

PROJECT SUMMARY

- (1) **Applicant Organization** - Island Heritage Trust, Inc.
- (2) **Project Title** - A Collaborative Project to Restore Connectivity, Improve Resilience, and Improve Community Infrastructure Around the Lily Pond, Deer Isle Maine
- (3) **Site Location** - Lily Pond, Deer Isle; Eel Brook, Deer Isle; Coordinates: Site 1: 44 deg 13' 39" N 68 deg 40' 23" W; Site 2: 44 deg 13' 27" N 68 deg 40' 41" W; Hydrologic Unit Code (HUC) 010500021908
- (4) **Brief Project Description: - Project Goals**

This fish passage restoration project would replace a failing earthen dam on the Lily Pond, a perched culvert on the Lily Pond outlet stream (sometimes called "Eel Brook") along State Route 15 in Deer Isle, Maine, and a Deer Isle Fire Department concrete firefighting water cistern on Eel Brook, thereby removing what are now the only complete barriers in the watershed for all aquatic species at all flows. The Lily Pond is the largest natural waterbody on Deer Isle, with a maximum depth of 21 feet. An earthen dam of indeterminate age extends for approximately 180 feet along the southwest end of the Pond and adds approximately 6 feet to its water depth. The Dam is classified as a "significant hazard dam" under Maine law and is in poor condition with leaks, "boils" and evidence of overtopping. Eel Brook flows from the Lily Pond through a narrow culvert at State Route 15 and the Fire Department water cistern to the Mill Pond. Island Heritage Trust is the owner of the Lily Pond Dam and plans to replace it with a new structure that includes a nature-like fishway. Working in collaboration with the Deer Isle Fire Department, IHT plans to provide an alternative source of fire water supply from the Lily Pond to replace the concrete cistern currently blocking Eel Brook. The Town of Deer Isle is coordinating with the Maine Department of Transportation to replace the narrow culvert passing under Route 15. In addition to the barrier removal and emergency services improvements, this project will make the ecosystem and infrastructure more resilient to the effects of sea level rise and climate change induced extreme weather.

This project is focused on restoring system function and habitat for many species, primarily focusing on four species outlined in the Atlantic Coastal Fish Habitat Partnership Species-Habitat Matrix (ACFHPS): Alewife (NOAA species of concern & very high ACGHPS), sea-run rainbow smelt (NOAA species of concern & high ACGHPS), sea-run brook trout (very high ACGHPS), American eel (medium ACGHPS) and forage fish population restoration and sustainability, directly benefiting saltwater recreational fish like striped bass (medium ACGHPS), and Endangered Species Act listed species like Atlantic salmon. Removal of these barriers would restore access for target populations to freshwater refuges and spawning habitats necessary to maintain sustainable species populations. Small populations of American eel are currently present in the Lily Pond, and barrier removal could improve runs of this increasingly commercially important species. Local knowledge confirms Atlantic tomcod (medium ACGHPS) and winter flounder (high ACGHPS) being present, all located within the Mill Pond.

Regional and Watershed Context: The Lily Pond is a 37-acre freshwater pond connected by a 2400-foot stream to the Mill Pond, a 50-acre semi-tidal arm of Northwest Harbor, itself a branch of Penobscot Bay: all together comprising a 1.23-square-mile drainage area. Most of its shoreline is currently undeveloped, but development pressures persist. The Lily Pond is classified as a well-nourished waterbody, very productive, and supporting a diverse array of organisms, albeit with an elevated phosphorous level. It is regularly stocked by the Maine

Department of Inland Fish and Wildlife with brown and brook trout and is highly valued by local anglers. Apart from presumed American eel migration, the existing barriers are a complete barrier to the other Target Species. This watershed is located within the USFWS Gulf of Maine Distinct Population Segment (GOM DPS) for Atlantic salmon and NOAA’s Penobscot Watershed Habitat Focus Area (HFA).

Timeline: Lily Pond Dam: Initial public outreach, engineering analysis and conceptual engineering design have been completed. Construction drawings: 2024. Construction bidding: 2024. Construction: 2025.

State Route 15 Culvert Replacement: Initial consultation with Maine DOT: Fall 2023. Engineering design: 2024. Bidding will take place in 2025 and construction is anticipated to be completed in 2026.

Fire Department Water Supply: Initial consultation with Deer Isle Fire Department and conceptual engineering analysis have been completed. Finalization of design alternatives: 2024. Design and bidding: 2024. Construction of replacement system and dismantling of stream barrier: 2025.

(5) Landowner and Stakeholder Outreach

Island Heritage Trust’s current landowner and stakeholder outreach has included communication with all Dam Emergency Action Plan and Pond adjoining landowners; public meetings and meetings or consultations with the Town of Deer Isle, Deer Isle Fire Department, Town of Stonington, Maine Center for Coastal Fisheries, Maine Department of Marine Resources, Maine Inland Fish & Wildlife, US Fish & Wildlife, Maine Coast Heritage Trust, The Nature Conservancy, Downeast Salmon Federation, Downeast Trout Unlimited, Bagaduce Watershed Association, Maine Emergency Management Agency, Hancock County Emergency Management Agency, MaineDOT and Deer Isle Code Enforcement Officer and Planning Board. The proposed barrier removals and replacements will all occur on Island Heritage Trust, Town of Deer Isle and State of Maine properties or rights of way and will not require the consent of or access agreements with any other landowners, other than the Housing Authority, which owns and operates the Deer Run Apartments.

Required permits and approvals: Municipal Shoreland Zoning Permit and flood hazard development permit, Maine Department of Environmental Protection (MDEO) Natural Resources Protection Act (NRPA) Permit by Rule #10 or #11, U. S. Army Corps of Engineers (Corps) Programmatic General Permit (PGP), Section 106 required consultation with Maine Historic Preservation Commission, and USFWS consultation on endangered species.

(6) Funding Request

Total anticipated project cost: \$2,883,239.50 with \$1,873,469.00 requested from NOAA and \$1,007,424.50 coming from cost sharing funding sources. Of the total amount requested from NOAA, 2024 requested costs are estimated to be \$182,290.00 for engineering, bidding, hiring to expand staff capacity and furthering education and outreach. 2025 will see the most construction, requested costs are estimated to be \$1,084,314.00 for dam/fishway related construction and new emergency firewater construction. 2026 will expend the remaining NOAA requested funds totaling \$606,865.00 for the State Route 15 culvert replacement.

| NOAA Request | Costs |
|--------------|-----------------------|
| 2024 | \$182,290.00 |
| 2025 | \$1,084,314.00 |
| 2026 | \$606,865.00 |
| Total | \$1,873,469.00 |

PROJECT NARRATIVE

(1) Importance and Applicability

The Lily Pond is a “great pond” under Maine State law. The State effectively holds great ponds in trust for the benefit of the public and protects access by the public. The Lily Pond comprises approximately 37 acres, has a maximum depth of approximately 21 feet, and holds on the order of 200 acre-feet of water. Its watershed is relatively small at approximately 297 acres, the pond being mostly surrounded by fairly high terrain. Lily Pond Park and Church Land Preserve are located within this watershed. These conserved lands are owned by Island Heritage Trust to ensure public access and protect 67 acres and 1,555 ft of shorefront on the Lily Pond. IHT also holds a conservation easement on another shorefront property conserving approximately 14 acres along with 896 ft of shorefront. Land for Maine’s Future program helped IHT fund the acquisition of a portion of the protected properties.

The Town of Deer Isle has the longest coastline of any of the municipalities in Hancock County, Maine. Much of it faces the Penobscot Bay mouth of the Penobscot River watershed of such importance to Atlantic salmon restoration. The Island lies just about a mile offshore from the mainland Blue Hill Peninsula where many Atlantic salmon, alewife, and other fish restoration efforts are concentrated. The Town of Deer Isle comprises about 29 square miles of land area. Although the Lily Pond is relatively small, it is of outsize importance to the Island. The Island’s lobster fisheries, granite quarries and other industries are also of outsize importance to the economy of Hancock County and the State of Maine. Restoration of fish passage to the Lily Pond could provide an important boost to local commercial and recreational fisheries and help preserve the natural ecology of the Lily Pond/Eel Brook/Mill Pond/Northwest Harbor system for the enjoyment of all.

The Lily Pond is beloved by the local community as a venue for swimming, fishing, boating, ice skating, and enjoying nature. While not yet classified as ADA-compliant, several Lily Pond trails are accessible for individuals with limited mobility. Island Heritage Trust’s future plans for Lily Pond Park include some portion of ADA-compliant trails and possibly a fully accessible fishing and kayak/canoe launching platform.

The Lily Pond is classified as a well-nourished waterbody, very productive, and supporting a diverse array of organisms, albeit with an elevated phosphorous level. It hosts landlocked rainbow smelt, pumpkinseed sunfish, and American eels, and the Maine Department of Inland Fisheries and Wildlife annually stocks the Pond with brown and brook trout. Beaver and other small mammals frequent the Pond, while moose, white-tailed deer, and black bears all can be found within its watershed.

The Lily Pond Dam is an earthen dam of indeterminate age, approximately 180 feet long by 11 feet high. A dam has been in place on the Lily Pond since at least the 1800s. The Dam is served by a narrow concrete spillway installed in 1948, and flow through the spillway has normally been regulated by removable wooden “flashboards.”

The Lily Pond outflow stream is locally referred to as “Eel Brook” and extends approximately 2400 Feet. The bank-full width of Eel Brook is approximately 10 feet. Eel Brook crosses State Route 15 via a narrow culvert in Deer Isle Village and then passes through a concrete water cistern used by the Deer Isle Fire Department as a firefighting water supply before emptying into the Mill Pond. At present, the dam, the Route 15 culvert, and the concrete water cistern act as the only complete barriers to fish passage in this watershed.

The Mill Pond is a 50-acre semi-tidal arm of Northwest Harbor, itself a branch of Penobscot Bay. The Mill Pond is identified in Maine’s Beginning with Habitat tool as a Tidal Wading Bird and Waterfowl Habitat. Northwest Harbor is part of the Penobscot Bay and Islands Focus Area of Statewide Ecological Significance in the State of Maine. Northwest Harbor contains Tidal Wading Bird and Waterfowl Habitat, National Wetlands Inventory Wetlands, Blue Mussel and Softshell Clam Shellfish Growing Areas, Purple Sandpiper State Listed Animal Habitat, and Heart Island, protected by an Acadia National Park Easement. The Mill Pond is connected to Northwest Harbor by a pair of culverts on Bridge Street in the Village of Deer Isle. The Bridge Street culverts represent a partial barrier to fish migration, although local anglers report catches of striped bass, among other species, in the Mill Pond despite the partial barrier. Local knowledge confirms that islanders historically fished for flounder and tomcod in Northwest Harbor and the Mill Pond prior to the construction of the bridge street culverts. Planning for a second phase of remediation to include the Bridge Street culverts is already underway and may be the subject of future NOAA Grant requests.

The Lily Pond Dam is currently classified as a “significant hazard dam” under Maine law, principally because a dam failure could wash out Route 15 and the Fire Department water supply. Island Heritage Trust acquired the dam property in 2015 as part of a public fundraising effort to protect the Lily Pond and parts of its shoreline. Island Heritage Trust’s goal is to preserve the Lily Pond for the benefit of the public and enhance its ecosystem. Island Heritage Trust also recognizes the importance to public safety of the use of Pond waters for firefighting and is committed to working with the Town of Deer Isle and its Fire Department to ensure continued access in the future. Although the Pond is not currently used as a source of drinking water for Deer Isle’s residents, its preservation and protection may also serve that purpose should climate change or other factors diminish the supply or quality of well water locally. The Lily Pond is the largest body of fresh water on Deer Isle.

In the winter of 2019-20, the Maine State Dam Inspector identified some possible seepage (referred to as “boils”) through the Dam around the spillway and at the downstream base of the Dam. The Inspector characterized the condition of the Dam as “poor.” Island Heritage Trust immediately responded to the inspector’s report by placing sandbags around the boils to reduce erosion and intensifying its monitoring of the Dam. In consultation with the Fire Department, Island Heritage Trust has removed the flashboards from the spillway to lower the level of the Pond and reduce hydraulic pressure on the Dam pending its rehabilitation. Island Heritage Trust also worked with Maine Emergency Management Agency (MEMA) to update its Emergency Action Plan (EAP) in case of a Dam failure and initiated its public outreach, engineering analysis and consultations to resolve the Dam’s condition issues. IHT also engaged the community to form a ‘Lily Pond Watch Group.’ This group consists of community volunteers who were trained by IHT staff to monitor the dam on a regular basis to

ensure its stability, clear debris from the culvert, maintain sandbags, check on woody vegetation, and inspect seepage areas of concern.

In response to the deterioration of the Dam, Island Heritage Trust has elected to rehabilitate it rather than remove it altogether. Removal of the Dam would substantially diminish the historical extent of the Lily Pond and degrade the resource so valued by the Island community. Numerous community members have voiced their strong support for the preservation of the Lily Pond at its current extent. As part of its plans for rehabilitation, Island Heritage Trust has determined to provide for a nature-like fishway at the Dam. This strategy has been inspired by the success of the NOAA-supported fishway projects at Pierce Pond and Snows Brook on the nearby mainland within the Bagaduce River Watershed. Since most migratory fish cannot currently even reach the Dam because of the firewater cistern and culvert at Route 15, Island Heritage Trust has been coordinating with the Town of Deer Isle, the Deer Isle Fire Department, and Maine Department of Transportation (MaineDOT) to plan for the removal of those barriers, as well.

(a) Priority for Migratory Fish

The completion of this project will free 1.23 square miles of drainage for all aquatic organisms at all flows by removing two complete barriers. This will connect the Lily Pond (37 acres) via a 2400-foot stream to Mill Pond (50 acres) to allow anadromous and catadromous species access to spawning habitat. There are many aquatic organisms and fish assemblages that will benefit from improved habitat connectivity in the Lily Pond and its outlet stream. From a habitat perspective, four species outlined in the Atlantic Coastal Fish Habitat Partnership Species-Habitat Matrix (ACGHPS) are likely to experience a significant tangible biological response: alewives (NOAA species of concern & very high ACGHPS), sea-run rainbow smelt (NOAA species of concern & high ACGHPS), sea-run brook trout (very high ACGHPS), and American eel (medium ACGHPS). Additionally, these species will provide prey buffering for Atlantic salmon (ESA Listed as Endangered) and Atlantic tomcod (medium ACGHPS), and forage biomass for commercially important species like haddock, cod (high ACGHPS), and striped bass (medium ACGHPS), all Species of Management Concern in Maine.

The alewife is an anadromous fish, migrating upstream in the spring to freshwater bodies for spawning and incubation, with the adults migrating back downstream after reproduction to marine waters where they live the majority of their life. The new fish emerge in the summer and also migrate downstream to estuaries and salt-water rearing areas over the course of the summer and fall, as they gain in maturity and begin to live their life in these marine waters. This project will support alewives in all life stages.

While the Lily Pond is not in the anadromous waters catalog of Maine, it is not incomprehensible to believe that it will provide spawning habitat to alewives. Its omission from the catalog is likely due to the significantly smaller size and depth of the Lily Pond prior to the creation of the earthen dam in the 1800s. Local knowledge from lobster fishermen and other aquaculture outfits site seeing alewife in several estuarine and marine wetland locations around Deer Isle. Alewives are not known to be present in the Lily Pond system and it is

unclear if there was a historic run; however, it is clear that the current Dam, as well as the downstream culvert at State Route 15 and the firewater concrete cistern, are complete barriers to passage. The lack of alewife in the system is likely due to the inability of these fish to migrate to and reproduce in the Lily Pond since there are ample alewife present in Penobscot Bay. IHT plans to engage University of Maine students to conduct Environmental DNA (eDNA) sampling to form an understanding of what was historically present in the Lily Pond. Regardless of historical evidence of Alewife in Lily Pond, a request will be made to the Department of Marine Resources (DMR) in the winter of 2024 to hold a public meeting with IHT and stakeholders. An alewife stocking program, similar to those scheduled in the Bagaduce Watershed would be scheduled each spring from 2025-2029 upon approval, resulting in an alewife return to the Lily Pond in 2029.

The restoration of alewives is important to the ecology of freshwater, estuarine and marine environments alike. They are a fundamental part of the food chain, not only as forage for marine fish (striped bass, tuna, cod), but also for freshwater fish (bass, pike, trout, salmon), birds (osprey, eagles, heron, loons), and mammals (raccoon, weasel, fisher). In recent years, striped bass have become more common in Penobscot Bay, and have been caught by recreational anglers in both Northwest Harbor and in the Mill Pond. Alewives and other migratory fish tie our marine and freshwater habitats together and improve the foundation of both ecosystems.

In addition to its ecological benefits, the Alewife is also a resource traditionally utilized by humans. In the 1800s, the bulk of alewife harvests was for human consumption, as they were well preserved in salt or when smoked. However, with the advent of refrigeration technologies and a general shift in food supplies, the current harvest of alewives has shifted to predominantly being used as bait for the lobster industry. Hundreds of thousands of pounds of alewives are harvested each year, valued in the hundreds of thousands of dollars annually. Were alewives able to be reestablished in the Lily Pond system, there would be a potential for future local harvest of this renewable resource. The Island towns of Deer Isle and Stonington represent the largest concentration of workers in the lobster fishery in the State of Maine. Thus, the fish passage structures to be implemented in this system take into consideration the opportunity and potential for alewife harvest.

In general, fisheries approved for harvest of alewives are allowed to remove approximately sixty percent of the fish that return to spawn at any given location. The remaining forty percent of the population pass upstream to spawn to maintain a sustainable population. Harvested locations must pass a minimum of 35-fish per acre of pond habitat and observe returns of 235 fish per acre before the Atlantic States Marine Fisheries Commission (through consultation with Maine DMR) certifies the population as sustainable. The commercial harvest season starts when the fish arrive and runs until June 5 of any given year. Harvest occurs four days during the week, allowing three days for required “escapement.” Towns manage all commercial harvest in consultation with the Maine Department of Marine Resources.

“Escapement” is a term used in fisheries management to refer to how many fish are able to “escape” premature death and complete their life cycle. In the context of the analysis at the

Lily Pond, it generally equates to the number of fish that can pass by the Dam (via fishways or otherwise) and access the Pond habitat. If unrestricted access (full escapement) is provided to alewives to the Lily Pond, then there is the potential for a significant biological response in their production. This production is somewhat directly related to the available habitat above the Dam and accessible by the alewives. Based upon the water surface area of the Lily Pond (approx. 35 to 37 acres depending on the precise water level), it could produce alewife runs in the range of 8,000 to 15,000 fish annually (based upon production rates of 235 per acre and 400 per acre, respectively).

The American eel is a catadromous fish. Similar to anadromous fish, the American eel migrates from marine to freshwater as part of its life cycle. However, the primary difference is that a catadromous fish reproduces in marine waters and lives the majority of its life in freshwater bodies. Juvenile eels (also referred to as Elvers) born in the sea return and migrate upstream in the Spring to lakes and other freshwater bodies to live the bulk of their lives. The American eel is already present in Lily Pond. Elvers are somewhat capable of ascending over dams or other obstructions provided that a rough and damp surface exists for them to climb. Generally under the cover of darkness, Elvers can be observed during migration periods “climbing” up dams or natural ledge features to access upstream waters. Once these Elvers reach the upstream waters they are able to mature and live much of their adult lives before heading back to the sea for reproduction. Passage restoration at the Lily Pond and in Eel Brook could improve the productivity of this species locally. Elver harvesting has become a valuable commercial fishery in recent years.

Brook trout are also notable in this system. The Lily Pond has historically had a productive brook trout fishery. However, according to the Maine Department of Inland Fisheries and Wildlife (“MeDIFW”), the fishery declined through the 1990s for a variety of reasons, including increased competition from other warm water fish (particularly pumpkinseed sunfish). As such, brown trout were introduced in 1999, as they had the potential to compete better with the warm water fish. MeDIFW continues to stock both brook trout and brown trout in the Lily Pond. In 2021, MeDIFW stocked fifty (50) Brown Trout (@ 12” each) and 1,100 Brook Trout (@ 7” each), which is consistent with what has been stocked annually for the prior several years.

While brook trout are more commonly known as a freshwater species, they have historically also been a “sea-run” species (aka “Salters”). Salters are easily recognized by their impressive weight compared to their length—they are extremely fat. However, sea-run brook trout have declined significantly across their range in recent decades. With pollution and development threatening habitat throughout New England, Maine is home to the majority of the East Coast brooks that still support sea-run brook trout. The Lily Pond/Eel Brook/Mill Pond system could provide habitat for sea-run brook trout known to be present in Penobscot Bay if connectivity were restored at both Route 15 and the Lily Pond Dam. The Mill Pond and Northwest Harbor include fields of eel grass, rockweed, and other marine plant life, giving predator and prey plenty of room to hunt and hide. Juvenile alewife, rainbow smelt, mummichog (killifish), Atlantic silversides and stickleback are but a few of the forage species available to these brook trout, most already present in this system. Small snails and periwinkles are also part of their diet. Salters are still caught in local brooks each spring.

Rainbow smelt are also a valuable species at this location. There is a strong population of rainbow smelt in the Lily Pond; however, these are effectively a “landlocked” version of the species that has adapted over many centuries to a purely freshwater existence as in many lakes across the State of Maine. Of more significant restoration interest is the sea-run variety of rainbow smelt, as they have been listed as a “Species of Concern” by the U.S. Federal Government since 2004. Similar to alewife, these sea-run rainbow smelt are an anadromous species, which seek freshwater systems to spawn. However, unlike the alewife, the rainbow smelt is not a particularly strong swimmer, and they seek stream habitat for reproduction (not lakes or ponds). As such, the habitat of value for the rainbow smelt is typically on the fringes of saltwater along initial stream reaches just upstream from brackish water. Improvements to the culvert crossing at State Route 15 and removal of the firewater concrete cistern could provide valuable habitat for sea-run rainbow smelt in Eel Brook upstream from the brackish Mill Pond. According to ME DMR Stream Habitat Viewer, the partial barrier below Bridge St still allows for an active rainbow smelt access route, with limited active habitat and productivity up until the Rt 15 culvert, due to it being a complete barrier.

This project will also assist the Atlantic Salmon Recovery Plan by nature of its location within the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (Listed as Endangered). The project area is also located within NOAA's Essential Fish Habitat (EFH) for all life stages of Atlantic salmon. The success of this project, combined with ongoing NOAA-supported restoration efforts across the nearby Bagaduce River, Penobscot River, and related watersheds, however, could have cascading effects into the Penobscot Bay and Gulf of Maine trophic systems and provide prey buffering for migrating Atlantic salmon, as well as forage biomass for other commercial and recreationally important species like haddock, cod, and striped bass.

The striped bass is a particularly good example of a species that could benefit from passage restoration in this system. Atlantic striped bass are managed by the Atlantic States Marine Fisheries Commission under an Interstate Fisheries Plan. They have become increasingly common in Penobscot Bay, including arms such as Northwest Harbor and the Mill Pond. Improving the stocks of forage fish for striped bass would align with the first NOAA saltwater recreational fisheries guiding principle of *supporting ecosystem conservation, sustainability, and enhancement* by restoration, conservation, and enhancement of habitats that benefit recreational and other fish stocks and support ecosystem health. Striped bass is not the only saltwater recreational fishery that will be supported through this project; other species include Atlantic cod, American lobster (very high ACGHPS), Atlantic mackerel, Atlantic tunas, haddock, bluefish (low ACGHPS), halibut, pollock (low ACGHPS), squid, and winter flounder (high ACGHPS).

Atlantic Sturgeon (Atlantic subspecies; Gulf of Maine DPS) (ESA Listed as Threatened) are also known to be present in Deer Isle waters and could benefit from habitat restoration and forage fish improvements.

(b) Enhancing community resilience to extreme weather and climate hazards and providing other co-benefits

The new Dam and culvert structures will be designed to have a functional life of approximately 80-100 years, and design will take into account 1,000-year flood events as well as projected future traffic levels on State Route 15. Current overtopping risks will be mitigated by raising the Dam structure approximately two feet and broadening its footprint accordingly. The Dam structure will be designed to meet Federal Emergency Management Agency guidelines in FEMA P-94 and conform to Soil Conservation Service TR-20 methodology. Route 15 is a lifeline for the Island economy that is currently at risk from a Dam failure and other consequences of extreme weather and climate hazards. The Route 15 crossing will be designed to meet United States Forest Service Stream Simulation Design for Aquatic Organism Passage Guidelines, including, but not limited to passing a 100-year flood event with a minimum of 20% freeboard; interior width a minimum of 1.2 times the bank-full width of the stream, banks to be built inside the structure to facilitate crossing of terrestrial animals such as frogs and turtles; and the natural stream bed through the crossing mimics unimpacted reaches of the stream. In addition, efforts at sustainability around this project are robust, not only through engineering and design but also through fostering strong community interest and hands-on training and activity to manage issues such as beaver activity on the Lily Pond. The nature-like fishway design will result in low-impact development which will offer an added level of protection from flooding and extreme weather events, reduce erosion, and create a more natural public space. This type of habitat restoration builds resilience in communities and ecosystems, especially along the coast. The selected design also represents the most sustainable option.

There are currently two major highways and three buildings in the dam-breach flood inundation zone, with numerous others nearby that could be affected depending on the intensity of a storm. With the right combination of tide and weather, both highways accessing the southern half of the island could be inundated in a dam breach. This would also result in the loss of the Deer Isle Fire Department's emergency fire water supply. The completion of this restoration project will move the fire water supply outside of the inundation zone and rehabilitate the dam to reduce the likelihood of a breach.

The economy of eastern Maine is one of the most natural resource-dependent in the country. There are more fishing licenses per capita here than anywhere else on the East Coast. Yet, due to the severe decline in all other fisheries, is dangerously dependent on a single species – American lobster. If the American lobster population were to crash, the economic impact on the region would be severe and immediate. Re-establishing populations of rainbow smelt, alewives and other prey species will not only build greater resilience into the ecosystem, but also into the economy by providing a possible, much needed, additional bait source; diversifying the stock of commercially valuable fish available to the fishing industry; and by increasing the forage fish population—seen as a key step to helping bring back a groundfish population and fishery to the region. Increasing the regional populations of alewife and other forage fish is a key step to restoring and improving the ground fishery that once was a key economic driver of this State.

(c) Regional and Watershed Context

The Lily Pond/Eel Brook/Mill Pond/Northwest Harbor system is one of the most significant ecosystems on Deer Isle. It lies at the very heart of the Town of Deer Isle. The Pond has been a popular recreational resource for generations. While the Island and its watercourses are not connected to the mainland, they lie on the edges of the Penobscot River Watershed NOAA Habitat Blueprint Focus Area. They are also just offshore from hundreds of units of Modeled Salmon Habitat in the Gulf of Maine Distinct Population Segment (Maine DPS) of Atlantic Salmon. Restoration of this system could provide valuable forage for Atlantic salmon migrating to and from mainland streams, complementing NOAA's restoration efforts there.

Although Atlantic salmon are not likely to migrate to the Lily Pond in the foreseeable future, alewives flowing out of the Pond could have a positive effect on reducing the mortality of out-migrating salmon smolt from other parts of the Penobscot River estuary. Increasing the forage fish populations in this system can significantly reduce predatory stresses on the salmon smolts as they journey out to sea, and the adult alewife spawning migration aligns well with the timing of smolt emigration—both species will be entering the lower estuary in April and June. The larger and more populous alewives should provide a much better food source for the many seals, cormorants and other predators feeding on the spring migration and increase smolt survivability.

Equally important to the success of this project is fostering a population of alewife ready to return to the Lily Pond. Once the project is funded, the Maine Department of Marine Resources will be requested to stock alewife at this watershed in order to develop a population that will be ready to return in future years.

This project is being designed to maximize the returns from the investment of time and money in its completion. The construction is being designed by experienced engineers, to be built by experienced contractors, carefully overseen by interested agencies and other third parties. However, fish passage is not just about construction activities. With no alewife here now due to the blockages, a population of alewife that have the memory to return here needs to be fostered, the fish returning need to be counted to show results to partners and funders, and the run needs some attention each year, monitoring and removing debris or beaver blockages. Over the long term, people need to know about alewife and care about them and their habitat. This is a prime opportunity for education and community engagement.

Maine Center for Coastal Fisheries has developed and maintained a volunteer counting and monitoring program with the support of local towns for four Alewife runs in neighboring watersheds and has agreed to help develop one for the town of Deer Isle and the Lily Pond. Island Heritage Trust will work with community partners to form an Alewife Committee with appointed community members who keep their town governments informed, engage the schools and teachers, and promote alewife as part of heritage and habitat. Educational signage will be incorporated at the Lily Pond Dam to help make learning accessible, and Island Heritage Trust's Environmental Educator will lead area school visits during the runs to touch and watch the fish. In addition, one of the key components of this project is

engagement and training of local volunteers—one of the best ways to ensure longevity of any conservation project is to help people nearby learn and care about its goals and benefits. Island Heritage Trust plans to tap into its active volunteer base to recruit individuals to this mission.

(d) Providing benefits to underserved communities, including through partnerships with federally recognized tribes or other indigenous communities

The Island Towns of Deer Isle and Stonington qualify as underserved communities under the Climate & Economic Justice Screening Tool. The Towns will benefit from the proposed work through the enhanced resilience of the critical artery of State Route 15, the improved level of fire protection from the new firewater supply, the ecological amelioration of restored fish runs and habitat regeneration and the economic opportunities arising from alewife and elver runs.

The Route 15 crossing is currently at risk not only from the effects of sea level rise, but also from the consequences of overtopping or failure of the Lily Pond Dam, a significant hazard dam, a risk that will likely grow with climate change and increased incidence of extreme weather events. Route 15 is the primary access route to and from the Town of Stonington, the largest lobster port in Maine. The Dam rehabilitation and replacement culvert and bridge will be designed to minimize these risks.

The Deer Isle Fire Department's concrete water cistern at Route 15 does not meet any current form of fire protection standards (NFPA) and does not receive credit from ISO (Insurance Services Office). The proposed pump house and relay to the Deer Run Apartment site will alleviate those shortcomings.

The Dam, Route 15 culvert and concrete water cistern represent a complete barrier to all migratory fish other than American eels. The removal of these barriers will not only improve the health of the Lily Pond, but should provide ecosystem benefits to the Mill Pond, Northwest Harbor and Penobscot Bay and the fish species that inhabit them. These benefits will ultimately flow to the residents of the underserved communities on the Island through increased fishing, and improved commercial and recreational opportunities.

(2) Technical and Scientific Merit

This fish passage restoration project will benefit from a rich partnership with a broad array of organizations and entities with significant experience. Proposed are the design and construction phases of an identified priority project, with feasibility and initial design already largely complete.

The conceptual design plans for the Dam/fishway are attached to this application and were prepared by Acadia Civil Works (ACW), who has many years of experience on a range of dam restoration, fishway and stream crossing projects including NOAA-funded Pierce Pond in the Bagaduce River Watershed and were selected from among four different engineering firms who submitted proposals. Final designs for the Route 15 culvert reconstruction will

include the level of detail required by Maine Department of Transportation (MaineDOT) engineering and design specifications, consistent with the Department's Bridge Design Guide (BDG); AASHTO LRFD Bridge Design Specifications 8th Edition September 2017; the Department's Standard Specifications and associated Supplemental Specifications; the Department's Standard Details and associated Standard Detail Revisions. The Route 15 crossing will also be required to meet United States Forest Service Stream Simulation Design for Aquatic Organism Passage Guidelines, including, but not limited to, passing a 100-year flood event with a minimum of 20% freeboard; interior width a minimum of 1.2 times the bank-full width of the stream; banks to be built inside the structure to facilitate crossing of terrestrial animals such as frogs and turtles; and natural stream bed through the crossing mimicking unimpacted reaches of the stream. Design slope, substrate and scour depth will be comparable to reference reach metrics.

Final designs and engineering, following these same parameters, as well as support with MaineDOT process and permitting, will be negotiated as the project progresses.

As a project on a State Route, this crossing will have tight parameters set by MaineDOT, to be combined with engineering for fish passage and resilience in accordance with requirements of projects receiving federal funding. Construction will be put out to bid to qualified contractors as determined by Maine DOT and in consultation with NOAA and other partners, and contractor selection will be made based on competitive price and experience, as well as other factors in consultation with the project partners.

(a) Project Site Characteristics and Methods

Lily Pond Dam: This phase of the project entails the reconstruction of the Dam, the removal of the existing spillway and the construction of a nature-like fishway. Feasibility study, stakeholder input and conceptual design (attached) have been completed. Steps to be funded by this proposal are: construction design, permitting, bidding and construction.

The Lily Pond Dam is an earthen dam of indeterminate age, approximately 180 feet long by 11 feet high. A dam has been in place on the Lily Pond since at least the 1800's. Its original purpose is unclear, but it may have been constructed to improve ice production from the Lily Pond during the winter. The Dam impounds on the order of 200 acre-feet of water. The Dam is served by a narrow concrete spillway installed in 1948, and flow through the spillway is normally regulated by removable wooden "flashboards." The Deer Isle Fire Department is listed as the "operator" of the Dam and removes the flashboards when needed to increase the supply of water to its firefighting water cistern downstream below Route 15. The Lily Pond Dam is in poor condition, with seepage and boils jeopardizing the structure, together with signs of overtopping. The concrete spillway is undersized and deteriorating. The breach of the Dam would significantly threaten numerous downstream property owners, Route 15, and the Deer Isle Fire Department firefighting water cistern.

The Dam represents a complete barrier to fish passage to the Lily Pond, other than for American eel. Because of the great age of the Dam, records have not been found of historic anadromous and catadromous fish passage up to the Pond prior to its construction. Analysis

indicates that there is a good potential for passage of alewife and sea-run brook trout to the Pond and for sea-run rainbow smelt to return to Eel Brook.

Island Heritage Trust owns Lily Pond Park, the parcel where the Lily Pond Dam is located and holds a conservation easement on an adjacent parcel on the Pond. Lily Pond Park invites the public to recreate at the beach and picnic area, which is located next to the Dam. Required permits and approvals for this project include Municipal Shoreland Zoning Permit and flood hazard development permit, Maine Department of Environmental Protection (MDEO) Natural Resources Protection Act (NRPA) Permit by Rule #10 or #11, U. S. Army Corps of Engineers (Corps) Programmatic General Permit (PGP), Section 106 required consultation with Maine Historic Preservation Commission, and USFWS consultation on endangered species.

The Dam will be rebuilt on a minimal expansion of its current footprint and should not result in significant changes to hydrology and flooding regimes. Construction will be implemented by the installation of a temporary coffer dam and should not result in significant disturbance of Lily Pond sediments beyond its immediate footprint. The great age of the Dam and the construction plan make it highly unlikely that any new historic or cultural resources will be uncovered in the process.

The Lily Pond Dam is a significant hazard dam in poor condition. The replacement will be designed for a minimum life of 80-100 years and to withstand 1,000-year flood events. Safety will be enhanced by excluding visitors from the crest of the dam and eliminating tree growth that currently threatens the integrity of the structure. The nature-like fishway will be an attraction, but its pools will be shallow and represent a lower risk to visitors than the Dam crest presently does. Following construction completion, IHT's professional staff will reroute the Park's trail from along the Dam crest, down along the nature-like fishway to a newly built wooden bridge to continue up the slope on the far side and return the shore of the pond beyond the Dam's eastern terminus. Educational signage will be installed as appropriate along this new trail construction.

The replacement of the Dam will improve local resilience to the effects of climate change by reducing or eliminating the risks of a failure resulting from an extreme weather event.

The Lily Pond has only hand-carry boat launching and should remain free from the risks posed by marine organisms transferring on boat hulls from one freshwater body to another. The primary invasive species threat in the Penobscot Bay watershed is the green crab, which is confined to salt water. Island Heritage Trust regularly monitors the water quality of the Lily Pond and is alert to signs of invasive species.

Route 15 Culvert: This phase of the project entails the reconstruction of the roadway to accommodate a crossing structure with a minimum span of 1.2 times the bank-full width of Eel Brook. Feasibility study has been completed, and stakeholder outreach has been initiated. Steps to be funded by this proposal are: preliminary design, stakeholder approval, construction design, permitting, bidding, and construction.

The stream crossing at Route 15 is a square, dry laid stone culvert structure with an approximate 24” to 30” span. At the inlet of the structure (upstream of Route 15) the structure has wingwalls of dry laid stone, as well as some sort of stone grade control structure in the channel. As the culvert crosses Route 15 it ultimately discharges into an aging concrete firewater supply cistern on the downstream side of the culvert. The culvert and concrete cistern represent a complete barrier to fish passage, other than American eel. The culvert does not impound any volume of water under normal conditions.

Current State and Federal stream crossing regulations would require that such a crossing be constructed with a passable structure. Of particular note are the requirements to provide culvert crossing structures that span at least 1.2 times the bank-full width of the associated stream, as well as the provision for a natural stream channel invert (bottomless or buried invert structure). The bank-full width of Eel Brook is approximately 10 feet, which would suggest a structure with an approximate 12-foot span be constructed at this location.

Improvement to the crossing infrastructure at Route 15 has also considered the potential breach of the Lily Pond Dam. If the crossing infrastructure were able to convey flow under Route 15 without threatening the traveled way or causing damage to the associated highway infrastructure, it is possible that the Lily Pond Dam hazard classification could be reduced from its current “significant” hazard status to a “low” hazard status. It remains to be determined how large this structure would need to become to accommodate a Dam breach, but it is possible that the 12-foot span (to accommodate bank-full requirements) would need to increase to as much as 20 feet.

The culvert replacement would take place within the State right of way for Route 15. Primary stakeholders for this phase are the MaineDOT, Maine Emergency Management Agency and the Town of Deer Isle.

The culvert replacement would improve community resilience to the effects of climate change by reducing or eliminating the risk of damage from a Dam overtopping or failure resulting from extreme weather events. The improved roadway will also be secure against the potential effects of sea level rise. Protection of this important local transportation artery will help secure the economic future of the lobster industry and other Island businesses.

Fire Department Water Supply: This phase of the project entails the removal of the concrete water cistern immediately downstream of the Route 15 culvert and the construction of a replacement fire water supply system: a feeder pipe in the Lily Pond, a pump house on the shore of the Pond, a pipeline across Island Heritage Trust property and a storage reservoir and control station along the entry road to the adjacent Deer Run Apartment complex. Feasibility study and preliminary design sketch have been completed, and stakeholder outreach has mostly been completed. Steps to be funded by this proposal are: final stakeholder approval, construction design, permitting, bidding and construction.

The concrete water cistern impounds thousands of gallons of water. The concrete is in poor condition and is spalling in several locations. Its downstream wall has broken at its corner, but the structure still represents a complete barrier to fish passage, except for American eel.

This phase entails the establishment of a pumping relay for firefighting. Adjacent to the Deer Run Apartments driveway a storage reservoir (perhaps 10,000 gallons) will be constructed, as well as a control station. Down at the Lily Pond, a small pump house will be constructed that contains a pumping unit that draws water from the Lily Pond and sends it over to Deer Run. The Lily Pond Pump House and the tanks at Deer Run will be connected by a force-main pipe (between 3” and 6” in diameter). The equipment will be designed for a rate of flow that could range between 300 and 1500 gallons per minute, depending on Fire Department requirements.

Stakeholders for this phase are Island Heritage Trust, the Deer Isle Fire Department, and the Housing Foundation (owner and operator of Deer Run Apartments). The Deer Isle Fire Department has been closely involved in the review and analysis of fire water supply alternatives and has chosen this proposal as its preferred design.

The replacement of the existing concrete water cistern will provide distinct benefits to the community’s resilience to the effects of climate change. The firewater supply will no longer be subject to the risk of destruction from a Dam failure or overtopping resulting from an extreme weather event. The Fire Department’s capacity to fight fires will be improved. Both extreme weather events and wildfire and lightning strike fire risks are potential consequences of climate change.

Mill Pond and Northwest Harbor: Grist and sawmills were operated on the Mill Pond and at the mouth of Eel Brook since the early days of the Island’s settlement. In 1864, the Town of Deer Isle purchased the mill dam and constructed a bridge connecting Deer Isle Village with the western parts of the Town. Subsequently, the bridge was replaced with two laid stone culverts. The culverts allow for partial passage but are considered minimally adequate to the task. The Town has identified replacement of the culverts as a high priority in its Climate Vulnerability Analysis. Bridge Street itself is at high risk of inundation from sea level rise. This phase of the project does not include improvements to the Bridge Street infrastructure, but initial analysis and planning for such improvements has commenced with Maine Department of Marine Resources. This would fall under a coastal zone and wetland management project to restore fringing marsh for the Mill Pond and raise the road approximately 3 ft for future sea-level rise projections.

In the age of sail, Northwest Harbor was a vibrant commercial thoroughfare. Deer Isle Village housed sail lofts and other businesses catering to the maritime trades. Steamboats called at Dow Point wharf on the east side of the harbor in the 1880s. The upper harbor now dries at low tide but is regularly harvested for softshell clams and marine worms. Restoration of fish passage to the Lily Pond and Eel Brook would play a key role in the revitalization of this historic marine system and its economic viability.

(b) Project Description and Milestones

The execution of this project entails coordination of many moving parts and partners. The timing and funding of the Route 15 culvert replacement aspects are dictated in large part by MaineDOT. This award is anticipated to be a three-year award, with the successful re-

connectivity of an entire watershed able to be completed within that time frame. Preliminary designs and review are largely complete.

2024: Final engineering and design of the Dam and fire water replacement system should be completed by March, 2024. Plans will be submitted for bidding by June, 2024. Evaluation, selection and contract negotiation with the winning bidder will be complete by November, 2024.

Preliminary designs for the replacement of the Route 15 culvert will be submitted to MaineDOT by June, 2024. Negotiations with MaineDOT will be conducted as necessary during the year.

Efforts at public awareness building and support building will continue throughout this period.

2025: Construction of the Dam and fire water replacement system will commence in June, 2025, with completion targeted for October, 2025.

Final construction design of the Route 15 culvert replacement and bridge will be submitted in mid-2025. Also in 2025, there will be additional public processes to prepare for the detouring of traffic around the Route 15 culvert site, as well as pursuing and obtaining all permitting.

2026: In 2026, construction of the Route 15 replacement culvert and bridge would take place within the permitted in-stream construction window of July 15 – September 30, 2026.

This project is anticipated to need the following: Municipal Shoreland Zoning Permit and flood hazard development permit with the town of Deer Isle, Maine Department of Environmental Protection (MDEO) Natural Resources Protection Act (NRPA) Permit by Rule #10 or #11 with the Maine DEP, U. S. Army Corps of Engineers (Corps) Programmatic General Permit (PGP) with the Maine Office of the Corps, Section 106 required consultation with Maine Historic Preservation Commission, USFWS consultation on endangered species. Additionally, applicant will benefit greatly from experienced guidance by its consultant engineering firm, Maine Coast Heritage Trust and from the anticipated cooperation with MaineDOT.

(c) Fish Passage Implementation Monitoring and Evaluation

Island Heritage Trust will work with NOAA and its project partners to implement a Monitoring Plan consistent with the NOAA Restoration Center Implementation Monitoring (Tier 1) Guidance applicable to barrier removals and culvert replacements.

The high density of restoration projects in the Penobscot River watershed provides an ideal situation to systemically assess the success of these fish passage projects. With no fish passage currently and with stocking of the pond upstream, we believe an underwater camera and environmental DNA (eDNA) sampling to be the best way to begin monitoring fish presence and movement. The Applicant wants to ensure good monitoring and counting at this

site and plans to create Citizen Science projects and to bring on board UMaine students currently conducting eDNA research to further engage the community. Maine Center for Coastal Fisheries and Downeast Salmon Federation have indicated a desire to help create and implement successful monitoring and evaluation programs.

Island Heritage Trust plans to engage The Nature Conservancy and US Fish and Wildlife to conduct pre/post stream simulation surveys to capture changes to the stream resultant from the dam rehabilitation, fishway installation, and removal of the barrier and culvert replacement. Tracking the resultant changes to stream bedform and substrate size class distribution allows TNC to directly compare the proposed design to the as-built projects and assess how the slope and substrate of the crossing naturalizes over time, an effective assessment of how a stream responds to the installation of aquatic organism passage designed road/stream crossings.

(d) Sustainability

Island Heritage Trust owns the property on which the replacement Dam and firewater pumping equipment will be located and has undertaken to protect and monitor its condition in perpetuity. The Town of Deer Isle and the Deer Isle Fire Department will be responsible for servicing and maintenance of the firewater pumping station equipment pursuant to an access and servicing agreement to be entered into with Island Heritage Trust. Island Heritage Trust has agreed to work with the Town of Deer Isle to ensure that the Route 15 culvert remains free of debris and obstructions to fish passage.

The proposed Dam reconstruction will have a design life of approximately [80-100] years. It will be designed to accommodate an inflow design flood of a 1000-year event.

The proposed culvert is expected to have a design life of approximately 80 to 100 years. The 2021 US National Climate Assessment Report estimates that the frequency of extreme daily precipitation events will increase by 2x to 3x for coastal Maine by 2100 (Figure 2.19, NOAA National Climactic Data Center). In other words, the flood discharge magnitude of the 1% AEP (Q100) storm in 2100 would be equal to that of an 0.5% to 0.3% AEP (Q200 to Q300) storm event today. It is expected that the design adopted will exceed MaineDOT hydraulic design standards for storms as large as the 0.2% APE (Q500) event, and therefore would still safely pass the Q100 with adequate freeboard if storm frequencies increase as predicted.

Similarly, the 2017 US Global Change Research Program (NOAA NOS CO-OPS 083) predicts potential sea level rise of approximately 2 to 10 feet by the end of this century for coastal Maine. Although the crossing is located close to the tidally influenced Mill Pond, the roadway elevation (approximately 15 feet NAVD88) would not be inundated under any coastal storm surge scenario, even when adding potential sea level rise.

(e) Data Management Plan

See Data Management Plan submitted in the Supplemental Materials PDF.

(3) Overall Qualifications of Applicants

Island Heritage Trust is a nonprofit land trust founded in 1987 to contribute to the well-being of the Deer Isle community by conserving its distinctive landscapes and natural resources, maintaining public access to valued trails, shoreline and islands, and by providing educational programming for all ages. It holds 25 conservation properties in fee on Deer Isle and its surrounding islands, as well as 38 conservation easements. It is accredited by the Land Trust Accreditation Commission proving sound finances, ethical conduct, responsible governance, and ability to provide lasting stewardship of the lands we conserve. Island Heritage Trust has held and managed Lily Pond Park, including the Lily Pond Dam, since 2015.

Island Heritage Trust staff members and project leads are Julia Zell, Executive Director, and Alex Drenga, Stewardship Director. Education will be overseen and conducted by Martha Bell, Environmental Educator, and community engagement by Noël Ruth, Outreach Manager.

Julia has been with the Trust for nearly five years and has been part of its successful accreditation by the national Land Trust Accreditation Commission, increase in professional capacity, launch of the Trust's largest capital campaign, and more than doubling annual revenue and operating budget. Julia is the Project Contact with authority to act on behalf of the Applicant and manages finances and budgets.

Alex has been with the Trust for nearly three years and comes with a master's degree in Natural Resource Management and having previously worked for USFW at the Eastern Massachusetts National Wildlife Refuge Complex doing outreach, education, and monitoring of ESA listed species. He will be the key staff liaison for the implementation of this project and will direct the management and stewardship of the dam site going forward along with the proposed new position of Land Steward.

Martha Bell, a Maine Master Naturalist, has over 30 years of environmental education experience and has been with the Trust for 10 years. She works nearly full-time in the schools as a resource to teachers and leads field trips on the Trust's preserves. She also takes students to nearby completed NOAA-funded projects. We plan to utilize her expertise and experience to create long-term education and outreach at the Lily Pond Dam Fishway site.

Noël Ruth is a professional writer and communicator and has been with the Trust for nearly two years. She has spent that time engaging in indigenous learning journeys and grant work to highlight indigenous voices in outreach and communication materials. She will help coordinate and advertise community programs throughout and following the completion of the project and work on the design and creation of educational signage, including working with indigenous consultants.

Island Heritage Trust retained the services of engineering design consultant Acadia Civil Works of Leeds, ME (principal: Joseph McLean) to evaluate the condition of the Lily Pond Dam and propose engineering solutions. Mr. McLean is a civil engineer with a wealth of experience in stream crossing, fishway engineering and other projects. Mr. McLean engaged Soil Metrics LLC and Northern Test Boring, Inc. to perform a geotechnical investigation of

the Dam. Rural Fire Protection consulted on the current fire water supply system and evaluated alternatives. Mr. McLean's resume is attached in the Supplemental Materials and Project Designs PDF. Due North LLC surveyed the site of the Dam.

(4) Project Costs - See Budget Narrative PDF

(5) Outreach and Education

(a) Stakeholder Support

Stakeholder support letters (found in supplemental documents) are provided by the Town of Deer Isle and the Deer Isle Fire Department, the Town of Stonington, Maine Coast Heritage Trust, Maine Center for Coastal Fisheries, Downeast Salmon Federation, Downeast Trout Unlimited, Bagaduce Watershed Association, former Deer Isle Science Teacher Mickie Flores, and Deer Isle resident William J. Wiegmann, The Towns of Deer Isle and Stonington are underserved communities under the Climate & Economic Justice Screening Tool. Cost sharing detail can be found in the budget narrative.

(b) Inclusive Planning and Engagement

In April 2020, Island Heritage Trust reached out to all landowners downstream of the dam to update its Emergency Action Plan for the potential breach of the dam. In November 2020, Island Heritage Trust and its engineering consultant Acadia Civil Works organized a meeting of representatives of the Town of Deer Isle, the Deer Isle Fire Department, the Town of Stonington, ME, Maine Center for Coastal Fisheries, the Maine Department of Marine Resources, Maine Inland Fish & Wildlife, Maine Coast Heritage Trust, the Maine Emergency Management Agency and the Hancock County Emergency Management Agency to update them on the condition of the dam and the plan to rehabilitate it. In 2021, representatives of Island Heritage Trust and Acadia Civil Works met with the Deer Isle Fire Chief and Town Manager to discuss fire water design alternatives. In 2023, Island Heritage Trust sent a mailing to all landowners adjoining the Lily Pond/Eel Brook system and other stakeholders to advise them of plans to rehabilitate the dam and seeking feedback. In June 2023, representatives of Island Heritage Trust met with the Deer Isle Select Board to apprise them of the current status of the rehabilitation plans. On July 10, 2023, a Public Meeting on the dam was held at the Deer Isle Town Office attended by approximately 50 Town residents; among other things, an informal poll of the participants showed overwhelming support for a dam rehabilitation plan that included a nature-like fishway. Island Heritage Trust's Stewardship Director has also consulted with the Deer Isle Code Enforcement Officer and Planning Board regarding permits required for the Dam rehabilitation. The proposed barrier removals and replacements will all occur on Island Heritage Trust, Town of Deer Isle and State of Maine properties or rights of way and will not require the consent of or access agreements with any other landowners, other than the Housing Authority, which owns and operates the Deer Run Apartments.

(c) Community Outreach and Education

A key component of Island Heritage Trust's mission is to provide educational programming for all ages. Island Heritage Trust's award-winning Environmental Educator Martha Bell has a regular presence in the Island schools and leads students in investigations of nature and wildlife while focusing on resilience and sustainability. Mrs. Bell already includes fish count monitoring into her spring lesson plans by busing Deer Isle-Stonington Elementary School (DISES) students to successful, NOAA-funded fish passage restoration sites within the Bagaduce River Watershed. This project at Lily Pond will enhance learning opportunities by highlighting the connectivity between watersheds within NOAAs Penobscot Watershed Habitat Focus Area and bring an important watershed scale restoration project to focus on the island.

Island Heritage Trust's Stewardship Director Alex Drenga leads "Trail Tuesday," a weekly volunteer workday that will contribute to the monitoring and maintenance of the condition of the watershed, including measuring the success of fish passage restoration efforts and keeping the new fishway and Eel Brook free of beaver blockages and debris. The Lily Pond Watch group will continue to monitor the dam prior to construction and after completion.

Maine Center for Coastal Fisheries has agreed to develop and implement citizen science opportunities to engage the community in this effort. And Downeast Salmon Federation will be approached to conduct electrofishing programs for pre and post data collection and education about fish species.

IHT recently received the 2023 Project Canopy Assistance Grant for Planting and Maintenance through Maine Department of Agriculture, Conservation and Forestry's Maine Forest Service (MFS) to develop the Lily Pond Memorial Nursery. The purpose of this nursery is to provide the island community, local garden clubs, and the towns of Deer Isle and Stonington with native trees and woody vegetation grown on Deer Isle. The soils on Deer Isle can be unforgiving to other nursery outputs and planting is often unsuccessful. A major goal of the nursery is to provide restorative vegetation around the Lily Pond dam and riparian buffer along Eel Creek after the impact of project construction. IHT's Environmental Educator is engaging her students in seed collection on IHT preserves to begin seed propagation at the DISES Greenhouse.

The organization also conducts a regular series of "Walks and Talks" programs on natural history topics, as well as coordinating the annual Wings, Waves and Woods birding festival. The restoration of fish passage at the Lily Pond and the revitalization of the Lily Pond/Eel Brook/Mill Pond/Northwest Harbor system will become a continued focal point of Island Heritage Trust's educational efforts, in alignment with our mission.