

COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

---

In the Matter of

Hoosac Wind Project  
EnXco, Inc.

Docket No. 2004-174  
DALA Docket No. DEP –05-124  
File No. 156-10

Florida

June 20, 2007

---

Final Decision

In this appeal, two citizen groups challenge the wetlands permit issued to enXco, Inc. to construct gravel access roads for a wind farm in the Town of Florida in the Berkshires. The case before the Department is limited to the project's compliance with the Wetlands Protection Act, and does not, in any way, concern wind turbines or alternative energy. After a lengthy hearing, an Administrative Magistrate recommended that the permit be vacated. More specifically, the Administrative Magistrate concluded that enXco did not properly delineate the banks of twelve intermittent streams that would be crossed by the access roads, that the proposed open-bottom culverts did not meet the performance standards for inland bank, and that a wildlife habitat evaluation was not performed as required for the inland bank alteration.<sup>1</sup> After careful evaluation of the Petitioners' claims and the Recommended Final Decision, I have concluded that this project meets the requirements of the wetlands protection regulations.

---

<sup>1</sup> The Recommended Final Decision, at eighty pages in length, is both thorough and thoughtful. Administrative Magistrate Natalie S. Monroe carefully described the claims of the parties and their evidence, and provided detailed findings of fact for all issues in either the Recommended Final Decision dated May 14, 2007 or a prior Ruling on Motion for Partial Directed Decision dated March 7, 2007.

I have reviewed this project within the context of recent guidance by the Department on stream crossings and wildlife habitat protection. The Massachusetts Stream Crossing Standards strongly endorse the use of open bottom culverts as a preferred alternative to traditional closed culverts.<sup>2</sup> The Petitioners claim that the plants growing on the inland banks will be shaded and die beneath the crossings, and this plant mortality will destabilize the banks.<sup>3</sup> The Standards do not preclude the use of open bottom culverts where banks are vegetated, and I find no scientific or regulatory basis for excluding their use for these intermittent streams, where the banks may or may not be vegetated. The Standards do recommend monitoring a stream crossing after construction. The Department's superseding order of conditions already includes a requirement that the applicant retain a compliance monitor to oversee the work at the site, a wetlands scientist to oversee the replication of bordering vegetated wetlands, and the submission of annual reports on the stability of the roadway, the functioning of the stormwater management system, and the ecological status of all resource areas. I will clarify the reporting condition already included in the permit to include the best management practices for monitoring for open bottom culverts identified in the Stream Crossing Standards. I will

---

<sup>2</sup> Massachusetts River and Stream Crossing Standards, developed by the River and Stream Continuity Partnership, dated March 1, 2006, adopted for use by the Army Corps of Engineers Programmatic General Permit for Massachusetts under Section 404 of the federal Clean Water Act, January 2005, originally published as technical guidelines on August 6, 2004. These Standards were developed under the regulations effective on November 13, 2003, the date the notice of intent for this project was filed. Although the Stream Crossing Standards are relatively new, the Department began to require spans for crossing of streams and vegetated wetlands associated with Outstanding Resource Waters in its 401 Water Quality Certification regulations in 1995. 314 CMR 9.06(3). Thus, the Department has many years of experience with similar stream crossing designs without reports of stream instability or other negative impacts of concern to the Petitioners. An agency may use its experience, technical competence, and specialized knowledge in the evaluation of the evidence presented. M.G.L. c. 30A, s. 11.

<sup>3</sup> Every use of the terms "inland bank" or "bank" in this Decision refers to the resource area identified in 310 CMR 10.54, and not to the more general area where one might walk along a river or stream.

also allow the applicant to substitute an open-bottom culvert for a closed culvert at an additional stream crossing location.<sup>4</sup>

### Background

The notice of intent for this project was filed in 2003, followed by issuance of a local order by the Florida Conservation Commission, a request for and issuance of a superseding order by the Department's regional office and this appeal by the Petitioner on November 22, 2004, and most recently the Recommended Final Decision on May 14, 2007.<sup>5</sup> During this time period, the applicant proposed revisions to the project from the original plans which used traditional culverts for the stream crossings to the incorporation of open bottom crossings.<sup>6</sup> During this same time period but outside the context of this adjudication, the Department engaged in policy and regulatory development that led to

---

<sup>4</sup> This condition is consistent with the Department's Administrative Appeals Policy for the Review of Project Plan Changes, DWW Policy 91-1, Issued February 8, 1991, Rev'd March 1, 1995, because it does not significantly revise the plan configuration and will result in reduced environmental impact.

<sup>5</sup> A group of twelve residents initiated the appeal and a group of more than ten citizens moved to intervene pursuant to M.G.L. c. 30A, s. 10A (collectively, "the Petitioners"). A request by the applicant to expedite the appeal was granted, on the grounds that the project provides a significant environmental benefit. Although a grant of expedite status is intended to move a case to resolution more quickly, it implies no prejudgment of the merits.

<sup>6</sup> Two streams (12 and 15) would remain crossed by closed culverts and the other ten streams (1,2,3,5,8,9,10,13, and 39) would be crossed by aluminum open-bottom structures. An "open bottom arch" is defined in the Massachusetts River and Stream Crossing Standards, Glossary, as "arched crossing structures that span all or part of the stream bed, typically constructed on buried footings and without a bottom." Thus, open-bottom arches cross a stream without touching either the stream or its banks. Culverts are defined as "round, elliptical or rectangular structures that are fully enclosed (contain a bottom) designed primarily for channeling water beneath a road, railroad or highway." Based upon these definitions, the terms "open bottom crossing" or "open bottom culvert" used throughout the Recommended Decision refer to an "open bottom arch" in the new Standards. The construction of driveways and roads frequently requires some type of structure to allow passage of water underneath and the installation of culverts has been a relatively routine project in wetlands permitting.

the formal adoption of guidelines for stream crossings,<sup>7</sup> wildlife habitat protection guidance,<sup>8</sup> and narrative standards for work in the buffer zone of resource areas.<sup>9</sup>

In reviewing the record, I attribute some of the lack of clarity in the testimony, duly noted by the Administrative Magistrate, to ambiguity in the absence of standards to be applied to the revised proposal for the crossings.<sup>10</sup> The typical stream crossing project has involved the installation of properly sized culverts that simply eliminate the natural bank and replace it with the concrete or metal walls of the culvert. The Massachusetts River and Stream Crossing Standards were developed in response to concern about disruption of river and stream continuity from the destruction of natural banks by traditional closed culvert structures. See Massachusetts River and Stream Crossing Standards, para. 1.<sup>11</sup>

These Standards recommend open bottom crossing structures, as proposed by the applicant, as an alternative to closed culverts which had been initially planned. The Standards provide details on proper design and construction best management practices, and are appropriate guidelines for the development of plans for restoration or replication

---

<sup>7</sup> Massachusetts River and Stream Crossing Standards, developed by the River and Stream Continuity Partnership, dated March 1, 2006, adopted for use by the Army Corps of Engineers Programmatic General Permit for Massachusetts under Section 404 of the federal Clean Water Act, January 2005.

<sup>8</sup> Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands, Department of Environmental Protection, March 2006. I note that I am one of the principal authors of this document.

<sup>9</sup> 310 CMR 10.53(1)rev'd March 2005. Unless specifically noted, all other citations to 310 CMR 10.00 refer to the regulations in effect on November 13, 2003 when the notice of intent for this project was filed.

<sup>10</sup> The Department is sometimes criticized, justifiably, for shortcomings in the clarity of its regulatory standards. This case is an example of how a new methodology may be proposed before the appropriate guidelines are in place, complicating the respective tasks of the applicant, conservation commission, Department staff, the Petitioners, and the Administrative Magistrate.

<sup>11</sup> Despite its authority to announce new standards in adjudication, the Department has not typically applied new regulation or policy to previously filed applications. See Brookline v. Comm'r of DEQE, 387 Mass. 372, 379 (1982); 310 CMR 10.10. I am reviewing this project within the context of the Stream Crossing Standards because they are helpful to me in evaluating the proposed work and because the Petitioners essentially challenge Department policy. The Standards are not prescriptive, and I do not intend to imply that all applicants must meet the Standards for all crossings where the application was filed prior to the issuance of this guidance or where site-specific circumstances may preclude their use.

of altered habitat under the Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands and incorporated therein. See Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands, Department of Environmental Protection, March 2006, p. 16 and Appendix E. The Wildlife Habitat Guidance also clarifies the jurisdiction of work in the buffer zone that may alter a resource area, in the context of wildlife habitat. Id. at Section G, Buffer Zones, p. 8.

Although enXco's revision of the plans to incorporate open bottom crossings was greeted with skepticism by the Petitioners as a means to impermissibly circumvent regulatory requirements, I have reviewed these guidances and the underlying regulations in considerable detail and do not share that view.<sup>12</sup> While the project proponent may have shifted to open bottom crossings in part to avoid the difficulties inherent in compensating for impacts of closed culverts, I conclude that the Department has embraced open bottom structures that leave the natural bank in place. Traditional closed culverts are not only challenging for wildlife, but can cause instability of the bank downstream because the smooth concrete or metal sides of the closed culvert result in much faster velocity that leads to erosion downstream.<sup>13</sup> I do not agree with the Petitioners that the presence of vegetation, and the potential for some plant mortality, makes an otherwise environmentally benign open-bottom culvert unacceptable and

---

<sup>12</sup> Applicants, in fact, are encouraged to design or to redesign their projects so that they do not exceed regulatory requirements. For example, an applicant proposing closed culverts must generally comply with the Department's 401 Water Quality Certification regulations at 314 CMR 9.00, as well as Section 404 of the Clean Water Act administered by the Army Corps of Engineers. By reducing the impacts, a permit under that program is no longer necessary. 314 CMR 9.00 requires the use of spans to avoid fill in wetlands or streams that are Outstanding Resource Waters. The open-bottom crossing design that the applicant adopted for the project is an example of a span that avoids wetland impacts.

<sup>13</sup> Velocity in a stream depends on the depth and slope and inversely on the resistance of the boundary. In engineering, this resistance is called the Manning roughness coefficient. To illustrate, the coefficient for smooth concrete is 0.012 and the coefficient for a mountain stream is .040-0.050, or approximately four times more resistant than man-made materials. Dunn and Leopold, Water in Environmental Planning, W.H. Freeman and Company, 1978, p. 592-593.

instead requires a traditional closed culvert which would have the perverse result of destroying the banks altogether. See Prefiled Direct Testimony of Pamela B. Weatherbee at para. 15-16.<sup>14</sup> The regulations support the use of open-bottom structures, and although I have been informed by the recent guidance documents of the Department, my Decision is firmly rooted in the regulations.

The Petitioners claim that, when properly delineated, there is vegetation on a narrow band on the banks of the intermittent streams that will be shaded after installation of open bottom culverts, altering the banks within the meaning of the regulations. The installation of traditional closed culverts coupled with a wildlife habitat evaluation, as originally proposed, would appear to address their concerns. Ironically, a wildlife habitat evaluation finding of an adverse effect would likely result in mitigation through the use of the open bottom culvert design that has been the subject of this dispute.<sup>15</sup> See Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands, Department of Environmental Protection, March 2006, p. 16 and Appendix E. Petitioners question whether the use of open bottom culverts is appropriate in small watersheds. Prefiled Rebuttal Testimony of Ed Stockman at para.27. While not addressing specifically the relative merits of culvert designs, research on hydrological connectivity and the contribution of stream headwaters to ecological integrity suggests that headwater streams are worthy of an ecological crossing design.<sup>16</sup> This research is consistent with the

---

<sup>14</sup> Ms. Weatherbee is a highly qualified botanist, the author of *Flora of Berkshire County, Massachusetts*, and although I differ on the question of the question of plant mortality and bank stability related to the open-bottom crossing structures, I credit her identification of plant species in every respect.

<sup>15</sup> I note that, with the exception of a population of large-leaved goldenrod which as a plant is not covered by the Wetlands Protection Act and was addressed by a conservation permit under the Massachusetts Endangered Species Act, the wildlife species identified at this site are quite limited: mice, voles, shrews and salamanders. Prefiled Rebuttal testimony of Ed Stockman at para. 25.

<sup>16</sup> See, e.g., recent research published in the *Journal of the American Water Resources Association* (Vol. 43, No. 1, February 2007) and cited by the U.S. Environmental Protection Agency and U.S. Army Corps of

Department's policy objective in the Massachusetts River and Stream Crossing Standards and the policy underlying this Final Decision.

In this Final Decision, I review the evidence on the issues for adjudication, beginning with the three issues related to inland bank that were the focus of the Recommended Final Decision, review the other issues related to bordering vegetated wetland replication and stormwater management, and finally comment on some procedural aspects of the case. I adopt in part and reject in part the Recommended Final Decision of the Administrative Magistrate. Although the Administrative Magistrate is quite correct that the burden of proof rests squarely upon the applicant in a wetlands case, 310 CMR 10.03(1), the applicant here relied upon the advice of Department staff as to the delineation of the inland bank and the acceptability of open-bottom structures prior to the formal adoption by the Department of this stream crossing technique.<sup>17</sup> While I have closely considered the evidence presented in this case, I am mindful that the conclusions I reach will affect other cases that involve stream crossings.

In addition to clarifying the condition on monitoring of the open-bottom crossings, I have added a condition to the final order of conditions that would allow the applicant to substitute the closed culvert currently proposed for Stream 15 with an open-bottom culvert, provided that the design meets the specifications for a minimum span of 1.2 times the bankfull width of the stream according to a revised plan submitted to the Department and Department staff has field verified that the structure will be located

---

Engineers in guidance released June 5, 2007 entitled "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States* & *Carabell v. United States*. See [www.epa.gov/owow/wetlands/guidance/CWAwaters.html](http://www.epa.gov/owow/wetlands/guidance/CWAwaters.html). The Stream Crossing Standards are also used under the Army Corps of Engineers 404 program for Massachusetts, so the Department closely follows federal activities related to wetlands.

<sup>17</sup>The Department also bears responsibility for some ambiguity in regulatory interpretation of the delineation of upper boundary of bank and thresholds for wildlife habitat evaluation by not including these issues in more recent guidance.

within the buffer zone only. I have not required this substitution because the applicant's engineer referred to a gradient restriction at this location, so this design may be precluded from an engineering perspective. See Prefiled Direct Testimony of Jason Krzanowski at para. 23. I have not recommended an open-bottom crossing of Stream 12 along Tilda Hill Road due to the presence of bordering vegetated wetlands and access constraints during construction.

#### Delineation of Inland Bank – Upper Boundary

The issue of whether the banks were properly delineated at the site received much attention, despite the understanding by the Petitioners that the open-bottom culverts would not be placed on this resource area. Prefiled Direct Testimony of Pamela B. Weatherbee at para. 15 (“Open-bottom culverts are considered to be the most benign environmentally in spanning small waterways. They do not physically touch the bank – and the bottom of the stream is left in its original state.”) Although the record is not clear as to the precise dimensions or orientation of the inland bank to which the witnesses were referring, it is certainly a small area. Prefiled Direct Testimony of Pamela B. Weatherbee at para. 19 (“[t]his Inland Bank Resource Area as delineated here is a very narrow space, perhaps inches or a foot wide.”). The dispute centered, then, not on the presence or absence of work on the inland bank but on the presence or absence of vegetation within this narrow area.<sup>18</sup>

The Department reviewed the delineation of Bank to determine whether the work would, in fact, be limited to the buffer zone. For these purposes, a precise delineation is

---

<sup>18</sup> The parties agree that there is at least some vegetation on at least some of the Banks. See, e.g., Prefiled Testimony of Gary R. Sanford at para. 34 (“Stream crossings #3, #7, #13, #39, #8 do not support significant vegetation.”). I infer that at a minimum stream crossings #1, #2, #5, #9, and #10 do have some vegetation.

not essential. Although I have resolved the question of terminology in determining the upper boundary of Bank, the differences between the various methodologies for delineation are not significant for review of this work which is limited to the buffer zone.<sup>19</sup> The differences in delineations were so strongly contested by the Petitioners because a higher upper boundary of inland bank could increase the amount of vegetation within the resource area. Even showing that there is at least some vegetation on some inland bank, the Petitioners have not shown that work in the buffer zone will cause a measurable change in the stability of the banks to protect the interests of the Act.

A Bank for purposes of the wetlands regulation is the area which confines a water body, and does not include the land along a water body which is subject to flooding. 310 CMR 10.54(2) and 10.56(2). The wetlands regulations identify the upper boundary, or landward edge, of a bank as the first observable break in slope or the mean annual flood level, whichever is lower. 310 CMR 10.54(2)(c). The first break in slope is visually observed, while the regulations are silent on how to determine the mean annual flood level. The lower boundary of Bank is the mean annual low flow level. 310 CMR 10.54(2)(c). Neither mean annual flood level or mean annual low flow level is a defined term in the regulations. The term “mean annual high water line” for purposes of determining the boundary of the riverfront resource area was added to the regulations in 1997 after passage of the Rivers Protection Act with a narrative definition later refined in 2000 to incorporate the concept of a “bankfull” discharge and “bankfull field indicators”

---

<sup>19</sup> I address in another section of this Decision the reliance by the Petitioners on cross-examination rather than direct testimony to raise the question of this technical term. I note that both the Applicant and the Department objected to the introduction of this question by means of the Leopold treatise. I have turned to Leopold for information on this issue in an attempt to evaluate the somewhat confused testimony resulting from the lack of foundation.

which can be visually observed.<sup>20</sup> The Massachusetts River and Stream Crossing Standards also use the term “bankfull width.”

The parties relied upon their own observations in the field, photographs taken at the site, and upon the supplemental submittal of the applicant identified in the record as Exhibit 1-1. See Prefiled Direct Testimony of Pamela B. Weatherbee, Attachment C, Exhibit 1-1, Data from Woodlot Alternatives. This submittal, which had been requested by the Department prior to issuance of its superseding order of conditions, includes descriptive materials based upon the Cowardin classification system, a well-accepted methodology for describing wetlands habitat.<sup>21</sup> Based upon the Department staff’s assessment that the mean annual flood level was typically lower than the first observable

---

<sup>20</sup>The mean annual high water line, used to delineate the riverfront area, is defined as “the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land.” 310 CMR 10.58(2).

<sup>21</sup> The submittal by the applicant for each stream using the Cowardin classification system conveys quite specific information about each stream. These wetlands were all classified as within the “Riverine System,” or habitat contained within a channel and bounded on the landward side by upland, the channel bank, or wetland. The channel bank is defined as the sloping land bordering a channel. “Intermittent” is one of four subsystems within the Riverine System, and applies to streams where the channel contains flowing water for only part of the year. The class “streambed” is restricted to the channels of intermittent streams and includes all wetlands within the Intermittent Subsystem of the Riverine System. The substrate (the surface on which a plant or animal grows) of streambeds vary according to channel gradient, discharge velocity, and sediment load. Streambeds are usually not vegetated due to scouring by flowing water, but may be colonized by plants during low or interrupted flow or have scattered perennial emergent vegetation. Three subclasses are listed for these streams. “Rubble” is characterized by stones, boulders, and bedrock that together cover at least 75% of the channel. “Cobble-gravel” has a substrate of at least 25% unconsolidated particles smaller than stones with a predominance of cobbles or gravel (a “stone” is between 10 and 24 inches). The “Sand” subclass has sand-sized particles predominant among particles smaller than stones. “Vegetated” streambeds lack water long enough to be colonized by annuals or seedling perennials, but the vegetation is usually killed by rising water levels. There are two water regime modifiers for the streams at this site. “Intermittently flooded” means that the substrate is usually exposed but surface water is present for varying periods, not necessarily seasonally. “Seasonally flooded” means that surface water is present for extended periods particularly early in the growing season but then is absent toward the end of the growing season in most years. Cowardin, L.M., V. Carter, F.C. Golet, & E.T. LaRoe, Classification of Wetlands and Deepwater Habitats of the United States, U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C., 1979. All streams at the site were identified as System: Riverine, Subsystem: Intermittent, Class: Streambed. The subclass Cobble-gravel was identified for Streams 1, 2, and 13. The subclass “Rubble” was identified for Streams 5, 7, 8, and 10. The subclass “Sand” was identified for Stream 3, 15 and 39. The subclass “Vegetated” was identified for Stream 9 and 12. The Water Regime “Intermittently flooded” was identified for Streams 5, 8, 10, 12, 13. The Water Regime “Seasonally flooded” was identified for stream 1, 2, 3, 7, 9, 15 and 39.

break in slope in this area, enXco's consultant placed flags in the field at what was variously described as mean annual flood level, "bankfull conditions," and ordinary high water. The Administrative Magistrate faulted enXco for flagging the inland bank according to these instructions and was persuaded that the flags had been improperly placed lower than the mean annual flood level. Recommended Final Decision at 28.

During cross-examination, Petitioner's attorney correctly quoted a technical definition from a hydrology treatise: the "mean annual flood" is the arithmetic average of the highest momentary peak of annual flood discharges; it has a recurrence interval of 2.3 years. Leopold, Luna B., A View From the River, Harvard University Press, 1994, p. 117. See, e.g., Transcript Vol. 9 at pp 44-53.<sup>22</sup> Flood frequency is stated in recurrence intervals, a statistical parameter that describes the probable interval in years between floods of a specified magnitude.<sup>23</sup> It is greater than a bankfull discharge, which has an average recurrence interval of 1.5 years, and represents the most probable annual flood.<sup>24</sup> Id., at 129. Importantly, the "mean annual flood" used in this technical sense is a discharge without any field indicators. It does not appear to have either a statistical or a

---

<sup>22</sup> Luna Leopold, as the former Chief Hydrologist for the United States Geological Survey, is unquestionably an eminent source. I address in a later section the introduction of this treatise and the technical definition of mean annual flood through cross-examination rather than through direct testimony with appropriate foundation for its use in this context.

<sup>23</sup> The analytical procedure is the sequential ranking by magnitude of the highest discharges for each year of record. The equation is  $RI=(n+1)/r$  where n is the number of years of record and r is the rank. An alternate method used when the record is incomplete uses all discharges above a specified magnitude. Leopold, Luna B., A View From the River, Harvard University Press, 1994, p. 114-117.

<sup>24</sup> A recurrence interval of 1.5 means that one year out of 1.5 years, or two out of three years, the highest discharge during a year will be equal to or exceed the capacity of the bank. Leopold and Dunne, Water in Environmental Planning, W.H. Freeman and Company, 1978, p. 315. Recurrence intervals for bankfull at 1.5 years and mean annual flood at 2.33 years are national averages and do not necessarily reflect conditions at this site or even Massachusetts.

physical relationship to the inland bank as the resource area which confines a water body within the context of these intermittent streams.<sup>25</sup>

The technical term “ordinary high water mark” used by the Corps of Engineers and other federal resource agencies “means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.” 33 CFR 328.3(e). Similar to the upper boundary of bank under the state wetlands regulations, the federal ordinary high water serves to distinguish between the water body and adjacent wetlands. 33 CFR 328.4(c). The notation “OHW” on enXco’s blue flags indicates that this term was used by their consultant as synonymous with mean annual flood level. Testimony of Jeff Simmons, Transcript Vol. 7 at pp. 191-192. Apparently accepting the definition in the Leopold treatise of mean annual flood as instantaneous peaks and a review of federal case law indicating ordinary high water excludes peak flows, the Administrative Magistrate concluded that the federal concept of ordinary high water is necessarily lower than the mean annual flood level under the wetlands regulations. Recommended Final Decision at 32.<sup>26</sup>

---

<sup>25</sup> In other words, even were the Mean Annual Flood as statistical instantaneous peaks with a 2.33 year recurrence interval to be used at these intermittent streams, it would theoretically be located higher on the bank than a 1.5 year recurrence but necessarily higher than the first observable break in slope.

<sup>26</sup> The Administrative Magistrate found the applicant’s witness, Jeff Simmons, not qualified to present testimony on the mean annual flood level under the Wetlands regulations and not a credible witness. For purposes of the issue of delineation of Bank, I have not relied upon his testimony. See Vinal v. Contributory Retirement Board, 13 Mass. App. Ct. 85 (1982). I do believe that much of the perceived inconsistency in his testimony is attributable to lack of precision in use of term for mean annual flood and the assumption by the Administrative Magistrate that the Petitioner’s definition was used under the wetlands regulations. I did rely upon the testimony of David Foulis because I believe there is support in the record for his conclusions as to the nature of the banks at the site. The emphasis at the hearing was on the

The Department's staff David Foulis used the term "mean annual flood level" to mean a flood that occurs on average every year. Testimony of David Foulis, Transcript Vol. 9 at pp.16-17. He believed that the mean annual flood so determined at these streams would fall below the first observable break in slope because they are entrenched, meaning that they have relatively confining banks and no flood plain. In fact, there is no evidence that these streams have any floodplain, nor is there any evidence that flood flows exceed the capacity of the channel. In ordinary usage mean annual flood level suggest an average of the levels in a stream that occur every year during flood stages, or an event that occurs on average annually.<sup>27</sup> The only graphic depiction of Bank produced by the Department that I am aware of appears in "Clearwater Estates," a guidebook on the wetlands review process published by the Department in 1987. The graphic shows the bank resource area with the notation "Mean Annual Flood (1 Year)." Department of Environmental Quality Engineering, Clearwater Estates, Part I, 1987 Ed.<sup>28</sup> I conclude from this notation that the Department understood the mean annual flood level to be the one-year event. Further as the term "mean annual flood level" is not defined in the

---

photographs in Exhibit 1-1, submitted by Woodlot Alternatives in respond to the Department's request prior to issuance of the superseding order. Although the Administrative Magistrate evaluated the testimony related to the photographs that were presented again at the hearing, Mr. Foulis testified that the hydrologic information in the Cowardin classification system and hydrologic descriptions were as or more useful to him. Transcript Vol. 9 at p. 129-134. Rather than conduct a site visit over the entire four mile length of the proposed access and ridge roads, Mr. Foulis relied upon a more limited site visit, supplemental submittals of descriptive materials including a well-accepted methodology for classifying wetlands, and several photographs for each stream crossing location. The superseding order also includes a prohibition on work on the bank and a compliance monitor to ensure that this condition is respected. Although I would prefer that Department staff were able to visit proposed sites and oversee ongoing work near wetlands, the Department's limited resources have increased reliance on submittals and technology.

<sup>27</sup> If the Department later determines that the technical term "mean annual flood level" or some other technical term is appropriate, it should propose a revision to the regulations that includes a definition and a methodology to locate this boundary in the field.

<sup>28</sup> The agency name has been changed. The document continued to be used and is currently undergoing revisions.

regulations indicating a technical usage, it should be given its ordinary meaning.

Warcewicz v. Department of Environmental Protection, 410 Mass. 548 (1991).

Department staff determined that the mean annual flood level could be determined in the field by looking for signs of bankfull conditions, used to approximate the average annual flood level which he had determined to be within the channel because there was no indication that the flood flows overtopped the channel walls.<sup>29</sup> Although perhaps arrived upon for different purposes, the indicators used for locating bankfull conditions appear to be consistent between regulatory schemes. Bankfull field indicators for the riverfront area include changes in slope, changes in vegetation, stain lines, top of point bars, changes in bank materials, or bank undercuts.” 310 CMR 10.58(2)(a)2. The Massachusetts River and Stream Crossing Standards also rely on “bankfull width,” and define bankfull as “a geometric parameter that corresponds with the amount of water that just fills the stream channel and where additional water would result in a rapid widening of the stream or overflow into the floodplain.” Indicators are identified as abrupt transition from bank to floodplain, top of pointbars, bank undercuts, changes in bank material, and change in vegetation. Massachusetts River and Stream Crossing Standards, Glossary. The vigorous difference of opinion of the witnesses over whether the banks were or were not vegetated

---

<sup>29</sup> Related text in the regulations supports this view. First, banks normally abut and confine a water body. The preamble for Bank states that banks act to confine floodwaters during the most frequent storms and banks confine waters during such storms to an established channel. 310 CMR 10.54(1). Second, banks separate the water body from bordering vegetated wetland. The preamble for bordering vegetated wetland states that bordering vegetated wetland slow the passage and provide storage for flood waters during periods of peak flows. 310 CMR 10.55(1). Therefore, banks do not necessarily confine peak flows. The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm. 310 CMR 10.57(2)(a)3. No party has claimed that there is bordering land subject to flooding at these sites.

tended to obscure the lack of any expert opinion testimony on the differences, if any, between the field indicators.

As noted above, the bankfull discharge for stream has a recurrence interval based on the annual flood analytical method of 1.5 years and represents the most probable annual flood. This recurrence interval equates on a record of the average frequency of occurrence between floods of a given size irrespective of the time in years to a recurrence interval of 0.9 years, or slightly more frequently than once a year.<sup>30</sup> The bankfull condition, therefore, will be equaled or exceeded approximately once a year. Bankfull conditions appears to be the technical definition that most closely fits the ordinary usage of mean annual flood level.

For these intermittent streams with no evidence they overflow their channel, it is reasonable to conclude that the upper boundary of bank may be located below the first break in slope, and instead be located at some lower line along the channel wall where there are visual indicators that represent the level at which the stream typically reaches its annual flood stage. Testimony of David Foulis, Transcript Vol. 8 at pp. 132-134. Despite the emphasis in the testimony on vegetation, it is clear from the preamble that banks may be devoid of vegetation, partially vegetated, or totally vegetated, so the vegetational status of the bank is not determinative. 310 CMR 10.54(2)(a). Other than the dispute about the presence or absence of vegetation on these Banks and the introduction of the technical definition of mean annual flood by the Petitioner's attorney, there appears to be no real dispute over the relevant field indicators or any expert opinion which links certain indicators to any of the various regulatory formulations.

---

<sup>30</sup>Dunn and Leopold, Water in Environmental Planning, W.H. Freeman and Company, 1978, p. 315.

I find that the mean annual flood level upper boundary of bank is properly determined using field indicators as a proxy for the level that the flood flows reach on an average annual basis.<sup>31</sup> I further note that the difference between the upper boundary using first observable break in slope as advocated by the Petitioners and field indicators of bankfull conditions appears to be measured in vertical inches. There is no evidence to support a conclusion that the work would take place *on* a bank even were the delineation to be based upon first observable break in slope instead of on bankfull indicators.

#### Delineation of Bank – Lower Boundary

The lower boundary of Bank is the mean annual low flow level. 310 CMR 10.54(2)(c). The boundary of Land Under Water Bodies and Waterways is the mean annual flood level. Petitioners witness testified that intermittent streams do not have any Land Under Water, and therefore, the entire resource area is bank. Testimony of James M. Scalise, II, Transcript Vol. 1 at p. 58. The Department apparently concurred with this interpretation, because it found there was no measurable Land Under Water at this site.<sup>32</sup> This interpretation has two consequences in this case. First, the witnesses described varying areas below the upper boundary of the bank when testifying about the presence of vegetation. The Administrative Magistrate did not credit the testimony of the Department's and applicant's witnesses as to the amount of vegetation growing on the Banks of the streams based on her conclusion that only a narrow band of embankment was bank and that the streambed could not be part of the bank. Recommended Decision

---

<sup>31</sup> To the extent the Administrative Magistrate accepted the delineation of mean annual flood level according to the treatise definition supplied by Petitioner's attorney in evaluating the testimony of witnesses, I do not accept those assessments.

<sup>32</sup> A prior case determined that an intermittent drainage ditch is not excluded from the definition of stream on the theory that since the stream is dry there is no land under water. Matter of Conroy, Docket No. 97-074, Final Decision (June 9, 1998). The case specifically reserved judgment on the status and extent of other resource areas, including Bank.

at 54, n. 41. I have not been able to determine from the record the location of the mean annual low flow level for any of these streams, and the testimony of the Petitioners witness viewed the Bank resource area as including the entire streambed. Testimony of James M. Scalise, II, Transcript Vol. 1 at p.56.

Second, the lack of any resource area between the two banks may have lead to the conclusion by the parties that the threshold of fifty feet for a wildlife habitat evaluation should be calculated based upon one fifty foot length rather than using a total by determining the footage for each bank. 310 CMR 10.54(4)(a)5. The Administrative Magistrate is correct that a prior case counted each Bank of an intermittent stream separately, but it is not clear whether that was based on a determination of the lower boundary of Bank at mean annual low water and a footnote does not constitute a considered Department position. Recommended Final Decision at 64; Ruling on Motion for Partial Directed Decision at 17-18; See Matter of Pacheco, Recommended Decision, Docket No. 98-072 (Nov. 5, 1999). The only Department position on this issue that I have been able to locate is a policy on Wildlife Habitat prepared in 1988 soon after the 1997 statutory amendment to include wildlife habitat as an interest of the Wetlands Protection Act. In its checklist for projects on inland banks, it advises that “[e]ach side of a river or stream (*except intermittent streams*) constitutes a bank; i.e., 50 feet of stream or river contains 100 feet of Bank.” (emphasis added) Division of Wetlands and Waterways Regulation, Wetlands Program Policy 88-1 and Wetlands Wildlife Advisory #2, Checklist for Projects on Inland Banks, p. 4, March 4, 1988. While this Policy has been supplanted by newer guidance documents on wildlife habitat, I have no indication that the

Department's position has changed.<sup>33</sup> I would conclude from the agreement of the parties and their witnesses on this question that stating a bank length as a single linear dimension is an accepted practice. At a minimum, I accept the practice of using the length of a bank as a single linear footage where there is no evidence of a mean annual low flow level establishing a resource area between the two sides of a stream channel.<sup>34</sup> I note that the location of mean annual low flow level in an intermittent stream would logically vary depending on the amount of time the streambed is in fact dry. Some streams flow much of the year and are dry only seasonally for a week or two in late summer. These streams would have a mean annual low flow level above the thread of the stream. For these headwater streams which are dry much of the year, the mean annual low flow level will logically be indistinguishable from the thread of the stream.

Proposed Work and the Performance Standards for Bank, 310 CMR 10.54(4)(a)(1 and 5)

The work involving stream crossings for this project falls into two distinct categories, for purposes of the wetlands protection regulations. Some work is proposed within resource areas, specifically bordering vegetated wetland and bank, and some work is proposed within the 100 foot buffer zone of these resource areas. See 310 CMR 10.02(2) (a) and (b). Where any activity is proposed within resource areas which will alter that area, a notice of intent is required and the work must meet the performance standards for that area. 310 CMR 10.02(2)(a) and 310 CMR 10.03(1)(a)(2). Where work is proposed within the buffer zone, a notice of intent is required where the issuing

---

<sup>33</sup> During my work on the Massachusetts Wildlife Habitat Protection Guidance, my understanding was that the length of bank is only counted once, so that it would be the same as the linear footage of the stream.

<sup>34</sup> I am not certain, however, whether the Department's practice has been consistent and ask that a uniform practice be adopted for stating the linear footage of the bank resource area. For example, every notice of intent submitted by an applicant for work on bank must indicate a linear footage, but the instructions do not indicate whether each bank should be counted separately. I suspect for purposes of the wildlife habitat provisions in the regulations, that the fifty foot threshold was originally intended to apply to the length of a single bank for rivers and streams on the theory that an equal length would be stated once.

authority determines that the activity will alter a resource area. 310 CMR 10.02(2)(b); Commentary. “Activity” and “Alter” are defined terms, and defined broadly, so that work in the buffer zone is relatively likely to meet this jurisdictional threshold. 310 CMR 10.04 (Activity, Alter). For example, the term “alter” includes the destruction of vegetation, signifying not that the destruction of vegetation is prohibited but instead that it is subject to review. Work in the buffer zone, therefore, may be subject to jurisdiction, but it is not subject to the performance standards that apply to work in resource areas. Instead, work in the buffer zone must contribute to the protection of the interests of the Wetlands Protection Act. 310 CMR 10.03(1)(a)(3). See 310 CMR 10.01(2) (list of interests).<sup>35</sup>

The performance standard for Bank states, “any proposed work *on* a Bank shall not impair . . . .” 310 CMR 10.54(4)(a) (emphasis added). As discussed above, Bank is a resource area with an upper boundary along another resource area (vegetated wetland or floodplain), or, as in this case, an upland buffer zone. 310 CMR 10.54(2)(a). For the open-bottom culverts component of the project, the applicant has not proposed work *on* the bank. Further, the Petitioners have not alleged that the work will be *on* the Bank. Instead, the Petitioners claim that work *near* the Bank will indirectly impair the functions of the Bank and the Administrative Magistrate concluded that the project cannot meet the performance standards. As a matter of law, the performance standards do not apply to

---

<sup>35</sup>In October 6, 1997 regulatory revisions, the Department clarified the burden on applicants filing a Notice of Intent (compare 310 CMR 10.03 (1)(a) effective 10/6/97 with prior version). The Department retained the requirement that proposed work in a resource area will contribute to the protection of the interests of the Act by complying with the performance standards for that area. 310 CMR 10.03 (1)(a) 2. The Department added a provision which addresses buffer zones and distinguishes the circumstance where the buffer zone and the riverfront resource area coincide. 310 CMR 10.03 (1)(a)3. Proposed work in the buffer zone must contribute to the protection of the interests of the Act, but must comply with performance standards only when work is within both the riverfront area and the buffer zone. Otherwise proposed work in the buffer zone need not comply with the performance standards for the adjacent resource area.

work in the buffer zone.<sup>36</sup> Instead, the work in the buffer zone to the bank requires review to ensure the protection of the interests of the Act.

Work in the buffer zone may cause alteration of resource areas, including bank, that will affect its ability to provide important wildlife habitat functions. Work *on* a bank is governed by the performance standard for wildlife habitat capacity and the 50-foot threshold for a wildlife habitat evaluation. 310 CMR 10.54(4)(a)(5). Work *near* a bank in the buffer zone as proposed for the open-bottom culverts is not governed by this performance standard and does not require a wildlife habitat evaluation.<sup>37</sup> See Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands, March 2006, p. 8 (conditions on work but not wildlife habitat evaluation for work in buffer zone).

#### Proposed Work in Buffer Zone to Bank

The distinction between proposed work in or on a resource area and work in the buffer zone has important regulatory consequences because it determines whether the performance standards apply. However, an applicant proposing work in the buffer zone must still demonstrate the work will contribute to the protection of the interests of the Act. Once an issuing authority determines work in the buffer zone is subject to jurisdiction, the commission or the Department reviews the work in the buffer zone to ensure that adjacent resource areas will not be adversely impacted.<sup>38</sup> In this case, the

---

<sup>36</sup> I note that many local bylaws have eliminated this distinction and do regulate the buffer zone as a resource area. The Wetlands Protection Act does not establish a buffer zone. M.G.L. c. 131, s. 40. Certainly work in the buffer zone is frequently and appropriately subject to conditions.

<sup>37</sup> See Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands, March 2006, p. 8 (conditions on work but not wildlife habitat evaluation for work in buffer zone). The Guidance further states that the “no adverse effect” standard for important wildlife habitat applies to alterations in resources areas only and not to areas proposed within the buffer zone. Id. at 13. Further, I note that had the proposed work triggered a wildlife habitat evaluation, an applicant could demonstrate no adverse effect by use of the Stream Crossing Standards and the open-bottom methodology. Id. at 16.

<sup>38</sup> The nature of the review of work in the buffer zone was not codified until 2005. This narrative standard articulates the considerations that have been applied for many years. See 310 CMR 10.53(2) (2005

Department staff imposed stringent conditions in the permit to ensure that the work will not occur directly on resource areas, beyond that specified, and to avoid negative impacts on resource areas.<sup>39</sup>

The Petitioners claim, and the Administrative Magistrate found, that vegetation on the banks of the streams would die once shaded within the culverts, leading to instability of the banks in contravention of the performance standards. 310 CMR 10.54(4)(a). She further found that the installation of the open bottom culverts would destabilize the banks. I have evaluated these claims even though the performance standards do not apply to work in the buffer zone, because they call into question the Massachusetts River and Stream Crossing Standards which advocate the use of open bottom culvert design. The Stream Crossing Standards do include guidelines for the siting, installation and monitoring of stream crossing structures, and I have reviewed the evidence on this issue within that context.<sup>40</sup>

The Standards contain guidance on the selection of locations for crossings. The recommendations include avoiding sensitive areas such as rare species habitat, unstable or alluvial areas, and meanders, and to align the crossing perpendicular to the channel. The proposed crossings appear to meet these criteria. Importantly, there is nothing in this guidance document which suggests that vegetated banks should be avoided; the

---

revisions). An issuing authority has the authority to deny proposed work in the buffer zone, but projects can and routinely are conditioned to protect resource areas. I am not aware of any denial of work in the buffer zone to allow a stream crossing.

<sup>39</sup> David Foulis, the Department staffperson responsible for preparing the permit testified it was the most stringent permit issued for work in the buffer zone that he had ever seen.

<sup>40</sup> Despite conflicting views on the extent of shading beneath the crossings, some plant mortality appears inevitable at least within the two longest crossings at Streams 5 and 39. Prefiled Direct Testimony of Pamela B. Weatherbee at para. 15, Testimony of Gary Sanford, Transcript Vol. 8 at pp. 99-100. enXco and the Department are correct that some light will enter through the openings at the ends of the crossings and the existing canopy is quite dense. See Prefiled Direct Testimony of Jeff Simmons at para. 47 and of David Foulis at para. 57. More importantly, the applicant is not required to ensure the survival of every plant within the crossings.

document does not mention vegetation at all except in the context of reestablishing vegetation post-construction. The Standards include a minimum width to span the channel of 1.2 times the bankfull width to avoid channel constriction.<sup>41</sup> Using the information provided by the applicant and presented in the Recommended Decision, I have confirmed that the open bottom culverts proposed for each of the ten streams meets this 1.2 times bankfull width specification.<sup>42</sup>

Any effects on the stability of the bank from the death of shaded plants underneath the crossing is sufficiently speculative so that anticipatory action is not warranted. I am puzzled by the claim that the loss of an unspecified number of plants over an unspecified area because of shading along the natural stream bank is somehow more detrimental than the installation of a culvert which would eliminate the entire bank and any vegetation that might grow there. Even if the Petitioners were to persuade me that the loss of plants would destabilize the bank, I would not deny the project but instead

<sup>41</sup>There is also an “openness ratio,” which is a ratio of the cross-sectional area of the opening divided by its length measured in meters. Wildlife may be reluctant to enter a confined space, so this measure is intended to accommodate the passage of wildlife. The general standards call for an openness ratio of >0.25. Neither the Standards nor the record contained sufficient information to enable me to calculate this ratio for each of the proposed crossings, but the wildlife identified as present at these sites (mice, shrews, voles, and salamanders) would appear unlikely to be troubled by enclosed spaces.

<sup>42</sup>I prepared a table to compare the span as provided by the applicant for each of the streams, the distance between the crossing structure and the bank (for each side), the approximate bankfull width calculated by subtracting the area from culvert to bank from the span distance across the stream, and the bankfull width times 1.2 as specified in the Stream Crossing Standards. *At every crossing, the proposed span is greater than the minimum 1.2 times bankfull width. Compare second column with last column.*

Stream	<u>Span</u>	Culvert to Bank	Culvert to Bank x 2	Approx. Bankfull Width	<u>1.2 x Bankfull Width</u>
1	29'3"	>6'	>12'	17.25'	20.7'
2	15'6"	5'	10'	5.5'	6.6'
3	10'2"	4'	8'	2'	2.4'
5	24'4"	4'	8'	16.33'	19.6'
7	19'10"	4'	8'	11.75'	14.1'
8	22'1"	3'	6'	16'	19.6'
9	12'7"	2'	6'	8.5'	10.2'
10	21'6"	3'	6'	15.5'	18.6'
13	20'7"	3'	6'	14.5'	17.4'
39	12'1"	2'	4'	8'	9.6'

See Recommended Final Decision at n. 13 and n. 14. I rounded down by an inch on certain span measures for ease of calculation, so the results may be slightly conservative or otherwise imprecise and are provided here for illustrative purposes.

would have conditioned the work to prevent any adverse effects or required the applicant to undertake preventative bank restoration. The Petitioners testimony about the importance of vegetation on banks is generally quite true, but there is no evidence that isolated plant mortality within the structures will have a material effect on the bank.<sup>43</sup> I also conclude that the excavation of the trenches and installation of the footings will not cause material impacts to the banks. Inherent in the Department's approval of the Massachusetts River and Stream Crossing Standards is its considered judgment that these structures are sufficiently protective of wetland resource areas and meet the performance standards.<sup>44</sup>

The Stream Crossing Standards contain recommendations for monitoring after a crossing has been installed. These include inspection for erosion, structure stability, evidence of stream instability, presence of debris accumulation, maintenance of streambed continuity, problems with infiltration, and indications of scouring downstream or sediment aggradation upstream of the structure. The inclusion of these monitoring requirements suggests to me that any impacts from installation of crossings can and should be addressed after construction.<sup>45</sup> The inclusion of this list on monitoring requirements leads me to conclude that any effects on the banks from plant mortality can be addressed if and when they occur.

---

<sup>43</sup> While vegetation does contribute to the stability of banks, other materials such as boulders, cobble, gravel and sand are important as well. Prefiled Direct Testimony of Gary Sanford at para. 33 and Prefiled Supplemental Testimony at para. 22; Prefiled Direct Testimony of David Foulis at para. 52. If the survival of all bank vegetation were a prerequisite to ensuring bank stability, the regulation would contain a prohibition of work which would result in plant mortality.

<sup>44</sup> While the Stream Crossing Standards were developed primarily in response to concerns about wildlife and fisheries, they are not inconsistent with the protection of other interests of the Wetlands Protection Act.

<sup>45</sup> The monitoring requirements apply generally to all stream crossings, including streambed construction and other work far more extensive than what is proposed here.

### Wildlife Habitat Evaluation

When work will be conducted on an inland bank, the proposed work may not impair the capacity of the bank to provide important wildlife habitat functions. A wildlife habitat evaluation is required for any work on a bank where the work will cumulatively alter more than fifty feet or 10%, whichever is less, of bank on a single lot. As discussed above, the streams crossed by open-bottom arches involve work within the buffer zone but not on the bank itself, and therefore no habitat evaluation is required for these ten crossings (Streams number 1,2,3,5,7,8,9,10,13 and 39). Streams 12 and 15 will be crossed by traditional round culverts and clearly involve work on inland bank.

The parties were focused on the banks at the open-bottom culvert crossings and the question of whether a wildlife habitat evaluation was necessary for that work.<sup>46</sup> The Administrative Magistrate did not accept the Department's assertion, not disputed by the Petitioners, that the bank affected by the two culverts would be 48 feet (18 feet for stream #12 and 30 feet for stream #15). Because I have found that the open-bottom culverts do not involve work on bank and therefore do not require a wildlife habitat evaluation, the question of how to calculate linear footage of bank alteration for purposes of the evaluation threshold is critical with respect to the two closed culverts. I now reach that question.

Stream 12 is associated with Wetland #13 and these areas are located at the entrance for the access road toward Crum Hill from Tilda Hill Road. In fact, it is

---

<sup>46</sup> The applicant did submit a wildlife habitat evaluation with its notice of intent in 2003. In the superseding order of conditions, the Department included a finding that certain submittals by the applicant related to the vegetation at the site constituted an evaluation. The question of what constitutes a wildlife habitat evaluation has been answered by the Wildlife Habitat Protection Guidance issued by the Department in 2006. I agree with the Administrative Magistrate that the submittals identified in the findings accompanying the superseding order do not constitute a wildlife habitat evaluation. See Ruling on Motion for Partial Directed Decision at 20.

described as a drainage ditch parallel to Tilda Hill Road. Recommended Decision at 11. The culvert proposed for this crossing is 18 feet in length. As part of the construction process, enXco would lay steel plates over about 80 feet of Stream 12 to allow large vehicles to turn onto the access road. The steel plates would be removed and the area restored when construction is completed. This work appears to be on land owned by Matt and Maureen Bakke. Stream 15 was identified during the review by the Florida Conservation Commission after submission of the notice of intent. It is located on land owned by the Town of Florida. The Administrative Magistrate found that this work would exceed the threshold for inland bank because the work at Stream 12 would actually alter 36 feet (18 feet on each side of bank) plus 160 feet (80 feet on each side of bank) and at Stream 15 would alter 60 feet (30 feet on each side of bank).

I begin with Stream No. 12, the roadside drainage ditch along Tilda Hill Road which must be crossed for the Crum Hill access road. This stream received little attention in the testimony, largely because there was no dispute that the upper boundary of the bank was the first observable break in slope. Recommended Final Decision at 27, n. 21. Although the Administrative Magistrate counted the length of steel plating necessary on a temporary basis to allow for entrance of construction vehicles as bank alteration, no party addressed the status of the plates. Recommended Final Decision at 64-65. Although at first blush it might seem that the steel plates would lie directly on the upper boundary of the bank, the plan view of the steel plating shows that the bank is well below the plating and will be physically unaffected by it. Because there is no argument, or more importantly, evidence in the record to factually support a conclusion that the steel plates

will impact the bank, I will not include that length for purposes of the wildlife habitat evaluation threshold.

Although the record indicates that there may be flow more frequently in this stream than others on the site, there is no argument or evidence in the record as to the location of the lower boundary of bank and mean annual low water. As the parties have agreed that there is no Land Under Water resource area and these are intermittent streams, I conclude that the bank resource area should be counted as a single length for purposes of the wildlife habitat evaluation threshold. Finally, as an alternate grounds I note that the applicant's witness Mary Johnson did prepare a wildlife habitat evaluation for Stream 12. See Prefiled Direct Testimony of Pamela Weatherbee, Exhibit E. In Ms. Johnson's direct testimony she states that impacts from the two culverts, at less than the fifty foot threshold, will not have an adverse effect on wildlife habitat. Prefiled Direct Testimony of Mary Johnson at para. 41-43. Because she had evaluated Stream 12 and is qualified to testify as to wildlife habitat, I accept her professional opinion and conclude that there will be no adverse effect on wildlife habitat at Stream 12.

As to Stream 15 which will be crossed by a 30 foot culvert, I have already addressed the question of how linear feet of bank may be counted for intermittent streams. Here the culvert is only 12 inches in diameter and the stream is described as having a "dry streambed for much of the year," so mean annual low flow level is likely to be the thread of the stream. See Notice of Intent, Data from Woodlot Alternatives, Exhibit 1.1.

Because the threshold applies per lot, again based upon the text of the regulation, I find that Stream 15 may be assessed separately. See Preface to the 1987 Regulatory

Revisions, Wetlands Protection Act Regulations, at IV. B. I have looked to the notice of intent plans and accompanying list of landowners, as it is reasonable to conclude that the ownership of lots would be determined at the time the application is filed. Although the applicant's engineer indicated that grade restrictions may precluded its use, I have allowed the substitution of an open-bottom culvert at this location in accordance with the Department's preference for this type of crossing where feasible. See Prefiled Direct Testimony of Jason Krzanowski at para. 23. I find that for purposes of the threshold for wildlife habitat, the linear feet of bank on this lot is 30 feet.<sup>47</sup>

#### Identification of Bordering Vegetated Wetlands

I concur with the conclusion of the Administrative Magistrate that the Petitioners did not meet their burden of going forward to show that there are bordering vegetated wetlands on the site that are not properly delineated or will be impacted inconsistent with the performance standards (Issue No. 1). Recommended Final Decision at 19-25 and Ruling on Motion for Partial Summary Decision at 4-6. I agree that the existence of trampled vegetation where the plant species may still be accurately identified is not sufficient to qualify as a disturbed area under the regulations. 310 CMR 10.55(2)(c)3. A claim that bordering vegetated wetlands should be delineated more precisely based upon evidence of hydric soils is not sufficient to show that the area is within the limit of work. Finally, the Petitioners did not meet their burden of going forward to show that work within the buffer zone will adversely affect the bordering vegetated wetland. The applicant must establish a clear limit of work and will provide erosion and sedimentation controls to protect the resource areas. Special Conditions 23 to 29; Prefiled Direct

---

<sup>47</sup>Even if the applicant were to perform an evaluation and found an adverse effect on habitat, the remedy under the new guidance would be the installation of open-bottom culverts.

Testimony of Jason Krzanowski at para. 90-99, Plan of Record, Sheet L132. The requirement in the permit that the applicant hire a compliance monitor to oversee construction will also ensure that the limit of work is respected. Superseding Order Condition No. 27.

#### Bordering Vegetated Wetlands Replication

I accept the recommendation of the Administrative Magistrate that the Petitioners have not met their burden of going forward on whether the replication area for bordering vegetated wetlands complies with the regulations at 310 CMR 10.55(4)(b)6 (Issue No. 6). The Department has guidelines for the siting and installation of replication areas. Massachusetts Inland Wetland Replication Guidelines, March 2002. A single observation of dry test pits is not sufficient to determine whether seasonal groundwater at the proposed site is suitable for a replication area. Id. at Section 2.3.1. Prefiled Direct Testimony of Ed Stockman, para. 32. I also agree with the resolution of Issue 6a, that an area selected for replication may be larger than the area lost. Decision on Motion for Partial Directed Decision at 23.

#### Stormwater Management

I concur with the conclusion of the Administrative Magistrate that the applicant has shown by a preponderance of the evidence that the project will comply with the Department's stormwater management standards. On Issues 7c and 7d, I agree with the Administrative Magistrate that the Petitioners did not meet their burden of going forward on the adequacy of the erosion and siltation control plan and the operation and maintenance plan. Decision on Motion for Partial Directed Decision, at 27 and Recommended Final Decision at 75. I have reviewed the stormwater management plans

for this project carefully because large projects, particularly during construction, can adversely affect wetland resource areas if a storm event occurs and controls are inadequate. Again, I note that the permit requires the applicant to employ a compliance monitor to oversee construction at the site and who will have the authority to stop work if necessary. While such a condition is unusual in a wetlands permit, the site is remote and the presence of a person responsible for environmental compliance should prevent some of the problems that might otherwise lead to enforcement by the Department.<sup>48</sup> The requirement for an onsite compliance monitor, however, does not signal any abdication by the Department of its enforcement responsibilities.

#### Other Procedural Issues

As correctly described by the Administrative Magistrate, to meet the burden of going forward in a wetlands case, the Petitioners had to “produce at least some credible evidence from a competent source in support of the position taken.” 310 CMR 10.03(2). Recommended Final Decision at 32. As to the delineation of the inland bank, the Petitioners may not have been required to submit an entire delineation but they were required to submit evidence *as part of their direct case* showing that the applicant’s delineation was incorrect, with factual support. Adducing testimony on cross-examination of applicant’s witness by having the Petitioner’s attorney present material from a treatise, however authoritative, does not meet this burden. The hearing would have proceeded more efficiently had the Petitioners presented their theory of the location of mean annual flood level in prefiled direct testimony. In addition to asserting a

---

<sup>48</sup> The remote location of this project and its relative inaccessibility may have contributed to the fewer and less comprehensive visits to this site. The Department is a reviewing agency; the regulations do not require Department staff to have inspected every area where work is proposed and do not preclude either the use of imaging or relying on observations of representative sites in reaching opinions on the appropriate contents of a permit.

definition of mean annual flood, the Petitioners needed to show how this line would be located and to actually locate it in at least one area sufficiently representative to show its position relative to the first observable break in slope and the delineation offered by the applicant. I reject the conclusion of the Administrative Magistrate that the Petitioners met their burden of going forward on this issue. Recommended Final Decision at 30-33.

Secondly, I do not accept the view of the Administrative Magistrate that any theory offered by a witness that is not also addressed in a post-hearing brief is properly deemed “abandoned” by that party and may be disregarded. While a well-crafted and comprehensive closing brief can certainly assist decisionmakers in the evaluation of evidence, the Department has not been prescriptive about their contents, nor does the hearing rule related to briefs suggest this level of formality. 310 CMR 1.01(13)(k).

### Conclusion

I issue a Final Order of Conditions for the Hoosac Wind Project incorporating the superseding order of conditions for this project with the addition of a condition to be inserted before the final sentence of Special Condition No. 29:

The applicant shall specifically report on the condition of the Inland Bank within the open bottom stream crossings, consistent with the monitoring best management practices identified in the Massachusetts River and Stream Crossing Standards, and comply with any order of the Department to undertake corrective action where an annual report indicates any adverse affects.

Additionally, the following Special Condition will be added:

The applicant may substitute at Stream 15 an open-bottom crossing for the proposed closed culvert, provided that revised plans are submitted to the Department and Department staff field verify that the work will be limited to the buffer zone.

The Plan of Record for this project includes the final set that enXco submitted and revised plan pages accepted by the Administrative Magistrate on August 18, 2005. I

direct Department staff to prepare a Final Order of Conditions for my signature within five business days, consistent with this Final Decision.

Based upon the documents submitted to the Secretary of the Executive Office of Energy and Environmental Affairs under M.G.L. c. 30, s. 61 and to the Department under M.G.L. c. 131, s. 40, I find that the conditions to be incorporated into the Final Order of Conditions for this project constitute all feasible measures to avoid damage to the environment, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority.

The parties to this proceeding are notified of their right to file a motion for reconsideration of this Decision, pursuant to 310 CMR 1.01 (14)(d). The motion must be filed with the Docket Clerk and served on all parties within seven business days of the postmark date of this Decision. A person who has the right to seek judicial review may appeal this Decision to the Superior Court pursuant to M.G.L. c. 30A, §14(1). The complaint must be filed in the Court within thirty days of receipt of this Decision.

[Signed]\_\_\_\_\_

Arleen O'Donnell  
Acting Commissioner