

# ***INTERIM INSPECTION REPORT***

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## ***CRYSTAL POND DAM CT DEEP #03908 HAZARD CLASSIFICATION "BB"***

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COVE ROAD EAST & WEST  
CRYSTAL POND BROOK  
EASTFORD, CONNECTICUT



***PREPARED FOR:***

***CRYSTAL POND ASSOCIATION, INC.***

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Prepared by:

KARL F. ACIMOVIC, P.E.  
588 Stonehouse Road  
Coventry, CT 06238

## 2023 INSPECTION OF CRYSTAL POND DAM

The following is an interim report prepared for the Crystal Pond Association; the report is not intended or required for submittal to the Connecticut DEEP<sup>1</sup>, as an inspection is not on the DEEP's currently mandated schedule. The dam was inspected on May 4, 2023 and found to be in overall fair<sup>2</sup> condition, with no significant deficiencies, but requiring some repairs and routine maintenance. The last formal DEEP mandated inspection, based on the dam's hazard rating of "BB", a moderate hazard dam, was conducted in 2018. The dam will be due for a formal inspection once again in 2025. Recommendations made in the 2018 report included monitoring of leakage, removal of trees and woody vegetation, continued mowing and brush clearing, monitoring of the downstream stone masonry wall, filling in animal burrows and the provision of a filter berm on the downstream face of the dam.

### Embankment:

The dam is composed of an earth embankment with a downstream masonry wall, an upstream slope of riprap and a crest of well-maintained grass. The grass cover atop the crest was in good condition throughout the length of the embankment. As noted in the previous report, it is recommended that routine mowing be continued in order to maintain a strong grass cover in the event of embankment overtopping.



Photo 1 – The crest as seen from the right side of the dam looking toward the left side.

The upstream side, composed of a small to intermediate sized riprap slope to the left of the outlet structure and a mix of large stones and small boulders to its right side. The riprap was in good condition throughout and extended from the exposed dry portion of the embankment to a varied area extending 6 – 8 feet below water level.

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<sup>1</sup> Department of Energy and Environmental Protection

<sup>2</sup> The conditional assessment is based on current DEEP standard definitions for overall dam assessments.



Photo 2 – Riprap along the upstream shoreline of the dam on the left side and a mix of large rocks and small boulders on the right side.

The downstream side is composed mostly of stone masonry wall on the bottom, with a combination of grassed upper slope area extending approximately half way down the slope to the top of the masonry sections. While the masonry wall appears to be in poor condition in several locations, it is on the whole firmly held in place along the slope with a good grass cover between many of the stones. There are some voids within the wall and some stones displaced by having fallen to the base toe area. We recommend that voids within the wall be chinked to fill in gaps under or between rocks for added stability, and that stones fallen or displaced from the wall be reset firmly into their original position to the extent possible and practical.



Photo 3 – The downstream side of the embankment as seen looking from the right to the left side. Note the extension of the grass area to approximately halfway down the slope along most of the length of the dam.



Photo 4 – The downstream slope, as seen in this view from the left side looking toward the right side. Note that, as with the previous view, there is an extensive marshy area directly at the base of the dam and extending northward therefrom.

Leakage and / or seepage was noted in the previous inspection report. Some minor seepage was noted at the time of the current inspection, but none that was serious in nature. There was no evidence of heavy flow or the transport of sediment from within the dam (i.e., no visible turbidity). As seen in the above photos, however, this must be tempered or balanced against the fact that the downstream wetland area or marsh extends at a consistent elevation northerly for approximately 3,000 feet toward Bigelow Hollow Road (Route 171). It appears that there may be substantial beaver activity in the marsh as well, as evidenced by the presence of a beaver slide at the downstream end of the low level outlet. This combination creates a saturated base area, but one that has been in existence for a long period of time, as noted by the presence of the dam and wetland area in aerial photos dating from the 1934 aerial survey of the State.



Photo 5 – Looking at the beaver slide area adjacent to the left side of the downstream pipe outlet. This area needs to be filled in and otherwise reconstructed to firm up the embankment, using on site stone and fill material from the bottom of the slide.

## Intake and Outlet Areas

The intake consists of an upstream concrete structure with a rack and pinion type hoisting mechanism for the underlying sluice gate. Although the concrete is weathered from age, there were no apparent cracks or other issues that would indicate structural deficiencies. The gate is operated on a consistent basis for control of seasonal water levels and there were no reported problems at the time of inspection. The upstream side of the structure has a steel trash rack, which was also found to be in good condition and clear of obstructions.



Photo 6 – The gate structure as seen from its right side.



Photo 7 – The intake as seen from the upstream side, with the trash rack in place and a sign to minimize damage to the shoreline area in its vicinity.

The low level outlet consists of a 24-inch cast iron pipe running from the intake to the base toe area of the downstream stone masonry wall. Although the interior was inaccessible for viewing, the end of the pipe appeared in good condition and there were no reported issues with flow through the pipe. Seepage was noted in the prior inspection report and, during the course of the current inspection, there were sandbags present along the left downstream side of the outlet. However, though the area was saturated due to the presence of the marsh, there was no noticeable sign of seepage. The water surface at the downstream base is a direct reflection of the water level in the marsh, presumably set by beaver activity in the northern sections of the wetlands.



Photo 8 – The end of the low level outlet pipe at the base of the downstream stone masonry wall. Note that there were no signs of seepage from the earthen portion of the embankment and no signs of movement on the water surface at the time of inspection.

### **Spillway Area**

Flow was passing through the spillway at the time of inspection, at approximately 3 inches above the weir crest. There were no impediments to flow and the approach was clear of debris and obstructions. The discharge side was also running without impediment and showed no signs of distress from obstructions or significant scour.

The concrete surface, while weathered, showed no visible signs of significant issues. The prior inspection report had noted the concrete was in poor condition, heavily scoured and showed signs of a longitudinal crack with signs of minor differential settlement. It also noted, however, that there were no signs of flow beneath the concrete slab panels. We would recommend that the slab be inspected during a dry summer period to check on the crack, as the flow currently impeded a full view of the top of the slab.

### **Weather Conditions / Lake Level:**

Weather at the time of the inspection was clear and sunny, with temperatures in the upper 50° F range. Water level was approximately 3 inches above the crest of the primary spillway; no weir boards were in place at the time of the field inspection. The sluice gate was closed on this day to bring water level up for the summer season.

## Summary / Recommendations:

The site was found to be in overall fair condition, requiring routine monitoring, maintenance and small repairs. Recommended are the following:

- (1) **Vegetation** – As noted in the report, the grass surface along the crest and a portion of the downstream slope was in good condition and should continue to be mowed and / or weed whacked to maintain a firm stand across the top in the event of potential overtopping. With respect to trees and brush, significant clearing had been completed since the prior inspection. More, however, needs to be done to remain in compliance with DEEP guidelines which recommend a 25-foot clearing limit from all points of the dam. Should clarification be required as to individual trees, an engineer should be consulted.
- (2) **Downstream Stone Masonry Wall** – Gaps and voids were noted in several locations along the downstream face of the stone masonry. As noted within the report, we recommend that these voids be chinked to fill in gaps under or between rocks for added stability. In addition, we also recommend that stones fallen or displaced from the wall be reset firmly into their original position to the extent possible and practical. Any questionable areas should be reviewed with the assistance of an engineer.
- (3) **Concrete Spillway** – Though no significant issues were noted at the time of the current inspection, we recommend that the spillway be examined once again during a dry period, as the prior inspection had noted minor deficiencies. Cracks, spalls or other issues should be addressed by cleaning joints or otherwise deteriorated areas and then filling either with joint filler or epoxy cements depending upon specific deteriorated areas.
- (4) **Embankment Slopes** – The area of erosion left of the outlet pipe, caused by beaver activity, needs to be cleared, then filled in and otherwise re-constructed to firm up the embankment, using on site stone and fill material from the bottom of the slide.
- (5) **Monitoring Activities** – While no significant seepage issues were noted during this inspection, we would recommend continued monitoring on a monthly basis during high water level conditions, and at least once every three months during low water level periods. In particular, two areas to be specifically examined include: the downstream toe approximately 70 feet to the right of the left abutment area and the outlet area where sand bags had been noted.

As for timing, we recommend that maintenance and repairs be accomplished any time during the year that weather conditions are appropriate for those items that can be done in the dry. For those items that require a lowering of water level, we recommend they be done during the spring or fall seasons during normal drawdown periods.

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*Note: All photos within this report were taken on May 4, 2023.*