

DUNWOODY NATURE CENTER

MASTER PLAN UPDATE

JULY 2021

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INTRODUCTION

The purpose of this document is to update the 2016 Master Plan for the Dunwoody Nature Center (DNC). Since the plan's completion, multiple changes have occurred in and around the site. The intent of this plan is to document those changes and clarify planned improvements. Specifically, the Master Plan Update includes the following:

- An updated map of the park and facilities.
- Stormwater management mitigation strategies at key areas within the park.
- Wetland rehabilitation strategies to enhance health and educational opportunities.
- Concept design for the eco-classroom and pollinator garden.
- Concept design for the classroom area and park entry.
- Phasing recommendations and preliminary opinion of probably costs for budgetary purposes.

An initial site visit was conducted. Members from the DNC, City of Dunwoody, and Pond were present to walk the site and discuss areas of focus. During that site visit, two areas were identified that required additional design consideration: The classroom/restroom area near the main building and the area around the existing eco-classroom/beehive. For the classroom/restroom area, design priorities include:

- Preserving the existing bathrooms.
- Constructing a new building that provides enough space for a minimum of three classrooms of 20 people each.
- Providing significant amount of storage.
- Provided covered outdoor space for camps and gatherings.
- Generally improve the aesthetics and functionality of the space.

For the area around the existing eco-classroom and beehive, design priorities include:

- Solving the massive stormwater runoff issues and failing sidewalk.
- Creating a safe, designated route to get from the parking lot down to the eco-classroom.
- Improving accessibility.
- Redesign pollinator garden to complement the existing beehive structure.

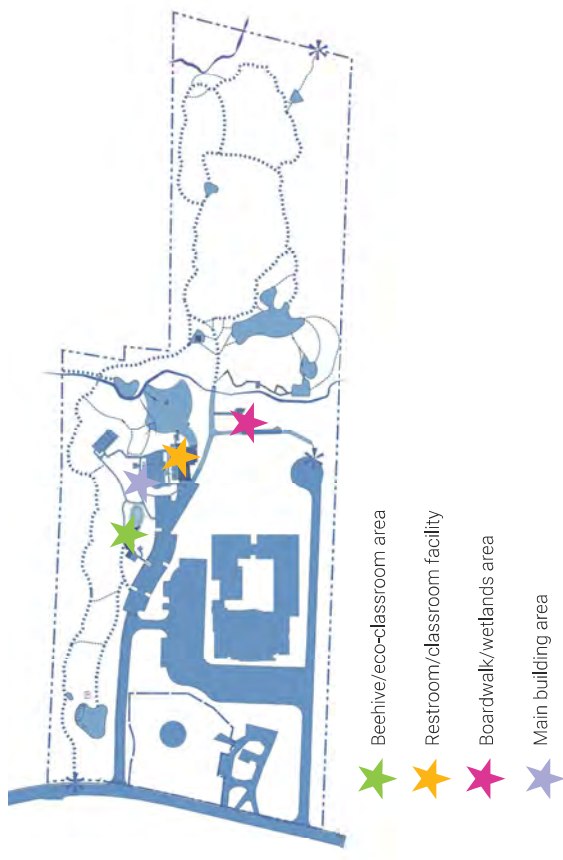
Additional concerns include addressing drainage issues under the boardwalk at the front of the main building, raising the elevation of the boardwalk through the wetlands and extending the boardwalk to connect to an existing staircase, and construct a large deck space adjacent to the new boardwalk to accommodate an outdoor classroom.

After the initial site visit, Pond created three concept alternatives for each main area of focus (the classroom/restroom area and the eco-classroom/beehive area). These were presented to the DNC and members of their board for discussion and feedback. Following the presentation, a preferred concept was designed for each area. On July 15th, members of the Pond team presented the concept plans and 3D renderings to the DNC Board of Directors to seek additional feedback on the concept designs. This report and supporting graphics are to be used for future capital campaign initiatives and other joint efforts between the DNC and City of Dunwoody.

EXISTING CONDITIONS

SECTION INTRODUCTION

This section includes imagery representing the existing conditions within the DNC property. The colors below coincide with photos taken in those areas.



BEEHIVE/ECO-CLASSROOM AREA



Existing eco-classroom with green roof to remain. The proposed building architecture is influenced by this structure.



Existing beehive to remain.



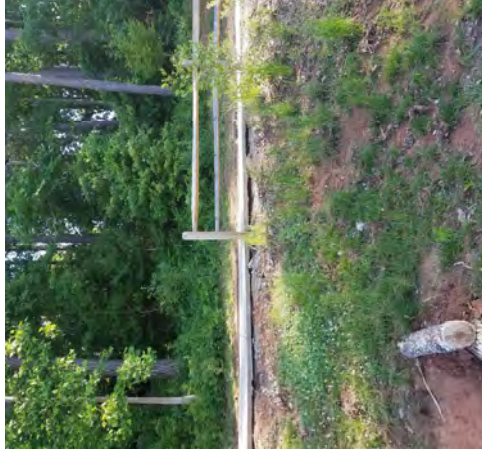
Proposed pollinator garden to be installed in area adjacent to parking lot.



Landscape steps and stepping stones are proposed to provide pedestrian access from parking lot to eco-classroom and beehive area.



Evidence of stormwater runoff pooling, creating a muddy area around the existing classroom.



Evidence of erosion along the slope adjacent to the sidewalk due to large amounts of stormwater runoff.



Stormwater runoff is undercutting the existing sidewalk north of the pond, creating a safety hazard.



Significant erosion damage and storm damage exists along stream through wooded area adjacent to eco-classroom area.

BEEHIVE/ECO-CLASSROOM AREA



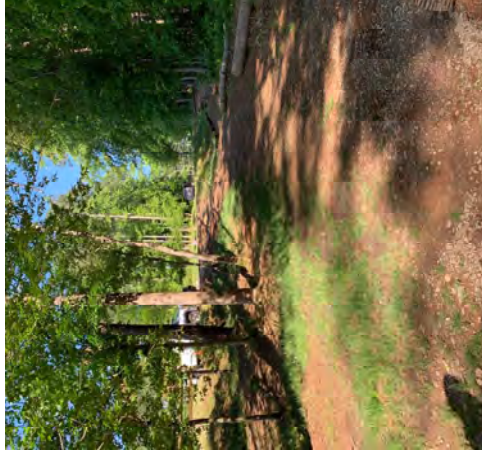
View looking down drainage swale into existing rain garden.



View looking down drainage swale into existing rain garden.



Evidence of erosion upstream of stormwater pond.



Existing pedestrian and maintenance access to be maintained.

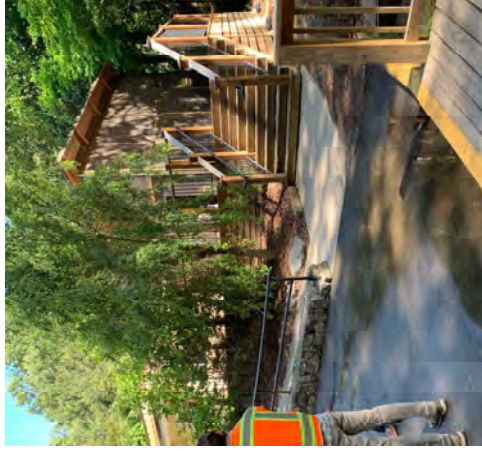
RESTROOM/CLASSROOM FACILITY AREA



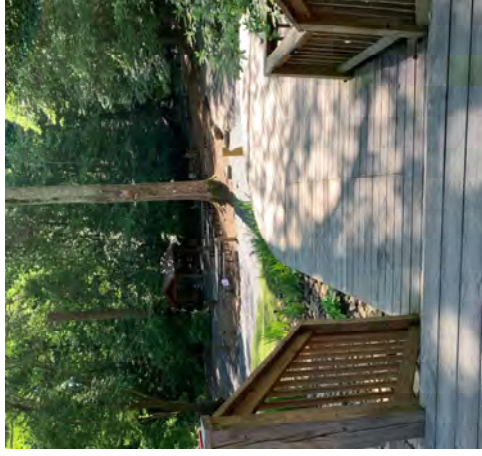
Existing restroom building to remain. Backside of building to be excavated for water proofing.



Existing cabin to be replaced with new, larger classroom building.



Existing asphalt to be demolished and replaced with pervious pavers in order to address stormwater management concerns.

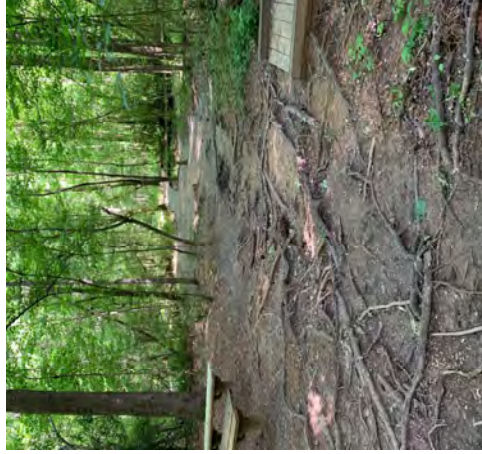


It is important to provide a logical connection from the restroom area to the existing deck that leads to the meadow.

BOARDWALK/WETLANDS AREA



View of existing boardwalk.



Stormwater runoff issues caused significant erosion and exposed large amounts of tree roots. This is a tripping hazard for people and causes stress on the tree.



Invasive species grow along the existing stream banks.



The DNC wants to extend the existing boardwalk and tie into existing wooden steps to provide safety, more accessible pedestrian connections.

MAIN BUILDING AREA



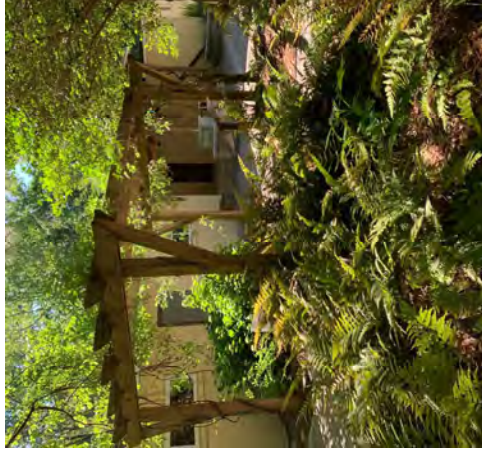
Existing concrete drainage swale is full of debris, reducing its functionality.



The culvert underneath the existing footbridge is full of debris, causing erosion issues.



Because water cannot travel beneath the footbridge, moisture build-up is compromising the integrity of the wood.



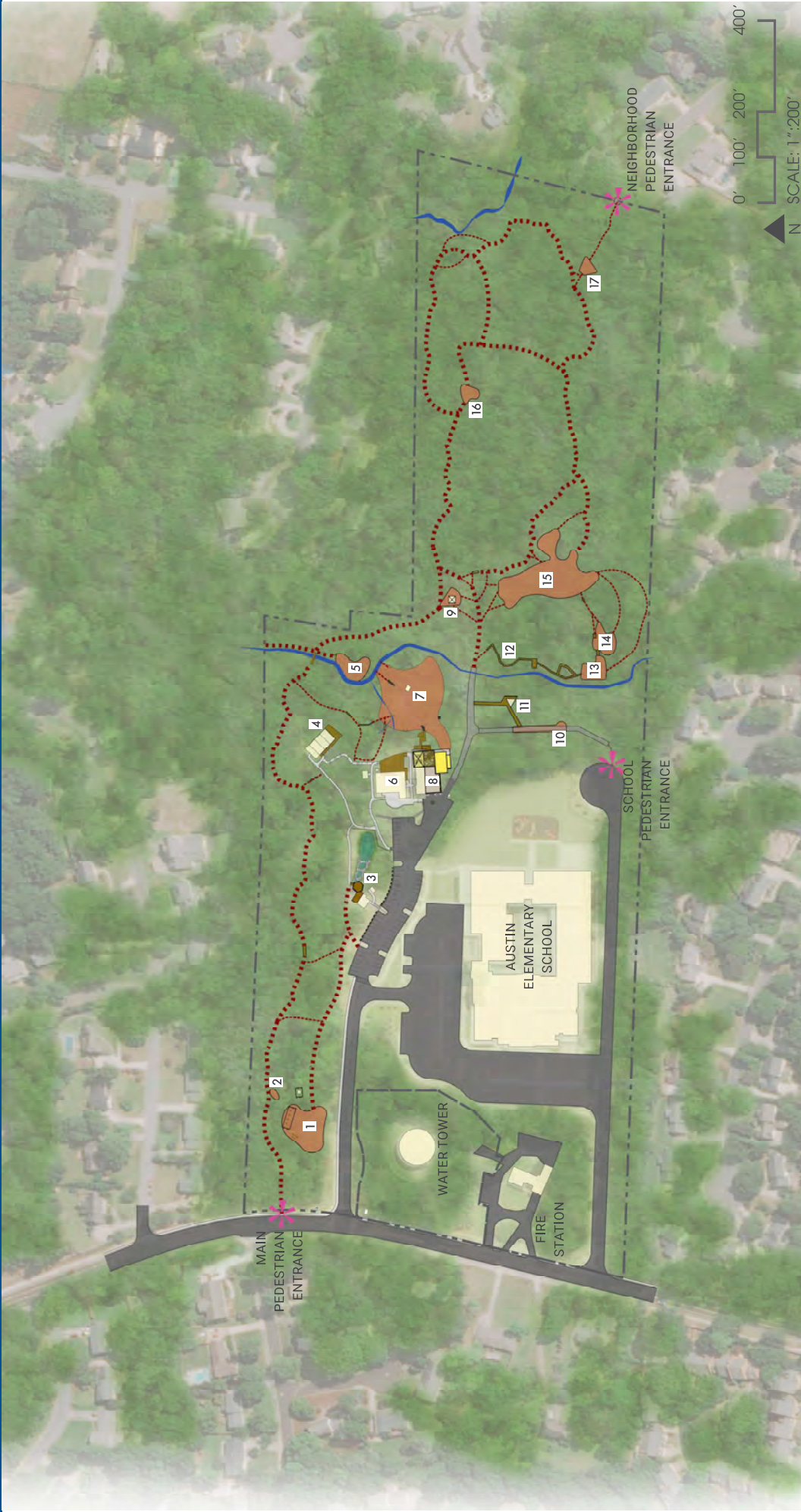
Existing pergola and plant pallet to be used for design inspiration in other areas.



OVERALL PLAN

SECTION INTRODUCTION

The map rendering on the next page was created using a combination of existing survey information, aerials, GIS data, and field verification. It reflects existing facilities as well as proposed improvements.



- | | | | |
|--|---|-----------------------------------|----------------------------|
| 1. PICNIC AREA/BEEHIVE/ RAISED GARDEN BEDS | 7. CENTRAL ACTIVITY AREA | 12. BOARDWALK | PROPERTY LINE |
| 2. OUTDOOR CLASSROOM | 8. NATURE CENTER EXPANSION AREA - RESTROOM FACILITIES | 13. OUTDOOR CLASSROOM | MAIN TRAIL |
| 3. ECO-CLASSROOM AREA | 9. KIOSK ACTIVITY AREA | 14. HAMMOCK AREA | SECONDARY TRAIL |
| 4. PAVILION WITH DECK | 10. PICNIC AREA | 15. PLAYGROUND | FENCE |
| 5. STREAM-SIDE PICNIC AREA | 11. BOARDWALK/PAVILION | 16. PICNIC AREA/OUTDOOR CLASSROOM | STREAM |
| 6. NATURE CENTER MAIN BUILDING | | 17. OUTDOOR CLASSROOM | PEDESTRIAN ACCESS LOCATION |



CONCEPT ALTERNATIVES

SECTION INTRODUCTION

Three conceptual site plans were designed for both the existing restroom/classroom area and the existing eco-classroom/bee hive area based on feedback received during the initial site visit. For each area, the concepts build in complexity and cost from Concept 1 to Concept 3. The intent of each concept is detailed on the following pages through labels and archetypal images. These concepts were presented virtually to members of the DNC Staff and members of the DNC's Board of Directors. Feedback and comments provided in response to these concept were used to design the preferred concepts for each area.

RESTROOM FACILITIES CONCEPTS



CONCEPT 1

1. REMOVE STORAGE SHED ON EXISTING BUILDING AND REPLACE WITH WOODEN SHADE STRUCTURE AND INFORMATIONAL BOARDS
2. NEW PAVILION
3. NEW 2-STORY CLASSROOM BUILDING (LARGE ENOUGH TO REPLACE CURRENT CLASSROOM SPACE AND ADD ADDITIONAL CLASSROOMS)
4. REPAVE AREA BETWEEN NEW CLASSROOM BUILDING AND PAVILION
5. EXISTING BATHROOMS TO REMAIN. EXISTING CLASSROOM TO BE CONVERTED TO STORAGE-ONLY SPACE
6. EXISTING ASPHALT TO REMAIN
7. EXISTING SIDEWALK
8. EXISTING DECK
9. EXISTING BUILDING



CONCEPT 2

1. REMOVE STORAGE SHED ON EXISTING BUILDING AND REPLACE WITH WOODEN SHADE STRUCTURE AND INFORMATIONAL BOARDS
2. NEW PAVILION
3. NEW 2-STORY CLASSROOM BUILDING WITH STORAGE
4. COVERED CATWALK TO CONNECT NEW CLASSROOM TO BATHROOMS. INCORPORATE "WELCOME SIGNAGE" INTO DESIGN
5. EXISTING BATHROOMS TO REMAIN. RENOVATE EXISTING CLASSROOM SPACE
6. PLAZA WITH DECORATIVE PAVING
7. EXTEND DECK TO ALIGN WITH "WELCOME SIGN" AND REMOVE PAVING AND REPLACE WITH PLANTINGS
8. EXISTING SIDEWALK
9. EXISTING DECK
10. EXISTING BUILDING
11. EXISTING ASPHALT

RESTROOM FACILITIES CONCEPTS



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- | | |
|--|--|
| 1. WOODEN SHADE STRUCTURE AND INFORMATIONAL BOARDS | 5. NEW, 2-STORY BUILDING WITH CLASS ROOMS, BATHROOMS, AND STORAGE |
| 2. NEW PAVILION WITH DECORATIVE PAVING UNDERNEATH | 6. EXTEND DECK TO LINE UP WITH NEW ENTRANCE PAVILION. REMOVE PAVEMENT AND LINE WITH PLANTS |
| 3. NEW 2-STORY CLASSROOM BUILDING WITH STORAGE | 7. EXISTING WALKWAY |
| 4. COVERED SPACE TO CREATE "GRAND" ENTRANCE INTO PARK AREA AND DOUBLE AS ADDITIONAL PAVILION SPACE WHEN NEEDED | 8. EXISTING DECK |
| | 9. EXISTING BUILDING |
| | 10. EXISTING ASPHALT |

ECO-CLASSROOM AREA CONCEPTS



CONCEPT 1

1. CATCH BASIN WITH RIP-RAP APRON TO CATCH WATER AND PIPE UNDER EXISTING SIDEWALK
2. PIPE WATER DOWN TO RIP-RAP APRON AND DAYLIGHT AT EXISTING BIO-RETENTION POND
3. GRAVEL DRIVE TO BE MAINTAINED FOR MAINTENANCE TRUCK ACCESS
4. CONCRETE PAVERS TO RESEMBLE "HONEYCOMB" AND CONNECT CLASSROOM BUILDING TO BEEHIVE
5. POLLINATOR GARDEN.
6. EXISTING BEEHIVE STRUCTURE
7. EXISTING CLASSROOM BUILDING



CONCEPT 2

1. CATCH BASIN WITH RIP-RAP APRON TO CATCH WATER AND PIPE UNDER EXISTING SIDEWALK
2. PROPOSED PLUNGE-POOL SYSTEM TO MITIGATE RUNOFF/EROSION PROBLEMS. PLANT WITH SAME SPECIES AS BIO-RETENTION POND
3. GRAVEL DRIVE TO BE MAINTAINED FOR MAINTENANCE TRUCK ACCESS
4. RELOCATED BEEHIVE
5. NEW PATIO CREATED WITH HEXAGONAL PAVERS TO RESEMBLE HONEYCOMBS
6. POLLINATOR GARDEN
7. EXISTING ECO-CLASSROOM
8. EXTEND ADA RAMP FROM ECO-CLASSROOM TO CONNECT TO RELOCATED BEEHIVE

ECO-CLASSROOM AREA CONCEPTS



1. EXISTING SECTION OF SIDEWALK TO BE DEMOLISHED
2. PROPOSED PLUNGE-POOL SYSTEM TO MITIGATE RUNOFF/EROSION PROBLEMS. PLANT WITH SAME SPECIES AS BIO-RETENTION POND
3. NEW BOARDWALK OVER DRAINAGE SYSTEM. BOARDWALK TO TIE INTO EXISTING SIDEWALK AND REMAIN ADA COMPLIANT
4. NEW ECO-CLASSROOM
5. DECK SYSTEM TO CONNECT NEW CLASSROOM TO EXISTING CLASSROOM
6. NEW CONCRETE PATIO AND HEXAGONAL STEEPING STONES
7. RELOCATED EXISTING BEEHIVE STRUCTURE
8. POLLINATOR GARDEN
9. EXTEND ADA RAMP FROM EXISTING ECO-CLASSROOM TO CONNECT TO RELOCATED BEEHIVE STRUCTURE
10. EXISTING ECO-CLASSROOM
11. MAINTAIN GRAVEL MAINTENANCE DRIVE ACCESS

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PREFERRED CONCEPTS

SECTION INTRODUCTION

The preferred concepts were refined based on feedback from the DNC Staff and members of their Board of Directors.

CLASSROOM FACILITY

PREFERRED CONCEPT

The preferred concept design addresses multiple goals for the DNC as they seek to provide improved educational environments for their classes. Firstly, the existing classroom area is no longer used for students and campers due to safety concerns with mold and flooding. Instead, this space is to be used for storage only. To provide the requested space for three large classrooms, the existing cabin is to be demolished and replaced with a new, modern, two-story classroom building. This design also capitalizes on the City of Dunwoody's previous investment by maintaining the existing bathroom. Lastly this concept design proposes a new shade structure system that connects the new classroom building to the existing restroom building. This proposed covered, outdoor space allows for flexible programming. It can be used for casual, every day picnicking, along with camp/educational classes, and high-end fundraising events.

PLAN VIEW



PERSPECTIVE VIEWS



The above rendering shows the plaza area between the proposed classroom building and the shade structures connecting to the existing restroom building. On nice days, the garage door on the new building can be opened to provide complete permeability between interior and exterior spaces. This creates flexible space and offers additional opportunities to host larger events.



The above rendering shows the facade of the existing classroom building where the current tool crib is now. Once the tool crib is removed, this facade can be used as a feature wall to act as an entry into the nature center and provide a beautiful, "Instagrammable" moment. The building facade provides numerous opportunities for collaborations between the nature centers and local artists.

CLASSROOM FACILITY ARCHETYPAL IMAGES



Example of sculptural, wayfinding signage to be used at entrance of enhanced classroom/restroom area.



An artistic shade structure can be used to connect the new classroom building and the proposed pavilion off of the existing restroom building. This shade element can provide visual interest and help bridge the gap of the differing architectural styles.



It is suggested the new classroom building have a modern architectural style that utilizes natural wood elements, black metal accents, and large glass windows in order to compliment some of the newer buildings on site.



Suggest using large, natural boulders in landscape beds to deter vehicular traffic from entering new plaza area.



Murals can be used to enhance the existing restroom building's facade and provide potential collaboration opportunities between the DNC and Spruill Arts Center. They also provide "Instagrammable moments" which are excellent marketing tools.



A picnic pavilion is proposed off of the existing restroom building, similar to the photo above, which is located in Chastain Park.



Permeable pavers should be used where possible to help mitigate stormwater runoff.

ECO-CLASSROOM/BEEHIVE AREA

PREFERRED CONCEPT

In the existing eco-classroom/beehive area, addressing the stormwater runoff and erosion issues are the main priorities of the preferred concept design. Because of the amount of stormwater runoff moving through this area, the current sidewalk is failing and is a safety hazard to visitors. In order to mitigate these water issues, the design proposes creating a plunge-pool system or bio-swale to capture the water, slow it down, and direct it into the existing rain garden. This system shall be created using natural boulders and planted with similar species to the existing rain garden. Not only is this solution functional, but it also provides educational opportunities and is aesthetically pleasing. In conjunction with the plunge-pool/bio-swale, this design proposes removing the section of failing sidewalk and instead connecting an elevated boardwalk to the existing eco-classroom. This allows the stormwater to pass under the boardwalk and eliminates the safety concern. In addition to the elevated boardwalk, a large, hexagonal deck is a recommended addition adjacent to the eco-classroom in order to provide a flexible outdoor space that can be used casually, for educational purposes, and other programmed events. The hexagonal shape of the proposed deck mimics the geometry of a honeycomb, and ties this area into the existing beehive. Additional features of this preferred concept design include installing a pollinator garden to complement the beehive, creating access to this area from the parking lot, and extending the ADA ramp off the back of the eco-classroom in order to make the beehive more accessible.

PLAN VIEW



PERSPECTIVE VIEW



The above rendering depicts the proposed hexagonal deck overlooking the bio-swale/plunge-pool system. This design can significantly improve the stormwater runoff issues in this area while also enhancing aesthetics and providing educational and recreation opportunities.

ECO-CLASSROOM/BEEHIVE AREA

ARCHETYPAL IMAGES



Landscape steps with handrails shall be embedded into the existing slope to provide access from the parking lot to the existing eco-classroom.



A vegetated bio-swale or plunge-pool system shall be installed in the existing drainage ditch in order to capture stormwater runoff and convey it downstream to the pond, alleviating significant issues being caused by the rapid flow of water.



Constructing a hexagonal deck (inspired by the honeycomb) off of the existing eco-classroom provides additional amenity space while contributing to resolving the significant stormwater runoff issues in the area.



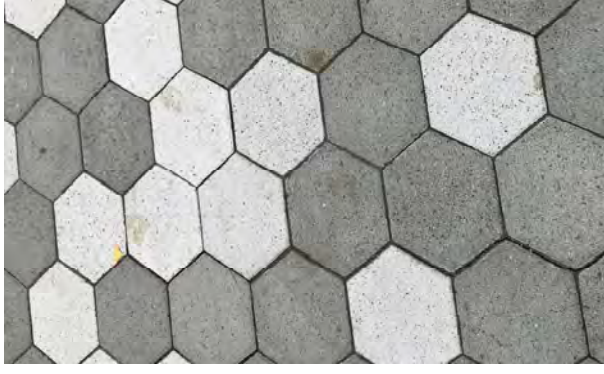
Plant the bio-swale/plunge-pool system with native grasses and shrubs that complement the existing rain garden planting pallet.



A pollinator garden shall be planted adjacent to the parking lot with vents connecting that area to the existing beehive structure.



Interpretive signage can be incorporated into this area to educate visitors on the different types of flora and fauna they see in the nearby habitats.



Utilize hexagonal stepping stones, inspired by a honey comb, to provide access from the parking lot to the eco-classroom area.



ADDITIONAL SITE IMPROVEMENTS

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WETLAND & STREAM ENHANCEMENTS & IMPROVEMENTS

The current boardwalk traverses an active floodplain area with multiple channels which convey high flows as well as one toe of slope wetland. This dynamic area provides numerous educational opportunities by using the existing outdoor classroom space and hammock garden, as well as informal opportunities for outdoor education. The current boardwalk area is an asset and below enhancements and improvements can offer increased accessibility and opportunities for the public to enjoy this unique environment.

Boardwalk rebuild above floodplain

The current boardwalk is elevated yet receives high flows which cause sedimentation on the boardwalk, increased maintenance issues and slip hazards for visitors. An option would be to further elevate the boardwalk and utilize materials which require minimal maintenance over a longer lifespan. The boardwalk reconstruction offers opportunities to add multiple access points via stairs and ramps the various educational spaces. These areas of interest include: existing stone structures within the creek, wetland areas, outdoor classrooms, and future areas of interests which could include signage and learning opportunities.

Bio retention area in floodplain

This area of the nature center serves multiple ecological functions. A key function of a floodplain is to

store floodwaters allowing for the capture of sediment and other pollutants, as well as groundwater recharge. This area may offer an opportunity to enhance these natural functions by designing a bio-retention area within the current floodplain. A bio-retention area can be designed to utilized soils with high infiltration rates and vegetation which collect and store pollutants. This increased capacity for storage and treatment will not only improve water quality within the nature center but will also provide for greater water quality to the Dunwoody community.

Wetland enhancement and invasive species removal

Within the floodplain area one large emergent wetland serves numerous ecological purposes. This wetland area provides wildlife habitat, species biodiversity, floodwater abatement, and pollutant removal to name a few. While this wetland serves these functions to a high degree, multiple of them can be enhanced through the construction of an earthen berm to encourage greater water retention and therefore increase groundwater recharge and pollutant removal. Additionally, invasive species are present within this wetland area and could be removed to improve wildlife habitat and greater nutrient availability for native species. Should these enhancements be completed, this area would serve as an educational asset and signage, as well as boardwalk access could be added.

Stream bank restoration and enhancements

Apparent attempts at stream channel and bank stabilization have occurred in the past. Large stone cross vanes and structures have been installed to control the grade of the stream bed as well as encourage stream flows to stay within the center of the channel. While efforts have benefited the stream, some of the structures have shifted and are increasing isolated bank erosion. The restoration of these structures and the installation of additional woody and stone structures could increase bank and bed stability as well we provide an additional education space through the installation of signage and boardwalk access.

These natural and engineered enhancements can increase accessibility and educational opportunities for the nature center, as well as increased environmental functions for the greater Dunwoody community. As with many projects within stream and wetland areas, permitting is a major consideration. Most if not all of the above enhancements and improvements will require not only local permit authorization but also state and federal authorization for stream buffer and waters impacts. Once a particular enhancement or group of enhances is chosen by the nature center a design can be generated to minimize the permitting effort. Additionally, construction costs can be minimized once a decision is made.

STORMWATER MANAGEMENT & ENHANCEMENTS

Restroom/classroom facilities

The existing building that houses the restroom facilities is less than 10-years old and experiences flooding during high rain events. This is likely the result of hydrostatic pressure buildup/high water table behind the wall. The proposed solution is to excavate outside the CMU wall down to the foundation, install a water proofing barrier, and install a perforated drain near the foundation that is encased in stone to relieve the hydrostatic pressure from the groundwater. The drain will either connect to the future drainage system downstream or daylight at the existing downstream stormwater management facilities/bioretentention. If surface runoff is found to also contribute to the flooding issue, additional drainage/waterproofing will be required to be installed.

Other improvements around the restroom and classroom facilities are anticipated to create additional impervious area, which would increase runoff flow from the site. It is proposed to utilize pervious pavers in the existing asphalt area located to the south of the restroom building. These pavers would be designed to infiltrate stormwater runoff into the ground and would offset the additional impervious surfaces. Subsurface drainage beneath the pavers would be collected by a series of perforated underdrains, should the existing soil conditions not be favorable for ground infiltration. It is anticipated that the existing downstream stormwater management facilities will not need to be improved as a result of this development.

Stormwater management at pond and surrounding areas

The existing stormwater pond detains and treats a large drainage area to the north and west of the nature center facilities. Currently, areas directly upstream of the pond do not properly channelize runoff from large storm events. As a result, there has been significant erosion to the pond slopes and the existing sidewalk that provides access to the learning center is becoming undermined. Runoff flow and subsequent erosion is the most concentrated adjacent to the learning center in the low point of the valley. It is proposed to install a series of pretreatment forebays (plunge-pools) with a raised boardwalk crossing to provide safe access to pedestrians. The forebays will provide the following benefits:

- Provide stormwater energy dissipation to reduce erosion within the pond.
- Provide pretreatment to the pond by collecting sediment rather than allowing it to accumulate in the pond/bioretentention filter media.

It is anticipated that the forebays will reduce the amount of required sediment cleanout of the pond, reducing the cost of maintenance.

Ensuring that the upstream flow will not bypass the forebays, proper channelization of the runoff will be required beginning at the wooded area. This can be done using a grass or stone channel. This area has an existing vehicular crossing for emergency and maintenance access as well as pedestrian access to nature trails. The proposed channelization of the upstream flow will be designed to maintain this access point by using a wide, shallow channel that is easily navigable by vehicles and pedestrians while also able

to contain large runoff flows. The channel will also reduce the amount of flooding/ponding that occurs around the learning center building.

As the existing sidewalk extends up to the northeast away from the pond, runoff tends to be spilled from the upstream channel over the sidewalk and eroding the pond side slopes. It is proposed to improve the channel on the north side of the sidewalk to better collect the flow and install a culvert beneath the sidewalk at the west end of the pond. The outlet of the culvert will have stone energy dissipation or will drain into one of the proposed forebays. This will prevent drainage from passing over the sidewalk and reduce erosion of the pond slope.

The area between the learning center and the existing beehive has been observed to be frequently muddy.

This is likely due to lack of direct sunlight to the area and, potentially, a high water table. Additional decking/hardscape is proposed to make the area more accessible and less susceptible to slipping hazards. The decking would be connected to the proposed crossing of the pond forebays, providing direct access to the rest of the Center and an opportunity for a continuous educational experience.

Downstream, flow from the stormwater pond is piped to a tributary of Ball Mill Creek. The north side of the parking lot bypasses the pond into a paved flume that continues downstream to the tributary. There is currently a wood deck path for pedestrians that crosses the flume. Beneath it is a small stone channel connecting two ends of the flume. This creates a choke point for the flow and has accumulated a large amount of leaves and debris, causing ponding upstream of the crossing. In order to provide continuous flow along the flume, it is proposed to raise the decking so that flow can more easily pass beneath the supporting members and to install a paved flume matching the existing upstream section. This will also reduce the amount of moisture exposure to the wood supports, promoting longevity of the decking at the crossing location.

OPINION OF PROBABLE COST

DUNWOODY NATURE CENTER IMPROVEMENTS CONCEPT OPINION OF PROBABLE COST						
Prepared by Ford & Company						
7/20/2021						
ITEM		QUANTITY	UNIT	COST		TOTAL
Classroom Facility						
New classroom building		2,250.00	SF	\$275.00		\$618,750.00
New shade pavilion off of restroom & new restroom roof		1.00	EA	\$125,000.00		\$125,000.00
New artist's shade structure		1.00	EA	\$75,000.00		\$75,000.00
Install French drain and pump system along back of existing classroom building		1.00	LS	\$10,000.00		\$10,000.00
Perovis pavers		1,400.00	SF	\$50.00		\$42,000.00
Concrete paving		155.00	SF	\$50.00		\$8,250.00
Remove asphalt paving		4,500.00	SF	\$2.00		\$9,000.00
Remove existing roof crib		1.00	EA	\$1,000.00		\$1,000.00
Site furnishings		1.00	LS	\$10,000.00		\$10,000.00
Tree removal		1.00	LS	\$5,000.00		\$5,000.00
Info kiosk & signage		1.00	LS	\$10,000.00		\$10,000.00
Deck expansion		175.00	SF	\$50.00		\$8,750.00
Landscape		1,000.00	SF	\$15.00		\$15,000.00
Art		1.00	LS	\$10,000.00		\$10,000.00
Grading complete		1.00	LS	\$75,000.00		\$75,000.00
SUBTOTAL						\$1,027,750.00
Eco-classroom/Beehive Area						
Hexagonal deck		700	SF	\$60.00		\$42,000.00
Gravel walkway to beehive		175	SF	\$3.00		\$525.00
Interpretive panel signage		3	EA	\$1,000.00		\$3,000.00
Stepping stones		4	EA	\$25.00		\$100.00
Demolish concrete sidewalk		185	SY	\$15.00		\$2,775.00
Site furnishings		1	LS	\$5,000.00		\$5,000.00
Plunge-pool/bioswale (stone, land-caps, fine grading)		1	LS	\$50,000.00		\$50,000.00
Landscape		2,500	SF	\$10.00		\$25,000.00
Grading complete		1	LS	\$20,000.00		\$20,000.00
SUBTOTAL						\$148,400.00
Miscellaneous Projects						
Existing boardwalk demolition		1	LS	\$20,000.00		\$20,000.00
New boardwalk (Permatrak)		3,200	SF	\$245.00		\$784,000.00
Boardwalk railing		800	LF	\$75.00		\$60,000.00
Stream & wetland enhancement construction		1	LS	\$300,000.00		\$300,000.00
Environmental survey & permitting		1	LS	\$20,000.00		\$20,000.00
Fix Drainage Issues under boardwalk near front of fire building		1	LS	\$15,000.00		\$15,000.00
SUBTOTAL						\$658,200.00
CONSTRUCTION COST TOTAL						
						\$1,829,350.00
CONTINGENCIES AND SOFT COSTS						
Engineering and Inspection (5% of Construction)						\$91,467.50
Design Fee (12% of Construction)						\$219,522.00
Contingency Percent (20% of Construction)						\$365,870.00
CONTINGENCIES AND SOFT COSTS TOTAL						\$776,859.50
CONSTRUCTION COSTS, CONTINGENCIES AND SOFT COSTS						
						\$2,506,209.50
INFLATION: 3.5% INCREASE PER YEAR						
2021						\$ 2,593,926.81
2022						\$ 2,684,714.27
2023						\$ 2,778,679.27
2024						\$ 2,875,933.06
2025						\$ 2,976,590.70
Notes:						
1. Construction costs do not include costs incurred for phased project development.						
2. The Engineering and Inspection construction contingency is included as a budget percentage that should be carried through the construction on the project. The contingency allows for change orders and unforeseen conditions and/or costs that may be encountered during the construction phase.						
3. Design fees are included as a percentage of construction cost.						
4. Overhead, profit, and mobilization fees are included as a percentage of construction cost.						
5. Contingency percentages are included in the opinion of cost. The concept level 20% construction contingency accounts for the details and associated costs that are not unknown.						
7. Investigations for ecology, geotechnical, and local, state and federal studies are not included. Environmental permitting costs are not included.						
8. For each additional year of project not moving to construction, 3.5% of total cost will be accrued to account for economic inflation.						
9. Any estimates as to costs are based on industry experience and the CONSULTANT is not responsible for changes in market conditions that affect construction, material or maintenance costs. Any changes to the project or additional expenses associated with same will not be the responsibility of the CONSULTANT.						



PHASING

Phasing improvements is a tiered process that is influenced by environmental concerns, donor wishes, funding availability, project costs, and partnerships.

With an understanding that the City is an active and engaged partner, the proposed improvements can be constructed within five years. The following phasing is broken down by short- and mid-term phasing with identified assumptions.

Short Term (up to one year)

The ongoing erosion issues coupled with donor commitments makes the eco-classroom/bee hive improvements a needed short-term improvement. The City is already working to install stairs, and the overall cost of improvements is manageable. Once improvements are made to the runoff, new deck, and improved boardwalk, the pollinator garden can be improved and maintained. This also creates an opportunity to introduce an improved donor wall/ memorial space which addresses out and outstanding need. Other runoff issues like addressing the flume underneath the existing boardwalk near the main building should be done in collaboration with the City and completed within six months.

Installing a French drain system behind the existing bathroom/classroom building is also a short-term priority which addresses flooding and mildew concerns. This can be done prior to more comprehensive improvements in the classroom space.

In addition to drainage improvements around the bathroom, the toolshed could be removed and relocated elsewhere on site. This is a low cost endeavor that would make an immediate impact.

Depending on funding, it is recommended that DNC advance the classroom building area to 30% plan completion. At this stage, cost estimating for construction becomes more accurate and is refined. This will assist future fundraising efforts for DNC.

Mid Term (one to five years)

Working with the City, DNC can focus on a wetland rehabilitation strategy that involves new boardwalk construction, habitat restoration, stream restoration, and overall improved ecological health. If possible, it makes the most financial sense to accomplish this work within a single phase to receive a greater return on investment.

Following the 30% completion of plans for the education area, DNC can complete fundraising and advance to design and permitting of the final design. While final plans are developed, DNC should create a temporary classroom strategy during construction period services. Because this is an active site, staging the construction process is critical. One potential approach is as follows:

- Site prep, demolition
- Upgrade storm drain substructure and utilities
- Complete renovation of restroom with pavilion addition
- Construction new class room building
- Finalize site work with new boardwalk entrance

The approaches outlined above are recommendations based on known factors and existing conditions. Implementation can shift or advance more quickly based on funding and resource capacity. It is important to take initial steps for a capital campaign/fundraising now to avoid long-term cost implications.