STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
LAND USE PLANNING COMMISSION
45 RADAR ROAD
ASHLAND, MAINE 04732-3600

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GOVERNOR

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COMMISSIONER

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EXECUTIVE DIRECTOR

PERMIT

DEVELOPMENT PERMIT DP 4982
BY SPECIAL EXCEPTION
Water Quality Certification

The staff of the Maine Land Use Planning Commission, after reviewing the application and supporting documents submitted by Iver Soderberg for Development Permit DP 4982 by Special Exception, finds the following facts:

1. Applicant/Landowner: Iver Soderberg
   Attn: Carl Soderberg
   460 York St
   Caribou, Maine 04736

2. Leasee: Michael, Sheldon, and Shawn Landeen
   26 Landeen Road
   New Sweden, Maine 04762

3. Date of Completed Application: July 6, 2015

4. Location of Proposal: Connor Twp., Aroostook County
   Lot #3, 4, 5, and 6 on Plan 01

5. Zoning: (M-GN) General Development Subdistrict
   (P-SL1 & 2) Shoreland Protection Subdistrict
   (P-WL1, 2, & 3) Wetland Protection Subdistrict
   (P-FP) Flood Prone Protection Subdistrict by Virtue of Section 10.23, C, 2 of the Commission's Land Use Districts and Standards

6. Lot Size: 1,768 Acres (owned)

7. Project: Stream Impoundment and Surface Water Withdrawal for Irrigation of Farmland

8. Affected Waterbody: Outlet Stream of Dubay Lake/Tributary of Little Madawaska River

   The Little Madawaska River and its tributaries above the Caribou-Connor Township line are classified as a Class A flowing water under the Maine Department of Environmental Protection's Water Quality Classification Program (38 M.R.S.A. Sections 464, 465).

Background and Proposal

9. The applicant owns 1,768 acres located south east of Dubay Lake in Connor Twp. He currently leases 250 acres, known as the "Soderberg Farm", to Michael, Sheldon, and Shawn Landeen for the purpose of farming potatoes. The flow on the outlet stream of Dubay Lake has historically been restricted by a beaver dam, flooding the adjacent wetland area.

10. The applicant seeks approval to construct an impoundment on the outlet stream of Dubay Lake, which also drains into the Little Madawaska River, and to allow the Landeens to withdraw water annually from the resulting 7.9 acre pond. The purpose of the impoundment and water withdrawal would be to irrigate approximately 146 acres of farm land on a three year rotation of oats, rye and potatoes.

11. *Impoundment.* The proposed impoundment would consist of an approximately 32 foot wide by 200 foot long earth dam structure with a primary spillway and secondary (emergency) spillway. The top of the berm would be about 10 feet wide and at an elevation of 609.5 feet. The primary spillway, designed to maintain adequate stream flow under DEP's Chapter 587 Rules and to allow fish passage, would contain a 4 inch diameter PVC pipe with an 18 inch by 18 inch by 18 inch steel "trash rack" over the inlet to prevent blockage by debris and would have random pockets (deeper spots) on the surface to enhance fish passage. The spillway would be comprised of 8 inch angular stone mixed with 6 inch minus gravel clay till with at least 95% compaction to prevent water from draining through the stone. The elevation of the top of the primary spillway would be 606.5 feet. The secondary (emergency) spillway, designed to allow excess water to flow during periods of high water levels and flows, would consist mainly of 12 inch D50 stone with an elevation of 606.64 feet.

    The impoundment would be located within the M-GN General Management, P-SL2 Shoreland Protection and P-WL1 Wetland Protection Subdistricts and outside of the P-FP Flood Prone Area Protections Subdistrict. Less than 500 square feet of P-WL wetland would be altered in order to construct the dam structure.

12. *Access Road.* The impoundment would be accessed by a proposed 24 foot wide by 200 foot long extension to be constructed at the end of the existing land management road to allow for construction equipment and maintenance. The new section of road would be approximately 75 feet from the existing stream. The farm is gated and only accessible through the summer months.

13. *Water Withdrawal.* The applicant has submitted an Irrigation Water Management Plan prepared by the Maine Potato Board dated December 18, 2012 (Revised 11/04/2014). Irrigation would take place only on fields in potato production. The applicant would irrigate during the summer season (July 15 to September 15). Water would be withdrawn at a rate up to 450 gallons per minute for approximately 2.1 days per application. The maximum number of applications applied in a season would be eight with approximately 4 days between applications, for a maximum of 41 acre-feet or 13.4 million gallons withdrawn throughout the entire irrigation season.

14. *Irrigation System.* The applicant's proposed irrigation system would consist of installing two sections of 8 inch PVC pipe (3,300 feet and 1,550 feet in length) underground from the impoundment to the fields along the edge of the existing fields. During the irrigation season, a portable pump capable of pumping 450 gallons per minute would be connected to the pipe and an intake pipe placed in the river. No fuel would be stored at the pumping site.

15. *Alternatives Analysis.* The applicant states that three alternate water sources were considered: Dubay Lake, a modified or excavated pond, and a drilled well. The amount of water available from these optional sources was questionable, and therefore, not suitable for the applicants needs. The only feasible source in this area would the proposed impoundment and pond.

Commission Review Criteria:

16. Pursuant to 12 M.R.S.A. §685-B(4)(C) of the Commission's Statutes, the Commission shall approve no application unless the applicant has demonstrated that adequate provision has been made for fitting the proposal harmoniously into the existing natural environment in order to ensure there will be no undue adverse effect on existing uses, scenic character, and natural and historic resources in the area likely to be affected by the proposal.

17. On August 24, 2007, MDEP adopted 06-096, Chapter 587: In-stream Flows and Lake and Pond Water Levels, which apply statewide:

    A. 06-096, Chapter 587, paragraph 5**.** *Flow requirements for Class A waters.* Flow requirements established by the standard allowable alteration in Class A waters may not be less than the seasonal aquatic base flow as defined, except when natural conditions alone cause those flows to be less. Withdrawal or other direct or indirect removal, diversion, activity, or use of Class A waters may not occur for more than two consecutive seasons under the standard allowable alteration**.** The Commissioner may establish, pursuant to sections 7 or 8 of this chapter, site-specific water flows that are protective of all water quality standards, including all designated uses and characteristics of those waters.

    B. 06-096, Chapter 587, paragraph 2,E**.** *Seasonal aquatic base flow.* "Seasonal aquatic base flow" is a median flow value for the following seasons: winter (January 1 to March 15), spring (March 16 to May 15), early summer (May 16 to June 30), summer (July 1 to September 15), fall (September 16 to November 15), and early winter (November 16 to December 31). Seasonal aquatic base flows are established as follows.

        (1) For the winter season January 1 to March 15: a flow equal to the February median monthly flow as determined according to section 3 of this chapter.

        (2) For the spring season March 16 to May 15: a flow equal to the April median monthly flow as determined according to section 3 of this chapter.

        (3) For the early summer season May 16 to June 30: a flow equal to the June median monthly flow as determined according to section 3 of this chapter.

(4) For the summer season July 1 to September 15: a flow equal to the August median monthly flow as determined according to section 3 of this chapter.

(5) For the fall season September 16 to November 15: a flow equal to the October median monthly flow as determined according to section 3 of this chapter.

(6) For the early winter season November 16 to December 31: a flow equal to the December median monthly flow as determined according to section 3 of this chapter.

18. Pursuant to Section 10.23,N,3,d,(2) of the Commission's Land Use Districts and Standards, alteration of the water table or water level, for other than mineral extraction, may be allowed within a (P-WL) Wetland Protection Subdistrict as a special exception upon issuance of a permit from the Commission according to 12 M.R.S.A. §685-A(10) and subject to the applicable requirements set forth in Sub-Chapter III provided that the applicant shows by substantial evidence that (a) there is no alternative site which is both suitable to the proposed use and reasonably available to the applicant; (b) the use can be buffered from those other uses or resources within the subdistrict with which it is incompatible; and (c) such other conditions are met that the Commission may reasonably impose in accordance with the policies of the Comprehensive Land Use Plan.

19. Under provisions of Section 10.25,P of the Commission's Land Use Districts and Standards, projects affecting any area of P-WL1 wetlands require a Tier 3 review. Under a Tier 3 review:

A. A project must not cause a loss in wetland area, functions and values if there is a practicable alternative to the project that would be less damaging to the environment. The applicant must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist;

B. A project must limit the amount of wetland altered to the minimum amount necessary to complete the project;

C. The project must not have an unreasonable impact on the affected wetland; and

D. The Commission may require compensation when it determines that a wetland alteration will cause a wetland function or functions to be lost or degraded as identified by an assessment of wetland functions and values in accordance with application requirements or by the Commission's evaluation of the project.

20. In accordance with the provisions of Section I,C,1,a of the Commission's Compensation Guidelines, the proposal is exempt from the requirement for functional assessment or compensation because the wetland alteration would be less than 500 square feet total and is likely to have only a minimal effect on freshwater wetland functions and values.

21. In response to the special exception criteria and the Commission's wetland rules, the applicant indicates the following in their application:

A. The outlet stream of Dubay Lake is the only feasible and available source of water for irrigating their crop. The site can provide the needed water without damaging any aquatic

habitat or water quality. There are no existing wells or farm ponds of sufficient capacity to supply the amount of water needed to irrigate the proposed target crop acreage.

B. To minimize the amount of water usage and therefore minimize the amount of water to be withdrawn as much as possible, the applicant would utilize soil moisture monitors and a "feel method". Irrigation applications would be light and more frequent to minimize water runoff and maximize water intake. In addition, crop rotation would be used to increase soil organic matter and reduce the need for irrigation in the future.

C. The amount of wetland impact would be limited to that necessary to install the impoundment structure and the intake hoses below the normal high water mark of the stream. The impact would be considerably less than 500 square feet.

Review Comments

22. The Maine Department of Inland Fisheries and Wildlife (MDIFW), Fisheries Division has reviewed the proposal and in comments provided on November 30, 2015 states that "The proposed dam on the outlet of Dubay Lake will block fish passage during dry periods of the growing season by use of the 4 in low flow pipe. While this feature will help ensure that an aquatic base flow for aquatic life will be maintained during drawdowns, I do not expect fish to pass through this pipe at times when the reservoir is drawn down to a point where the primary spillway is dry. Some of the recent modifications to dam design have improved the potential for fish passage (over that of the original design). Fish will likely pass the structure during wet periods when the primary spillway will be flowing at a high rate; however, permeability of the rip rap during low flows is still a concern because there may not be enough water flowing over the "ramp". It is possible that a thalweg could be built into the primary spillway channel during construction to promote fish passage during low flows. Filling voids in the rip rap and proper compaction will be important. The final design should be reviewed and approved by a PE with experience in fish passage. Timing of the project should coincide with low flow periods that primarily occur in July/August."

    The Fisheries Division has submitted revised comments after meeting with the applicant on January 19, 2016. In comments provided on January 21, 2016, the Division states that they are predicting that low flow periods when all the flow will be passing through the 4 in pipe will be quite rare and that the primary spillway will stay wetted much of the time. They further state that fish passage through the 4 in pipe remains problematic but they don't believe the overall impact will be negative in this case based on projected water usage in the plan. IFW Staff plans to visit the site during and after construction and plans to confirm elevations of the spillway post-construction. Therefore, they request that they be notify when notice that work is about to begin is received by LUPC staff.

23. The Maine Department of Inland Fisheries and Wildlife (MDIFW), Wildlife Division has reviewed the proposal and in comments provided on August 11, 2015 states that "The water management plan and the design of going from 603' (present elevation at proposed site) to 609.5' (proposed head dam) on Dubay Lake is appropriate and should not cause any undo harm or significant habitat degradation to this Moderate Inland Waterfowl and Wading Bird Habitat (UMO 956). There should be no discharge from water source until **after July 15th** as previously agreed on to enable waterfowl and wading birds adequate nesting and breeding site at this project site. Water level increase due to head dam will not significantly impact this IWWH, water levels and will only increase 2-6 feet in

front of head dam, and 1-1.5 feet on ¾ of the project area and may actually increase breeding habitat due to shallow interspersion. The water management plan should be monitored yearly during irrigation and adjusted if necessary to use only the water necessary to achieve necessary goals and objectives for the potato crop."

24. The Army Corps of Engineers has reviewed the proposal and has determined that the proposed pond is exempt from the need for a Department of the Army permit pursuant to Title 33, Code of Federal Regulations, Part 323.4(a)(3), as published in the November 13, 1986 Federal Register. Hence, no further action with the Corps is required.

25. The Maine Department Environmental Protection (MDEP) has reviewed this proposal and in comments provided on August 14, 2015 states that "The proposed design should work to maintain the summer seasonal aquatic base flow (estimated at 0.24 cfs) through use of a 4-inch outlet pipe near the bottom of the impoundment. Other seasonal aquatic base flows should by maintained adequately by flows over the principal spillway once initial impoundment filling is complete. As uninterrupted passage of the summer seasonal aquatic base flows is critical for aquatic life downstream, I recommend the inlet of the proposed 4-inch low flow outlet pipe be protected from blockage by debris. This can be done using a trash rack having a net opening area substantially greater than the pipe opening area (12.5sq.in.) and bar spacing significantly less than the pipe's diameter (4 in.). It would be best not to fix the rack to the PVC outlet pipe, as ice acting on the trash rack may crack the pipe. The trash rack will need frequent maintenance and cleaning.

    The following additional comments are recommendations only, being outside requirements of the *Chapter 587 In-stream Flows and Lake and Pond Water Levels* rule.

    1. The dam's principal spillway will need to be redesigned if a normal water elevation of 606.5 feet is to be maintained in the impoundment. The "Pond Outlet" drawing indicates the principal spillway's crest elevation at the top of the riprap layer is to be 606.5 feet so to maintain a normal pool elevation of 606.50 feet behind the dam. As the spillway's riprap lining is highly permeable, it should be expected that the water level will actually be near the bottom of the riprap layer, resulting in a normal pool elevation of around 605.5 feet. As this would be a significant reduction in the impoundment's storage capacity, the principal spillway should be redesigned to provide an impermeable barrier at the front (upstream end) of the spillway's control section. A design similar to that used for the emergency spillway on the "Pond Emergency Spillway First 5 Feet" drawing would also be appropriate for the principal spillway.

    2. The riprap lining for the dam's principal spillway should be improved to promote fish passage. As currently proposed, most discharges through the principal spillway will flow through the highly permeable riprap layer rather than over it. To provide adequate flow depth for fish passage, the voids in the riprap need to be filled (i.e., the riprap needs to be embedded by finer material) so that most of the flow is over rather than through the riprap. This is usually done by grouting the voids; however, it might be accomplished with gravel fill if the exit channel's grade is low enough. The proposed spillway section should be reviewed by IF&W to ensure the spillway's grades and run lengths will not be barriers to fish movement upstream and downstream.

    I recommend a professional engineer experienced with dam design and construction be required to inspect the construction of the dam. The most critical times of engineering inspection for this dam are

after the embankment foundation has been prepared (but before fill placement) and during fill placement and compaction."

26. The Maine Natural Areas Program has reviewed the proposal and states that according to their current information, there are no rare botanical features that will be disturbed within the project site.

27. The Maine Historic Preservation Commission has reviewed the proposal and has concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

28. In response to DEP's and MDIFW comments, the applicant submitted revised plans for redesigned spillways, making them more impermeable and including the trash rack on the inlet of the primary spillway pipe. The applicant has agreed to have a professional engineer be present during critical points in the construction, just before fill placement and during fill placement and compaction. The applicant agrees to submit a letter from the engineer certifying that the impoundment was constructed according to the approved design and specifications.

29. The facts are otherwise as represented in Development Permit Application DP 4982 and supporting documents.

Based upon the above Findings, the staff concludes that:

1. The proposal will meet the criteria in Section 10.23,N,3,d(1) of the Commission's standards for a permit by special exception. The applicant has demonstrated that it has no alternative source of water reasonably available for irrigation of this scale. Specifically, there are no existing wells or ponds of sufficient capacity to supply the amount of water needed to irrigate the proposed target crop acreage.

   Furthermore, provided the applicant complies with Conditions below, the proposed withdrawal is compatible with other uses and resources in the subdistrict. Based upon the amount of water proposed for withdrawal and the August median flow for the stream, the proposed water withdrawals are not likely to have any significant impact to water levels or other uses and resources. The comments received from the MDEP and MDIFW indicate that the water withdrawals are unlikely to affect natural aquatic life and other designated uses or resources in the project area. While MDEP and MDIFW initially expressed concern about the provisions for fish passage during low flows, the applicant has addressed these concerns by redesigning the spillway and compacting the material to make it more impermeable.

2. The proposal meets the criteria in Section 10.25,P of the Commission's standards for projects requiring a Tier 3 wetlands review. Specifically, as stated in Conclusion #1 above, the applicant has demonstrated that it has no practicable alternative to the proposed water withdrawals. Additionally, the wetland has previously been altered by the existing dam and new alteration to the wetland would be limited to what is needed to construct the impoundment and to the minimum necessary to sustain adequate moisture. Wetland alteration would be less than 500 sq. ft.

3. If carried out in compliance with the Conditions below, the proposal will meet the Criteria for Approval, Section 685-B(4) of the Commission's Statutes, 12 M.R.S.A. Specifically with regard to Section 685-B(4)(C), for the reasons the proposed withdrawal is compatible with other uses and resources in the subdistrict (see Conclusion #1 above) the proposed withdrawal will not have an undue adverse impact on existing uses or natural resources.

Therefore, the staff approves the application for Iver Soderberg with the following conditions:

1. **At least one week prior to commencing the permitted activities**, the permittee or the designated agent must contact the Commission staff and notify them of the estimated date construction work will start. Notice may be provided in writing, in person, by email, or by calling. If you leave or send a message, please include your full name, telephone number, permit number, and the date the work will start.

2. Construction activities authorized in this permit must be substantially started within 2 years of the effective date of this permit and substantially completed within 5 years of the effective date of this permit. If such construction activities are not started and completed within this time limitation, this permit shall lapse and no activities shall then occur unless and until a new permit has been granted by the Commission.

3. Notwithstanding Condition #2 above, this permit shall remain in effect unless the annual report (see Condition #4) indicates that the authorized surface water withdrawal site is causing an undue adverse impact; is not in compliance with the provisions of MDEP's Chapter 587; or unless increases are proposed to be made to the period of operation, maximum pumping rate, or total gallons withdrawn. The permittee shall notify LUPC staff in writing if permanent decreases are made to the period of operation, the maximum pumping rate, or total gallons withdrawn.

4. Reporting of Pumping. The permittee shall maintain a log of pumping records for the permitted pump site which shall be available upon Commission request. The log shall contain daily records of pumping activities, including the date(s) and hour(s) pumped, total volume of water pumped and the pumping rate for each pumping event. The permittee shall submit an annual report to the Commission of the pumping records by December 31st of each year.

5. Professional Engineer Sign off. The permitee shall submit a reported signed by a professional engineer certifying that the impoundment structure was constructed as designed and approved. The engineer must be on site after the embankment foundation has been prepared (but before fill placement) and during fill placement and compaction. In addition, the engineer must certify the final elevations of the top of the embankment and both spillways.

6. All activities granted approval in this permit must be conducted in compliance with the provisions of MDEP's Chapter 587. The use of Dubay Lake outlet stream/impoundment as an irrigation source must be conducted in a manner intended to comply with Chapter 587.

7. As recommended by the MDIFW, the water level of the wetlandmust not be initially increase by the impoundment and water must not be withdrawal until after July 15 of each year to avoid impacts to nesting birds.

8. Clearing and construction activities, except those necessary to establish sedimentation control devices, shall not begin until all erosion and sedimentation control devices (including ditches, culverts, sediment traps, settling basins, hay bales, silt fences, etc.) have been installed and stabilized. Once in place, such devices shall be maintained to ensure proper functioning. All temporary sedimentation and erosion control devices shall be removed after construction activity has ceased and a cover of healthy vegetation has established itself or other appropriate permanent control measures have been effectively implemented. Permanent soil stabilization shall be completed within one week of inactivity or completion of construction.

9. The scenic character and healthful condition of the area covered under this permit must be maintained. The area must be kept free of litter, trash, junk cars and other vehicles, and any other materials that may constitute a hazardous or nuisance condition.

This permit is approved upon the proposal as set forth in the application and supporting documents, except as modified in the above stated conditions, and remains valid only if the permittee(s) complies(y) with all of these conditions. Any variation from the application or the conditions of approval is subject to prior Commission review and approval. Any variation undertaken without Commission approval constitutes a violation of Land Use Planning Commission law. In addition, any person aggrieved by this decision of the staff may, within 30 days, request that the Commission review the decision.

DONE AND DATED AT ASHLAND, MAINE, THIS 3RD DAY OF FEBRUARY, 2016.

By for Billie J. MacLeon
Nicholas D. Livesay, Executive Director