wetland delineation that is intended for submission to the Maine Department of Environmental Protection (DEP) must be done to a **minimum accuracy of  $\pm 1$  Meter (3 Ft)**.
2. All wetland maps submitted to the DEP must contain the following information, clearly noted for the reviewer:
  - Name of Wetland Delineator(s) and/or Firm, and Date(s)
  - Name of Professional who located the wetland delineation and Date
  - Description of method used for locating the wetland delineation (ie. typical survey "Total Station" unit, GPS unit/type/model, compass and tape traverse, etc.)
  - Statement by locator as to the accuracy of the wetland map



# PROPOSED GENERAL GUIDELINES FOR LOCATING/MAPPING WETLAND DELINEATIONS

(Final Draft - 4/18/2001)

## Background

Wetlands are an important natural resource that should be accurately located on any site proposed for development. There are many different methods employed by consulting professionals to locate the previously identified wetland boundary in the field, and subsequently plot that boundary on to a plan for use by the project design team members and regulatory agencies. The following guidelines are intended to provide general guidance for locating and mapping wetlands for final project design and permitting to achieve the accuracy standard. We recognize that the technology and procedures used by professionals to produce a map of acceptable accuracy are dynamic, and change over time. Therefore, this document may need to be revised periodically.

## Final Design and Permitting Project Phase

Wetland identification and delineation for final project planning, design and permitting:

- Wetland boundaries are identified and marked in the field by a qualified wetland professional with clearly labeled flagging or similar means.
- Proposed wetland impacts are identified on the project plan.
- Wetland impacts exceed permitting threshold, after meeting avoidance and minimization standards, and an accurate wetland map is required for project permitting.

We recommend that the wetland boundaries should be located by one of the following methods or its equivalent as a **minimum standard**:

- Observations must be correlated to a minimum of three benchmarks on the site, ie. physical or natural features, that are shown on the base plan (i.e. apparent property pins, centerline of roads, building corners, fences, utility poles. etc.) so the field data can be accurately overlaid on to the base plan
- Standard compass and taped measurements by a qualified professional that is trained to both measure accurately and perform

checking procedures to confirm the results and ensure the accuracy standard is achieved

- Conventional survey instruments, such as a transit or total station, or new technologies such as a laser distance finder and angle encoders, should be used by qualified professionals that are trained to both measure accurately and perform checking procedures to confirm the results and ensure the accuracy standard is achieved
- Global Positioning System (GPS) unit:
  - GPS equipment used should be capable of either recording raw data for post-processing and/or recording real-time differentially corrected positions to achieve the minimum accuracy standard
  - Manufacturer's recommendations should be carefully adhered to with respect to: number of satellites used, PDOP (Positional Dilution of Precision) values allowed, minimum number of observations recorded, and point occupation time periods. In addition, error checking techniques, such as taping and compass readings between observation points or other similar method, should be used to perform spot confirmations of the data when the number of satellites available or the PDOP values are sub-optimal per manufacturer's specifications
  - The GPS unit operator should be well trained in recognizing potential problems encountered in the field while collecting the data, which are created by weather, canopy cover, adjacent topography, instrument operation and other sources. These problems include high PDOP, high satellite signal to noise ratio (SNR), loss of base station link, multipathing (reflection of satellite signal off other site objects then to the receiver), etc. The standard error and positional accuracy can be checked during the data processing and degree of precision can be determined.
  - GPS data must be post processed and plotted on the base plan by a well trained, knowledgeable professional to produce an accurate map. Although a Professional Land Surveyor may not be required to perform this work, only qualified individuals with sufficient training and experience should perform this work
  - No elevation data (sea-level) should be provided on any map or in any report unless the professional has adequate training and understanding of GPS vertical control calculations

# MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS

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April 4, 2001

DEP Consulting Professionals Task Force  
Attn: Bill Brown  
Department of Environmental Protection  
Station #17, State House  
Augusta, Maine 04333

Re: MAPSS comments and recommendations on the "Proposed Standards for Accuracy of Locating Wetland Delineations" and the "Proposed General Guidelines for Locating/Mapping Wetland Delineations."

Dear Bill,

Thank you for giving the Maine Association of Professional Soil Scientists (MAPSS) the opportunity to comment on the "Proposed Standards for Accuracy of Locating Wetland Delineations" and the "Proposed Guidelines for Locating/Mapping Wetland Delineations"

The MAPSS membership voted at their annual meeting to endorse the proposed accuracy standards (draft 3/16/01) including the minimum location accuracy of +/- 1 meter accuracy along with the following recommendations :

1. Standards 2. MAPSS suggests that the second sentence of the third bullet be deleted. MAPSS feels that such specific information asked for when GPS is the chosen method is not needed by the reviewer. This kind of detailed information would be collected by the professional as part of the acceptable methodology for using GPS technology and that the technical detail of how the GPS data points are gathered is not necessary as part of the documentation to the reviewer. The most important issue to the reviewer is that the minimum accuracy standard has been achieved regardless of the method used. The other acceptable methods for locating wetland delineations mentioned in the first sentence, such as compass and tape and Total Station, are not required to provide the equivalent kinds of information. MAPSS suggests that the information asked for in the second sentence is important to the professional in determining the location of a wetland boundary using GPS but is irrelevant to the reviewer.
2. MAPSS suggests that the "Proposed General Guidelines for Locating/Mapping Wetland Delineations" be issued as a separate document from the standards so they will not be confused with the "Standards for Accuracy of Locating Wetland Delineations."

Thank you again for asking for our input. If you have any questions please contact me at 862-6460. Also, my e-mail address is [Nklch@cs.com](mailto:Nklch@cs.com).

Sincerely,



Norm Kalloch  
President, MAPSS





MAINE  
ASSOCIATION OF  
WETLAND  
SCIENTISTS

49 Topsham Fair Mall  
Suite 20-103  
Topsham, ME 04086

December 13, 2000

Consulting Professional Task Force  
Attn: Bill Brown  
Department of Environmental Protection  
Station #17, State House  
Augusta, Maine 04333

Re: Comments of MAWS on the "Proposed General Guidelines for Locating/Mapping Wetland Delineations"

Dear Bill:

Thank you very much for seeking the input of the Maine Association of Wetland Scientists (MAWS) on the referenced guidelines. We as an organization commend you for your efforts to develop these guidelines to assist professionalism in this area of technical work. We would also like to apologize for taking so long to achieve the needed peer review to formalize our collective comments.

Hopefully the attached recommendations to the 5/10/2000 Revised Draft version will be of assistance in your presentations to MDEP.

As always, should you have any questions, please feel free to call me.

Sincerely,

Peter Tischbein  
President



MAINE  
ASSOCIATION OF  
WETLAND  
SCIENTISTS

December 13, 2000

## **Comments of the Maine Association of Wetland Scientists on "Proposed General Guidelines for Locating/Mapping Wetland Delineations".**

### **Introduction**

The Maine Association of Wetlands Scientists is a state-wide professional organization with approximately 75 members representing the majority of wetland professionals in Maine. Our members have considerable experience working with GPS in the context of wetland delineation, and a substantial interest in ensuring that proposed guidelines prove workable in the field under conditions typical of professional practice.

The use of GPS technology is becoming increasingly common among environmental professionals. Unfortunately, both the understanding of the technology, and standard of practice vary tremendously. Establishing guidelines for the use of GPS in the context of wetland delineation will help improve the overall quality of wetlands delineations within the state, increase consistency of GPS-located boundaries, and make clear the level of accuracy expected of professional delineations.

The comments presented here are the result of several months of discussion among MAWS officers and interested members. The MAWS officers first discussed the issue of GPS accuracy for wetland delineation (in response to a request from the Task Force) at their November, 1999 meeting. At that time it was decided that the issue should be raised with the membership, and the opportunity given for interested members to contribute their thoughts on the matter. The officers presented an earlier draft of the proposed guidelines to the MAWS membership at our annual meeting in February of 2000. A vigorous discussion ensued. Members with relevant interest and expertise were identified and they agreed to continue the discussion after the meeting. Follow-up discussions with these individuals and MAWS officers have continued during the spring and summer. Additional discussion of the proposed guidelines with the general membership was held at a MAWS field workshop held in June. Draft comments were developed following the August meeting of the Executive Committee, circulated among officers and interested

members. The following thoughts therefore represent a synthesis of the views expressed by the membership on the most recent draft of 5/10/2000, as reviewed and amended by MAWS officers.

## Recommendations

***Recommendation 1: Express guidelines in terms of desired boundary or map accuracy, not solely in terms of the steps taken to achieve that accuracy.***

As currently written, the guidelines state that "Multiple readings must be collected at each subject point (wetland flag, etc.), with a recommended minimum of 20 readings. The standard error can be checked during the data processing and the degree of precision can be determined." Additional language specifies the types of receivers to be used, a minimum PDOP (Positional Dilution of Precision) to use to record each of the 20 readings, and so on. Other technical criteria that may strongly affect positional accuracy such as limits on satellite signal to noise ratio (SNR), however, are not mentioned. Furthermore, use of standard error of position to characterize precision of estimated positions can be misleading. Standard error provides information on precision (scatter among replicate estimates of position) but not positional accuracy (how close the estimated position is to the "true" position being estimated). Systematic biases triggered by atmospheric conditions, multipath signals, or other difficult conditions in the field may degrade positional accuracy with relatively little effect on precision.

MAWS members were especially concerned by the proposed requirement that all positions be based on a minimum of 20 estimated GPS positions, each with a maximum PDOP of 5. Under field conditions, especially in forested or mountainous locations where satellite availability may be limited by interference by forest canopy and nearby topographic highs, it can be time consuming or even impossible to collect so many replicate positions. Alternative methods to achieve similar positional accuracy (such as taking fewer positions with especially favorable satellite geometry, or by using more sophisticated GPS receivers) should also be considered acceptable.

MAWS recommends that guidelines be stated primarily in terms of desired map accuracy. The techniques required to achieve a given level of map accuracy may vary with satellite geometry, weather, field conditions, distance to base station, and type of GPS receiver. Most importantly, the methods used to achieve a given level of accuracy are likely to change as available GPS receiver technology changes. While it is appropriate for the Task Force to specify methods that typically would result in maps of acceptable accuracy, especially to help those new to the field understand how adequate accuracy can be achieved, such recommendations should not be absolutely binding on field professionals; the accuracy standards should be.

***Recommendation 2: Require that GPS positions be collected in accordance with manufacturers recommendations and the judgement of professionals***

set  
PDOP  
to 5  
or 6

***trained in the use of the GPS in general, and a particular receiver in particular.***

Professional training and adherence to manufacturer's recommendations are significant determinants of GPS-derived map accuracy. Inexperienced or poorly trained users are more likely to make errors in data collection, differential correction, data projection and mapping. Those with little training on the particular receiver in use may set it up incorrectly, fail to notice indications of poor data quality, or interpret results inappropriately. In addition, the techniques used to achieve consistently high data quality may differ among GPS receivers or according to the post-processing software used. The best way to ensure data accuracy regardless of the receivers and software in use, therefore, is to require that data be collected and processed in accordance with the manufacturer's recommendations by trained personnel. This ensures that professionals will be able to adapt the field methods they use to achieve a desired level of map accuracy regardless of the specific equipment they use and that they will be able to adapt successfully and efficiently to future changes in technology or signal availability.

***Recommendation 3: Required GPS positional accuracy should be consistent with the imprecision typical of field wetland delineations.***

Levels of accuracy suggested for GPS-derived positions should not be significantly higher than the typical accuracy achieved in placement of flags and other boundary markers during wetland delineations. Although wetland boundaries must be precisely placed for legal reasons, they are typically placed along a continuous environmental gradient from upland to wetland. A certain degree of professional judgement is inevitably involved, and small (usually 1-2 meters, but sometimes more) disagreements over the precise location of the wetland boundary are common among wetland professionals. Many members mentioned that for practical reasons, boundary flags are often located near, but not precisely on the wetland boundary. In addition, the curvy, often convoluted wetland boundary must be broken into a series of straight line segments in order to place flagging. This inevitably results in inaccuracies between points regardless of the accuracy of the survey. It makes little sense to require submeter accuracies on GPS positions mapping the location of a boundary flag that may itself be located somewhere within a meter or two of the wetland-upland border.

***Recommendation 4: Continue to require that the GPS-derived delineation maps be tied into known benchmarks.***

We fully support the requirement that all GPS-derived wetland boundaries be tied to three or more known benchmarks. This requirement acts as a simple and sensible check on map accuracy. Given the many steps between GPS data collection and preparation of a final map – from data collection to differential correction, to specification of datum and map projections – there are many opportunities for both unavoidable and inadvertent errors to enter into the in map production process. By requiring that GPS-derived maps be tied to known benchmarks, this requirement will help ensure that the professionals

doing the delineation will be able to detect problems before the results of the delineation get reported to clients or regulators.

***Recommendation 5: Require that the methods used to derive the GPS positions be annotated on the map.***

Many of our recommendations would leave determination of the technical requirements for achieving required map accuracy to the professionals carrying out the field work. We recognize that this approach may make it more difficult for regulators to evaluate the adequacy of methods used. Accordingly, we recommend that the GPS methods used to determine position of the wetland boundary be documented on the map. A suitable map annotation should allow a knowledgeable map reader to assess the data quality that underlies production of the map. Ordinarily, this annotation should include identification of the type of receiver used, the distance to any base station used for differential corrections, maximum PDOP used while collecting positions, minimum number of positions collected at each point, and the maximum standard error of the resulting GPS positions.

***Recommendation 6: Require that the name of the person or firm responsible for the GPS mapping be indicated on the map notes.***

The use of GPS technology for location and mapping of wetland boundaries offers the possibility of significant reductions in time in the field and thus cost of wetland delineations. However, use of this technology for such purposes requires care, professionalism, and technical training both on general principals of GPS, and also on the detailed use of individual GPS receivers. Accordingly, we believe field professionals responsible for assembling delineation maps should indicate their endorsement of the maps and the methods used by what amounts to signing their work. This provides additional incentive for professional wetlands delineators to ensure the accuracy of their maps, and also provides a chain of accountability that would allow rapid detection and resolution of discrepancies between field delineation and the map intended to represent it.



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.

GOVERNOR  
November 20, 2001

MARTHA KIRKPATRICK  
COMMISSIONER

William P. Brown, P.E.  
Bureau of Land & Water Quality  
Department of Environmental Protection  
17 State House Station  
Augusta, ME 04333

Re: Proposed Standards for Accuracy of Locating Wetland Delineations


To: the Members of the Consulting Professionals Task Force

The documents submitted by the DEP Consulting Professionals Task Force, entitled "Proposed Standards for Accuracy of Locating Wetland Delineations," final draft dated April 18, 2001, have been reviewed by the management of the Division of Land Resource Regulation. At this time, it is our intent to provide this document, in its final form, as additional guidance on wetland delineations to supplement existing, written guidance routinely provided to applicants required to provide a wetland delineation as part of a Natural Resources Protection Act or Wetland Alteration permit application. Anyone requesting information regarding wetland delineations is also provided with the existing document.

This guidance will not be used as a requirement to meet criteria or standards of the Department's rules and regulations, but as a recommendation for gathering accurate technical information on which the Department may base a regulatory decision.

Should you have any further questions regarding this decision, please contact me at 287-7848.

Respectfully,

  
Jeff Madore, Director  
Division of Land Resource Regulation  
Bureau of Land and Water Quality

## **APPENDIX 5**

*Vernal Pools - Milestones and Misconceptions*; By Phillip DeMaynadier,  
Ph.D. Reptile, Amphibian & Invertebrate Group Leader MDIF&W Bangor  
Research Office; MDIFW Insider; February 2011





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February 2011

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MDIF&W Photo by Phillip deMaynadier

**Floodplain vernal pool habitat along the Sebasticook River in Waldo County.**

# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS

**By Phillip deMaynadier, Ph.D.**

Reptile, Amphibian & Invertebrate Group Leader  
MDIF&W Bangor Research Office

Vernal pools come in myriad shapes, sizes and settings but nearly all are small, forested wetlands whose depressions fill with water from spring snowmelt and rain and dry partly or completely by late summer. What makes these habitats so valuable for wildlife is a rich food base fed by

**Continued on Page 2**

### **IF&W Fact**

Funding for vernal pool identification and conservation by the Maine Department of Inland Fisheries and Wildlife is supported by contributions to the state's Nongame and Endangered Wildlife Fund, proceeds from the Conservation "Loon" license plate and Chickadee Check-off, and a grant from the U.S. Fish and Wildlife Service.



# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS



MDIF&W Photo by Phillip deMaynadier

### High value vernal pool habitat hosts rare species in York County.

#### Continued from Page 1

surrounding forest organic matter and a lack of fish.

Isolated from streams and subject to periodic drying, vernal pools provide a nearly predator-free haven for a diversity of specialized amphibians (salamanders, frogs, and toads) and aquatic invertebrates (over 500 species in New England pools alone) that lack the physical and chemical defenses to reproduce in more fishy environs. Some of Maine's better known pool-breeding specialists -- Spotted Salamanders, Blue-spotted Salamanders, Wood Frogs, Fairy Shrimp, and Fingernail Clams -- have become iconic for their colorful, conspicuous, and nearly exclusive use of vernal pools.

Just as the state's more traditionally recognized wildlife habitats, such as deer wintering areas and waterfowl and wading bird wetlands, host more than deer and ducks, so do vernal pools provide habitat for more than a few specialized frogs and salamanders. In fact, over half of the state's amphibians, turtles, and snakes frequent vernal pool habitats during their life cycle, as do myriad more familiar species such as black and wood ducks, great blue herons, broad-winged hawks, deer, moose, fox, mink, bats and other small mammals.

Some forest herbivores are drawn to vernal pools be-

**Continued on Page 3**

# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS

**Continued from Page 2**

cause they serve as spring oases where the season's first herbaceous forage is available. Forest predators are attracted to vernal pools because of the abundance of pool-breeding amphibian prey occupying the surrounding forest floor.

The collective weight (or "biomass") of these unseen spring amphibian sentinels has been estimated to exceed that of all birds and mammals combined in some forests with productive pools! Indeed, their sheer abundance and palatability has many biologists and sportsmen convinced that the terrestrial wanderings of pool-breeding frogs and salamanders play a powerful role in the local ecology of Maine's forests.

Finally, among Maine's dozens of wetland community types, few host as many rare and endangered species as do vernal pools, providing sustenance and shelter to animals as varied as Blanding's Turtles (Endangered), Ribbon Snakes (Special Concern), and Ringed Boghaunter dragonflies (Threatened), and plants as elusive as Featherfoil (Threatened), and Sweet Pepperbush (Special Concern), to name a few of the most vulnerable vernal pool denizens. Some of these species could face extinction in Maine without the presence of high value vernal pools distributed throughout their range.

Interestingly, as little as 10 years ago the mention of "vernal pools" in a public forum, or even among some natural resource professionals, elicited blank stares as participants struggled to conger an image of the habitat. Today, much has changed. There are few members of Maine's greater landowner, land trust, municipal planning, academic, or professional communities that are not at least partially familiar with the defining characteristics and values of vernal pools. This is due partly to volumes of recent scientific research, much of it from New England, documenting the significance of this previously poorly understood ecosystem. Maine's biologists have been in the forefront of translating this science, often buried among academic journals, into publically accessible outreach materials designed to inform land managers of the values of woodland pools to wildlife diversity and forest ecosystem functions. Another factor has also moved vernal pools into the common vernacular of Maine natural resource discussions: special rules promulgated in 2006 for protection of Significant Vernal Pools

**SPOTTED SALAMANDER  
(INDICATOR SPECIES)**



MDIF&W Photo by Jonathan Mays

**BLUE-SPOTTED SALAMANDER  
(INDICATOR SPECIES)**



MDIF&W Photo by Jonathan Mays

under the state's Natural Resources Protection Act (NRPA).

Because much has already been penned on the science and importance of vernal pools for wildlife (see references below) the balance of the focus here is on policy; specifi-

**Continued on Page 4**



# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS

### Continued from Page 3

cally revisiting the history of vernal pool regulation in Maine and clarifying common questions and misconceptions about its implementation.

The mandate for vernal pool protection is not new. Surprising to some is the fact that the Maine Legislature added vernal pools as far back as 1995 as one of seven Significant Wildlife Habitats eligible for regulatory protection under NRPA – along with Deer Wintering Areas, Seabird Nesting Islands, Atlantic Salmon Spawning Areas, Waterfowl and Wading Bird Wetlands, Shorebird Nesting-Feeding-Staging Areas, and Endangered and Threatened Wildlife Habitat. The inclusion of vernal pools was in response to growing public and scientific recognition of their exceptional wildlife value and vulnerability to certain intensive land use practices.

However, the Maine Legislature also made it clear that the intent was not to expand general wetland protections to include all vernal pools, but instead charged the departments of Environmental Protection and Inland Fisheries and Wildlife to identify a high value subset of the state's vernal pool resource. This seemingly simple charge took over 10 years to accomplish by a state vernal pool technical working group led by the Maine State Planning Office and comprised of agency biologists, environmental consultants, academics, forest management interests, and other stakeholders.

Despite pressure to develop a definition based on remote (aerial photography) or physical characteristics (size, depth), the working group abided by the spirit of the Significant Wildlife Habitat provisions of NRPA in recognizing exceptional wildlife use as the sole criteria by which potentially high value pools could be eligible for protection. Specifically, breeding egg mass thresholds for a small suite of specialized pool breeding indicator species were considered the primary means by which Significant Vernal Pools can be identified. Also potentially eligible for Significance are those pools used by a short list of state rare and endangered species that require vernal pools to complete their life cycle. Finally, regardless of wildlife use, only pools of natural origin can be regulated.

This science-based definition of vernal pool Significance received unanimous bipartisan support from the Natural

### **BLANDING'S TURTLE** (ENDANGERED SPECIES)



MDIF&W Photo by Jonathan Mays

### **SPOTTED TURTLE** (THREATENED SPECIES)



MDIF&W Photo by Phillip deMaynadier

Resources Committee and approval by the 120th Maine Legislature in 2006. Significant Vernal Pools are currently protected in the same manner as the state's other Significant Wildlife Habitats, under Chapter 335 of the NRPA, with regulatory authority administered by the Department of En-

**Continued on Page 5**

# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS

Continued from Page 4

Environmental Protection and technical review and mapping support provided by the Department of Inland Fisheries and Wildlife.

While Significant Vernal Pools have been part of Maine's regulated landscape for nearly four years, there is still occasional confusion about their identification and breadth of regulatory jurisdiction. As a relatively newly protected resource this is understandable, and was similarly the case for other protected natural resources whose value and vulnerability are now taken for granted, including streams, great ponds, and larger freshwater wetlands. Interestingly, most vernal pool confusion is biased toward an assumption that the state's rules are more inclusive and further reaching than is in fact true. To this end, it is worth clarifying a few of the most common questions and misconceptions:

- **Are all (or most) vernal pools now regulated?**

NO. Only Significant Vernal Pools are eligible for regulatory protection using science-based criteria of exceptional indicator species abundance or use by rare or endangered species. As such only a subset of the state's highest value pools are identified as Significant Wildlife Habitat under Maine's Natural Resource Protection Act. Of the nearly 1,200 vernal pools reviewed to date statewide by MDIF&W only 230 (~19%) have been identified as Significant.

- **Can a Significant Vernal Pool be documented on my property without my knowledge?** NO. MDEP and MDIFW have a strict policy of requiring landowner permission before any pool is assessed or mapped. Once a survey is conducted on a willing landowner's property a determination of the pool's status is made by state wildlife biologists and a written notification of the determination is provided to the landowner from MDEP.

- **Is forestry regulated in or near Significant Vernal Pools?** NO. Forest management activities (including associated road construction) are exempt from regulation in or near Significant Vernal Pools, and other Significant Wildlife Habitats. In fact, there is scientific support that careful forest harvesting practices that conserve partial forest canopy, forest litter, and coarse woody debris in proximity to vernal pools is highly compatible with the protection of pool-breeding wildlife. Voluntary management guide-

### SPATTERDOCK DARNER DRAGONFLY (SPECIAL CONCERN SPECIES)



Photo by Blair Nikula

lines for forest management near high value vernal pools are available from the Maine Forest Service at <http://www.maine.gov/doc/mfs/fpm/facts.htm>.

- **Is all development activity prohibited near Significant Vernal Pools?** NO. The 250-foot area around Significant Vernal Pools is a consultation zone where permits may be required from MDEP for certain intensive development activity. Generally, development activities that maintain 75% of the forest cover (only on that portion of the habitat controlled by the landowner) do not require a full permit review and are eligible for Permit by Rule, a streamlined notification process. More intensive development activity may also be acceptable under circumstances where

Continued on Page 6

# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS

**Continued from Page 5**

avoidance and minimization is not possible due to specific parcel constraints. Of the 465 full NRPA permits issued in 2010 by MDEP for all natural resource issues, from wetlands to shorelands to sand dunes, only 4 (0.8%) involved Significant Vernal Pools. Furthermore, since the implementation of pool regulations in 2007, MDEP has not issued a single permit denial for a proposal involving Significant Vernal Pools.

- **Is there scientific support for maintaining intact forest habitat in proximity to Significant Vernal Pools?** YES. Numerous scientific studies from Maine and throughout the Northeast have documented that pool-breeding amphibians travel hundreds, sometimes thousands, of feet into the terrestrial habitat surrounding vernal pools where outside of the breeding season they require cool, moist, mostly closed canopy forest conditions. The 250-foot zone around Significant Vernal Pools is critical to the viability of pool-breeding wildlife and yet only protects a portion of the total upland habitat needs of adults and juveniles as documented using radio telemetry and amphibian trapping techniques.

The Maine Legislature has declared it the policy of the state “to conserve, by according such protection as is necessary ... all species of fish and wildlife found in the State as well as the ecosystems upon which they depend”. The Maine Department of Inland Fisheries and Wildlife takes this mandate seriously, but also acknowledges that this is a tall order when considering that wildlife is further defined by the state to include over 15,000 species of native birds, mammals, fish, reptiles, amphibians, and invertebrates. The Department uses a fine scale, hands-on approach to the conservation and management of a relatively small number of these species -- mainly those managed as harvestable fish and game, and those endangered or threatened by the risk of extinction. However, the state does not have the luxury of managing all of its fish and wildlife resources on an individual species by species basis. It is well recognized that a more efficient and lasting approach for sustaining the vast majority of Maine wildlife requires landscape scale, habitat-based strategies.

To this end, MDIF&W has used a combination of voluntary cooperative outreach and legislatively-approved

**BLACK DUCK  
(USFWS FOCAL SPECIES)**



MDIF&W Photo by Steve Walker

**Black duck nest in vernal pool in Cumberland County.**

regulatory tools to conserve public trust wildlife resources on private lands. One regulatory tool that has been used judiciously and conservatively is the protection of Significant Wildlife Habitat – those discrete patches of habitat that provide exceptional public benefit by serving a disproportionate role in maintaining viable populations of Maine’s native wildlife. While natural resource policy often lags behind natural resource science, Maine made important progress in recognizing the large body of accumulated peer-reviewed science demonstrating that a subset of the state’s vernal pools are highly valuable and vulnerable components of our forest ecosystem.

The information presented here is intended to clarify that current approaches at Significant Vernal Pool protection are designed to strike a balance between accommodating private development interests and the state’s public trust wildlife responsibilities and legislative mandates.

**Continued on Page 7**



# VERNAL POOLS

## MILESTONES AND MISCONCEPTIONS

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Photo by Megan Gahl

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## **APPENDIX 6**

*Vernal Pool Regulation in Maine: Answers to Frequently Asked Questions;*  
This document was created at the University of Maine in consultation with  
the US Army Corps of Engineers, Maine Department of Fish and Wildlife,  
and Maine Department of Environmental Protection.

# Vernal Pool Regulation in Maine: Answers to Frequently Asked Questions

This document was created at the University of Maine in consultation with the US Army Corps of Engineers, Maine Department of Fish and Wildlife, and Maine Department of Environmental Protection.

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*In 2006, legislation was passed in Maine to regulate a subset of vernal pools as Significant Wildlife Habitat under the state's Natural Resources Protection Act. These Significant Vernal Pools (SVPs), a small subset of Maine's total pool resources, are recognized as productive breeding habitat for several specialized species of frogs, salamanders, and invertebrates. Below we provide information on how vernal pools and SVPs are regulated at the federal, state, and local level. We also provide a list of "Frequently Asked Questions" to address and clarify common concerns expressed by landowners.*

## **Who is Involved in Vernal Pool Regulation and what are Their Roles?**

**Army Corps of Engineers (ACOE):** The ACOE is a federal agency responsible for overseeing impacts to wetlands and waterways ("waters of the United States") that result from fill activities and secondary impacts (e.g., areas drained, flooded, fragmented, mechanically cleared or excavated). These waters may include vernal pools of any size and productivity, even if they are not state-recognized SVPs.

**US Fish and Wildlife Service (FWS) and US Environmental Protection Agency (EPA):** The FWS and EPA are federal agencies that provide input to the ACOE on proposals for development that have potential impacts to wildlife habitat values, including species using vernal pools.

**Maine Department of Environmental Protection (MDEP):** MDEP is the state agency responsible for permitting and enforcement associated with wetland alteration activities in Maine. It also oversees protection of other sensitive natural resources including regulation of SVPs.

**Maine Department of Inland Fisheries and Wildlife (MDIFW):** MDIFW is the state agency responsible for mapping high value wildlife habitats and providing technical expertise on vernal pools and other Significant Wildlife Habitats. MDIFW maintains a mapped database of SVPs and forwards pool status recommendations to MDEP. MDEP notifies landowners and field observers of the final regulatory status of all pools submitted for state review.

**Town Code Enforcement Officers and Planning Boards:** Code Enforcement Officers administer and enforce municipal zoning, building, and similar ordinances, and, especially when local standards overlap with state and federal regulations, they encourage adherence to state and federal regulations such as protection of natural resources (including vernal pools). Planning boards are likely to encounter vernal pools as they review site plans and subdivision applications for conformance with local ordinances, and pertinent state and federal regulations.

**Environmental Consulting Firms:** Professional environmental consultants may be hired to delineate wetlands, identify SVPs and federally-regulated non-SVPs, and help landowners apply for permits and adhere to regulation at all levels.



## Federal Regulation

The US Army Corps of Engineers (ACOE) oversees the temporary or permanent discharge of dredge or fill material into waters and wetlands. This regulation is under Section 404 of the Clean Water Act. ACOE has seven divisions throughout the country, each with districts of jurisdiction. The New England District oversees activities in the six New England States.

**Prior to altering a wetland**, landowners are responsible for applying for and obtaining all required permits, which may consist of federal, state, and/or local approvals before work may begin. Authorization from ACOE does not mean that the landowner is not required to obtain other federal, state, or local authorizations required by law, and *vice versa*.

The **ACOE Maine General Permit (ME GP)** provides rules and guidance for regulating activities in and around wetlands and vernal pools. There are two permit review categories within the ME GP: Category 1 (notification form required) and Category 2 (application form required). Proposed activity and size of impact determines the category for permitting that is required. The ME GP may be found at: [http://www.nae.usace.army.mil/reg/Permits/ME\\_GP.pdf](http://www.nae.usace.army.mil/reg/Permits/ME_GP.pdf).

The ACOE vernal pool definition states that presence of any of the following species in any life stage at any abundance level will designate a water body as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs (see the ME GP, Appendix A, Page 10). ACOE vernal pool permitting requirements are described in the ME GP, General Condition 28, page 16.

Certain management practices must be followed for all work within the VP Management Area (Figure 1) of all VPs in order to meet Category 1 (no application required to ACOE - only a Category 1 Notification Form) when there is fill placed in a wetland or waterway.

**NOTE:** The ACOE does not always have jurisdiction over work in uplands. Only in cases where their jurisdiction is triggered by any wetland or waterway fill on a property, can they consider the full scope of a project’s environmental impact, both to aquatic resources and upland resources. It is through this jurisdictional trigger that impacts to VP Management Areas are evaluated by ACOE (Figure 2).

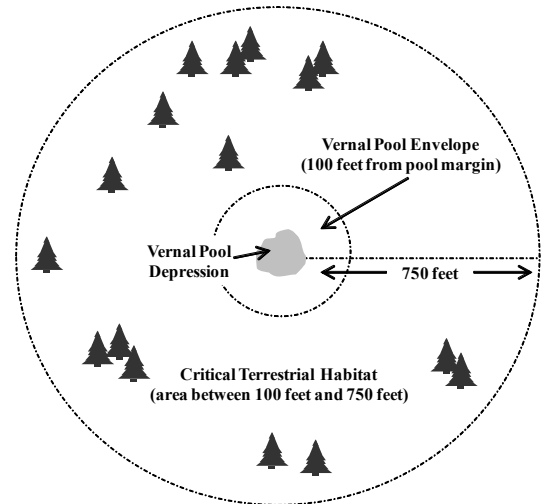


Figure 1: ACOE Vernal Pool Management Area is made up of the depression itself, the vernal pool envelope (area within 100 feet of the pool margin), and the critical terrestrial habitat (area between 100 and 750 feet from the pool margin).

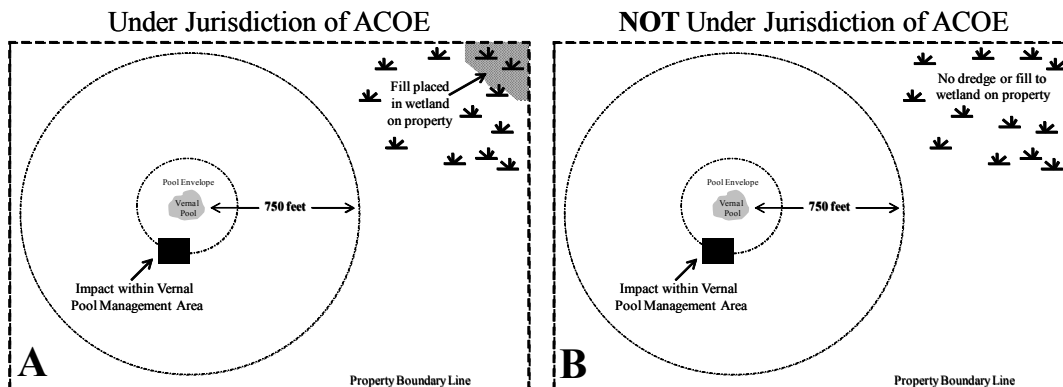


Figure 2: **A-** fill of a wetland anywhere on property triggers ACOE jurisdiction over Vernal Pool Management Areas on property. **B-** without wetland fill on the property the same activities are not regulated by the ACOE.

For example, assuming ACOE jurisdiction is triggered on a project (e.g., 20 square feet of wetland fill on the property but not within the Vernal Pool Management Area), Category 1 of the GP requires the following: no disturbance of the VP depression; no disturbance of the VP Envelope; and maintaining a minimum of 75% of the Critical Terrestrial habitat as unfragmented areas (Figure 3A). Calculating the percent cover loss must include existing unforested areas (roads, fields, power lines, development, etc.) as well as proposed clearing. Failure to meet these standards (Figure 3B) requires at least a Category 2 review and submission of an application to ACOE which must include information on directional buffers in accordance with the VP Directional Buffer Guidance document at <http://www.nae.usace.army.mil/reg/Permits/VPDirectionalBufferGuidance.pdf>. If there is no fill proposed in waters of the U.S. on the property then there is **no** ACOE jurisdiction (Figure 2B).

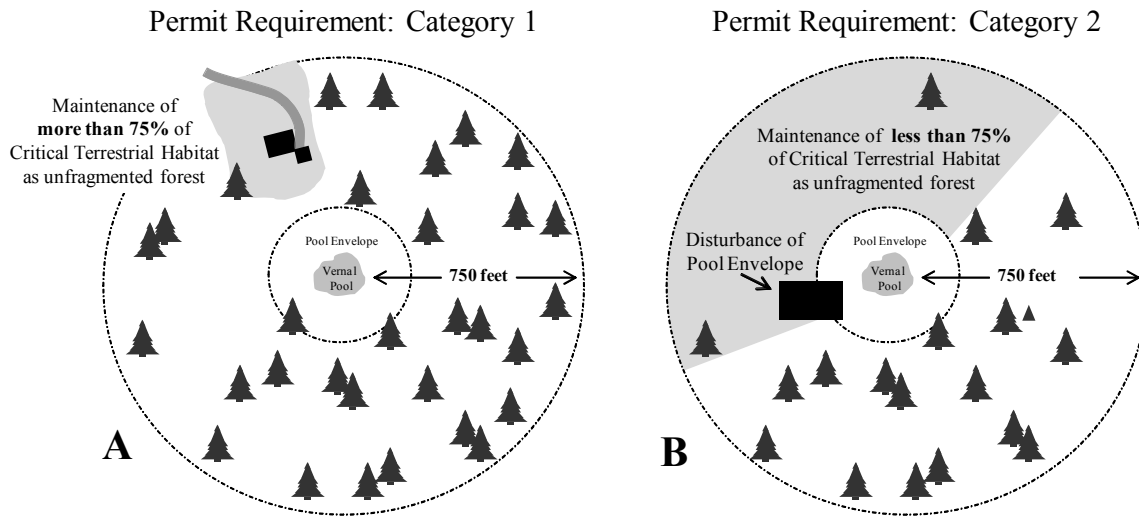


Figure 3: ACOE permitting requirements **A**-Category 1 Permit required if there is no disturbance to the Vernal Pool Depression or Vernal Pool Envelope and a minimum of 75% of the Critical Terrestrial Habitat is maintained as unfragmented forest, **B**-Category 2 Permit required if disturbance is made to the Vernal Pool Depression or Vernal Pool Envelope, or less than 75% of Critical Terrestrial Habitat is converted from unfragmented forest.

### State Regulation

Maine wetlands are regulated under the Natural Resources Protection Act (NRPA, Chapter 335) along with other sensitive natural resources including fragile mountain areas, rivers and streams, great ponds, coastal dunes, and Significant Wildlife Habitats. Permit and review procedures for habitat alteration of freshwater wetlands are based upon the size of impact with review and reporting requirements only initiated for proposed impacts equal or greater than 4,300 square feet (roughly 1/10 acre).

### Significant Vernal Pools

In September 2006, Maine passed legislation under NRPA to regulate Significant Vernal Pools as Significant Wildlife Habitat. Significant Wildlife Habitats host high concentrations of important wildlife populations and receive careful environmental review that may lead to restrictions on certain intensive land-use activities within and adjacent to the SWH, even if the adjacent land is not wetland. SWHs include seabird nesting islands, deer wintering areas, shorebird concentration areas, coastal and inland waterfowl and wading bird areas, and Significant Vernal Pools. MDIFW recognizes the importance of vernal pools to pool-breeding amphibians, invertebrates, and other game and nongame wildlife, including several rare and endangered species. To date, SVPS represent only a high value subset of the total statewide vernal pool resource (between 20 and 25%).

### Definition of Significant Vernal Pools (as defined in NRPA)

**Vernal Pool:** A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.

“Whether a vernal pool is a significant vernal pool is determined by the number and type of pool-breeding amphibian egg masses in a pool, or the presence of fairy shrimp (*Eubranchipus* spp.) or use by threatened or endangered species as specified in Section 9(B). Significant Vernal Pool habitat consists of a vernal pool depression and a portion of the critical terrestrial habitat within a 250-foot radius of the spring or fall high water mark of the depression. An activity that takes place in, on, over, or adjacent to a Significant Vernal Pool habitat must meet the standards of this chapter.”

**Significant Vernal Pool identification criteria:** Vernal pool significance must be determined and documented by an individual who has experience and training in either wetland ecology or wildlife ecology and therefore has qualifications sufficient to identify and document a significant vernal pool.

1. **Abundance.** Any one of or combination of the following species abundance levels, documented in any given year, determine the significance of a vernal pool.

Species	Abundance Criteria
Fairy Shrimp	Presence in any life stage
Blue-spotted Salamanders	Presence of 10 or more egg masses
Spotted Salamanders	Presence of 20 or more egg masses
Wood Frogs	Presence of 40 or more egg masses

2. **Rarity.** A pool that has documented use in any given year by state-listed rare, endangered, or threatened species that commonly require a vernal pool to complete a critical portion of their life-history is a significant vernal pool. Examples of vernal pool dependent state-listed endangered or threatened species include, but are not limited to, Blanding’s Turtles, Spotted Turtles, and Ringed Boghaunter dragonflies.

The NRPA provides guidance on optimal dates based on geographic location to survey pools to determine significance. Generally, at least two visits are needed to make an accurate determination, one during *peak wood frog breeding* and one during *peak salamander breeding* periods.

### Regulated area associated with a SVP

The pool depression and a 250 foot circular “zone of consultation” is regulated (Figure 4). Any activity in, on, or over the SVP or the 250 foot critical terrestrial habitat zone must avoid unreasonable impacts to the significant vernal pool habitat and obtain approval from the MDEP, either through Permit by Rule (a streamlined permitting process) or a full individual NRPA permit.

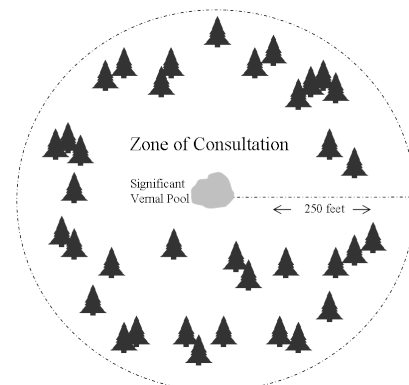


Figure 4: Regulated *Zone of Consultation* within 250 feet of a Significant Vernal Pool.

## **Standards for compliance with the SVP regulation**

- No disturbance within the vernal pool depression.
- Maintain minimum of 75% of critical terrestrial habitat as unfragmented forest with at least a partly-closed canopy of overstory trees to provide shade, deep leaf litter and woody debris.
- Maintain or restore forest corridors connecting wetlands and significant vernal pools.
- Minimize forest floor disturbance.
- Maintain native understory vegetation and downed woody debris.

## **Local Regulation**

Some Maine towns have implemented local ordinances pertinent to wetlands, and more specifically, to vernal pools (e.g., Falmouth, Cape Elizabeth, South Portland, Bar Harbor, and North Yarmouth) that are more restrictive than state or federal rules. A town interested in maintaining the ecological integrity of its natural resources might be concerned by the loss at the local level despite protection at the state and federal level. Municipal ordinances enable a more tailored approach to protection that is specific to known resources at the municipal scale. For this reason, it is important to check with town officials before the area around a potential vernal pool is altered.

## **Frequently Asked Questions**

### **1. How does a landowner know if s/he needs a permit to impact a vernal pool from either the ACOE or MDEP?**

*Town officials or consultants can provide you with guidance, you can contact state officials directly, or you can contact the ACOE for information on the ME GP. A natural resource professional can determine whether or not you have a vernal pool on your property. ACOE and MDEP staff are available to meet with landowners in the field as well (see contact information below).*

### **2. Are all vernal pools regulated by ACOE?**

*ACOE does not regulate VPs per se. For ACOE to regulate a vernal pool, it must be a wetland or waterway of the United States, be contained within a wetland or waterway of the United States, or (as noted above) occur on a property in which jurisdiction over impacts to upland is triggered based on review of impacts to a wetland or water body on the property.*

### **3. Are all vernal pools regulated by the State?**

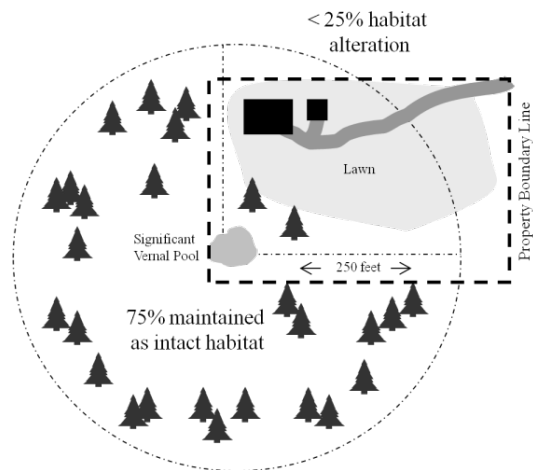
*No. Only a subset of pools defined as Significant Vernal Pools are regulated. Of the approximately 1200 vernal pools formally surveyed to date statewide, only 20-25% qualify as SVPs.*

#### 4. Do Significant Vernal Pools have to be mapped to be regulated?

No. Significant Vernal Pools are subject to specific land use protection standards whether or not they are documented on town or state maps. Landowners are responsible for acquiring relevant permits whether or not vernal pools on their land are mapped.

#### 5. Is the 250 foot zone around a SVP a no-build zone?

No. Think of this zone as a “zone of consultation” where the goal is to minimize adverse impacts to the habitat. When developing within 250 feet of a SVP, the goal is to retain a minimum of 75% of the habitat intact and follow guidelines outlined in the MDEP rules, Chapter 335. Landowners may need to get a permit from the MDEP for development within this zone (see additional resources below).

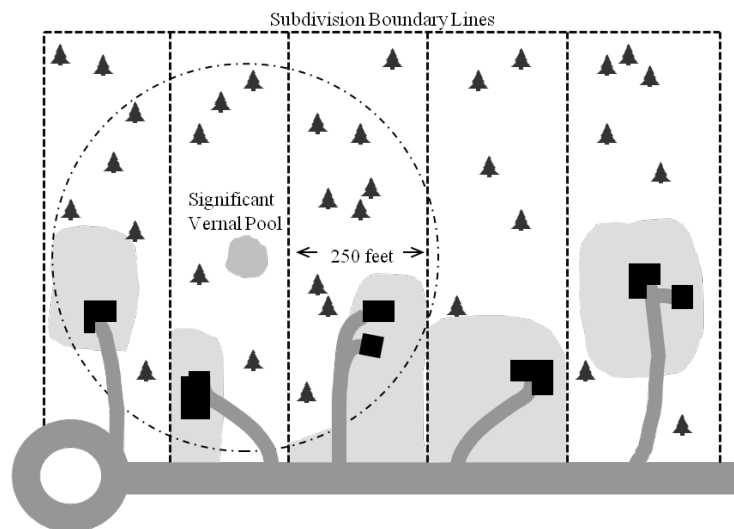


#### 6. Why does regulation limit intensive development in the area adjacent to a vernal pool?

Pool-breeding amphibians often travel hundreds of feet into the terrestrial habitat surrounding their breeding pools where, as adults, they spend only a few weeks in the spring. The rest of the year most adults and juveniles are located within 750 feet of the pool where they feed in the summer and hibernate in the winter. The 250 ft zone around the pool only protects a portion of their upland habitat needs (and only a portion of the population) and provides protection for newly emerged juveniles overwintering near the pool. Adequate forest canopy cover is necessary for providing a cool, moist environment for the amphibians as well as for providing organic material to the pool and forest floor. It is because of the wide dispersion of adults and juveniles that ACOE considers development impacts within 750' of the VP depression. This is a clear difference between the state and federal programs.

#### 7. Will a Significant Vernal Pool in the middle of a proposed subdivision make the land unbuildable?

No. Each landowner is permitted to impact a portion the area within 250 ft of the pool. The example below shows a subdivision where lots were laid out to enable construction of three 2-acre house lots where **within a 4 acre regulated zone** the developer was able to include a 20x100 foot driveway and a 12,000 square foot building envelope for each of the three house lots.



**Within the 4 acre regulated area around SVP:**

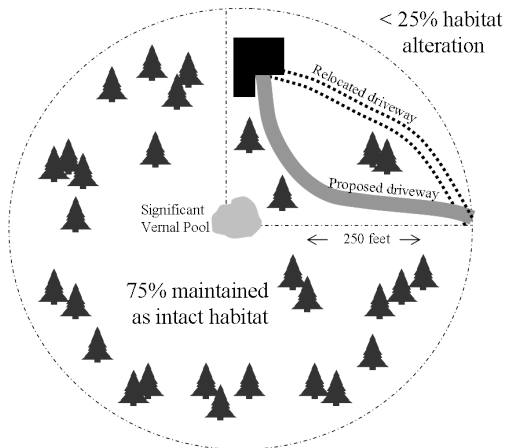
3 lots x 20x100 foot driveway = 6,000 square feet

3 lots x 12,000 square foot building envelope = 36,000 square feet

Total = 42,000 square feet < 1 acre (43,560 square feet), which is < 25% of (4 acre) regulated area



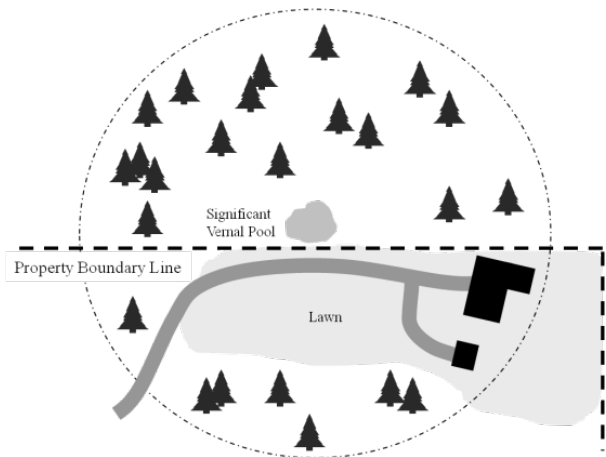
**8. If a landowner has a SVP and wants to build a structure or driveway, how might they need to modify their project?**



*In this example, the landowner has adjusted the location of the driveway to provide more forested habitat in the immediate vicinity of the pool. The MDEP and ACOE work directly with the landowner to come up with flexible solutions.*

**9. If a landowner doesn't own the Significant Vernal Pool, but the 250 foot regulated zone extends onto their property, do they need to get a permit from MDEP?**

*Sometimes. When a pool is located on a property abutting a proposed project and the 250' critical habitat extends into it, the project is not affected by the vernal pool regulation unless the pool has been formally surveyed, found to be significant and is on the State's vernal pool GIS data layer. Only then will an abutter be subject to the land use performance standards detailed for SVP's under the NRPA. Locations of currently mapped vernal pools may be viewed using Google Earth software. For more information see: <http://www.maine.gov/dep/gis/datamaps/>.*



**10. How will a landowner be regulated if they own a SVP but not the majority of the 250 foot zone around the pool?**

*Each landowner is only required to maintain a minimum of 75% forest cover on that portion of the SVP habitat that they own or hold title to. Stated differently, if an abutting neighbor has already converted 25% of their portion of the SVP habitat the current landowner is still permitted to convert up to 25% of the SVP habitat that they control.*

**11. How will a landowner be regulated if they own a SVP but the 250 ft zone is *already* less than 75% forested?**

*Land use clearing within a SVP habitat that occurred prior to 2006 is exempted from regulation; but if existing clearing within the SVP habitat is already more than 75%, no further clearing can be conducted by the landowner without consultation and permitting with MDEP.*

*As previously noted, ACOE considers the cumulative impact of cover loss to a VP, existing cover loss and proposed. Generally the greater the loss, the greater the potential impact, and the more difficult the application process will be (ACOE and MDEP).*

## **12. Does a landowner have to wait until the spring vernal pool season before they can break ground for development?**

*Permit by Rule is an option extended to landowners to allow them to develop within the 250 foot zone of any vernal pool before it has been assessed, by assuming it is a SVP and meeting development standards of surrounding forested habitat. Permit by Rule allows for speedy development without a formal assessment of pool status during the spring breeding season. PBR can generally be obtained in two weeks and costs roughly ¼ of the fee required for a full permit (2010 permit application fees: \$65 for PBR and \$271 for full permit).*

### **Additional Resources**

#### **Maine Department of Environmental Protection**

Vernal Pool Factsheet: [www.maine.gov/dep/blwq/docstand/nrpa/vernalpools/fs-vernal\\_pools\\_intro.htm](http://www.maine.gov/dep/blwq/docstand/nrpa/vernalpools/fs-vernal_pools_intro.htm)

Google Earth file showing regulatory status of mapped vernal pools: <http://www.maine.gov/dep/gis/datamaps/>

SVP rules, application forms, and related materials: <http://www.maine.gov/dep/blwq/docstand/nrpapage.htm>

#### **ACOE**

State General Permit: [http://www.nae.usace.army.mil/reg/Permits/ME\\_GP.pdf](http://www.nae.usace.army.mil/reg/Permits/ME_GP.pdf)

Directional Buffers: <http://www.nae.usace.army.mil/reg/Permits/VPDirectionalBufferGuidance.pdf>

#### **Maine Forest Service**

Vernal Pool Best Management Practice Fact Sheet: <http://www.maine.gov/doc/mfs/pubs/pdf/fpminfo/14vernalpool.pdf>

#### **University of Maine**

Informational Website on Vernal Pools: <http://www.maine.edu/vernalpools>

#### **Maine Audubon**

Significant Vernal Pool Factsheet: <http://www.maineaudubon.org/resource/documents/VP.8.5x11.pdf>

### **Contact Information**

#### **MDEP Central ME Regional Office**

17 State House Station, Augusta, ME 04333-0017; Phone: 207-287-390 or 1-800-452-1942

#### **MDEP Eastern ME Regional Office**

106 Hogan Road, Bangor, ME 0440; Phone: 207-941-4570 or 1-888-769-1137

#### **MDEP Northern ME Regional Office**

1235 Central Drive, Skyway Park, Presque Isle, ME 04769; Phone: 207-764-0477 or 1-888-769-1053

#### **MDEP Southern ME Regional Office**

312 Canco Road, Portland, ME 04103; Phone: 207-822-6300 or 1-888-769-1036.

#### **ACOE ME Project Office**

675 Western Avenue #3, Manchester, Maine 04351; Phone: 207-623-8367

## **APPENDIX 7**

Workshop Minutes:

MAWS March 9, 2010 Vernal Pool Regulatory Round Table Workshop

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MAWS December 8, 2010 Vernal Pool Regulatory Round Table Workshop  
Part 2



**Maine Association of Wetland Scientists (MAWS)**  
**Minutes of Meeting**

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**Subject:** Vernal Pool Regulatory Workshop  
**Date:** February 9, 2010  
**Time:** 1:00 – 5:00 P.M.  
**Location:** Pine Tree State Arboretum, Augusta, Maine  
**Agency Attendees:** Maine Department of Environmental Protection: Jim Cassida, Marybeth Richardson  
Land Use Regulation Commission: Marcia Spencer-Famous  
U.S. Army Corps of Engineers: Jay Clement, Ruth Ladd  
Maine Department of Inland Fisheries and Wildlife: Phillip DeMaynadier  
U.S. Environmental Protection Agency: Mark Kern, Erica Sachs

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**WELCOME AND INTRODUCTIONS:**

Dale Knapp, President of the Maine Association of Wetland Scientists (MAWS), commenced the workshop by explaining how the need for a vernal pool regulatory workshop came about. He explained that now that practicing professionals have had the opportunity to work with the new vernal pool regulations, as would naturally be expected, some interpretation questions have developed. In addition, in discussions among the MAWS Executive Committee (EC) and other practicing professionals, it became apparent that regulatory guidance for interpretation of the regulations was being sought by both individuals and companies on a project by project basis. MAWS set up the workshop with the objective of allowing a forum for an informal and open exchange of information between regulators and practicing professionals to discuss challenges encountered in the field while interpreting state and federal vernal pool regulations. In addition, MAWS recognized the importance of facilitating consistency in, not only interpreting state and federal vernal pool regulations, but also in both vernal pool data collection and reporting practices among practicing professionals.

In preparation for the workshop, the MAWS EC compiled a list of questions that was provided to agency representatives prior to the meeting. These questions were also distributed electronically to the MAWS membership via email prior to the meeting and were attached to the workshop agenda and distributed in hard copy to workshop attendees (attached).

Dale then handed the meeting over to Rod Kelshaw (Chairperson of the MAWS Legislative Subcommittee), who played a key role in compiling the vernal pool questions, to act as moderator during the remainder of the workshop.

Rod then provided an overview of the workshop agenda and commenced the workshop by thanking agency representatives for their willingness to participate in this information exchange and inviting them to introduce themselves and provide a brief overview of their vernal pool regulatory purview.

The following is a summary of that discussion:

**REGULATORY SUMMARY:**

**U.S. Army Corps of Engineers (Jay Clement, Maine Project Field Office):** Mr. Clement explained that the U.S. Army Corps of Engineers' (USACE') jurisdiction is guided by Section 404 of the Clean Water Act that regulates discharges to waters of the U.S. and their adjacent wetlands. He indicated that vernal pools

are captured as part of the definition of waters of the U.S. when in a wetland. He summarized that temporary or permanent discharges (i.e., fill) to these water resources requires a federal (USACE) permit. The Corps has no language defining a "vernal pool" beyond the working definition in the General Permit:

**FROM DEPARTMENT OF THE ARMY PROGRAMMATIC GENERAL PERMIT: STATE OF MAINE (Note: Maine's PGP expires October 2010)**

**3 Special Inland Waters and Wetlands:** Vernal Pools - Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.

**24. Spawning Areas.** Discharges of dredged or fill material, and/or suspended sediment producing activities in fish and shellfish spawning or nursery areas and amphibian and waterfowl breeding areas during spawning or breeding seasons shall be avoided. During all times of year, impacts to these areas shall be avoided or minimized to the maximum extent practicable.

**26. Environmental Functions and Values.** The permittee shall make every reasonable effort to carry out the construction or operation of the work authorized herein in a manner so as to maintain as much as is practicable, and minimize any adverse impacts on existing fish, wildlife, and natural environmental functions and values.

**27. Protection of Vernal Pools.** Impacts to uplands in proximity (within 500 feet) to the vernal pools referenced in Appendix A - Definitions of Categories, shall be minimized to the maximum extent possible.

**Maine Department of Environmental Protection (Jim Cassida, Director Division of Land Resource Regulation):** Jim explained that two laws guide vernal pool protection at the state level. The Natural Resources Protection Act (NRPA) regulates certain vernal pools that qualify as Significant Wildlife Habitat (SWH), which also upgrades the pool to a Wetland of Special Significance. SWH is regulated as habitat, with the pool itself and the land area that is 250 feet surrounding the pool comprising the protected vernal pool habitat. All activities in this habitat area are regulated by MDEP. The type of permit required depends on the activities taking place and the size of the pool. The Permit By Rule is the most basic permit and applies only when the activity results in post-construction (or activity) site conditions that result in alteration of less than 25 percent of the total protected vernal pool habitat (owned or controlled by the applicant). Maine's Site Location of Development Act (Site Law) protects vernal pools as unusual natural areas pursuant to Chapter 375: No Adverse Environmental Effect Standard, Section 12 (see below citation). The state's jurisdiction over vernal pools pursuant to the Site Law applies even when vernal pools do not qualify as significant vernal pools in accordance with NRPA Chapter 310. MDEP has discretion to evaluate, and regulate, additional vernal pool adjacent habitat up to 500 feet when appropriate. (According to correspondence with the MDEP, if the VP doesn't key out as significant, the Department isn't likely to require the 500 foot buffer. But typically on a site project if it is a significant pool, the 500-foot requirement will apply.) Jim also clarified that "Adjacency" only applies to certain types of wetlands, including 20,000 square feet of open water or emergent vegetation and peatlands. The Department's regulation of the area surrounding vernal pools is not an adjacency situation; the habitat itself (area within 250 feet of the pools edge during spring or fall inundation) is the regulated resource.

**FROM MDEP REGULATIONS:**

**The Natural Resources Protection Act (NRPA):** NRPA Chapter 310. Wetlands and Waterbodies Protection, Section 4. WOSS Subsection A2. Significant Wildlife Habitat regulates a significant vernal pool as Significant Wildlife Habitat (SWH), which upgrades the pool to a Wetland of Special Significance. Chapter 335. Significant Wildlife Habitat, Section 9. Significant Vernal Pool Habitat regulates the habitat, which includes the pool depression and 250 feet around the pool depression; comprising the habitat. All activities in this habitat area are regulated. The permit required depends on the activities taking place, the amount of proposed impact and the size of the pool. Chapter 305. Permit-by-Rule Section 19. Activities in, on or over significant vernal pool habitat is the most basic permit and is used when the activity impacts less



than 25 percent of the total habitat (of what they own...this is different from the federal requirements...if half the pool occurs on their property, it would apply to 25% of their half of the pool).

**Site Location of Development (Site Law):** Site Law regulates vernal pools as unusual natural areas under Chapter 375: No Adverse Environmental Effect Standard, Section 12. Preservation of Unusual Natural Areas and Section 15. Protection of Wildlife and Fisheries. This is regardless of significance of the vernal pool. The Maine Department of Inland Fisheries and Wildlife (MDIF&W) has review authority and can request additional buffers up to 500' feet.

“Adjacency” only applies to certain types of wetlands, including 20,000 square feet of open water or emergent vegetation and peatlands – NOT VERNAL POOLS.

**Land Use Regulation Commission (Marcia Spencer-Famous, LURC Senior Planner):** Marcia explained that LURC has no specific definition for vernal pools, based on no undue adverse impact and included in the PWL-1 significant wildlife habitat designation, but no definition of a Significant Vernal Pool. They use the MDIFW definition. This allows some flexibility in regulation. The definition, which is forthcoming, will be consistent with NRPA.

**Maine Forest Service:** MFS has no vernal pool definitions and relies on Best Management Practices for protection. “Forested” after a harvest relies on the definition of a forested wetland.

## WHAT ARE THE APPROPRIATE TERMS FOR DESCRIBING THESE FEATURES?

There are a number of terms that have been used to describe these resources including the following:

**Significant Vernal Pool (SVP)** (NRPA, 38 M.R.S.A. §§ 480-A to 480-FF, Chapter 335, Significant Wildlife Habitat, Section 9. significant vernal pool habitat identification criteria) A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus sp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.

Whether a vernal pool is a significant vernal pool is determined by the number and type of pool breeding amphibian egg masses in a pool, the presence of fairy shrimp, use by rare, threatened or endangered species, or other criteria as specified in Section 9(B).

**9. B. Significant vernal pool habitat identification criteria.** Significant habitat significance must be determined and documented by a qualified individual.

**(1) Abundance.** Any one of or combination of the following species abundance levels, documented in any given year, determine the significance of a vernal pool habitat.

**Species Abundance Criteria.** Fairy shrimp Presence in any life stage. Blue spotted salamanders Presence of 10 or more egg masses. Spotted salamanders Presence of 20 or more egg masses. Wood frogs Presence of 40 or more egg masses.

**(2) Rarity.** A pool that has documented use in (any) given year by a rare species, or state-listed endangered or threatened species that commonly requires a vernal pool to complete a critical portion of its life-history is part of a significant vernal pool habitat. Examples of vernal pool

dependent state-listed endangered or threatened species include, but are not limited to, Blanding's turtles, Spotted turtles, and Ringed Boghaunter dragonflies. The rare species that must be considered are limited to: Ribbon Snakes, Wood Turtles, Swamp Darner Dragonflies and Comet Darner Dragonflies.

**(3) Identification period.** Egg masses must be counted just past the peak breeding period of pool breeding amphibians. Abundance of pool-breeding amphibians can only be used to determine the presence of a significant vernal pool during the identification period. The presence of fairy shrimp, rare species listed in paragraph (2), or a state-listed endangered or threatened species may be used to determine the presence of a significant vernal pool at times of the year other than the identification period.

**NOTE:** Optimal times for counting egg masses of pool-breeding amphibians vary according to geographic location and weather. For instance, during cold springs, breeding can begin as much as 2 weeks later than it does in warm, wet springs. The optimal time to count masses is just past the peak breeding period. For wood frogs, this occurs approximately 2 weeks after they start full choruses. Wood frog egg masses hatch very quickly and are difficult to count much past peak breeding. Salamanders have a more extended breeding period and their eggs do not hatch as quickly as those of wood frogs. Therefore, surveys to count salamander egg masses should be conducted slightly later in the breeding season, generally 2-3 weeks following wood frog egg mass counts. The following are rough guidelines for optimal times for counting egg masses:

Geographic Region	Wood Frogs	Spotted & Blue Spotted Salamanders
Northern Maine	May 5 – May 20	May 15 – June 5
Central Maine	April 25 – May 10	May 5 - May 25
Southern Maine	April 10 – April 25	April 20 – May 10

Note that optimal egg mass counting dates for high elevation localities are likely to be delayed by up to one or two weeks from the suggested dates provided within each geographic region above.

**(4) Geographic regions.**

(a) The three geographic regions used in Section 9(B)(3) are as follows.

(i) The Northern Maine region is approximately that part of the state north of a line extending from Rangeley to Dover-Foxcroft to Howland to Calais.

(ii) The Central Maine region is approximately that part of the state south of that same line and north of a line extending from Fryeburg to Augusta to Belfast.

(iii) The Southern Maine region is approximately that part of the state south of the line extending from Fryeburg to Augusta to Belfast.

(b) The two geographic regions used in Section 9(B)(4-A) are as follows.

(i) The Northern Maine region is approximately that part of the state north of a line extending from Rangeley to Dover-Foxcroft to Howland to Calais.

(ii) The Southern Maine region is approximately that part of the state south of the line described in (i).

**(4-A) Drying.** When a vernal pool habitat has not previously been determined to be significant, and the department or the Maine Department of Inland Fisheries & Wildlife (IF&W) makes a determination concerning whether the vernal pool habitat is significant, either department may determine that the vernal pool habitat is not significant if:

(a) The vernal pool is located in northern Maine and dries out after spring filling and before July 31st based on winter, spring and early summer precipitation; or

(b) The vernal pool is located in southern Maine and dries out after spring filling and before July 15th based on winter, spring and early summer precipitation.

**(4-B) Lack of permanent flowing inlet or outlet.** In order to be identified as part of a significant vernal pool habitat, the vernal pool may not have a permanent flowing inlet or outlet.

**(5) Seasonality.** The department may require an assessment of significance by a qualified individual during the identification period. In any season, indicators of a potentially significant vernal pool habitat may include flat topography with depressions or pit-and-mound topography, wetland flora, fingernail clams, caddisfly cases, and evidence of temporary flooding.

**(6) Voluntary identification.** A landowner may voluntarily submit documentation to the department or IF&W regarding the significance of a vernal pool on that individual's property. Documentation must be completed by a qualified individual, or field-verified by either the department or IF&W prior to its inclusion on a Geographic Information System (GIS) datalayer maintained by either IF&W or the department. A landowner will receive written confirmation of such documentation from the department.

**(7) Verification of significance.** A significant vernal pool documented on a Geographic Information System (GIS) data layer maintained by either IF&W or the department is eligible for removal from that data layer following IF&W verification of three consecutive years of data demonstrating that a vernal pool no longer meets the criteria in Sections 9(B)(1) or (2). A written request to remove a significant vernal pool from the data layer must be submitted to both IF&W and the department and include documentation made during the identification period by a qualified individual. A written department determination that a vernal pool is not significant remains valid regardless of timeframe.

**9. A. Definitions.** As used in this section, unless the context otherwise indicates, the following terms have the following meanings.

**(1) Critical terrestrial habitat.** Uplands and wetlands associated with significant vernal pools used by pool breeding amphibians for migration, feeding, and hibernation, in particular, forested wetlands and forested uplands that provide deep organic litter, coarse woody debris and canopy shade.

**(2) Egg mass.** Three or more individual eggs clumped in a gelatinous matrix constitute an egg mass. Egg masses often occur in clusters, but each mass within a cluster must be counted as an individual egg mass.

**(3) Natural.** A natural vernal pool includes pools of natural origin that have been modified or excavated. A natural vernal pool does not include other natural wetland types (wet meadows, marshes, etc.) that have been altered and currently function as vernal pools.

**(4) Pool-breeding amphibians.** Animals that, as part of their life cycle, reproduce in vernal pools. Most pool-breeding amphibians return to reproduce in the pool where they originated. Most adult pool-breeding amphibians spend less than one month in breeding pools; the rest of their annual cycle is spent in critical terrestrial habitat.

**(5) Qualified individual.** An individual who has experience and training in either wetland ecology or wildlife ecology and therefore has qualifications sufficient to identify and document a significant vernal pool.

**(6) Significant vernal pool.** The vernal pool depression within a significant vernal pool habitat.

**(7) Significant vernal pool habitat.** A significant vernal pool and that portion of the critical terrestrial habitat within 250 feet of the spring or fall high water mark of the vernal pool depression.

**(8) Vernal pool depression or vernal pool.** This area includes the vernal pool depression up to the spring or fall high water mark, and includes any vegetation growing within the depression.

**Vernal Pool (VP)** Vernal pools that do not comply with the Maine DEP's definition of a significant vernal pools are regulated by the USACE's pursuant to the definition of special inland waters and wetlands included in Maine's Programmatic General Permit.

**3Special Inland Waters and Wetlands:** Vernal Pools - Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.

**Potential Vernal Pool (PVP)** Is a term used to refer to pools or dry depressions in the landscape that appear to have the potential to meet the definition of a vernal pool: *a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable*

*populations of predatory fish. PVP are referred to as such because they are observed in the field outside of the time period (spring of the year) when determinations of significance can be made.*

**Amphibian Breeding Area (ABA)** (U.S. Army Corps of Engineers, Maine Programmatic General Permit i.e. non-natural habitat, stream/beaver impoundment, permanent waterbody, etc. that provides breeding area for vernal pool indicator species)

**24. Spawning Areas.** Discharges of dredged or fill material, and/or suspended sediment producing activities in fish and shellfish spawning or nursery areas **and amphibian and waterfowl breeding areas** during spawning or breeding seasons shall be avoided. During all times of year, impacts to these areas shall be avoided or minimized to the maximum extent practicable.

### **Potential Amphibian Breeding Area (PABA) (off-season determination)**

The phrase “amphibian breeding area” describes a function of a wetland and/or vernal pool and not necessarily part of the vernal pool definition.

MDEP (J. Cassida): Site law regulates vernal pools - potential vernal pools are considered are SVPs until springtime surveys.

MDIFW (P. DeM.): Anything assessed in the spring, project associated an ABA, VP, SVP. MDIFW wants all that data, positive and negative.

MDEP (J. Cassida): The dry-out timeframe is not a trump card to throw out pools that were determined to be significant based on the egg mass counts.

## **QUESTION AND ANSWER SESSION**

*The order of this discussion was based on the previously mentioned list of questions provided to the regulatory panel prior to the meeting.*

### **Category 1: What is Required to Show on a Project Resource Map & Disclose to Regulators?**

**1. This is for NRPA and/or Site Law. Does a project become reporting to the DEP if there is NO wetland alteration, however there is alteration w/in 250' of an SVP depression?**

MDEP Response: Yes, unless <25% is altered and the activity complies with MDEP's Permit by Rule Standards.

Within 325' of an SVP (adjacency)?

MDEP Response: No, adjacency (75 foot regulated buffer) does not apply to SVP (250 foot from pool edge) adjacent terrestrial habitat.

**2. Does a project become reporting to the MDEP if there is NO wetland alteration, however there is alteration (upland or wetland) w/in 250' of a VP or ABA depression?**

MDEP Response: NRPA: No, assuming it is not an SVP.  
Site Law: Yes, also assuming it is not an SVP.

**3. Does a project become reporting to the MDEP and/or Corps if there is at least 1 square foot of wetland alteration if the wetland contains an SVP?**

MDEP Response: Yes, wetlands containing SVPs are classified as Wetland of Special Significance and wetland alterations in WOSS do not qualify for non-reporting (permit-by-rule) permits.

USACE's Response: No, the General Permit Category 1 requires no direct impact to a pool, avoid and minimize impact to surrounding upland (i.e. w/in 500 feet), and that "the project shall have no more than minimal individual and cumulative adverse environmental impacts as determined by the Corps" (Maine PGP).

**4. If there is at least one square foot of wetland alteration on a project, do ALL SVP, VP and ABA's have to be shown on the project site? Within 500' of all project alteration (upland & wetland)?**

MDEP Response: Yes, the MDIFW wants all VPs, SVPs and ABAs with requisite numbers, which would trigger SVP in a natural pool.

USACE's Response: not necessarily – Check with Project Manager

**5. Are all Site Law projects required to depict ALL SVP, VP, PVP, ABA, and PABA's onsite?**

MDEP Response: Yes.

**6. What is required by LURC for any of the previous scenarios?**

LURC Response: Filing requirements would be determined on a case by case basis.

**Category 2: Case-by-Case Specific Questions**

**1. Can an SVP have permanent hydrology?**

USACE's Response: Yes, this would still be regulated by the Corps even if it is not a SVP.

MDEP Response: No

**1.a. Follow up question was asked regarding how much is permanent, any "regulatory rules of thumb" for determining permanent hydrology?**

MDEP Response: Not at this time.

**1.b. If not, then is this same site feature considered a VP or an ABA?**

MDEP Response: No, vernal pools with permanent hydrology are not regulated by MDEP as wildlife habitat but may be regulated as wetlands if it meets regulatory definition for wetlands.



**2. Can a SVP be a complex of connected pits in a pit & mound wetland?**

USACE's Response: Yes

MDIFW Response: Yes

a. *If so, what is the depression considered to be.*

MDIFW Response: Wait until 2nd visit to determine the high water mark, after the spring melt has come down to the normal high water mark.

**3. Can an SVP have less than 75 percent existing woody vegetative habitat [read: CANOPY] cover?**

USACE's Response: Yes, it is possible for a pool to remain highly productive even if the adjacent terrestrial habitat has been altered. When alteration has already occurred we don't know the level of productivity with more than 75% canopy cover?

MDEP Response: Yes.

**4. Does a SVP located within a wetland make the entire wetland a WOSS?**

MDEP Response: Yes

**5. Is a wetland located within the 250' habitat of a significant vernal pool WOSS if the pool is not located within the same wetland?**

MDEP Response: Yes, the entire wetland—even that portion which is outside the 250' buffer—is considered a Wetland of Special Significance.

**6. If an underdrain is proposed in a VP or SVP, does this potential impact need to be calculated, and if so, how does the regulatory community suggest doing so?**

MDEP Response: Yes, The biologist should work with the project engineers to evaluate the potential hydrological affects of the underdrain on pool hydrology. This may not translate into a square foot impact calculation but would need to be explained in the permit application for consideration by the agencies.

**Category 3: Requirements for Inspection – Off-Site Features****1. Are we required to check the Google Earth vernal pool (VP) layer for on-site or near site mapped pools?**

MDEP Response: The biologists are not required to check available data sources for adjacent resources, but it's a good idea. The database is updated regularly (i.e., weekly during the busiest time and approximately monthly or every 10-20 pools the rest of the year).

**2. Are we required to check aerial photographs & published mapping for off-site wetland connections to off-site mapped VPs?**

MDEP Response: Not required, the MDEP field staff already does this. It should be noted that typical MDIFW consultation letters do not include information contained on the vernal pool data base.

USACE's Response: Not required, but it's a time savings if we do.

**3. If a VP extends off-site (off property or outside a ROW) are we required to investigate the pool area off-site?**

**a. Can we legally do this or is it considered trespassing?**

**b. Do we have to assume significance if we do not investigate off-site?**

**c. Can we legally conduct a SVP survey (and potentially register a SVP) on a ROW (e.g., a road ROW) that has deeded access to the town/state, but owned in fee privately?**

USACE's Response: No, do not trespass, survey to the extent that you are allowed and can.

MDEP Response: MDEP will not consider pools located off (Project) property (other side of property lines). \*\*In a scenario when a SVP is located two-thirds on your property and 1/3 on an abutting property, a good faith effort should be made to observe egg masses visually off property and within the pool to determine if significance criteria are likely to be met:  
 20 wood frog egg masses  
 10 spotted salamander egg masses  
 5 blue spotted salamander egg masses  
 \*\*(please refer to regulatory guidance below)

***The following communication was received from MDEP following the workshop.***

*Below are some general guidelines to use when you get a project where this issue comes up, and it will: there's a PSVP (potential significant vernal pool) located partially on the project site and partially on adjacent property. You should use the information below as an approach to assessing these pools for significance, in conjunction with MDIFW.*

MDEP won't consider them significant if:

- 1) 2/3 or more of the pool area is surveyed, AND
- 2) no fairy shrimp are detected and amphibian indicator egg mass counts do not exceed the following thresholds: a) Wood Frog--20, b) Spotted Salamander--10, OR c) Blue-spotted Salamander—5, AND
- 3) documentation is provided by the applicant's consultant that a good faith attempt was made to survey the pool across the property line by contacting the owner, and if permission was not granted, characterize how much of the pool was able to be surveyed from the property line without going onto the adjacent property.

Following in CAPS is the rationale for the first two criteria developed by Phillip deMaynadier:

- 1) 2/3 or more of the pool area was surveyed, AND

WE AGREED THAT 2/3 IS AN APPROPRIATE RATIO THAT BALANCES THE DEPARTMENTS NEED TO MINIMIZE ERROR UNDER OUR STATUTORY OBLIGATION TO IDENTIFY AND PROTECT SVPs WHILE RECOGNIZING THAT SOME POOLS CAN NOT BE SURVEYED IN THEIR ENTIRETY DUE TO MISSING PRIVATE PROPERTY PERMISSION. FURTHERMORE, WE AGREED THAT IN MOST CASES -- WITH THE ASSISTANCE

OF AERIAL PHOTOGRAPHY, NWI MAPS, AND ON SITE VISUAL ASSESSMENT -- SURVEYORS WILL BE IN A POSITION TO APPROXIMATE THE % OF THE POOL SURVEYED.

2) no fairy shrimp were detected and amphibian indicator species egg mass counts did not exceed the following thresholds: a) WF--10, b) SS--5, or c) BS--0.

WE DECIDED TO INCREASE THE EGG MASS THRESHOLDS TO 1/2 THE TOTAL REQUIRED FOR SIGNIFICANCE. WHILE ERRORS IN VERNAL POOL STATUS DETERMINATION WILL OCCUR AS A RESULT OF INCOMPLETE SURVEYS WE HAVE MADE A REASONABLE ATTEMPT TO MINIMIZE THESE BY REQUIRING A COMBINATION OF TWO COMPLEMENTARY CRITERIA -- I.E. EVIDENCE THAT EGG MASS NUMBERS ARE NOT APPROACHING SIGNIFICANCE LEVELS ACROSS THE MAJORITY OF THE POOL AREA.

***Example Scenario: We are hired to map wetlands along an existing road. The client only has access rights to the existing ROW (e.g. 10 feet off existing pavement).***

***1. What outside information do wetland scientists need to gather besides on the ground information (e.g. MDIF&W existing VP data, aerial photo interpretation, etc)?***

USACE's Response: No, do not trespass, survey to the extent that you are allowed and can.

MDEP Response: MDEP will not consider pools located off (Project) property (other side of

***2. What should wetland scientists do if the delineation occurs in July, and 25 feet from the pavement (outside of the ROW) the delineator sees a pool of water in a forested wetland?***

USACE's Response: Do not trespass, survey to the extent that you are allowed and can.

MDEP Response: MDEP will not consider pools located off (Project) property (other side of property lines).

***3. What if the client specifically says all they are seeking is wetland boundary flags – no reports, no WOSS information, no VP search – but the delineator stumbles upon some PVP/PABA type of features (in or out of the ROW)?***

This was decided to be a personal/professional ethical dilemma, use best professional judgement and be specific in disclosing what you did and did not survey for.

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#### **Category 4: Requirements for Inspection – On-Site Features**

***1. What is the required minimum number of site visits for vernal pool identification or dismissal? EMPHASIS ADDED.***

MDEP Response: There is no required minimum number of visits (just one, technically is necessary); one could assume that finding more egg masses (beyond the SVP #'s) would necessitate fewer visits; a man-made pool only necessitates one visit—but be very sure that it's man-made.

***2. For depressions of natural origin, is there a minimum number of indicator species egg masses required to callout a feature as a VP (i.e., should one wood frog egg mass in a natural depression be mapped as a VP)?***

MDEP Response: Yes (we wondered about the converse, no documented masses, but it looks like one).

USACE's Response: Yes, the Corps may regulate this pool based on the functions it provides for amphibian breeding more than for the pool itself. It's better to provide the information so the agencies can judge.

**3. For depressions of non-natural origin (ATV, skidder ruts, ect.) is there a minimum number of indicator species egg masses required to identify the feature as an ABA (i.e., should one wood frog egg mass in a non-natural depression be mapped as an ABA)?**

MDEP Response: Needs to be reported for Site Law.

USACE's Response: Identify the occurrence, use best professional judgement and explain it. There are no size qualifications. Use common sense. There have been no studies that have shown a correlation between size, depth and productivity. we document these occurrences as...?

**4. For other site features that contain egg masses (beaver impoundments or streams) is there a minimum number of indicator species egg masses required to identify the feature as an ABA (i.e. is one spotted salamander egg mass in a stream an ABA – should a stream (int. or per.) ever be considered an ABA)?**

MDEP Response: Submit the forms and document what was observed and the agencies will evaluate what form of regulation is appropriate.

USEPA Response: In 500 pools, 5 had egg masses and fish populations, but the 2 were separated by some kind of barrier or shallow water depth. These pools were documented to have both egg masses and fish populations, so therefore, the two can occur simultaneously.

**Category 5: Mitigation**

**1. Will any clearing of vegetation [read: TREES] within a VP depression require compensation? ABA?**

USEPA Response: No jurisdiction for just vegetation removal although temporary fill and stump grinding all count as fill and require corps permits.

MDEP Response: Yes, depends on scope and adherence to the 25% in the adjacent terrestrial habitat rule. Any fill or alteration is considered a total loss of the vernal pool habitat and must compensate for that entire loss.

**2. Will any clearing of vegetation [read: TREES] above the pool (opening the pool) depression require compensation?**

See above answer.

**3. Does on-site, preexisting, non-forested area within the critical terrestrial habitat [for SVPs] count toward the 75% threshold?**

MDEP Response: Yes.

**4. Does off-site [read OFF-PROPERTY], preexisting, non-forested area within the critical terrestrial habitat [for SVPs] count toward the 75% threshold?**

USACE's Response: Yes

MDEP Response: No

**5. Assuming all standards of avoidance and minimization have been met, will creation of vernal pools be looked at favorably as compensation?**

MDEP Response: Not the top choice.

USACE's Response: Not the top choice, but have more flexibility.

**Is preference given to on-site or off-site creation?**

Usually off-site.

**How much buffer or critical terrestrial habitat CTH (wetland and upland) is required to get credit for vernal pool creation?**

The maximum extent possible for what you are creating (i.e., 750 feet for an SVP). We wondered how far, at least within the same watershed.

**6. Do the DEP and ACOE have differing standards for what is acceptable for a minimum of 75% of the critical terrestrial habitat as unfragmented forest with at least a partly-closed canopy of overstory trees?**

MDEP Response: In general, as few fragments as possible.  
For permit by rule, it must be unfragmented.  
For Site Law, they use the differential standard (altering the shape of the buffer to accommodate appropriate habitat.

**7. Where's in lieu fees( ILF) at in terms of all of this? Are there any thoughts of reducing the multiplier for VP impacts where impacts are to upland CTH?**

MDEP Response: Not considering/contemplating any changes for at least 2 years.

**8. If preservation of another vernal pool is used as compensation for impacts to a SVP, must it be an SVP of similar size?**

Agency Response: Enhancing or protecting a man-made pool in place of a natural pool if it is very productive would be considered acceptable.



***How much undisturbed CTH must be preserved along with it? How is this calculated?***

Agency Response: Enough to preserve the habitat, 750 feet. There is the possibility of enhancement for this situation.

***9. What special considerations must be taken if proposing to move indicator species egg masses from a natural pool or other ABA to a created pool for mitigation?***

Agency Response: No net loss of egg masses

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**Category 5: Miscellaneous Questions from the floor*****Kathleen Miller Comment/Question: What is the responsibility of Applicant/Client if they are not the landowner (i.e., lease expected)?***

Agency Response: MDEP (J. Cassida): landowner must sign off that data can be submitted  
LURC (M. S-F): Lease agreements are all different and it may not be clear what is included and allowed in the lease.  
MDIFW (P.DeM.): if landowners are not being used, you cannot submit their data. There is the possibility of providing data with no form, which means there is no public record of it. For example, a spreadsheet identifying vernal pools and/or wetlands for an alternatives analysis.

***Jim Logan comment: Is there a protocol for Significant/Vernal Pool survey requirements?***

Agency Response: They will look to MAWS to establish a protocol.

***Comments about number of required visits: One visit is enough to determine if a pool is man made, or if there are hundreds of egg masses.***

Agency Response: As many as 3-4 may be needed in more complicated cases.

***Danielle Dyer question: If on a first visit a pool is determined to be natural and significant based on the wood frog egg mass count, is a second visit required?***

MDIFW Response: No. Data for the spotted salamander is not required, provided the hydroperiod is apparent.

***Jim Boyle comment: The corridor width is ideally 250 feet on either side of a given corridor. If the client chooses to abide by this suggestion, the alternatives for an alternatives analysis are already provided.******Alan Haberstock question: If a rare species that is included in the list for vernal pool significance is revealed to occur in the area, but not observed during the survey, is it inferred that the pool is an SVP (if not triggered already by the abundance counts)?***

Agency Response: No, that is not enough. The species must be physically observed. Consider the type of survey you are conducting, it may be a different type of survey for the rare species than for the vernal pool.

***Question from Cole Peters: If a species listed is observed, is it a vernal pool?***

Agency Response: No, but it's important to identify that function of a questionable feature. Erica responded with some clarification that it may take "several years" for a man-made feature to naturalize and earn treatment as a vernal pool.

***Question from Dave Moyses: In the update of the PGP in October, will the 500' buffer become 750'?***

USACE's Response: It has in Massachusetts, but not necessarily for Maine.

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**CLOSING**

The workshop was concluded with a sincere thank you to the agency representatives for their participation in the information exchange. Dale Knapp indicated to the attendees that Minutes from the meeting would be prepared and posted on the MAWS website.

## **APPENDIX 8**

MDIFW Recommended Periods for Vernal Pool Egg Mass Survey by  
Geographic Region

# Recommended Periods for Vernal Pool Egg Mass Survey by Geographic Region

Optimal times for counting egg masses of pool-breeding amphibians vary according to geography, elevation and weather. Egg mass counts are generally best conducted just past the peak breeding period. For wood frogs, this occurs approximately 1 to 2 weeks after full chorus. Salamanders have a more extended breeding period and their eggs do not hatch as quickly as wood frogs. Therefore, surveys to count salamander eggs should be conducted slightly later in the breeding season, generally 2-3 weeks following wood frog egg counts. **These recommendations are only guidelines and conditions may vary annually and locally thus requiring best professional judgment for the optimal timing of egg mass surveys.**

Region	Wood Frogs	Salamanders
 Southern	April 10 - April 25	April 20 - May 10
 Central	April 25 - May 10	May 5 - May 25
 Northern	May 5 - May 20	May 15 - June 5

