

## VP Directional Buffer Guidance

### Current review areas

Typically, vernal pool regulations apply to the pool depression and a radial buffer around the pool. Buffers were established largely to protect the water quality of the amphibian breeding pool while providing some terrestrial habitat for the wood frogs and salamanders that breed in these pools. The size of the regulated zone varies from state to state. In Maine, the DEP's regulated zone is 250 feet (FT) from the high water mark of a Significant Vernal Pool's depression (Figure 1). An activity in this zone is eligible for a Permit by Rule (PBR) provided that habitat management standards are met, including maintaining a minimum of 75% of the 250 FT regulated zone as unfragmented forest. The Corps of Engineers review area ("Vernal Pool Management Area") in their October 2010 Maine General Permit is 750 FT from the high water mark of a vernal pool, regardless of whether the vernal pool is "significant" or not. An activity in this 750 FT area is eligible for Category 1 provided that similar habitat management standards are met, including maintaining a minimum of 75% of the 750 FT regulated zone as unfragmented forest. Impacts to over 25% of contiguous area in this zone will require an application to the Corps for review for potential avoidance, minimization and compensatory mitigation measures.

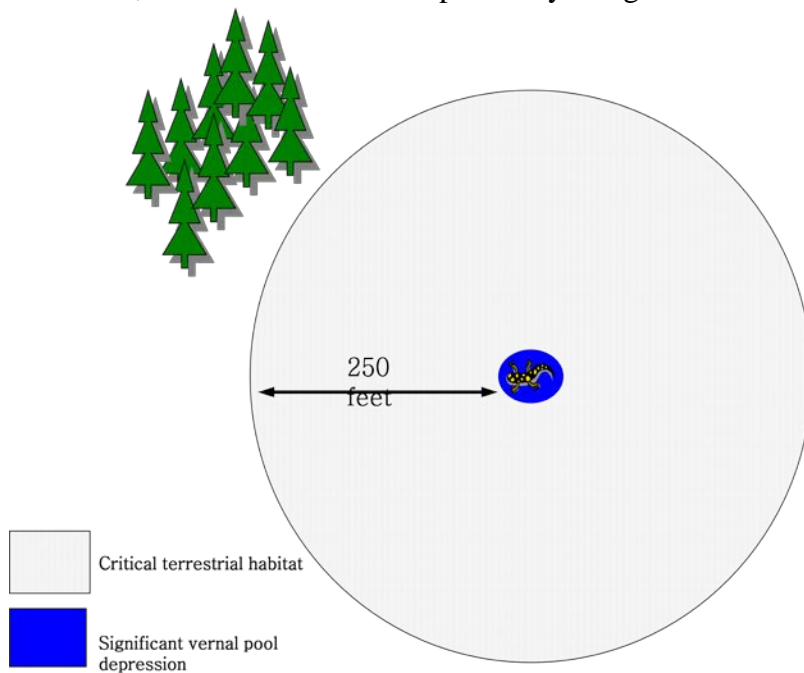


Figure 1:  
Maine DEP's regulated zone

However, circular zones often do not meet the terrestrial habitat needs of vernal pool species. Adult amphibians spend only 2 or less weeks in breeding pools before they move back into the forests where they spend the vast majority of their lifecycle (feeding and hibernating). Pool-breeding amphibians typically travel 750 FT (and as far as a mile or more) to reach non-breeding habitats. During their life-cycle, some species require 2 or more distinct habitats. For example, the wood frog uses vernal pools to breed, forested wetlands and moist stream bottoms to summer, and well-drained uplands to hibernate (Figure 2). Spotted salamanders typically breed in vernal pools and rely on small mammal burrows (often shrews) in upland forests for both summer habitat and for hibernating.

Given that current vernal pool regulations rely on regulating set circular zones around pools and may not conserve pool-breeding species or meet the needs of landowners, regulating agencies may choose to take a flexible approach like directional buffers that better serves both the human and amphibian communities.

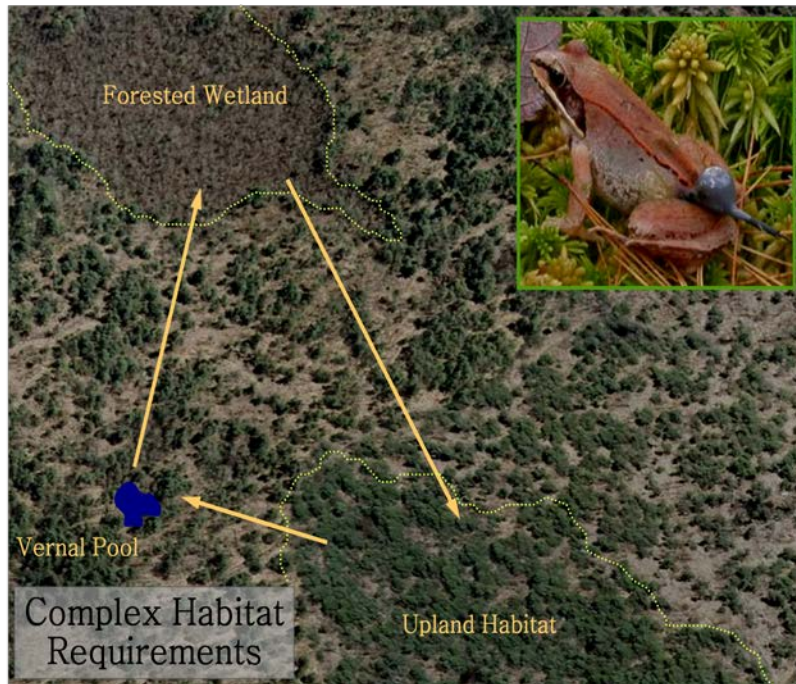


Figure 2:  
Complex habitat requirements

### Directional Buffers

Directional buffers are a vernal pool management tool that allows a flexible approach to conserving pool-breeding amphibian habitat. Directional buffers are designed to link habitats used by pool-breeding amphibians (e.g., breeding pools, forested wetlands, uplands) with forested travel corridors at appropriate migration scales (750 FT or greater). Landowners, consultants, and regulators can work together to design a regulatory buffer that is site-specific. This flexible approach considers pool-breeding amphibian habitat as a network of connected habitat elements (e.g., breeding pools, upland forest, nearby forested wetlands). Often, this approach can reduce the amount of land potentially requiring protection by  $> 2/3$  from that of circular habitat models and can be better tailored to individual landowner needs.

### Example

In Figure 3a, there is a circular buffer around a significant vernal pool which includes field habitat that is not suitable for vernal pool-breeding amphibians (they are forest-dwelling species). As it stands, this would only allow the landowner to develop 25% of this zone thereby conserving land unsuitable for amphibians and suitable for development. Figure 3b illustrates a “directional buffer” alternative where a buffer is shaped to connect other elements of amphibian habitat for wood frogs. In this model, the pool is linked to forested wetlands used by wood frogs in the summer and includes a travel corridor that is suitable upland habitat for hibernation. The same amount of land is conserved using both approaches. Other models may connect pools to other vernal pools or to good upland habitat and may actually require less land.

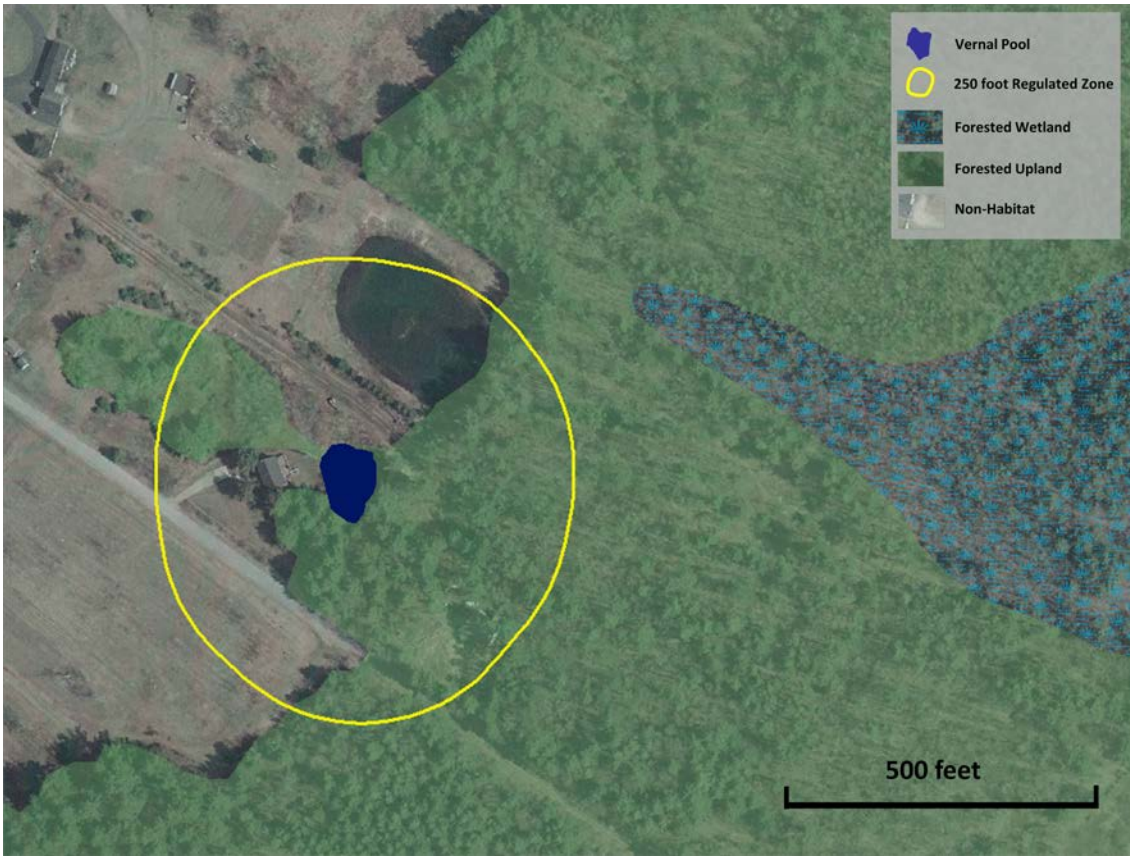


Figure 3a: Circular Buffer

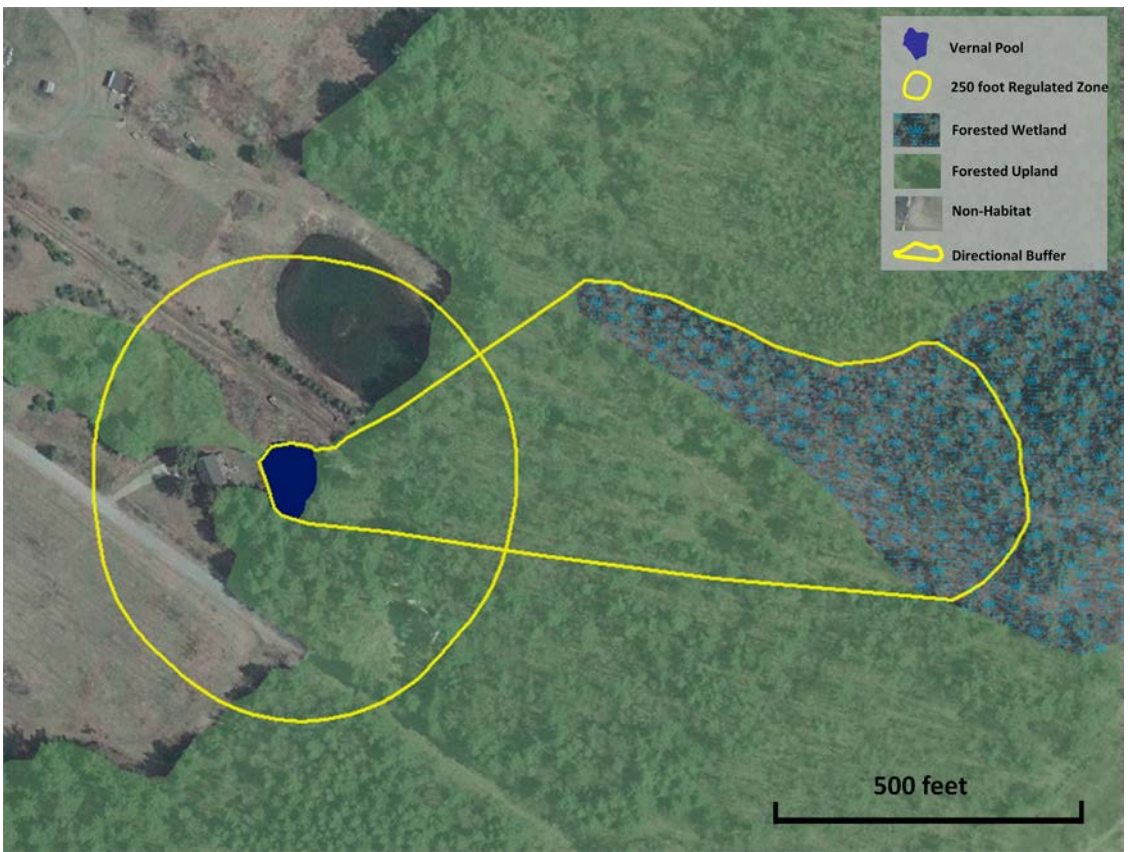


Figure 3b: Directional Buffer