OFFICE OF ADJUDICATIONS

IN THE MATTER OF ***: APPLICATION NO. IW-97-113***

DOT/ROUTE 14A PLAINFIELD ***: FEBRUARY 9, 2001***

PROPOSED FINAL DECISION

I

SUMMARY

The Connecticut Department of Transportation (the applicant), has applied to the Department of Environmental Protection Inland Water Resources Division (staff) for a permit to conduct regulated activities along Route 14A in the Town of Plainfield. These regulated activities are associated with the reconstruction of Route 14A approximately .4 miles east of I-395 to the border of the Town of Sterling. The DOT has filed an application for an Inland Wetlands and Watercourses Permit pursuant to General Statutes §22a-39 *et. seq.* (*Inland Wetlands and Watercourses Act*).

The applicant and staff are the only parties in this matter. Staff supports issuance of the permit and has submitted into the record a draft permit and proposed modifications that would authorize the applicant's proposed regulated activities.

The reconstruction of the portion of Route 14A that is the subject of this permit application would improve public safety by widening and realigning sections of a generally narrow, busy roadway that is characterized by severe horizontal and vertical restrictions. The road surface rises and falls in an irregular and unpredictable fashion. Combined with frequent curves, this results in poor sight lines that create areas with inadequate available stopping distances. The proposed project will alleviate these and other problems and provide a safer, more efficient roadway.

The project has been planned to minimize wetland impacts while meeting current highway design and safety standards. These proposed regulated activities, if conducted in accordance with the terms and conditions of the draft permit as modified herein, would be consistent with the applicable legal standards for issuance of the permit.

I recommend that a permit be issued in accordance with the terms and conditions of the draft permit (Attachment A) with the modifications outlined in Attachment B.

II

DECISION

A

FINDINGS OF FACT

The Application

1. On April 1, 1997, the Department of Transportation (DOT) submitted an application to the Department of Environmental Protection (DEP) Inland Water Resources Division for an Inland Wetlands and Watercourses permit[1]. Staff requested a hearing upon a determination of significant impact, and a hearing was held on June 20, 2000. The record remained open until July 10, 2000 to allow time for the submission of additional written public comments. (Ex. DOT-1.)

The Project

2. The proposed regulated activities that are the subject of this permit application (the project) are all associated with the reconstruction of a 3.5-mile section of Route 14A in the town of Plainfield. The project will begin approximately .4 miles east of Route I-395 and run to the Sterling town line. Generally, the existing roadway will be widened nine feet to accommodate two twelve-foot travel lanes with eight-foot shoulders in either direction, yielding a forty-foot wide pavement section. As a result of the

[1] The DOT has also applied for a Section 401 Water Quality Certificate. §33 U.S.C. §1341.

reconstruction, three sections of Route 14A will need to be realigned (herein described as Site 1, Site 2 and Site 3a, 3b and 3c). Improvements to the roadway pavement and geometry will also be made. The vertical and horizontal geometry will be modified to improve sight distances and traffic safety in accordance with current design safety standards. Also proposed are miscellaneous drainage improvements that include lengthening existing culverts, reconstructing two culverts, and constructing new catch basins and new piping. The storm drainage design for the catch basins and piping in the project area conforms to applicable state and federal guidelines. (Exs. DOT-1, 2, 6, 7; exs. DEP-5a, 6a; test. 6/20/00, D. Harms, C. Malik, S. Snyder, S. Yurasevecz.)

Roadway Deficiencies/Proposed Improvements

3. The proposed project has been identified by the DOT as a priority due to severe horizontal and vertical restrictions on Route 14A. The project is intended to help improve capacity restraints and safety issues caused by current design deficiencies. (Exs. DOT-1, 2, 6,7; exs. DEP-5a, 6a; test. 6/20/00, A. Dos Santos, D. Harms, C. Malik, S. Snyder, S. Yurasevecz.)

4. Route 14A is characterized as a rural major collector. Based on state standards for a two-lane collector roadway, the road should have eleven to twelve-foot minimum lane widths with eight-foot wide paved shoulders. The present width of the road, which varies from forty feet at the beginning of the project to twenty-one feet at the bridge over Ekonk Brook, cannot consistently accommodate these standard widths. (Exs. DOT-2,7; test. 6/20/00, A. Dos Santos, D. Harms.)

5. Improvements to the road include proper cross slopes of 1.5% pitched away from the centerline of the road. The superelevation cross slope in banked sections may be up to a 6% slope, except in one area of the project where the slope will be 8.8%.[2] A four-foot wide vegetated shelf at a slope of 12:1 will be provided for a snow shelf and for the placement of guardrail immediately adjacent to the roadway. Pursuant to state design guidelines, fill slopes for the roadway will be as flat as possible for safety purposes. Part of State Project No. 108-154, the project also includes improvements to three local roads that intersect this area of Route 14A. These roads are, from west to east, Gendron Road, Spaulding Road, and New Road. An area containing an historic property is located just east of Site 2 on the north side of Route 14A. (Exs. DOT-1, 2, 6,7; ex. DEP-5a; test. 6/20/00, D. Harms, S. Yurasevecz.)

6. The present horizontal and vertical alignments of Route 14A in the area of the project do not conform to federal and state operational, geometric and safety standards in several locations as specified below:

a) *Gendron Road*. In this vicinity, the road contains S-curves that do not meet the minimum design standards for horizontal curvature in a road. The distance between these curves is also inadequate and does not allow for a proper transition between the curves (i.e., the distance required to change from a bank in the roadway of one direction into a bank of the opposite direction). Gendron Road intersects Route 14A

[2] Standards of the American Association of State Highway and Transportation Officials (AASHTO) require 7% road grades. An 8.8% grade is proposed for an approximate 2500-foot section of Route 14A near Gendron Road. A 7% grade would ease the sudden changes in road surfaces that tend to be related to an increased accident rate. This standard was waived for this area because in order to be achieved, excessive excavation and filling would have been necessary in the affected area, resulting in impacts on adjacent wetlands and properties and an alteration of the character of the road. The minimal safety concerns due to this difference in grade did not justify these impacts to the project area. (Exs. DOT-1,7; test. D. Harms, 6/20/00.)

at a skewed angle. The sight distance or visibility, from this intersection as well as from several nearby driveways, is inadequate. The road will be realigned so that these curves are appropriate for vehicle speeds and so that there is adequate distance between curves for proper transition of the banking. Gendron Road will be realigned to a more perpendicular intersection angle for better sight distance at the intersection.

b) *Stations 180+00 to 195+00 (Vicinity of Site 2 east to vicinity of Site 3a)*.

The present roadway has a series of abrupt changes in horizontal and vertical geometry, causing a "roller-coaster" effect. An historic property exists on the north side, close to the roadway. The proposed design will smooth out these substandard vertical curves and relocate the roadway approximately fifty feet horizontally to the south to avoid impacts to the historic property.

c) *Stations 212+00 to 245+00 (Vicinity of Site 3b east to area mid-way between intersection of New Road and end of project)*.

The concerns with the existing alignment include substandard pavement widths, sharp horizontal curvature, abrupt changes in vertical geometry and steep vertical grades that cause drivers' speeds to exceed the adequacy of that geometry. There are restricted sight distances for New Road and various driveways as well as substandard stopping sight distances for Route 14A. The proposed plan will provide geometry appropriate to vehicle speeds, while disturbing only a portion of Site 3C between Stations 221+00 and 223+00.

(Exs. DOT-6, 7; test. D. Harms, 6/20/00.)

7. The accident rate for the section of Route 14A that is the subject of the proposed project is slightly higher than the state average for this type of road. However,

at two areas of the road, the accident rate is significantly higher than average. Without improvements to the roadway, it is reasonable to assume that the rate of accidents will increase, particularly with the expected increase in traffic volumes in this area. (Ex. DOT-7; test. A. Dos Santos, 6/20/00.)

Watercourses/Flood Control

8. Located within the limits of the project are the crossings of several watercourses. Small perennial streams, they include a tributary to Fry Brook at Site 1, an unnamed tributary to Ekonk Brook at Site 3a, and Ekonk Brook at Site 3b. Ekonk Brook flows north approximately 10,000 feet to the Moosup River. Fry Brook flows to a confluence with Mill Brook, a tributary to the Quinnebaug River. The tributary to Fry Brook crosses the roadway in twin 36-inch concrete pipes approximately 1400 feet from the western end of the project, around construction baseline station 114+00 (see Site 1, infra). Further east, Route 14A has a bridge crossing over Ekonk Brook at about station 208+25; a smaller tributary to Ekonk Brook is piped under Route 14A at about station 212+08 (see Site 3b, infra). (Exs. DOT-1, 6, 7; exs. DEP-5a, 6a; test. 6/20/00, C. Malik, S. Snyder, S. Yurasevecz.)

9. Ekonk Brook and Fry Brook are designated by the Federal Emergency Management Agency (FEMA) as within established 100-year flood zones. The project will increase hydraulic capacity of the new culverts and will raise the roadway near major stream crossings above the predicted 100-year flood elevation. This will lessen the frequency and duration of floodwaters that might back up at the culvert locations and decrease the likelihood of environmentally destructive flood damage. The size of the

respective drainage areas for Ekonk Brook and the tributary to Fry Brook, as well as the estimated times of concentration for the highest flow volumes, will yield a negligible difference in peak flow and water surface elevation in storm events, including a rapidly-arriving 100-year storm. The new roadway will permit passage of a 100-year flood. (Ex. DOT-7; ex. DEP-5a; test. 6/20/00, D. Harms, S. Yurasevecz.)

10. There are no stratified drift aquifers in the area surrounding the project. No public water supply wells will be impacted by the construction of the project. (Ex. DOT-7; test. C. Malik, 6/20/00.)

Wetland Impact Sites/Proposed Activities

11. The impacted areas on this project consist of palustrine[3] wetlands and alluvial wetland soils. The area has bedrock-controlled uplands blanketed with glacial till. Most of the impacted area was disturbed when the road was originally constructed, and when the existing culverts and bridges were built. The current project will impact three individual wetland sections, subdivided as Sites 1, 2, 3a, 3b, and 3c. A total of 1.39 acres of wetlands (60,412 square feet) will be impacted by the project. Most of these impacts are minimal and are unavoidable with the proposed alignment.

a. *Site 1* (Station 113+80 to 114+95)

- Site 1 is a culvert crossing that conveys an unnamed tributary of Fry Brook under Route 14A from north to south. This watercourse, a cold water fishery, is a tributary to Fry Brook, and its primary function is sediment and nutrient transport.

[3] Palustrine wetlands are freshwater, forested wetland areas.

- Approximately .08 acres of wetlands, or 3640 square feet, will be impacted. The total fill will be approximately 146.3 cubic yards (3950 cubic feet), and the total cut about 53.3 cubic yards (480 cubic feet).

- The existing roadway will be widened on both sides from twenty-four feet to a total of forty feet. This will provide a twelve-foot lane and an eight-foot shoulder in either direction. To accommodate the proposed widening, the existing twin 36-inch reinforced concrete pipe culverts and end walls will be replaced by twin 48-inch aluminized corrugated metal pipe culverts and end walls. The stony bottom stream, which crosses Route 14A at an angle, has an approximate 5% gradient. The proposed culverts will be installed at about the same angle with riprap placed on the side slopes. Riprap will be placed to reduce the outlet velocity, and the inverts will be modified to reduce the culvert gradient. Natural stream substrate will be used on the bottom of the new channel as recommended by DEP Fisheries staff. One of the twin culverts will be depressed 12 inches to provide low flow fish passage.

(Exs. DOT-1 (plate 1), 6, 7; exs. DEP-3a, 3b, 5a, 6a; test. 6/20/00, C. Malik, B. Murphy, S. Snyder, S. Yurasevecz.)

b. *Site 2* (Station 177+70 to 188+55)

- The area to be impacted at Site 2 is a young red maple swamp located on the south side of Route 14A. Impacts to a cattail marsh/shrub swamp and residential areas on the north side of the road will be avoided. The primary function of the impacted wetlands is wildlife habitat.

- The proposed regulated activity at Site 2 will impact approximately .5 acres of wetlands (21,650 square feet). The total fill for this area of the project will be approximately 3182.6 cubic yards and the total cut will be approximately 368.5 cubic yards.

- The proposed activity at this site will consist of realigning Route 14A to the south of the existing roadway and providing a twelve-foot lane and an eight-foot shoulder in each direction. Two strips, one approximately 25 x 350 feet and the other 30 to 50 x 300 feet, will be filled to accommodate a southern shift in the roadway alignment. Wetland impacts will result from the work that will raise the roadway profile, remove four culverts and replace two others. A new drainage system and end wall will be constructed within this area.

- Because of residential constraints and wetland locations on either side of Route 14A as it currently exists, wetland impacts will be unavoidable, however, they will be minimized with the use of a 1½ : 1 embankment slope and erosion control measures. In addition, fill will be limited to the margin of wetland that has been previously disturbed.

(Exs. DOT-1 (plates 2-5), 6, 7; exs. DEP-5a, 6a; test. 6/20/00, D. Harms, C. Malik, B. Murphy, S. Synder, S. Yurasevecz.)

c. *Site 3a* (Station 196+75 to 204+30)

- This site, a young red maple swamp, is comprised of a cross culvert that conveys approximately 110 feet of an unnamed tributary to Ekonk Brook under Route 14A. The watercourse has been identified as being capable of supporting

warm water fisheries. The primary function of the impacted wetlands on this site is wildlife habitat.

- The proposed regulated activities will impact approximately .37 acres of wetlands (16,266 square feet). The total fill for this area of the project will be approximately 1462.2 cubic yards and the total cut will be approximately 295.7 cubic yards.
- The proposed construction activity will consist of widening Route 14A an additional nine feet to provide for a twelve-foot lane and an eight-foot shoulder in either direction. A narrow strip of red maple swamp will be filled on the north side (about 10' by 320') and on the south side as well (25' by 475') to accommodate the roadway widening. Impacts will occur as a result of raising the roadway profile and replacing two 30-inch culverts with a 42-inch reinforced concrete pipe. An existing stone box culvert conveying a tributary to Ekonk Brook, inadequate to handle expected storm flows, will be supplemented by the installation of twin 36-inch bypass/overflow culverts to be installed parallel to Route 14A on the south side. This will allow for a base flow through this stone box culvert and divert larger, possibly destructive storm flows through other pipes. The culvert crossings will be installed 6 inches below grade to facilitate fish passage. The approximate 110-foot long section of the existing stream channel will have to be altered slightly. At the area of relocation, riprap will be placed on the bottom and sides of the new channel with natural streambed substrate placed in the bottom of the new channel. Seeded slopes at a ratio of 1½ : 1 are proposed to further minimize wetland impacts. The relocated channel will

be excavated within the wetland with channel width, depth, slope and meander geometry similar to the existing channel.

(Exs. DOT-1 (Plates 6-9), 6, 7; exs. DEP-5a, 6a; test. 6/20/00, C. Malik, B. Murphy, S. Snyder, S. Yurasevecz.)

d. *Site 3b* (Station 207+87 to 212+85)

- This site involves the bridge replacement over Ekonk Brook. The area is a sloping red maple swamp adjacent to a large wet meadow/marsh complex. It supports a mixed cold water/warm water fishery, while an unnamed tributary to the east may support a warm water fishery. The DEP has determined that those areas do not appear to provide suitable habitat features for sustaining fish population, therefore fish passage is not warranted at this site. The principle function provided at this site is wildlife habitat.

- The proposed activities at this site will impact approximately .24 acres of wetlands (10,356 square feet). The total fill for this site will be approximately 903.4 cubic yards and the total cut will be approximately 461.8 cubic yards.

- The proposed activity at this site will consist of realigning and widening Route 14A an additional nine feet to provide for a twelve-foot lane and an eight-foot shoulder in each direction. Wetland impacts will occur as a result of raising the highway profile as well as replacing a bridge over Ekonk Brook with a dual box culvert. The existing culvert will be extended to accommodate the roadway widening. This work will affect wetlands to the north and south of Route 14A. The existing 11 x 6 foot reinforced concrete slab bridge with stone masonry abutments over Ekonk Brook will be replaced with a twin 8 x 7 foot reinforced

concrete box culvert with endwalls and wingwalls at the inlet and outlet set approximately 12 inches below stream grade. To aid fish passage, a one-foot sill will be constructed at the outlet of the westerly box culvert cell to force low flow through the easterly cell. A riprap apron and basin will be constructed at the inlet and outlet base of the wingwalls at both crossings to protect the channel from erosion. Riprap will be placed on 1 ½ : 1 embankment slopes to minimize impacts to the adjoining red maple swamp.

- The present bridge is hydraulically inadequate and the roadway overtops during 100-year storm events. The proposed culverts will pass such a storm event with no overtopping of the roadway. The proposed culverts will also lower the water surface and reduce flooding on the upstream property.

(Exs. DOT-1, (Plates 10 and 11), 6, 7; exs. DEP-5a, 6a; test. 6/20/00, C. Malik, B. Murphy, S. Snyder, S. Yurasevecz.)

e. *Site 3c* (Station 220+00 to 223+40)

- The impacted area at this site is a stony wetland in a flat area near a small watercourse on the north side of the roadway. The principle functions of this wetland are sediment and nutrient transport.

- The proposed regulated activities will impact approximately .2 acres of wetlands (8,501 square feet). The lobe of red maple swamp to be filled is approximately 60 feet by 120 feet; the area of wetland fringe to be filled is about 50 feet by 20 feet. The total cut for this area will be approximately 521.1 cubic yards.

- The proposed activity at this site will involve realigning approximately 3300 feet of road to shift the roadway to the south. A lobe of red maple swamp will be filled, and an area of wetland fringe close to the road will be impacted to avoid residential impacts on the north side of the roadway.
- To lessen the extent of wetland disturbances, a small cut section will be used, as will a 1 ½ : 1 embankment slope and erosion control measures.

(Exs. DOT-1 (Plates 12 and 13), 6, 7; exs. DEP- 5a,6a; test. 6/20/00, C. Malik, B. Murphy, S. Snyder, S. Yurasevecz.)

12. Trees will be cut as a result of this project. The impact of this loss is minimized by the presence of extensive forested areas adjacent to the impacted areas. (Ex. DOT-7; test. C. Malik, 6/20/00.)

13. The impacted wetlands all provide similar habitat values. The wetlands are a habitat for wildlife tolerant of nearby motor traffic and disturbance by humans. The areas are contiguous with a larger block of habitat that provide viable wildlife habitat, including the floodplain of Ekonk Brook and the Pachaug State Forest. Common species within the affected wetlands include white-tailed deer, raccoons, beaver, muskrat, rabbits, gray squirrels, opossums, red fox, and eastern coyote as is typical of this type of rural setting. New impacts to wildlife within the project area will be controlled due to the limited impact area of the project, and the existing disturbance of Route 14A and residential land uses. Wider openings at the new stream crossings will enhance the potential for wildlife to travel along the stream corridors at these locations. The project is designed so there will be no long-term reduction in habitat values for existing wildlife species. (Ex. DOT-7; test. C. Malik, 6/20/00.)

14. DEP Fisheries Division recommended several measures to minimize impacts to fisheries resources. DOT has incorporated all of these recommendations into design plans and construction contracts. For example, all stream crossings have been designed according to the concerns reflected in the comments of the DEP Fisheries Division and in-water construction will be limited to a period between June 1 and September 30, to minimize disturbance to cold water fisheries reproduction. (Ex. DOT-7; exs. DEP-3a, 3b, 5a, 6a; test. 6/20/00, C. Malik, B. Murphy.)

Mitigation

a. Wetland Mitigation Site

15. A wetland mitigation site will be located on DEP-owned property in Canterbury near Route 169 and the Quinnebaug River. The goal of this mitigation site is to create approximately 1.5 acres of marsh with permanent pools to compensate for the loss of 1.39 acres of inland wetlands and watercourses and associated habitats that will occur as a result of the project impacts. This site, which should start to establish itself as a functioning wetland within one season, will be designed chiefly as a wildlife habitat enhancement to increase habitat diversity by providing seasonal habitat for waterfowl and water-dependent species, including amphibians and reptiles. This site will also be designed to increase ecological diversity and improve habitat functions for species that inhabit riparian corridors. The creation of undulating topography will maximize species diversity. The site will provide attenuation of flood flows in the Quinnebaug River Valley. (Exs. DOT-1, 6, 7; ex. DEP-6a; test. 6/20/00, C. Malik, S. Snyder.)

16. The mitigation area will be developed within an agricultural field, which is owned by the DEP and leased to a local farmer. Although the site has been historically used for agricultural purposes, it has been identified as marginal quality farmland due to somewhat poorly drained hydrology. The site has a remote location near the Quinnebaug River and access is difficult. An access roadway from Route 169 will be improved. (Ex. DOT-7; test. C. Malik, 6/20/00.)

17. The soils at the site and its location are conducive to this proposed mitigation site plan. The site will be located in the southwest quadrant of the agricultural field. A small watercourse exists on the southern end, and its drainage area consists of farmland and forest with sparse residential development. Irregularly shaped basins will be excavated at the site to provide year-round deep-water marsh habitat in most years. The goal will be to create a functioning wetland in an area that has non-hydric alluvial soils without disturbing the surrounding wetlands and a small watercourse that exists on the southern end of the site. (Exs. DOT-6, 7; ex. DEP-6a; test. 6/20/00, C. Malik, S. Snyder.)

18. The planting plan for the site will be designed to provide and maintain the ecological diversity and productive habitat function and value for the wetlands. The plan will also be designed to maximize species diversity, minimize erosion, provide for drought tolerance, and discourage the invasion and establishment of common reed grass. (Exs. DOT-6, 7; ex. DEP-6a; test. 6/20/00, C. Malik; S. Snyder.)

19. The non-inundated areas of the site will be seeded at the completion of excavation resulting in several overlapping vegetative zones. The seed mix will be selected to represent varying degrees of drought tolerance; seedlings will establish

themselves based upon micro-topology and the resulting variation in soil mixture. Wet conservation grass seed mix will be used on slopes to establish sod cover to minimize erosion. (Exs. DOT-6, 7; test. C. Malik, 6/20/00.)

20. The creation of the wetland will be monitored after construction and planting of herbaceous plant materials. One of the goals of this monitoring will be to determine whether the wetlands are maintaining their functional values. Woody plantings will be delayed one year to ascertain hydrologic conditions. The permit will require the preparation and submission of monitoring reports for three years following the completion of construction. Minor modifications may be made at the time of construction; and necessary additional modifications to grade will be made within a year of construction. Modifications to the plan will only be implemented with the authorization of the DEP. (Exs. DOT-6, 7; ex. DEP-6a; test. 6/20/00, S. Snyder, C. Malik.)

b. *Construction Mitigation/Erosion and Sedimentation Controls*

21. Short-term impacts will be minimized through erosion and sedimentation control guidelines that will be included in the construction contract for the project as required by the DOT. (*Standard Specifications for Roads, Bridges and Incidental Construction* Form 814A (1995) and *Supplemental Specifications* (2000); *On-site Mitigation for Construction Activities*, Connecticut DOT Environmental Planning Division 1994.) These guidelines address the installation, schedule for implementation, maintenance, inspection and expected results for the selected methods for erosion and sedimentation control. Adherence to these guidelines will assure that no adverse effects to fisheries or riparian habitat will occur as a result of this project. These guidelines

provide for protection of ground and surface water quality, and minimize the possibility of siltation and sedimentation within the area of the regulated wetlands and watercourses. (Exs. DOT-1, 7; ex. DEP-5a; test. 6/20/00, D. Harms, C. Malik, S. Yurasevecz.)

22. Specific care and special construction methods will be used. When existing piping is being replaced or upgraded, drainage work will be done during seasonal periods of low rainfall and flow. In drainage installations, water-handling methods will be used. These include cofferdamming and piping to an adequate basin in accordance with Best Management Practices. (Exs. DOT-1, 7, ex. DEP-5a; test. 6/20/00, D. Harms, C. Malik, S. Yurasevecz.)

23. The following specific erosion and sedimentation control measures are proposed:

a. Silt fencing will be installed in conjunction with all disturbed and new soil slopes that could affect other areas;

b. Exposed soils will be seeded with an approved erosion control mixture within seven days of the contractor reaching the appropriate grade;

c. Sedimentation control measures will be installed around all catch basins receiving flow from unstabilized areas;

d. Curbing use will be minimized to allow storm runoff to sheet flow off the roadway in order to filter sediment and any pollutants through roadside vegetated areas;

e. Vegetated swales will be used in some areas; some will be lined with erosion control matting prior to turf establishment to reduce the risk of erosion and allow a quicker establishment of vegetation; and

f. Riprap splash pads will be installed at stormwater discharge locations where erosion potential has been determined to be high.

(Ex. DOT-7; ex. DEP-5a; test. 6/20/00, D. Harms, S. Yurasevecz.)

24. A DEP Stormwater Discharge Registration will be required for the project. A Pollution Control Plan will also be developed in association with that registration. (Exs. DOT-1, 7.)

25. During construction, the contractor is required to inspect, report and repair any erosion. An on-site project engineer and staff of the DOT Environmental Planning Division will monitor the contractor's work to ensure compliance with DEP and DOT regulations and guidance. (Ex. DOT-7; ex. DEP-6a; test. 6/20/00, D. Harms, S. Snyder.)

State Species of Special Concern

26. The DEP Natural Diversity Database Maps[4] revealed that a population of *Lycacaena epixanthe* or "Bog Copper" has been observed in an area north of Route 14A adjacent to Site 2. A conspicuous butterfly that inhabits and is associated with sphagnum peat bogs, this species is listed as a State Species of Special Concern by the DEP Natural Diversity Database (NDDB). Although the bog was not exactly where it was located and identified by the DEP, a soil survey for Windham County identifies Adrian and Palms mucks, which are indicative of peat bogs, in an area farther east of the NDDB location that correlates to the Site 2 impact area. A vegetative survey for Site 2 and field observations of staff did not reveal any sphagnum present in the impact area.

[4] DEP Natural Diversity Database mapping includes information regarding critical biologic resources available to the DEP. The information is a compilation of data collected over the years by the DEP Natural Resource Center's Geological and Natural History Survey and cooperating units of the DEP, private conservation groups, and the scientific community. (Ex. DOT-7)

Nonetheless, to avoid any possible long-term reduction in habitat, no fill will be placed within the peat bog itself. The project will result in a fringe filling on the margin of the peat bog. Fill will also be placed in adjacent regulated wetlands that have gravelly soils. During construction, measures will be taken to prevent unnecessary loss of any Bog Copper butterflies, including a clear delineation of the construction area to prevent unnecessary intrusion. On-site inspectors will also monitor construction; if an endangered species is threatened, the construction activities will be moved. (Exs. DOT-1, 7; ex. DEP-6a; test. 6/20/00, C. Malik, S. Snyder.)

Alternatives

27. During the planning and design of this project, a continuous examination of design alternatives was conducted. Numerous alternatives were considered in consultation with various units of the DOT, as well as the DEP, the U.S. Army Corps of Engineers, the Town of Plainfield, concerned citizens and regulatory agencies. Among the factors considered when assessing alternatives were geometric constraints, historical and archeological concerns, impacts to private property, and environmental concerns. The following alternatives were considered when examining the potential range of alternatives.

- The existing geometry of Route 14A does not provide a safe roadway width and sight distance parameters. The numerous structural deficiencies in the project area mandate some resolution by the DOT. The "no build" alternative was therefore rejected as it would not meet the goals of the project and the obligation

of the applicant DOT, namely, the redesign of the subject area of Route 14A to provide for a safe roadway.

- The DOT determined that existing and projected daily traffic volumes did not require an expansion of Route 14A from two to four lanes. Design considerations were therefore limited to two-lane roadways.

- The alternative of widening the existing alignment was rejected as it would not adequately address the substandard features of the road. It was also rejected because in some areas, a widening of the existing alignment would impact adjacent wetlands and residential properties, as well as an historical property.

- The DOT considered a possible "spot improvements" project that would include such measures as new traffic lights and signage, widening in a few selected areas of the roadway, and improvements to certain drainage systems. However, the DOT concluded that because the structural deficiencies of Route 14A occur throughout the section of roadway that is targeted for the project, the entire roadway would need to be repaired to address each of the identified deficiencies. In addition, the DOT concluded that certain of the spot improvements would not correct the deficiencies and would only temporarily address the symptoms of the problems. The DOT also rejected this alternative because spot improvements could increase driver expectancy that the entire road was repaired. Therefore, the number of accidents could actually increase on the remaining deficient sections of the road.

- The DOT also rejected the alternative of a full reconstruction of the roadway. Although such an option could, in the experience of the DOT, meet all safety and capacity standards, such an alternative would likely not meet required environmental standards. The DOT rejected this alternative because no new alignment was possible without causing significant negative impact on the adjoining wetlands, watercourses, and other natural resources.

- Numerous miscellaneous alternatives to the present proposed design were considered as well. These alternatives were not separate plans, but were considered as parts of the overall design plan, and were incorporated or rejected as appropriate during planning discussions. One alternative was a change in the location of the intersection of Route 14A with New Road to move it farther away from residences. Other alternatives that were incorporated were minor adjustments in the road to avoid certain impacts to wetlands and watercourses and to an historical property. In some instances, the DOT rejected proposed changes to the road that might minimally improve the impact to the environment but would significantly affect safety.

- Several alternative sites to the proposed wetland mitigation area were considered and rejected. A one-half acre location on-site that would result in the destruction of presently forested uplands habitat and establish steep slopes for the mitigation site was rejected because it would not provide adequate compensation for the project. The DEP Sugar Brook Field Trial and Wildlife Management Area, located approximately three miles from the project, was dismissed due to conflicting land uses. The restoration of Horse Brook in Plainfield was proposed

by DEP Fisheries, but rejected by the DOT based on its belief that the current proposed mitigation site will more closely replace the lost functions and values of the wetlands that are impacted by the proposed project.

Exs. DOT-1, 7; ex. DEP-6a; test. 6/20/00, A. Dos Santos, D. Harms, S. Snyder, C. Malik, 6/20/00.)

B

CONCLUSIONS OF LAW

The purposes and policies set forth in the *Inland Wetlands and Watercourses Act*[5] are secured through the process and criteria outlined in §22a-41 of the General Statutes. Section 22a-41(b) requires that where a permit application has been the subject of a hearing, the commissioner must find that there is no feasible and prudent alternative to the proposed action before issuing a permit. *Strong v. Conservation Commission,* 226 Conn. 227, 229 n.2, 627 A. 2d 431 (1993); *Madrid Corporation v. Inland Wetlands Agency*, 25 Conn. App. 446, 450, 594 A. 2d 1037 (1991). In determining whether such an alternative exists, the commissioner must consider all relevant facts and circumstances, including but not limited to, the six statutory factors outlined in §22a-41(a). *Grimes v. Conservation Commission*, 49 Conn. App. 95, 102, 712 A. 2d 984 (1998).

[5] General Statutes §§22a-36 through 22a-45, inclusive.

The six factors set forth in §22a-41(a) are:

(1) The environmental impact of the proposed action;

(2) The alternatives to the proposed action;

(3) The relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity;

(4) Irreversible and irretrievable commitments of resources that would be involved in the proposed activity and any mitigation measures that may be considered as a condition precedent to issuing the permit, including measures to restore, enhance and create productive wetlands or watercourse resources;

(5) The character and degree of injury to, or interference with, safety, health or the reasonable use of property that is caused or threatened; and

(6) The impacts of the proposed regulated activity on wetlands outside the area and future activities made inevitable by the proposed activity that may have an impact on the wetlands.

See also Regs., Conn. State Agencies §22a-39-6.1.

Applying these factors to this permit application, I conclude as follows:

(1) *Environmental Impacts*

The proposed project will result in some loss of wetlands and some disturbance to wetlands during the construction phase. Most of the impacted area was disturbed when the road was originally constructed, and when the existing culverts and bridges were built.

The project has been designed and planned to reduce impacts on wetlands to the extent possible. Recommendations of DEP Fisheries Division have been incorporated into design plans and construction contracts, minimizing impacts to fisheries resources. Impacts to wildlife as a result of the project will be limited due to the restricted area of the project, and the existing disturbance of the area due to Route 14A and residential properties. The project will also result in an actual enhancement to wildlife and fisheries resources in the project area. Wider openings at stream crossings and improved stream beds will ease movement of fish in the channel and the travel of wildlife along the stream corridors.

Short-term impacts during construction will be reduced through measures to control sedimentation and erosion. These controls will assure that no permanent adverse effects will impact fisheries or riparian habitat. These measures will minimize the chance that siltation and sedimentation will encroach into the area of the regulated wetlands and watercourses. Ground and surface water quality will also be protected.

To compensate for the loss of wetlands, a mitigation site will be developed to create approximately 1.5 acres of wetlands. The site, which should start to establish itself as a functioning wetland within one season, will be designed to improve habitat functions. The site will also attenuate flood flows in the Quinnebaug River Valley.

I conclude that the project will not result in any significant short or long-term environmental impacts. The overall long-term impacts to the wetlands will be minimal. The loss of 1.39 acres of wetlands that will result from the project will be compensated for by the creation of a 1.5-acre wetland mitigation site. Short-term impacts will be controlled through the use of sedimentation and erosion controls during construction.

Long-term impacts to the wetland system as a habitat for wildlife and fish will be minimal. In fact, as a result of the project, some wildlife habitat and fisheries resources functions of the impacted areas will actually be enhanced. The construction of new culverts and related improvements will prevent flooding and facilitate drainage. These improvements and the creation of a mitigation site will not diminish the overall natural capacity of the wetland system to support desirable biological life, prevent flooding, control sediment, facilitate drainage, and promote public health and safety.

(2) *Alternatives*

There are no feasible or prudent alternatives to the present proposed plan for the project. The alternative of taking no action, or the "no build alternative", would not meet the goal of the project and obligation of the applicant to provide for a safe Route 14A. The project has been designed to minimize environmental impacts to the greatest extent possible. Where safety would be significantly and negatively impacted, the DOT reasonably rejected changes to the design that would only minimally improve the impact to the environment. The proposed plan for realignment of Route 14A is reasonable in view of the social benefits to be derived from an improved and safer roadway. I conclude that the applicant has adequately demonstrated that the proposed plan is a feasible and prudent choice. See *Woodburn v. Conservation Commission*, 37 Conn. App. 166, 174, 655 A. 2d 764 (1995), citing *Samperi v. Inland Wetlands Agency*, 226 Conn. 579, 596, 628 A. 2d 286 (1993).

(3) *Short-term Uses of the Environment/Maintenance and Enhancement of Long-Term Productivity*

The record demonstrates that the short-term impacts of the project, primarily due to the construction activities that will be necessary, will be minimized through erosion and sedimentation control guidelines that will be included in the construction contract as required by the DOT. These guidelines will protect ground and surface water by minimizing the possibility of siltation and sedimentation within the area of the wetlands and watercourses impacted by the project. Adherence to these guidelines and the terms and conditions of the permit will assure that temporary impacts to the environment will be minimal.

The project will improve the functioning of some areas of the present wetland systems as support for wildlife habitat, fisheries resources, and sediment and nutrient transport. Improvements to culverts and stream bed channels will enhance the ability of wildlife and fish to travel in and around the watercourses. The improvements as a result of the project will enable the wetland areas to better control flood waters and to facilitate drainage. The new wetland site, an area actually larger than the area of wetlands to be lost, will create a new, functioning wetland to replace the long-term wetland values lost to the project.

This project will impact the environment, both in the short and long term. However, the short-term impacts during construction will be tempered by construction mitigation efforts and the long-term impacts will be kept to a minimum. Improvements as a result of the project will enhance the overall long-term productivity of the wetlands and, where wetlands are lost, a mitigation site will be created as compensation. The

proposed plans include steps that will be taken to rehabilitate some areas of the impacted wetlands immediately after construction is completed. There is nothing to indicate that this rehabilitation will not result in the prospective future development of the wetlands areas impacted by this project. I find that the proposed project will not have a significant adverse long-term impact on the existing wetlands or on the natural development of the wetlands in the future.

(4) *Irreversible/Irretrievable Commitment of Resources and Mitigation Measures*

The proposed project keeps to a minimum the irreversible and irretrievable commitment of wetlands resources. In recognition of wetlands as an indispensable, irreplaceable fragile natural resource, the project is designed to protect existing wetland areas to the greatest extent possible. The applicant will mitigate the loss of wetlands by creating a wetland site to replace this natural resource.

The planned project will impact an area of wetlands whose quality is already affected by their proximity to Route 14A. Certain sensitive wetland areas will not be filled as part of the project. This includes the area in which the Bog Copper butterfly was identified, a State Species of Special Concern. To compensate for the irretrievable loss of 1.39 acres of wetlands, a mitigation site will be created to provide 1.5 acres of wetlands. This site will provide wildlife habitat and other valuable functions of a productive wetlands area.

The project will improve and enhance some of the functions of the existing wetlands through new culverts and improved drainage systems. These systems will also

allow for better drainage and storm water control. Movement of wildlife and fish in and around the culverts will also be improved. I conclude that the commitment of wetland resources to the proposed project will not result in an unacceptable loss of irretrievable or irreplaceable wetland resources and conclude that the mitigation site that will be created will restore, enhance and create a productive wetland resource.

(5) *Impact on Safety and Health*

The project, which will result in a safer roadway, has been designed to avoid adverse impacts to the wetlands to the greatest extent possible. Improvements as a result of the project will result in better flood control. The applicant will take measures to mitigate the potential for harm during construction, including the protection of ground and surface waters. The success of these measures will be monitored through regular inspections during the construction phase of the project. Potential impacts to wildlife and fisheries resources will be minimized through measures that include the incorporation of recommendations of the DEP. When concluded, the improvements to existing culverts, the construction of new culverts and the enhancements of existing stream channels will facilitate wildlife and fish movement throughout the wetlands system and will enhance the ability of the wetland system to control stormwaters. The improvements as a result of the project will provide a safer Route 14A for the public. These improvements will also enhance the functioning of the overall wetland systems to be impacted by the project. I therefore conclude that the impacts to the wetlands do not pose a threat of injury or interference with the public health or safety or the reasonable use of property.

(6) *Impact on Wetlands Outside the Area and Inevitable Future Activities*

There is no evidence that the proposed project will have a negative impact on wetlands outside of the project area. The measures that will be taken during construction will prevent erosion and sedimentation that could encroach upon surrounding wetlands. Improvements as a result of the project, such as new culverts and better drainage systems, will prevent flooding that could harm other wetlands. The wetland mitigation site that will be developed off-site will have a beneficial impact, and could benefit wetland systems that surround that area. The project as designed will not prevent future activities in and around Route 14A. I conclude that those future activities, if designed in a fashion similar to the present plan, could also have an overall minimal impact on the environment.

The requirements of General Statutes §22a-41(b) have been met by this permit application. Based on the record presented and my consideration of all the relevant facts and circumstances before me, including the six factors outlined in §22a-41(a), I find that there is no feasible and prudent alternative to the proposed project that meets the purpose of the project and that would cause substantially fewer impacts to the natural resources.

The reconstruction and reconfiguration of Route 14A will result in a safer and better roadway and a more efficient transportation system. The proposed plan strikes an appropriate balance between the obligation of the applicant to improve a road that is presently a risk to human lives and the mission of the DEP to protect the environment. The permit that is the subject of this application should be issued.

C

RECOMMENDATION

I recommend that the Commissioner issue the requested permit incorporating the terms and conditions set forth in the draft permit with the modifications attached hereto as Attachment B.[6]

February 9, 2001
Date

/s/ Janice B. Deshais
Janice B. Deshais, Hearing Officer

[6] Accordingly, the Section 401 Water Quality Certification should be issued as the condition for its issuance, compliance with the State's water quality criteria, has been met. §33 U.S.C. §1341. See *Summit Hydropower Partnership v. Commissioner of Environmental Protection*, 226 Conn. 792, 629 A. 2d 367 (1993).