

JANET T. MILLS GOVERNOR BG DIANE L. DUNN COMMISSIONER

# MAINE OFFICE OF DAM SAFETY



Peter J. Rogers Director

# Certified Mail

Date: September 18, 2024

Island Heritage Trust Attn: Julia Zell, Executive Director PO Box 42 Deer Isle, ME 04627

SUBJECT: Dam Inspection Report for MEMA #106 - Lily Pond Dam

Dear Ms. Zell.:

On behalf of Commissioner Diane Dunn, thank you for your cooperation in facilitating the required inspection of your dam by the contracted engineering firm, Kleinschmidt Associates.

Per Title 37-B MRSA, Chapter 24: Dam Safety, your dam is required to be inspected every six (6) years for condition and every twelve (12) years for hazard. Your dam was inspected on August 15, 2024 by Nicholas Ciomei, P.E. and Nicholas Mills E.I.T., of Kleinschmidt Associates. Please find attached the condition report with recommendations.

Should you disagree with the findings and recommendations of this report you may respond in writing to this office within twenty (20) days of receipt of this letter. Further you must file the basis of your appeal within 3 months of receipt of this letter.

Should you have any queries, please do not hesitate to contact either the Dam Safety Administrator, Tara Ayotte at (207)-624-4400 or <u>tara.ayotte@maine.gov</u> or the Operations and Response Division Director Steven Mallory at <u>steven.mallory@maine.gov</u>.

Thank you again.

Sincerely Peter J. Rogers Director

Enc: Distribution List Dam Report

> MAINE EMERGENCY MANAGEMENT AGENCY 72 STATE HOUSE STATION AUGUSTA, MAINE 04333-0072 PHONE: 207-624-4400/800-452-8735 FAX: 207-287-3178

# DAM INSPECTION REPORT ELECTRONIC DISTRIBUTION LIST

### DEPARTMENT OF DEFENSE, VETERANS, AND EMERGENCY MANAGEMENT

Brigadier General Diane Dunn, Commissioner Steven Mallory, Director of Operations and Response, MEMA Tara Ayotte, Dam Safety Administrator, MEMA (MEMA Dam File)

### OTHER

Andrew Sankey, County EMA Director Town of Deer Isle, 70 Church Street, Deer Isle, ME 04627

# MEMORANDUMTo:Steve Mallory, Maine Emergency Management Agency (MEMA)From:Nick M. Ciomei, P.E., Kleinschmidt Associates (Kleinschmidt)Cc:Tara Ayotte, MEMA; Anna Poppelreiter, E.I.T., MEMA; Nic Mills, E.I.T.,<br/>KleinschmidtDate:September 10, 2024Document No. 1534002\_07Re:State of Maine Dam Safety Inspection – Lily Pond Dam

### **Background**

This memorandum describes Kleinschmidt Associates' (Kleinschmidt) inspection of the Lily Pond Dam located in Deer Isle, ME on August 15, 2024. Nicholas Ciomei, P.E., and Nicholas Mills E.I.T., of Kleinschmidt were on site to perform the inspection accompanied by Anna Poppelreiter, E.I.T., of MEMA and Julia Zell of Island Heritage Trust. The purpose of this visit was to conduct a condition assessment by visually observing the current physical condition of the exposed/above water portion of the dam's water-retaining structures to and review hazard classification by observing the downstream reach of the dam in accordance with State of Maine regulations.

Dam Name	Lily Pond Dam
MEMA ID	106
Town	Deer Isle
County	Hancock
Owner	Island Heritage Trust
Last Inspection	November 25, 2020
Hazard-Classification	Significant
River/Stream/Brook	Lily Brook
Normal Storage	156.0 ac-ft
Max Storage	1100.0 ac-ft
Height	11.0 ft
Length	150.0 ft
Spillway Width	2.2 ft
Туре	Earth-Gravity Dam (REPG)
Last EAP Update	March 5, 2022

### **General Dam Information**



### **Inspection Observations - Condition Assessment**

A state dam inspector shall conduct an inspection of all high and significant hazard potential dams to determine whether the integrity, structural stability, function or operation of those dams constitutes a threat to public safety, in accordance with the following schedule:

- All significant hazard potential dams, at least once every 6 years.
- All high hazard potential dams, at least once every 6 years.
- Any dam, within 60 days of a request for an inspection from the dam owner or the municipality in which the dam is located; and
- At any time, any dam that may, in the judgment of the commissioner, constitute a potential risk to public safety.

Kleinschmidt has been retained by MEMA to perform the condition assessment of the dam.

In a system similar to the U.S. Department of Interior, *Safety Evaluation of Existing Dams* (SEED 1995), the terms satisfactory, fair, poor, and unsatisfactory are used in a general sense when describing the structural condition and the operational adequacy of the equipment for a dam or reservoir and its appurtenant works during the visual inspection. In addition, the term unknown may be utilized as applicable.

All references to left or right are based on a downstream facing perspective. Each of the below structures inspected are indicated in the aerial image (Attachment A) included with this memorandum.

### Left Embankment

Based on inspection observations the left embankment is in poor condition:

- Tree growth was noted on top of/near the left embankment along with some dead stumps which have not properly been removed which could eventually pose a risk for seepage through the dam (Photo 1, Attachment B).
- The crest of the embankment is consistently uneven, leading to concentrated areas of overtopping at elevations lower than originally intended/designed. Uneven embankment crests can result in accelerated failure events at lower flows (Photo 2, Attachment B).
- There was a significant amount of standing water noted on the downstream side of the left embankment. Its source is unknown; however, it looks as if it could potentially be due to seepage (Photo 3, Attachment B).



## Spillway

Based on inspection observations the spillway is in poor condition:

- The stoplogs on the upstream side of the spillway have been removed (Photo 4, Attachment B).
- It was noted that beavers have found an entrance to the cage around the intake/culvert and have begun to place debris inside the culvert. It is continuously being maintained to prevent further blockage from remaining inside the pipe (Photo 5, Attachment B).
- A boil was noted downstream of the spillway that may be originating from the foundation or spillway/embankment interface. Sandbags have been put in place to equalize the boil's pressure and reduce the piping potential along the seepage path (Photo 6, Attachment B).

### Right Embankment

Based on inspection observations the right embankment is in fair condition:

• Similar to the left embankment, tree growth was noted along the upstream and downstream slopes of the embankment along with excessive vegetation growth (Photo 7 and 8, Attachment B).

### Downstream Reach

Based on inspection observations the downstream reach is in poor condition:

- It was brought to Kleinschmidt's attention during the inspection that the culvert at the downstream road crossing is undersized and during high flow events leads to low-lying flooding along the stream channel and backup at the road. Upon further inspections it was also noted that the stream/culvert at the road crossing is surrounded by thick brush and swamp like conditions, further reducing the capacity at the opening. Without remediation to restore capacity or replace the culvert to allow for higher capacity, the culvert restriction will continue to cause low-lying flooding of Church St. during future high flow events (Photo 9, Attachment B).
- The reservoir, located underneath the parking area immediately downstream of the culvert, is relied upon by the local fire department as a water source for fighting fires in the community (Photo 10, Attachment B).

### Hazard Assessment

MEMA refers to Title 37B MRSA, Chapter 24 "Dam Safety" for hazard classification criteria. Before assigning a dam a hazard potential classification, the commissioner shall consider the



potential risk to public safety and property that may result from the failure or operation of the dam. In addition, when reassigning a hazard potential classification, the commissioner shall review any changes in upstream and downstream conditions since the last hazard classification evaluation. Before the commissioner assigns or reassigns a dam hazard potential classification, a state dam inspector shall visually inspect that dam and its upstream and downstream environs and provide a report to the commissioner recommending a hazard classification for that dam. Kleinschmidt has been retained by MEMA to perform the visual inspection of the dam and upstream/downstream environs.

Per Section 6 entitled "Hazard Potential" the classifications are as follows:

- A. High hazard potential dam. "High hazard potential dam" means a dam assigned the high hazard potential classification where failure or mis-operation will probably cause loss of human life.
- B. Low hazard potential dam. "Low hazard potential dam" means a dam assigned the low hazard potential classification where failure or mis-operation results in no probable loss of human life and low economic and environmental losses. Losses are principally limited to the owner's property.
- C. Significant hazard potential dam. "Significant hazard potential dam" means a dam assigned the significant hazard potential classification where failure or mis-operation results in no probable loss of human life but can cause major economic loss, environmental damage or disruption of lifeline facilities or affect other concerns. Significant hazard potential dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

## Hazard Assessment Findings for Lily Pond Dam

- Due to limited impoundment height, volume, and development along the stream downstream of the dam, it is not expected that the failure of the Lily Pond Dam would lead to a risk for potential loss of human life.
- In the event of a failure there is the potential to cause damage to Church St. at the intersection with Main St. and N. Deer Isle Rd. which is located approximately 1970 feet downstream.
- The reservoir beneath the parking area downstream of the road culvert could be impacted from a breach or go dry in the event of a failure to impound water at the Lily Pond. The loss of water in this reservoir would require the local fire department to access water elsewhere, increasing response times and reducing the ability for the department to adequately address fire concerns.
- A failure could also cause damages to the surrounding environment and ecosystems due to a release of built-up sediments and debris within the reservoir.



### **Conclusions**

Overall, the Lily Pond Dam was determined to be in poor condition (based on National Inventory of Dams 2013). The Lily Pond Dam is in need of rehabilitation. There is an abundance of beaver activity around the intake causing blockages to flow, there is also an active boil on the downstream side of the spillway along with standing water to the left which could potentially be due to seepage. Tree growth was also noted along each embankment and the culvert at the downstream crossing of Church St. is seemingly undersized.

It should be noted that the Lily Pond Dam owner is working towards obtaining grant funding to remediate/construct a new dam. The owner has retained an engineering firm who has performed preliminary site assessments and produced designs for the future construction. However, until funding is obtained, and the work is completed, the items identified in this memorandum remain.

Based on the visual hazard assessment indicating potential damages to infrastructure and the environment downstream but an unlikely risk to human life, the current hazard classification of "significant" is deemed appropriate.

### Recommendations

- Continue to apply for grant funding to obtain the means for remediate/construct a new dam.
- Continue to monitor the boil along the downstream reach of the spillway to ensure further erosion of the soil is not occurring.
- Continue to periodically inspect the standing water on the downstream side of the left embankment to ensure there is no active material transport occurring.
- Remove and properly backfill any trees and stumps that are located along the embankments.
- Regrade the dam crest, specifically the low spots, to prevent premature and concentrated overtopping.
- Continue to monitor beaver activity to ensure that they do not continue to block the intake. If this goes unnoticed this could lead to an unexpected rise in headpond levels.
- Consider replacing the culvert downstream to ensure adequate drainage during high flow events.
- Remove the thick vegetation growth surrounding the downstream culvert crossing at Church St.



### Considerations

• Consider cutting trees back a minimum of 15 feet from the toe of the dam.

### **Attachments**

Attachment A - Aerial Image of Dam Location

Attachment B - Inspection Photographs

Attachment C - Reference Drawings





# **ATTACHMENT A**

**A**ERIAL IMAGE OF **D**AM LOCATION



# **ATTACHMENT B**

**INSPECTION PHOTOGRAPHS** 



Photo 1: Tree growth and dead stumps along the upstream and downstream sides of the left embankment.



Photo 2: Low spot along the left embankment could provide a new overtopping location.



Photo 3: Standing water downstream of the left embankment. Could be the result of seepage impacts.



Photo 4: The stoplogs at the intake have been removed.



Photo 5: Prevalent beaver activity around the intake.



Photo 6: Downstream boil location. Mitigated with sand bags.



Photo 7: Vegetation and tree growth along the upstream and downstream slopes of the right embankment.



Photo 8: More large tree growth along the downstream reach of the right embankment.



Photo 9: Thick brush surrounding the culvert at the crossing of Church St.



Photo 10: Reservoir located immediately downstream the culvert under the parking area along Church St. used as an emergency water supply for the Fire Dept.

# **A**TTACHMENT **C**

**REFERENCE DRAWINGS** 













