

Rocky Mountain Arsenal NWR Recovery Fund
Project Proposal
Bluff Lake Habitat Restoration and Stormwater Management Systems Improvements
July 2024

1. Executive Summary

A. Proposal Name: Bluff Lake Habitat Restoration and Stormwater Management Systems Improvements

B. Project Description: Bluff Lake plays a vital role in the northeast metro area's habitat corridor and stormwater management system. The Bluff Lake Campus Improvements Project is a multi-phase re-envisioning of the entire site that answers the diverse needs of our growing community while also protecting and restoring these critical natural resources. Bluff Lake's annual visitation has increased from 40,000 pre-pandemic to over 90,000 annually. We believe that in order to sustainably manage our 123-acre site and continue providing outdoor experiences in the city, we need to do major campus improvements. Currently the site has no utility hookups, very little infrastructure, and our team works out of an office several miles away. This increased visitation has had significant damage on critical riparian habitats on the site, specifically due to social trails and illegal site access points. The overall Campus Improvements Project will address these challenges and provide a building to house a welcome center, classrooms, and offices; power and running water; a fully accessible ramp leading into the site; and a new entrance on our northwest side that will allow us to protect and restore critical habitat on the site. See attachments pages 2 and 3.

This proposal for Habitat Restoration and Stormwater Management Systems Improvements addresses the natural resources that will be impacted and enhanced as a part of this project. This includes extensive rain gardens and plantings to manage stormwater around the new building and parking lot, and building a new entrance which will allow us to restore habitat that has been damaged by social trails. A strong stormwater approach is paramount because the collected stormwater will eventually make its way back into Bluff Lake itself, which is critical wetland habitat. Such improvements will significantly improve water conservation and water quality while enhancing Bluff Lake as a bird/wildlife habitat, and will help restore habitat particularly vulnerable to the area's increasing urbanization.

C. Project Offeror: Bluff Lake Nature Center (BLNC)

D. Point of Contact Name, Address, Phone, and Email Address: Rachel Hutchens, 4760 Oakland St, Suite 200, Denver CO, 80239, (720)708-4147, rachel@blufflake.org

E. Total Project Cost: \$1,306,000

F. Amount of NRD Funding Requested: \$600,000

G. Matching Fund Sources, Type, Value and Status:

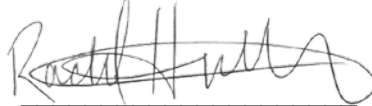
- a) Gates Family Foundation (31.25% of award): \$31,250 cash match, committed

- b) Great Outdoor Colorado (25% of award): \$125,000 cash match, committed
- c) Metro Denver Nature Alliance: \$30,000 cash match, committed
- d) Colorado Lake and Reservoir Management Association (CLRMA): \$3,000 cash match, committed
- e) Private Donors, Corporate and Foundation Grants: \$388,750 cash match, committed
- f) Bluff Lake Nature Center Endowment at The Denver Foundation: \$15,000 in-kind match, committed for staff time for oversight, coordination, and administration, not yet performed

H. Signature of an Authorized Representative of Authorized Offeror, and Signature Date:

Rachel Hutchens
Executive Director BLNC

Name and Title



Signature

12/11/2024

Date

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2. Scope of Work

A. Describe Nature and Substance of Project Provide general overview of the proposed project

Brief Summary: Bluff Lake Nature Center (Bluff Lake) is requesting \$600,000 to support habitat restoration and stormwater management through rain gardens and habitat development on our site.

Bluff Lake plays a vital role in the northeast metro area's habitat corridor and stormwater management system. The Bluff Lake Campus Improvements Project is a multi-phase re-envisioning of the entire site that answers the diverse needs of our growing community while also protecting and restoring these critical natural resources. Bluff Lake's annual visitation has increased from 40,000 pre-pandemic to over 90,000 annually. We believe that in order to sustainably manage our 123-acre site and continue providing outdoor experiences in the city, we need to do major campus improvements. Currently the site has no utility hookups, very little infrastructure, and our team works out of an office several miles away. This increased visitation has had significant damage on critical riparian habitats on the site, specifically due to social trails and illegal site access points. The overall Campus Improvements Project will address these challenges and provide a building to house a welcome center, classrooms, and offices; power and running water; a fully accessible ramp leading into the site; and a new entrance on our northwest side that will allow us to protect and restore critical habitat on the site. See attachments pages 2 and 3.

This proposal for Habitat Restoration and Stormwater Management Systems Improvements addresses the natural resources that will be impacted and enhanced as a part of this project. This includes extensive rain gardens and plantings to manage stormwater around the new building and parking lot, and building a new entrance which will allow us to restore habitat that has been damaged by social trails. A strong stormwater approach is paramount because the collected stormwater will eventually make its way back into Bluff Lake itself, which is critical wetland habitat. Such improvements will significantly improve water conservation and water quality while enhancing Bluff Lake as a bird/wildlife habitat, and will help restore habitat particularly vulnerable to the area's increasing urbanization.

Residential development on the west side of the property has led to an increasing number of visitors (a conservative estimate is 5,000 annual visitors) entering the property through an unauthorized access point on the northwest corner of the site. The building of a new pedestrian entrance will concentrate access from the west to one location, protecting vegetation and habitat from trespassing and off-trail travel. After construction of this pedestrian entrance, we will be

working on the ongoing maintenance required of the damaged area, including initial restoration and reseedling as well as continued monitoring for plant establishment, and making sure visitors are using the established trails we set to minimize social trail impacts.

Due to the nature of the site (which was formerly part of the Stapleton Airport) and the complexity of the project, extensive stormwater management systems (in the area where our new building and parking lot are being constructed) are required in order to properly manage water on the property. Bluff Lake's Stormwater Management Systems Improvements will include three rain gardens, an underground pump system, extensive landscaping, earth work, and erosion control (additional details below and in attachments). Bluff Lake submitted our Site Development Plan to the City and County of Denver in April 2024, and is currently in the process of receiving comments from CCD and finalizing our stormwater approach.

Stormwater Management Strategies Include (see page 5 of attachments):

- Rain Gardens
 - Plant beds and paved areas are graded to direct stormwater runoff to rain gardens
 - Impervious surfaces only used when required by code or to enhance site accessibility
 - Grated overflow structures at each rain garden collect stormwater above water quality control volume
 - Stormwater flows by gravity into pipe from overflow structure
 - Stormwater flows through gravity pipe to pump basin
 - Stormwater is collected in underground concrete basin with a series of electric pumps
 - Pressurized storm line pumps stormwater to existing storm structure at Martin Luther King, Jr. Blvd.
- Western Storm Pipe and Gravity Outlet
 - Plant beds and paved areas are graded to direct stormwater runoff to swales and drain inlets
 - A series of vegetated swales in plant beds which convey stormwater to drains
 - Exterior drains in pavement and planting to collect runoff and pipe to western storm line
 - Rain/snow runoff directed to gutter system on building
 - Downspouts connected to storm pipe and direct runoff into rain gardens
 - Stormwater flows from outlet pipe into plant bed
 - Storm water disperses into existing swale in plant bed and is directed west

Bluff Lake plays a vital role in the Denver northeast metro area's stormwater management system. Bluff Lake itself is not hydrologically connected to any other water bodies, and is only fed via direct precipitation and two stormwater outfalls, one draining approximately 80 acres in Denver's Central Park neighborhood, and the other capturing urban runoff from approximately 700 acres in North Aurora. The stormwater collected in our project area connects into Denver's stormwater system, which travels directly back into Bluff Lake itself through our storm water outfalls. This project presents an exciting opportunity to educate the public about the importance of successful stormwater systems in urban areas. The site also plays a vital role in the Sand

Creek Greenway riparian corridor, and protecting critical habitat in this area is important for the overall health of the greenway.

Organizational Background and Previous NRD Work Completed

In 1970, the Bluff Lake basin was purchased by the City and County of Denver (CCD) to act as a buffer between the Stapleton International Airport (SIA) and surrounding communities. Prior to 1970 and during the ownership by the airport, the land was unmanaged and misused, resulting in erosion and deposition of both hazardous and non-hazardous waste materials, and significant infestations of invasive plant species. In 1992, the Sierra Club filed a lawsuit against CCD for a violation of the Clean Water Act, due to the discharge of pollutants from SIA. Pursuant to a negotiated consent decree, CCD's Department of Aviation was required to develop an open space park and outdoor nature center at what is now Bluff Lake. The decree stated:

“The intent of the parties regarding the park is to preserve and restore a natural area related to water quality and wetlands preservation in urban area.... There shall be no reduction in total acres of wetland or riparian vegetation, although clean-up and restoration of those areas may be required and performed. The integrity of wetland, aquatic, and riparian ecosystems shall be improved and maintained.”

Bluff Lake took ownership of the property in 2008, and much of our early years were spent on site stewardship projects including planting native plant species and creating trails and overlook areas. The success of our efforts is evident by the 350+ animal species that call Bluff Lake home and the thriving habitats (wetland, riparian, prairie) that continue to grow. The Lake is the 8-acre cornerstone of the larger 123-acre Bluff Lake property, which boasts multiple habitats and 230 bird species identifications in recent years, as well as the full range of mammals, reptiles, and amphibians seen in Eastern Colorado. Currently, surface water comes to the Lake primarily from direct precipitation and stormwater inflows from the City of Aurora and sections of the CCD's Central Park (Stapleton) development area proximate to Bluff Lake.

In 2016, thanks to previous NRDs funding, BLNC was able to complete Phases 1 and 2 of the Aquatic Habitat Improvement Project. Phase 1, which included reinforcement of the dam (circa 1884) was begun in July 2016 and was completed as envisioned in the original proposal. To provide reinforcement to the leaking dam, a new slurry wall was constructed next to the old dam. The slurry wall is not visible on the surface. It runs the entire length of the old dam. The slurry wall is approximately 1,100 feet long, 28 feet deep, and 2 feet thick/wide. The bottom depths are sunk into bedrock at least 5 feet along the entire length of the wall. Phase 2 of the project involved dredging the Lake to a clay layer providing increased hydrological mixing with additional depth. Dredging the Lake helped to create a new, deeper water habitat in the Lake, allow more water to be stored over dry periods, allow for a more viable, ongoing aquatic population, and reduce the percentage of water lost to evaporation.

Phase 3 of the project began in 2020 and was funded through an extension of Bluff Lakes unspent NRD funds granted in 2016. The intent of this Phase was to ensure year round water in the lake given the water in the lake's legal status as “waters of the state.” It involved working with Denver Water to secure a conditional water right for Bluff Lake, as well as a decreed

augmentation plan to replace out of priority depletions from the lake with leased water from Denver Water. This ruling was official as of February 6, 2023. Bluff Lake staff has since been working with Denver Water and Martin and Wood (our water engineers) for ongoing procedures related to our augmentation plan. This work is ongoing.

Bluff Lake understands that blending education, conservation, equity, and community well-being is where we make true impact. Thousands of families live within a few miles of Bluff Lake, including the neighborhoods of Montbello, Northwest Aurora, Park Hill, Commerce City and Central Park. Our education team adapts programs to more equitably answer the needs of the diverse community we serve, including field trips and family programs. Making nature accessible is a driving factor for us, which is why we offer free entrance to the site 365 days/year from dawn to dusk, free prek-high school field trips and bus reimbursements for Title I schools, a vast majority of our programs are free, and for all paid programs we have a minimum of 25% of available spaces committed to full ride scholarships. Programs include internships, field trips, afterschool programs, family programs, and 10+ weeks of camp. A majority of our students come from Aurora Public Schools, Denver Public Schools, and Adams 14, which averaged together is 65.5% Hispanic, 15.5% white, 11% Black, and 8% other.

Since the pandemic, we have seen a drastic increase in visitation of 46.7%. Bluff Lake now receives over 90,000 total visitors a year (98% attending Bluff Lake for free), including over 10,000 youth and families who participate in programs. As the land around Bluff Lake has become increasingly developed, our visitation has risen with communities discovering an accessible, local way to enjoy nature.

B. Address Natural Resource(s):

i. Describe how the project will restore, replace or acquire the equivalent of the natural resources injured by the Site.

A critical targeted natural resource for this proposal is water, particularly stormwater water. A major goal of this proposal is to create sustainable stormwater management systems on our bluff that will handle the rainwater and runoff associated with our new building and parking lot. As this water returns to the site through Denver's stormwater system, this will have a positive impact on water quality, as well as the vegetation and the resident and migrating wildlife at Bluff Lake.

Bluff Lake's Stormwater Management Systems Improvements will feature three rain garden detention basins. The pumps would only be operating when the amount allowed to infiltrate for water quality purposes is exceeded. In addition, we do not have the space requirements on site to allow full detention and infiltration for a 100 year storm event. Full stormwater retention is discouraged by the City and County of Denver's Storm Drainage Design and Technical Criteria manual. Numerous alternate stormwater control measures were evaluated and ultimately rejected, either due to cost, feasibility, or potential negative site impact.

An additional targeted natural resource for this proposal is biological systems through habitat restoration. As mentioned previously, residential development on the west side of the property

has led to an increasing number of visitors (a conservative estimate is 5,000 annual visitors) entering the property through an unauthorized access point on the northwest corner of the site. The building of a new foot entrance will concentrate access from the west to one location, protecting vegetation and habitat from trespassing and off-trail travel. After construction of this pedestrian entrance, we will be working on the ongoing maintenance required of the damaged area, including initial restoration and reseeding as well as continued monitoring for plant establishment, and making sure visitors are using the established trails we set to minimize social trail impacts.

ii. Provide a detailed description of the area (acreage, linear footage, etc.) of natural resources addressed by the proposal.

The entire project described in this proposal would take place at Bluff Lake on two project sites. The “Primary Project” site is approximately two-point five acres at street level near the intersection of Martin Luther King, Jr. Boulevard and Lima Street (at about 5,350 feet in elevation). This portion of the greater site is a relatively flat promontory with very steep sides, 50’-60’ above the remaining acreage of the site. The current habitat in this area is Eastern Colorado shortgrass prairie, but is limited to a rain garden in our current parking lot and some additional garden areas to the north of the project area. This project will enhance habitat in the project area through planting, irrigation systems, and the creation of an increased number of rain gardens.

Additionally, the stormwater leaving this project area will enter the Denver stormwater system and very shortly return back to Bluff Lake through a stormwater outfall. Thus overall the impacted area includes 25 acres in the west-southwest portion of Bluff Lake. Bluff Lake itself is approximately 8 acres. The wetlands immediately adjacent to the southeast are approximately 12 acres.

The secondary “Northwest Restoration” project site is a roughly 10 acre section at the northwest corner of our site near the intersection of Havana Way and Florence Way. This section is directly adjacent to a 0.3 mile stretch of Sand Creek and contains critical riparian habitat.

Bluff Lake is located along Sand Creek, approximately two miles from the southern border of the Rocky Mountain Arsenal National Wildlife Refuge (RMANWR). Sand Creek runs downstream from BLNC approximately 7 miles into the South Platte River. The southern part of RMANWR consists of a landscape of lakes, marshes and woodlands interspersed with grasslands very similar to those at Bluff Lake. Bluff Lake and RMANWR share common wildlife species and animals that migrate back and forth between the two sites, using the open land of the Sand Creek Greenway. The two sites also share a nearly identical list of plant species. The restoration of the Bluff Lake site has been conducted in consultation with RMANWR’s U.S. Fish and Wildlife staff, whom we will continue to work with in the future. For example, the seed mix used for re-vegetation at Bluff Lake was based on comparable mixes used and collected at RMANWR.

iii. Provide a map of the area.

See attachment page 1

C. Objectives: Provide clear, measurable, realistic, timephased, objective(s) for the work proposed.

Pre-Construction (Fall 2022-Spring 2024) - This includes architect and GC selection and contracting, surveys and geotechnical reports, preliminary design, and value engineering. The majority of the preconstruction phase of this project has already been completed.

Permit and Final Design (Summer/Fall 2024)- Site Development Plan (SDP) were submitted for permitting with the City and County of Denver (CCD) in April, and are now going through several rounds of comments back and forth between the city and our team. Building permits are set to be submitted in mid August.

Construction (Winter 2024-Fall 2025)- Current projections have the project construction beginning in February/March 2025 and lasting roughly 8 months. Howell Construction is currently working on the construction timeline detailing the order and process that the work will be completed.

Restoration, Monitoring and Maintenance (Ongoing)- This phase will be ongoing and will be conducted jointly by the Bluff Lake staff, board, volunteers, and various contractors.

D. Operational Plan: Submit an operational plan that describes the proposal.

i. Describe in detail how the work will be implemented.

Bluff Lake owns, in full and as a nonprofit organization, all of the land at Bluff Lake. As a result, Bluff Lake also fully manages the land, within the bounds of only a handful of restrictions placed on the land via CCD's agreement with Bluff Lake when the land was transferred to Bluff Lake in 2008. Bluff Lake will be involved with every stage of planning and implementation, with general oversight over every phase. The project managers are our Owner's Representative firm, Cumming Group. All technical planning and work will be contracted out to Shape Architects and Superbloom Landscape Architects, and their various consultants. In terms of the work itself, this will be overseen and conducted directly by Howell Construction and their subcontractors. Bluff Lake's oversight over the planning and progress of the work will include frequent communications, regularly scheduled meetings, and a presence at the project site.

The restoration of the Northwest project site will be completed by our Natural Resources team, large cadre of regular volunteers, and numerous corporate groups.

Cost Breakdown and Description (See Budget Attachment for additional information)

General- NRD Funds will be used primarily for costs related to landscaping and restoration including earthwork, seed mix, and irrigation systems. Bluff Lake matching funds will be used for the stormwater infrastructure such as the pipes and pumps, as well as the physical infrastructure for the Northwest Gate.

NRD Use of Funds (\$600,000):

- \$399,000: Landscaping and Irrigation (seed mixes, irrigation pipes and valves, shrubs, etc)
- \$28,500: 5% of Project Total General Site Requirements, Erosion Control, Earthwork
- \$69,000: 5% of General Conditions, Permits, Bond, Tech, Fee, Preconstruction, Escalation Allowance, Contractors Contingency
- \$15,500: 12.5% of Landscape Architect and Consultants Fee
- \$61,500: 5% of Project Total PreDevelopment/Permitting/Utility
- \$26,500: 5% of Overall Project Contingencies

Bluff Lake Cash Matching Funds (\$691,000):

- \$28,500: 5% of Project Total General Site Requirements, Erosion Control, Earthwork
- \$340,000: Construction of Site Storm System including 2 distinct PVC storm sewer lines (eastern and western) as well as 3 rain gardens which include underground drain connections, liners, geo fabric, fill material, and an outlet structure.
- \$120,000: Stormwater Pump
- \$30,000: Northwest Gate Infrastructure
- \$69,000: 5% of General Conditions, Permits, Bond, Tech, Fee, Preconstruction, Escalation Allowance, Contractors Contingency
- \$15,500: 12.5% of Landscape Architect and Consultants Fee
- \$61,500: 5% of Project Total PreDevelopment/Permitting/Utility
- \$26,500: 5% of Overall Project Contingencies

*Total of 10% (5% NRD, 5% Match) used in above calculations comes from the percentage of the overall Campus project that is a part of the Habitat Restoration and Stormwater System Improvements.

Bluff Lake In-Kind Matching Funds (\$15,000):

- \$15,000: Roughly 3 hours per week for one year for Executive Director, Development Director, and Natural Resource Director, as described below.

Bluff Lake Leveraged Funds (\$7,217,000):

- \$7,082,000: Community Building & Adjacent Covered Outdoor Spaces, Parking Lot, Solar, Accessible Ramp and Stairs Trail (includes associated costs related to hard costs, architectural, 90% of the overall project soft costs, and 90% of the overall project contingencies)
- \$135,000: Owner Expenses related to Staff Time (90% of total)

ii. Describe with whom the Offeror will collaborate to accomplish the scope of work.

Bluff Lake recognizes that, as a small nonprofit, we needed to surround ourselves with knowledgeable experts in order to accomplish this project. Early funding allowed us to hire an Owner's Representation firm, Cumming Group, in Summer 2022. After an extensive RFQ/RFP and interview process, we hired Shape Architecture and Superbloom Landscape Architecture in the Fall 2022. Elevation Consulting Group, Ltd. is the civil engineering consulting firm

specializing in site development for residential, commercial and municipal projects. In Fall 2023 we brought on our contractor, Howell Construction. And in Spring 2024 we added a permit expediter, Service First.

Letters of support are attached from Superbloom, our Landscape Architect who designed the stormwater systems, as well as U.S. Fish and Wildlife Services, who are a strong partner of Bluff Lake. Resumes for key individuals from Superbloom and Elevation are also included in attachments.

Bluff Lake staff involved in the project, and included in the attached budget as an in-kind matching expense, include the following:

Rachel Hutchens (she/her) has been the Executive Director at Bluff Lake since 2018, and has helped grow the organization's education programs and accessibility to diverse communities. She was responsible for closing out Bluff Lake's initial 5-year Aquatic Habitat Improvements grant from the Natural Resource Damages Fund as well as applying for and receiving an extension for the unused funds through a second grant and contract. Rachel was also heavily involved in carrying out the work required in Phase 3 of that project which involved going to water court and developing an augmentation plan with Denver Water. Rachel has been involved in numerous other projects and grants over the years, and successfully manages Bluff Lake's \$750,000 annual operating budget as well as all associated programs and projects. Rachel serves on the Board of Directors for partner organization Friends of the Front Range Wildlife Refuges. Rachel was a part of the University of Denver Institute for Leaders in Development 2022 cohort and attended a Women's Executive Leadership course at Yale University in 2023. Rachel intends to spend an average of 3 hours per week over the next year on the site components of this project, with initial responsibilities focusing around the design and permitting process, and then switching gears once construction starts to more supervision and community engagement.

Leila Regan Porter (she/her) has been the Development Director at Bluff Lake since 2021. Prior to joining Bluff Lake, Leila worked at the Otis Redding Foundation in Macon, Ga., where she managed everything from marketing and administrative duties to fundraising campaigns and grant writing. She also served as grant writer for the Tubman Museum, and has written for Paste Magazine, Performing Songwriter, the Macon Telegraph, Macon Magazine, and more. She served as president for the boards of Bragg Jam and Main Street Macon. Leila serves on the Board of Directors for partner organization Sand Creek Regional Greenway Partnership and was part of the University of Denver Institute for Leaders in Development 2024 cohort. Leila intends to spend an average of 3 hours per week over the next year on the site components of this project, with initial responsibilities focusing around the design and permitting process, and then switching gears once construction starts to more community engagement and continued fundraising.

Tess Robeson (she/her) is the Natural Resource Director at Bluff Lake and joined the team in January 2023. She enjoys maintaining and improving the valuable natural resources on site as well as identifying plants and watching birds. Tess has a degree from the University of San Diego in Biology. Tess is a Colorado Native Plant Master, has four years of experience in Colorado invasive plant identification and management, and holds a Colorado Qualified

Supervisor Pesticide Applicator License. Tess intends to spend an average of 3 hours per week over the next year on the site components of this project, with initial responsibilities focusing around the design and permitting process, and then switching gears once construction starts to more community engagement.

Bluff Lake also has a robust Board of Directors who advise staff on key topics related to water quality, habitat management, and project management.

iii. Describe the type and name(s) of donors and what they are contributing in equivalent dollar amount of match if in-kind or actual dollar amount if cash.

- Foundation/Nonprofit: Gates Family Foundation 2024 grant (31.25% of award): \$31,250 cash match, committed
- State Government: Great Outdoor Colorado (25% of award): \$125,000 cash match, committed
- Foundation/Nonprofit: Metro Denver Nature Alliance: \$30,000 cash match, committed
- Foundation/Nonprofit: Colorado Lake and Reservoir Management Association (CLRMA): \$3,000 cash match, committed
- Additional Private Donors, Corporate and Foundation Grants: \$501,750 cash match, committed
- Bluff Lake Nature Center Endowment at The Denver Foundation: \$15,000 in-kind match, committed for staff time for oversight, coordination, and administration, not yet performed

iv. Provide construction designs and drawings, if applicable, maps of proposed restoration location(s), and a schedule and/or timeline for the completion of major project components.

Construction drawings are included in attachments. Designs are still being finalized as we are awaiting comments from the City of Denver. Updated designs will be shared as available.

v. Describe to what degree the proposal matches the goals of environmental restoration.

As stated in the Proposal Requirements, “recoveries from all Natural Resources Damages claims may only be used to restore, replace, or acquire the equivalent of the injured natural resources.” Furthermore, the project must be in the vicinity of the injured resources or demonstrate a geographical or ecological nexus to the injured resources.

The geographic proximity is clear: Bluff Lake is approximately 2 miles from RMANWR, the site of the injured resources giving rise to this funding opportunity. As described earlier, there’s also a close ecological nexus between RMANWR and the Bluff Lake site. The southern part of RMANWR consists of a landscape of lakes, marshes and woodlands interspersed with grasslands, very similar to those at Bluff Lake. Bluff Lake and RMANWR share a nearly identical list of plants, and wildlife species that migrate back and forth between the two sites, using the open land of the Sand Creek Greenway. (see attachment page 1)

With respect to equivalent injured resources, the following sections describe specific benefits to stormwater, surface water and biological resources that would result from the proposed project.

Biological Systems: This work will make critical improvements to provide the necessary conditions for enhancing wildlife and riparian habitat and restoring a native ecosystem. The restoration and protection of the 10 acre northwest corner of the site will ensure habitat development. With the new stormwater management systems being implemented through this project, Bluff Lake will ensure that we can continue to maximize Bluff Lake's potential as a reliable, critical habitat for an even wider variety of wildlife in a highly urbanized area.

Stormwater and Surface Water: Bluff Lake was originally constructed as an irrigation reservoir in the late 1800s. This reservoir was fed by water from Sand Creek and the Highline Canal. Currently, surface water comes to Bluff Lake primarily from direct precipitation, groundwater and storm-water inflows from the City of Aurora and sections of the Stapleton development area in the City of Denver. The watershed area of Bluff Lake is currently approximately 800 acres and includes 200+ stormwater drains. The primary watershed is within a heavily urbanized area of the Original Aurora neighborhood, bounded by 25th Street to the north, 11th Avenue to the south, Peoria Street to the east, and Havana Street to the west.

Groundwater Systems: The proposed project is not expected to significantly enhance groundwater systems, nor will it negatively impact groundwater. Alluvial groundwater at Bluff Lake has a negligible influence on water levels, as compared to storm sewer runoff, precipitation, seepage, and evaporation. According to the USGS groundwater atlas for the area, groundwater flows in a generally southwesterly direction and, in the vicinity of Bluff Lake, is located at 5,280 foot elevation. Groundwater levels range from 6 to 10 feet below the ground surface at Bluff Lake, and groundwater accounts for less than 1% of the gross water gains for the lake.

vi. Describe how the proposal will be coordinated with complimentary, similar existing, or other proposed projects in the area, if any.

Bluff Lake lies at the heart of the Sand Creek Regional Greenway, a 14-mile stretch of greenway running from east Aurora to the Platte River in downtown Denver. Because of its size and diverse habitats, Bluff Lake represents the widest and most biodiverse segment of the greenway. The Sand Creek Regional Greenway (SCRG) is on either side of Bluff Lake, so all of our projects are coordinated with SCRGP. For instance, this proposal is consistent with SCRGP's efforts toward native habitat preservation and invasive species removal. The new Northwest Entrance will be directly off of the Sand Creek Regional greenway Trail system and included in maps of the area. Bluff Lake borders both CCD and City of Aurora Open Space, and we coordinate managements with both jurisdictions.

“Future Greenway Corridor Funding Priorities” is a plan for the Northeast Greenway Corridor which envisions connectivity between Bluff Lake and the Rocky Mountain Arsenal National Wildlife Refuge (RMANWR) via the Sand Creek Greenway trail, so habitat improvement at Bluff Lake assists regional habitat quality. Bluff Lake has discussed this project with RMANWR

at length, and RMANWR not only approves of the project but will directly support our efforts and has supplied a letter of support.

Nearby Bluff Lake, the confluence of Westerly Creek and Sand Creek was contoured and restructured, and trash, debris, and other contamination was being removed in order to restore native prairie habitat at the Westerly Creek-Sand Creek junction area. This restoration of a native prairie ecosystem just over a mile from Bluff Lake is further complementary of the efforts outlined in this proposal.

vii. Describe the operation, maintenance and monitoring (OMM) requirements:

OMM requirements for the project relate to two broad categories: the maintenance of the integrity of the construction work performed, and the long-term health of the planted vegetation. In more detail, OMM requirements related to project construction include ensuring the integrity of the rain gardens and stormwater pumps. OMM related to vegetation will include review of the plantings around Bluff Lake, as well as the health of the wetlands adjacent to Bluff Lake and the vegetation adjacent to the step pools.

In general, Howell Construction will accept the primary responsibility for the OMM of the construction work, and Bluff Lake will accept responsibility for the vegetation that's planted. Both entities will maintain responsibilities in their areas of expertise. Howell will defer to Bluff Lake with respect to decisions about vegetation, and Bluff Lake will generally defer, though maintaining final decision making authority, with respect to construction decisions. This division of responsibilities will remain in place following completion of construction. In addition, during the course of construction, Howell would take primary responsibility over erosion control, and in matters related to regulatory compliance and permitting. All landscaping carries a two year warranty and will be monitored by the subcontractor as such.

Bluff Lake understands that Stormwater Control Measures do not work unless they are maintained properly. The type of maintenance that is needed depends on the type of system and will be inspected formally on an annual basis at a minimum and observed daily as well as after larger storm events (exceeding 1 inch over a 24-hour period).

viii. Permits/Approvals/Certifications:

BLNC will work with our Owners Representatives, Architects, Permit Expediter, and contractors to secure any and all necessary permits.

As mentioned above, this project is one component of a much larger construction project that requires extensive partnerships with the City and County of Denver. Bluff Lake has hired a Permit Expediter Firm, Service First, to assist with the permitting process.

Bluff Lake is currently working through our Site Development Plan submittal with CCD, and awaiting additional comments. We plan to submit our Building Plan for permits in mid-August.

ix. Project Schedule:

Pre-Construction (Fall 2022-Spring 2024) - This includes architect and GC selection and contracting, surveys and geotechnical reports, preliminary design, and value engineering. The majority of the preconstruction phase of this project has already been completed.

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Restoration, Monitoring and Maintenance (Ongoing)- This phase will be ongoing and will be conducted jointly by the Bluff Lake staff, board, volunteers, and various contractors.

x.Monthly Invoice and Status Report: Describe which activities in the operational plan will be tracked, how they will be counted, and how they will be reported in the monthly invoice.

Monthly invoices and a status report will be sent detailing the project progress. As previous NRD Awardees, Bluff Lake is very familiar with the invoicing and reporting process required.

xi.Project Documentation and Deliverables:

In general, project success from a construction standpoint will be measured based on whether the rain gardens and pump system are able to handle all precipitation events as planned. Water quality will continue to be monitored in the Bluff Lake outfalls and lake itself. Vegetation density, species, diversity, and cover will be monitored visually each year, mapped, and recorded. Measurements, as well as their scheduling and method, and a description, are captured in the table below:

Parameter Measured	Description	Schedule and Method
Rain Gardens Handling Necessary Stormwater	Rain gardens functioning as planned, stormwater moving through the system	Assessment daily and specifically after storm event Annual formal inspection
Water Quality	Water quality measuring including pH, temperature, dissolved oxygen, and turbidity.	Ongoing throughout the year in the Bluff Lake outfall and lake by Bluff Lake Natural Resource staff
Vegetation: a) coverage of species planted and b) individual numbers of species planted	a) Surface coverage of planted species at end of project; b) numbers of individuals surviving annually	Both would be done annually, through observation, counting, and mapping

Site Access Numbers	New Northwest Entrance functioning as planned, less illegal access in other northwest locations	Setting up attendance tracking at the new northwest entrance to determine usage
Different species of birds at site during monthly bird walks	Based on carefully kept bird count records from bird walks led by master birders	One year totals based on monthly bird walks prior to the project and one year totals based on monthly bird walks following the project
Community survey answers (likely a rating system) measuring general project satisfaction	Still to be developed, but such a survey would include at least some questions with responses that could be quantified	Pre-project and post-project satisfaction-oriented questions

PROJECT BUDGET & DETAILS

Bluff Lake Nature Center: Habitat Restoration and Stormwater Management System Improvements

NRD Budget 2024

APPLICATION SCOPE OF WORK

FUNDS RAISED (TO DATE)			
Source of Funds (CASH)	Date Secured	NRD Funds	Matching Funds
Natural Resource Damages Funds	This Proposal	\$600,000.00	
Gates Family Foundation 2024 (31.25% of award)	06/2024		\$31,250.00
GOCO (25% of award)	03/15/2024		\$125,000.00
Metro Denver Nature Alliance	02/2024		\$30,000.00
Colorado Lakes and Reservoir Management Association	02/2024		\$3,000.00
Private Donors, Corporate and Foundation Grants	As of 7/30/2024		\$501,750.00
	subtotal	\$600,000.00	\$691,000.00
Source of Funds (IN-KIND)	Date Secured	NRD Funds	Matching Funds
Bluff Lake Nature Center Endowment	11/01/2020		\$15,000.00
	subtotal	\$0.00	\$15,000.00
TOTAL SOURCE OF FUNDS			\$1,306,000.00

PROJECT COSTS				
Use of Funds (CASH)	Description	NRD Funds	Matching Funds	Total Funding
HARD CONSTRUCTION COSTS				
<i>Howell Construction</i>	Landscape and Irrigation (seed mix, crusher fines, shrubs, irrigation, 24 month additional maintenance for establishment)	\$399,000.00		\$399,000.00
	General Site Requirements, Surveying, Erosion Control, Earthwork (10% of total)	\$28,500.00	\$28,500.00	\$57,000.00
	Storm System (8" PVC Storm Sewer, 12" PVC Storm Sewer, 3 Rain Gardens Include: 4" PVC under drain connections, 30 Mil PVC Liner, 8oz Geo Fabric, CDOT Type C Fill, Media Grow, Type C Outlet Structure)		\$340,000.00	\$340,000.00
	Stormwater Pump		\$120,000.00	\$120,000.00
	Northwest Gate Infrastructure (concrete, crusher fines, gates, earthwork)		\$30,000.00	\$30,000.00
	General Conditions, Permits, Insurance, Bond, Tech, Fee, Preconstruction, Escalation Allowance, Contractor's Contingency (10% of total)	\$69,000.00	\$69,000.00	\$138,000.00
ARCHITECTURAL / ENGINEERING				
<i>Superbloom Landscape Architecture & Subs</i>	Landscape Architecture, Structural, Mechanical, Electrical Engineering (25% of fee)	\$15,500.00	\$15,500.00	\$31,000.00
SOFT COSTS	Pre-Development, Communication/Marketing, Plan Review/Permit, Dry & Wet Utility, GL & Builders Risk, Testing & Inspection, Owner's Rep & Legal, Furniture/Fixture/Equipment (10% of total)	\$61,500.00	\$61,500.00	\$123,000.00
PROJECT CONTINGENCIES	10% of overall project contingencies	\$26,500.00	\$26,500.00	\$53,000.00
	subtotal	\$600,000.00	\$691,000.00	\$1,291,000.00
Use of Funds (IN-KIND)	Description			Matching Funds
Project Leadership				
<i>Bluff Lake Nature Center</i>	Owner Expenses related to Staff Time (10% of total)			\$15,000.00
	subtotal			\$15,000.00
			Gates Funds	Matching Funds
	subtotal		\$600,000.00	\$706,000.00
TOTAL USE OF FUNDS*				\$1,306,000.00

* The Total Use of Funds must equal the Total Source of Funds in the section above.

OTHER LEVERAGED RESOURCES

CASH OR IN-KIND	Description	Total Funding
<i>Cash**</i> (Includes Secured Funds of \$5.8M from Private Donors, GOCO, LARRK Foundation, City of Denver New Building Electrification Pilot Project, Gates Family Foundation, Morgridge Family Foundation, Harvey Family Foundation and \$1.5M to be submitted with The Denver Foundation: Renewable Energy Trust, Xcel Energy Foundation, and Private Donors)	Community Building & Adjacent Covered Outdoor Spaces, Parking Lot, Solar, Accessible Ramp and Stairs (includes associated costs related to hard costs, architectural, 90% of the overall project soft costs, and 90% of the overall project contingencies)	\$7,082,000.00
<i>In-Kind</i>	Owner Expenses related to Staff Time (90% of total)	\$135,000.00

TOTAL PROJECT VALUE	\$8,523,000.00
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NRD % of Habitat Restoration and Stormwater Management System Improvements Cost 46%

NRD % of Total Project Value 7%

Rocky Mountain Arsenal NWR Recovery Fund
Project Proposal
Bluff Lake Habitat Restoration and Stormwater Management Systems Improvements
Project
July 2024

4. Public Communication Strategy

Bluff Lake Nature Center has worked to diversify its methods for engaging the public over the last five years, especially as we prepared for the Campus Improvements Project, under which this Stormwater Management System Improvements Project resides. In 2021-23, we conducted in depth community engagement, including program surveys, accessibility site surveys, empathy interviews, and a public engagement survey with 300+ responses. The results showed a majority supporting site infrastructure improvements, including bathrooms, water fountains, and better accessibility. The relationships we built with community members and organizations through this process continue.

We communicate with community members and teachers through social media (reach of 4,000+), newsletters (reach of 6,000+), press releases (we have a strong relationship with community press like The Front Porch, The Montbello Urban Spectrum Edition (MUSE), and Greater Park Hill News), in-depth conversations with partners to create dialog for public input. Our marketing and materials are available in both English and Spanish. Our Bilingual Environmental Educator (through Colorado Alliance for Environmental Education's Americorps program) ensures that materials are translated into Spanish. There is not a one-size-fits-all communication tool when it comes to engaging different audiences and we are always exploring alternative ways to spread the word and get feedback from those we serve. Social media works for some, but misses those who engage with Spanish-speaking publications or are not online. We are strengthening partnerships with organizations like Central Park United Neighbors, Montbello Organizing Committee, RISE Colorado, and Environmental Learning for Kids to share information with their audiences and also hear their voices. We utilize these partnerships to utilize tabling events to engage further with our community in person. When communications come through trusted channels, we reach a more racially diverse community and have a way to receive feedback, creating a two-way street that enables us to better advance racial equity in the world of nature. We intend to utilize all these methods, as well as onsite signage, tabling, and surveying, to keep our local community informed and engaged throughout this entire process.

In order to better communicate the developments around the Campus Improvements Project, we engaged a Content Marketing Strategist, who developed branding, messaging, and strategy for social media, newsletters, and other marketing materials and tools. This has increased our capacity to consistently engage our community, a vital piece of this project.

Two letters of support from partner agencies are included as attachments.

Rocky Mountain Arsenal NWR Recovery Fund
Project Proposal
Bluff Lake Habitat Restoration and Stormwater Management Systems Improvements
Project
July 2024

5. Relationship to the Ranking Criteria

Provide a summary of how this project meets each of the objectives indicated by the Screening and Ranking Criteria contained in Section VI.B.1 and VI.B.2 below.

Screening Criteria

A. Compliance with the SPP requirements:

- a. This project complies with all the requirements of the SPP

B. Compliance with laws:

- a. This project complies with all applicable federal, state, local laws, rules, regulations and permits.

C. Public health and safety:

- a. This project does not pose a threat to the health and safety of the public. As we plan to keep the majority of the Bluff Lake Nature Center site open during construction, public safety has been top of mind for our team through the preconstruction phases.

D. Eligibility for NRD Funding:

- a. This project is a great candidate for NRD funding through a combination of the natural resources restored and protected (stormwater and habitat), the location close to the Rocky Mountain Arsenal, the Bluff Lake site's former use as a part of the Stapleton Airport, and Bluff Lake's proven track record of utilizing these funds.
- b. The project will establish stormwater management practices that will improve water quality, reduce erosion, and maintain wildlife habitat. The project will also protect and restore vital riparian habitat along the Sand Creek Greenway corridor. The project will allow BLNC to continue to provide outdoor and environmental educational activities for over 8,000 Denver-metro school-aged children each year, and provide a natural open space amenity for the 90,000+ general visitors who use the site for public recreation.

Ranking Criteria

A. Public Support:

- a. Bluff Lake has received over \$6,400,000 in total funding for the overall project, with several hundred thousand earmarked for site work such as the stormwater systems. See Public Communication Strategy above for more about the deep level of community engagement that has informed this project

B. Likelihood of Success:

- a. Bluff Lake has a proven track record of managing large scale projects including our \$1,000,000+ project to create a year-round lake which was partially funded through a previous NRD solicitation. Bluff Lake also was able to successfully

restore the current bluff after previous construction projects in the 1990s. Bluff Lake has already faced several obstacles during this project and has been able to pivot and strategize successfully to find alternatives.

C. Technical Feasibility:

- a. The permitting process is going smoothly, which is a great indicator of technical feasibility.

D. Multiple Natural Resource Benefits:

- a. This project addresses numerous natural resource benefits, primarily related to stormwater, water quality, and biological systems. Bluff Lake has over 230 bird species on site, as well as hundreds of other animal and plant species. It also is a great project to inform the public about the importance of stormwater systems management in urban areas and the impacts of social trails and public visitation on habitat health. Bluff Lake is in the flood zone, and has proven to successfully divert flooding away from development. We look forward to continuing to educate the public about water systems.

E. Time to Provide Benefits:

- a. This project is set to begin construction in February/March 2025 and wrap up in fall 2025, so the benefits will be seen very soon.

F. Duration of Benefits:

- a. This project will provide long-term benefits for both Bluff Lake and the surrounding areas.

G. Non-NRDs Match:

- a. Currently the NRD request is 46% of the project cost, with 54% provided as cash and in-kind match (majority cash, only \$15,000 in-kind)
- b. In addition, this project is leveraged with the rest of our Campus Improvements Project which in total will cost Bluff Lake over \$8,500,000.

H. Protection of Implemented Project:

- a. Bluff Lake owns the project property

I. Project Alignment with Regional Planning:

- a. Bluff Lake works closely with other land management agencies such as the City and County of Denver, City and County of Aurora, Sand Creek Regional Greenway Partnership, and Rocky Mountain Arsenal National Wildlife Refuge. We are also closely connected to organizations such as Metro DNA and The Nature Conservancy.

J. Public Access:

- a. It is written into our property deed that our site remains free and open to the public year-round.

**Rocky Mountain Arsenal NWR Recovery Fund
Project Proposal
Bluff Lake Habitat Restoration and Stormwater Management Systems Improvements
Project
July 2024**

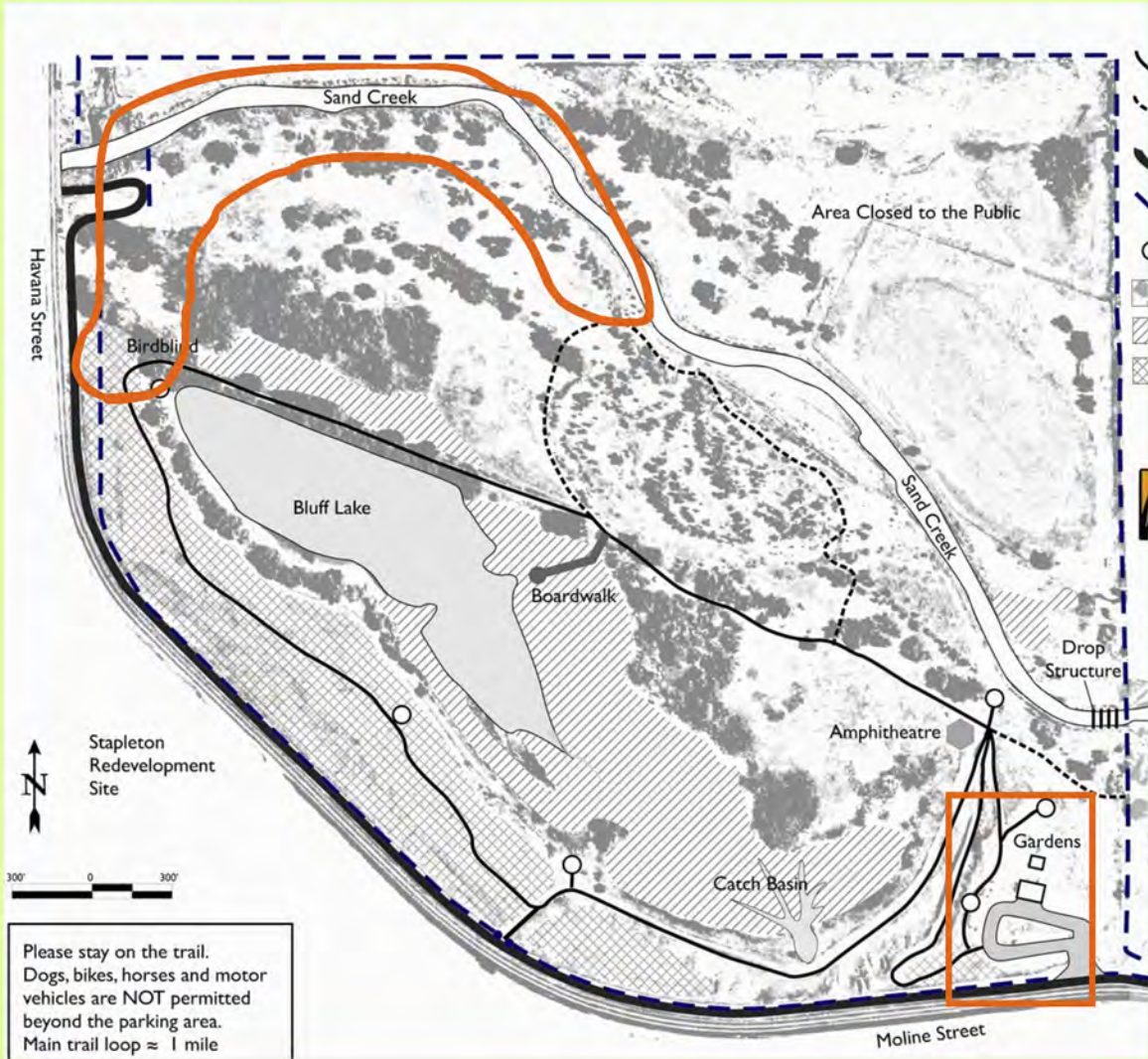
List of Attachments

- 1 Map of Bluff Lake Nature Center and Site Context
- 2-3 Campus Improvements Project Overall Plan and Scope
- 4-13 Site Development Plan Initial Submission
 - 4: Overall Site Plan showing elevations, utilities, etc
 - 5: Overview of Initial Planned Stormwater Management Strategy
 - 6-11: Irrigation Details
 - 12: Planting Plan
 - 13: Seed Mix Schedule and Planting Schedule
- 14 Letter of Support: Superbloom Landscape Architect
- 15 Letter of Support: US Fish & Wildlife: Colorado Front Range National Wildlife Refuge Complex
- 16-17 Proof of NonProfit Status
- 18-19 Bluff Lake- Rachel Hutchens Resume
- 20 Superbloom-Stacy Passmore Resume
- 21 Superbloom- Diane Lipovsky Resume
- 22 Elevation Civil- Lincoln Thomas Resume

BLUFF LAKE NATURE CENTER PROXIMITY TO ROCKY MOUNTAIN ARSENAL NATIONAL WILDLIFE REFUGE

Project Goal: Protect and enhance 123-acres of vital riparian, wetland, and prairie habitat along the Sand Creek corridor

ParkServe Mapping Tool
Trust for Public Land



“Northwest Restoration” Project
Location appx 10 acres with 0.3 miles adjacent to Sand Creek

“Primary Project”
Location appx 2.5 acres

Bluff Lake Nature Center

BLUFF LAKE PROPOSED PLAN PLAN PARA BLUFF LAKE

MATERIALS

- Low-Carbon Structural Materials
- Low-Carbon Finishes
- Low-Carbon Glazing & Lighting
- Low-Carbon HVAC Systems
- Low-Carbon Water Systems
- Low-Carbon Landscaping

JUSTICE

- Access
- Health

WATER

- Low Flow Fixtures
- Drought-Resistant Planting
- Stormwater Planting

CARBON

- Energy Star Appliances
- Energy Star HVAC Systems
- Energy Star Lighting
- Energy Star Water Heaters
- Energy Star Dishwashers
- Energy Star Refrigerators

**A Sustainable Building Within Budget
Un Edificio Sostenible Dentro del Presupuesto**



View from MLK
Vista desde MLK



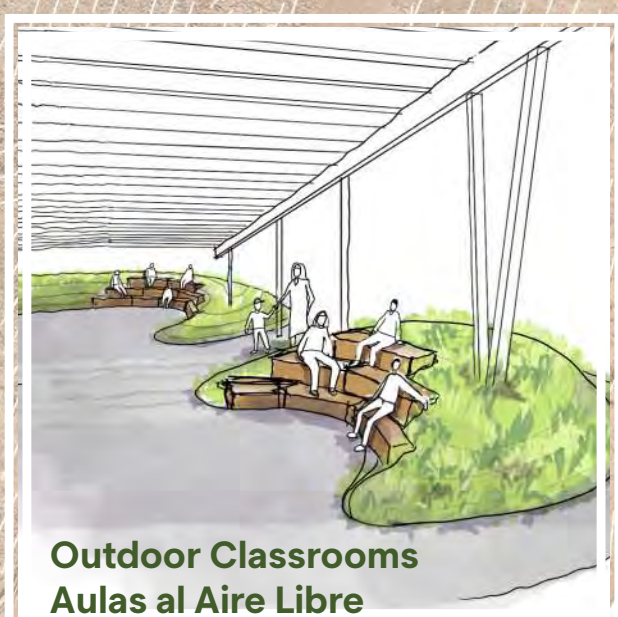
View from Parking
Vista desde Estacionamiento



Gateway
Puerta



Classroom
Aula



Outdoor Classrooms
Aulas al Aire Libre

Existing Hawks Nest
Nido de Halcón Existente

Rain Garden
Jardín de Lluvia

Proposed ADA Circulation
Updates
Sendero Accesible Propuesto

Existing Fire Pit
Hoyo de Fuego
Existente

Outdoor Workshop
Taller al Aire Libre

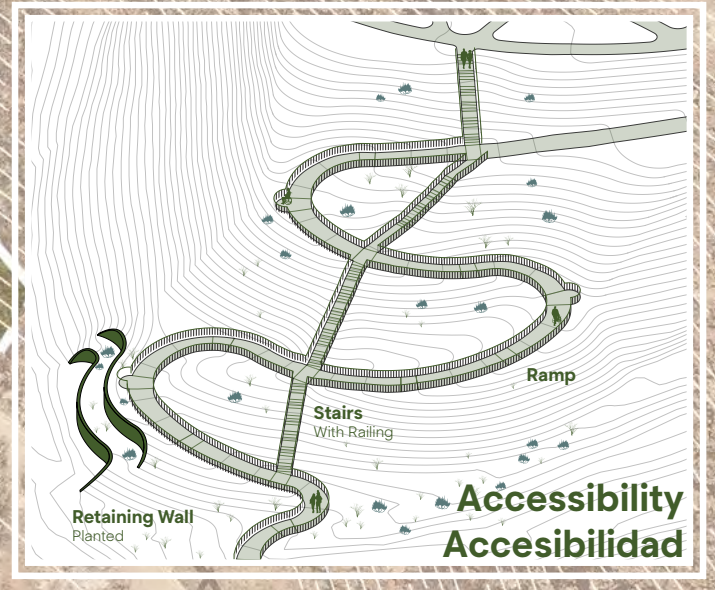
Pollinator Garden
Jardín para
Polinizadores

Bike Racks
Portabicicletas

Proposed Parking Lot
Estacionamiento Propuesto



Context
Contexto



Accessibility
Accesibilidad

* concept design, subject to change
* diseño conceptual, sujeto a cambios



Sand Creek Regional Greenway

M.L.K. Jr Blvd

SUPERBLOOM

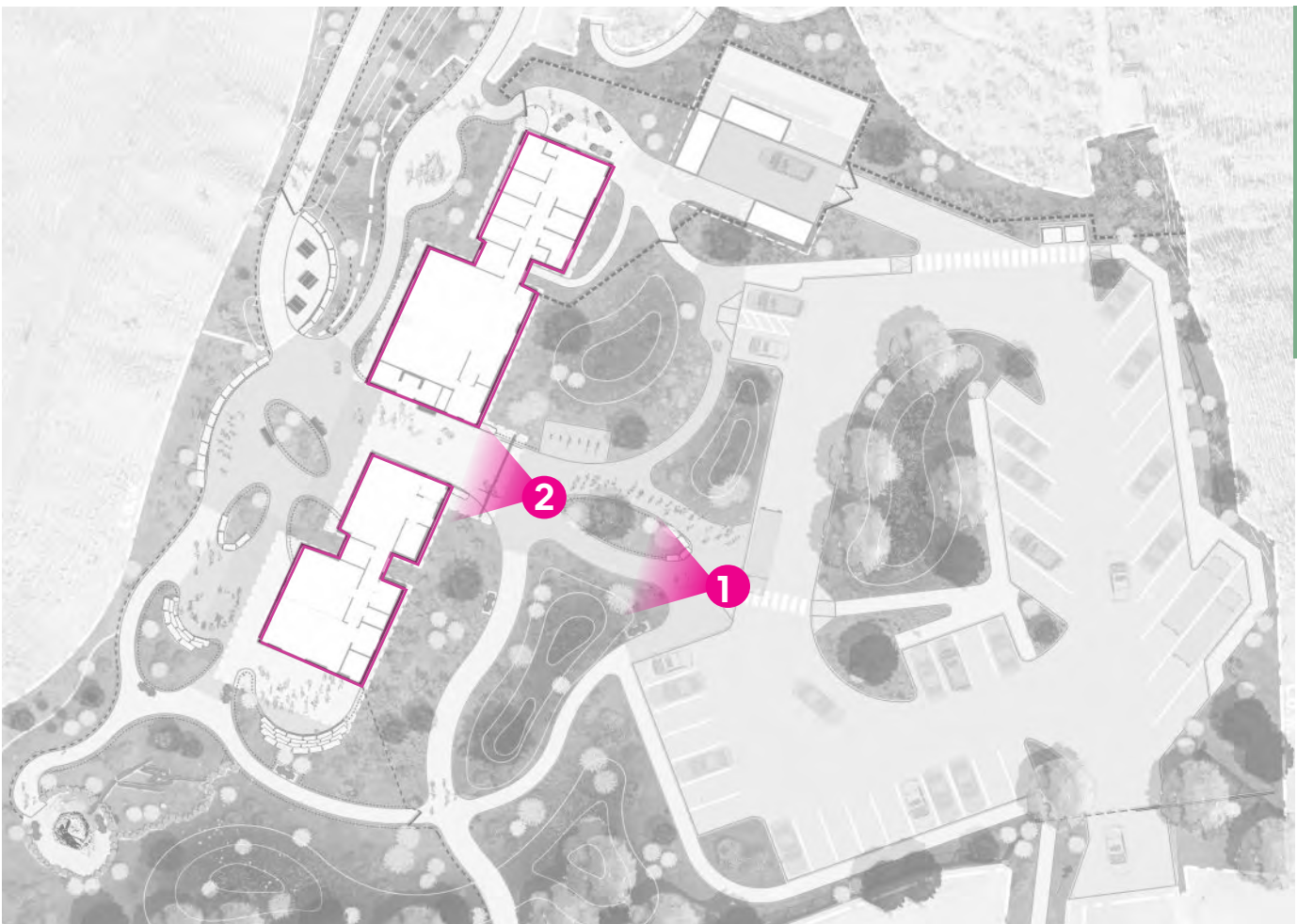
shApe
ARCHITECTURE

BLUFF
LAKE
NATURE
CENTER
Wildlife Refuge - Outdoor Classroom

Bluff Lake Nature Center

GATEWAY TO NATURE

PUERTA DE ENTRADA A LA NATURALEZA



2. Bluff Lake Nature Center | Administration Area + Conference Room



SUPERBLOOM

ARCHITECT
Shape Architecture Studio
23 Lincoln St / Ste 200
Denver, CO 80203

LANDSCAPE ARCHITECT
Superbloom
23 Lincoln St / Ste 200
Denver, CO 80203

CIVIL ENGINEERING
Elevation Consulting Group, Ltd.
Denver, Colorado

STRUCTURAL ENGINEERING
Studio NYL
3461 Ringsby Ct / Unit 315
Denver, CO 80216

MEP ENGINEERING &
BUILDING ENVELOPE
Resource Engineering Group
426 Bellview Ave / Suite 201
Crested Butte, CO 81224

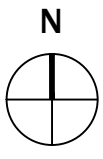
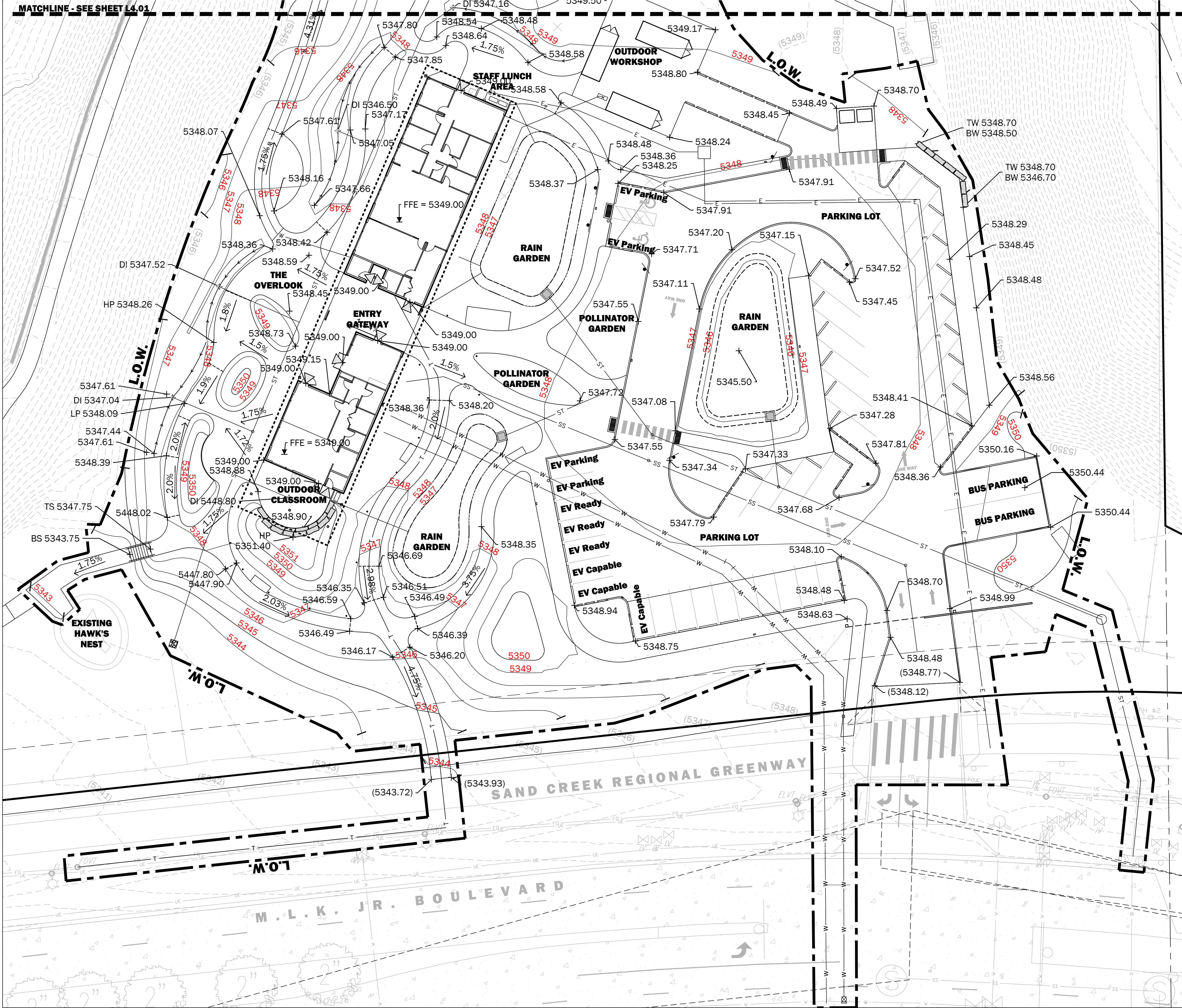
LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO

GRADING LEGEND

- 5348.36 Proposed Spot Elevation
- (5348.36) Existing Spot Elevation
- DI 5347.50 Drain Inlet Spot Elevation
- BS 5331.00 Bottom of Stair / Top of Stair Elevation
- TW 5331.00 Top of Wall / Bottom of Wall Elevation
- BW 5329.00 Bottom of Wall Elevation
- FFE = 5349.00 Finish Floor Elevation
- Grade Break / Landing at Ramp
- 1.5% Proposed Slope
- 5348 Proposed Contour
- (5310) Existing Contour
- Property Line
- Limit of Zone AE: Floodway
- Matchline
- Limit of Work

LEGEND

- EB1 EB1 Light Fixture Foundation
- EP1 Lighting Fixture Type EP1
- EP2 Lighting Fixture Type EP2
- EP3 Lighting Fixture Type EP3
- ED1 Lighting Fixture Type ED1
- EW1 Lighting Fixture Type EW1
- Sign
- Vegetated Drainage Swale
- Property Line
- Parking Setback, 30' Per OS-B Zoning
- Building Setback, 20' Per OS-B Zoning
- Limit of Zone AE: Floodway
- Matchline
- Limit of Work
- E Proposed Underground Power
- W Proposed Water Line
- SS Proposed Sanitary Sewer
- ST Proposed Storm
- T Proposed Telecommunication Line



DATE:	DESCRIPTION:
PROJECT:	BLUFF LAKE NATURE CENTER
SCALE:	AS NOTED
DRAWN BY:	
CHECKED BY:	
DATE:	3/29/24
SHEET NAME:	

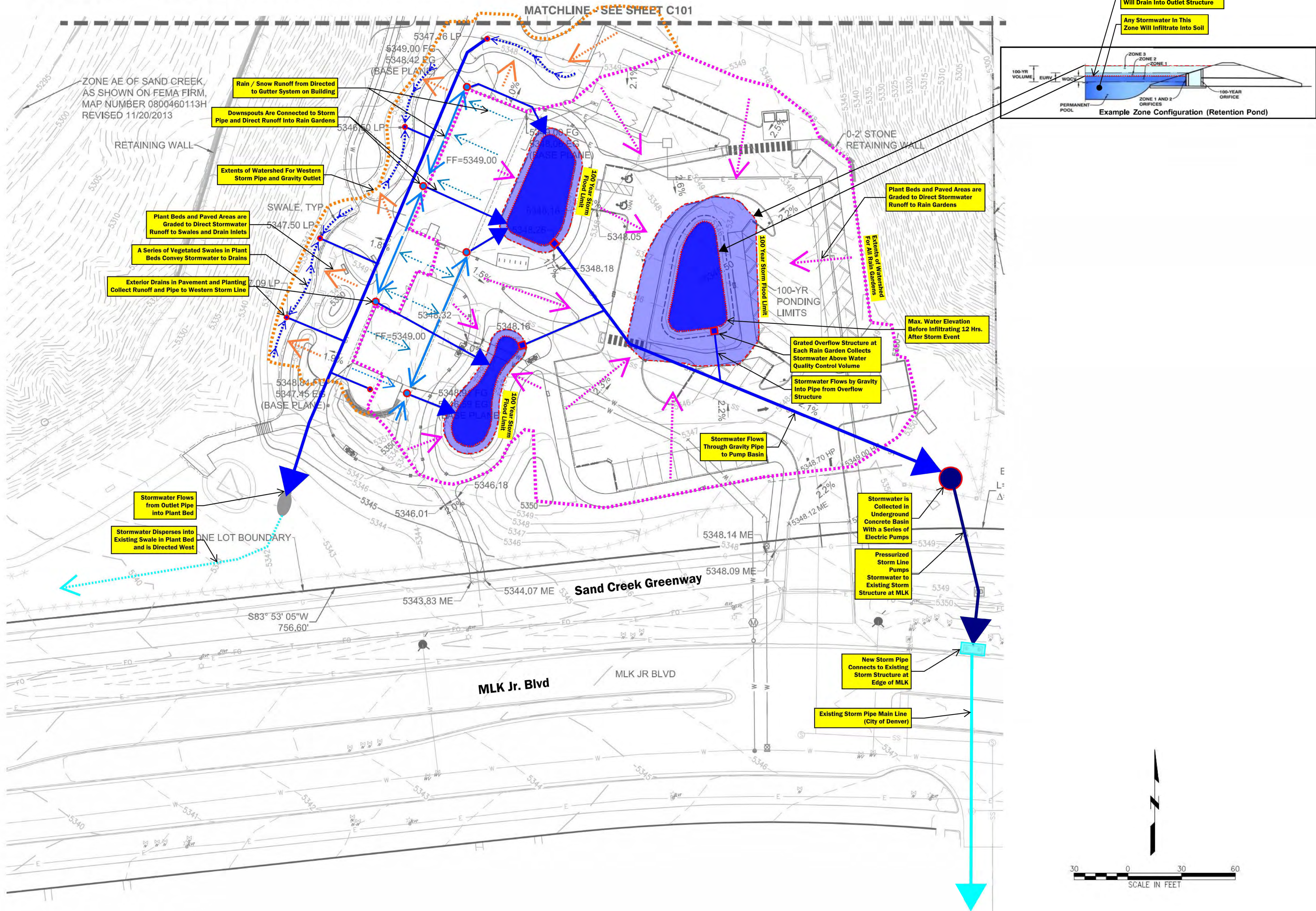
GRADING PLAN 1

SHEET NUMBER:

L4.00

PROJECT PHASE:
DESIGN DEVELOPMENT

Stormwater Management Strategy at Upper Landscape



LANDSCAPE ARCHITECT
Superbloom
23 Lincoln St / Ste 200
Denver, CO 80203

STRUCTURAL ENGINEERING
Studio NYL
3461 Ringsby Ct / Unit 315
Denver, CO 80216

LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO

IRRIGATION DEVELOPMENT DESIGN NOTES

- | | |
|----------------|---------------|
| ATION SCHEDULE | IR1.0 |
| ATION NOTES | IR1.0 |
| ATION PLANS | IR1.1 - IR1.2 |
| ATION DETAILS | IR1.3 - IR1.6 |

DRAWINGS AND BASE INFORMATION - ALL BASE AND PLANTING INFORMATION HAVE BEEN PROVIDED BY SUPERBLOOM. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY HYDROSYSTEMS* KDI OF ANY DISCREPANCIES BETWEEN THE UTILITY OR PLANTING PLANS AND THE IRRIGATION PLAN. IF CONTRACTOR FAILS TO NOTIFY HYDROSYSTEMS* KDI AND MAKES CHANGES TO THE IRRIGATION SYSTEM DESIGN, THEY ASSUME ALL COSTS AND LIABILITIES FOR ANY ADJUSTED FIELD CHANGES. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS. CONTACT IRRIGATION CONSULTANT FOR CURRENT SPECIFICATIONS IF NOT PROVIDED.

2. SYSTEM PRESSURE - HYDROSYSTEMS* KDI HAS CONTACTED THE LOCAL WATER DISTRICT THAT SERVES THIS SITE AND THEY HAVE BEEN TOLD THAT THE STATIC WATER PRESSURE IN THIS AREA SHOULD BE 75 PSI MIN. (TBD). THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY PRESSURE PRIOR TO COMMENCING ANY CONSTRUCTION AND NOTIFY HYDROSYSTEMS* KDI OF ANY VARIANCE FROM THE STATED PRESSURE IMMEDIATELY. WRITTEN DOCUMENTATION OF PRESSURE TEST AND RESULTS SHALL BE PROVIDED TO HYDROSYSTEMS* KDI AT CONSTRUCTION ONSET. IF CONTRACTOR FAILS TO FIELD VERIFY PRESSURE AND/OR NOTIFY HYDROSYSTEMS* KDI OR ANY VARIATIONS FROM THIS PRESSURE, THEN THEY ASSUME ALL CONSTRUCTION AND ENGINEERING COSTS ASSOCIATED WITH SYSTEM MODIFICATIONS REQUIRED TO ACCOMMODATE ACTUAL SITE PRESSURE. THIS SYSTEM HAS BEEN DESIGNED FOR A REQUIRED STATIC PRESSURE OF 75 PSI MINIMUM.

3. IRRIGATION SYSTEM OPERATION INTENT - THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO IRRIGATE THE ESTABLISHED LANDSCAPE WITHIN A SIX NIGHT PER WEEK, EIGHT HOUR PER NIGHT WATERING WINDOW. ESTABLISHMENT WATERING WILL REQUIRE UP TO TWICE AS MUCH IRRIGATION FOR A FOUR TO SIX WEEK PERIOD. THE DESIGN IS BASED ON THE FOLLOWING PROJECTED WEEKLY APPLICATION RATES AFTER ESTABLISHMENT. THESE FIGURES ARE BASED ON AN ASSUMED AVERAGE WEATHER DATA AND WILL NEED TO BE ADJUSTED DUE TO SEASONAL CHANGES AND WEATHER CONDITIONS ABOVE AND BELOW THE AVERAGE VALUES UTILIZED.

	1.94" PER WEEK PEAK SEASON
TURF	0.78" PER WEEK PEAK SEASON
ORNAMENTAL PLANTINGS	0.78" PER WEEK PEAK SEASON
NATIVE SEED MIXES	0.78" PER WEEK PEAK SEASON (TWO SEASONS)

NOTE: IT IS THE INTENT OF THIS DESIGN THAT NATIVE AREAS WOULD ONLY BE IRRIGATED FOR ESTABLISHMENT. SYSTEM WILL REMAIN FOR USE DURING YEARS WITH LESS THAN NORMAL RAINFALL.

6. EQUIPMENT INSTALLATION - IT IS THE INTENT OF THIS DESIGN THAT ALL IRRIGATION EQUIPMENT BE INSTALLED WITHIN PROPERTY LIMITS AND WITHIN LANDSCAPED AREAS. INSTALLATION SHALL BE COORDINATED WITH OTHER UTILITY WORK. ALL OTHER UTILITIES SHALL TAKE PRECEDENCE OVER IRRIGATION LOCATION. ANY EQUIPMENT OTHER THAN VALVE BOXES OR SLEEVING THAT CONTAINS PIPE OR WIRES SHOWN OUTSIDE OF THESE LIMITS IS SHOWN IN THAT LOCATION FOR GRAPHICAL CLARITY ONLY. ALL VALVE BOXES SHALL BE INSTALLED A MINIMUM OF 2'-0" FROM EDGE OF ANY PAVED SURFACES UNLESS SPECIFICALLY INDICATED ON PLANS. BOXES INSTALLED IN OPEN TURF AREAS SHALL BE KEPT TO EDGES AND STAKED FOR REVIEW IF ALONG HIGH TRAFFIC AREAS. ALL VALVE BOXES SHALL BE PLACED A MINIMUM OF 3'-0" FROM THE CENTERLINE OF ANY DRAINAGE SHALL. ALL VALVE BOXES WITHIN PAVEMENT SHALL BE TIER 1 RATED BOXES FOR HEAVY DUTY NON-DELIBERATE TRAFFIC. BOX LID COLOR SHALL MATCH ADJACENT MATERIALS, I.E. GREEN IN TURF, TAN IN WOOD MULCH, GRAY IN STONE MULCH, PURPLE FOR RECLAIMED WATER SYSTEMS (IF REQUIRED). REFER TO LANDSCAPE PLANS FOR MATERIAL COLORS AND TYPES. ALL BOXES SHALL BE INSTALLED TO BE FLUSH WITH GRADE AND IN AN ORDERLY MANNER. WHERE MORTAR PAVING LIDS ARE INSTALLED ABOVE BOXES, IRRIGATION BOX WITH LID SHALL BE LOWERED TO ACCOMMODATE PAVING LID. REFER TO LANDSCAPE FOR ADDITIONAL INFORMATION, TO BE INSTALLED PER MANUFACTURE RECOMMENDATIONS.

7. PIPING INSTALLATION - IRRIGATION PIPING SHALL MAINTAIN A MINIMUM DISTANCE FROM BUILDING FOUNDATIONS OF 5 FEET OR AS DESCRIBED IN SOILS REPORT, WHICHEVER IS GREATER. NO SPRAY IRRIGATION SHALL OCCUR WITHIN 10 FEET OF THE FOUNDATION. NO DRIP IRRIGATION SHALL OCCUR WITHIN 5 FEET OF THE FOUNDATION UNLESS SOIL MOISTURE SENSORS ARE INSTALLED ON VALVES SERVING THESE AREAS. ALL IRRIGATION PIPING AND EMISSION DEVICES LOCATED ON TOP OF OR WITHIN BUILDING STRUCTURE SHALL CONFORM TO WATERPROOFING CONSULTANT REQUIREMENTS. PIPE ROUTING MAY BE SHOWN WITHIN THESE DISTANCES FOR GRAPHICAL CLARITY ONLY.

8. MANUAL DRAIN VALVES - CONTRACTOR TO INSTALL ONE MANUAL DRAIN VALVE ON PRESSURE SUPPLY LINE DIRECTLY DOWNSTREAM OF EACH PRESSURE SENSING AND AT ALL LOW POINTS AND DEAD ENDS OF PRESSURE SUPPLY PIPING TO ENSURE COMPLETE DRAINAGE OF SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THESE LOCATIONS IN-FIELD AND INSTALLATION LOCATIONS SHALL BE NOTED ON AS-BUILTS.

9. POP-UP SPRAY NOZZLES - CONTRACTOR TO INSTALL PLASTIC NOZZLES ON ALL POP-UP SPRAY HEADS. INSTALL 15 SERIES NOZZLES ON ALL HEADS SPACED AT 12' TO 14'. INSTALL 12 SERIES NOZZLES ON ALL HEADS SPACED 10' TO 11'. INSTALL 10 SERIES NOZZLES ON ALL HEADS SPACED AT 8' TO 9'. INSTALL 8 SERIES NOZZLES ON ALL HEADS SPACED AT 6' TO 7'. VARIABLE ARC NOZZLES SHOULD BE UTILIZED ADJACENT TO CURVILINEAR SHRUB BEDS OR FOR ANY ANGLES THAT ARE NOT A STANDARD NOZZLE ANGLE.

10. DRIP IRRIGATION - REFER TO IRRIGATION DETAIL SHEET FOR DRIP EMITTER QUANTITIES / DRIP TUBING FLOW AND PLACEMENT.

11. UNLABELLED PIPING - ALL UNLABELLED LATERAL PIPING SHALL BE 1" MINIMUM UNLESS OTHERWISE NOTED.

12. SLEEVING - ALL SLEEVING UNDER PAVED SURFACES SHOWN ON PLANS IS BY CONTRACTOR UNLESS OTHERWISE NOTED. SLEEVING SHALL BE INSTALLED IN THE SIZES AND QUANTITIES SHOWN ON PLANS OR BASED ON THE SCHEDULE BELOW. WHERE SLEEVES ARE SHOWN, BUT NOT LABELED, FOLLOW THE SCHEDULE BELOW. ALL MAINLINE CONTROL WIRES AND DRIP LINES UNDER PAVED SURFACES ARE TO BE INSTALLED IN SLEEVING. ALL MAINLINE SLEEVE LOCATIONS TO INCLUDE A SEPARATE WIRE SLEEVE.

SLEEVED PIPE SIZE / WIRE QUANTITY	REQUIRED SLEEVE SIZE & QUANTITY
3/4" - 1 1/4" PIPING	2" PVC (1)
1 1/2" - 2" PIPING	4" PVC (1)
2 1/2" - 3" PIPING	6" PVC (1)
COMMUNICATION CABLE	2" PVC (1)

13. 2-WIRE SYSTEM NOTES - CONTRACTOR SHALL INSTALL ALL TWO-WIRE COMPONENTS PER MANUFACTURER'S RECOMMENDATIONS AND STANDARDS.

13.1. CONTRACTOR SHALL USE ONLY MANUFACTURED 2-WIRE DECODER CABLE (SEE SCHEDULE FOR SPECIFIC 2-WIRE CABLE).

13.2. ONLY USE SINGLE STATION DECODERS (SEE SCHEDULE FOR SPECIFIC MODEL).

13.3. ONLY USE SENSOR DECODER FOR FLOW SENSOR (SEE SCHEDULE FOR SPECIFIC MODEL) IF INDICATED ON PLANS.

13.4. LOOP 5' OF 2-WIRE DECODER CABLE INTO ALL VALVE BOXES (WITH DECODERS AND SPLICES) FOR MAINTENANCE.

13.5. LOOP 2' OF 2-WIRE DECODER CABLE AS AN EXPANSION LOOP AT ALL CHANGES OF DIRECTION.

13.6. USE ONLY 3M DBR-6 WATERPROOF CONNECTORS ON ALL WIRE SPLICES AND ALL WIRE SPLICES ARE TO BE MADE WITHIN A VALVE BOX WITH CONTROL VALVES OR A SEPARATE 10" ROUND VALVE BOX FOR WIRE SPLICES.

13.7. INSTALL SURGE PROTECTOR RODS OR PLATES 8 LF. PERPENDICULARLY FROM VALVES, DECODERS, AND COMMUNICATION WIRE. WHERE 8 LF IS NOT AVAILABLE, REFER TO ASIC GUIDELINES FOR PLATE LAYOUT.

13.8. GROUNDING SHALL BE IN AN IRRIGATED AREA.

13.9. GROUND ALL DECODERS AND DECODER WIRE A MINIMUM OF EVERY 1000' OF WIRE OR EVERY 12TH DECODER AND AT ALL ENDS OF 2-WIRE DECODER CABLE RUN.

14. ADJUSTMENT - CONTRACTOR SHALL FINE TUNE/ADJUST THE IRRIGATION SYSTEM TO REDUCE/AVOID OVERSPRAY ONTO HARD SURFACES BY ADJUSTING NOZZLE DIRECTION AND NOZZLE RADIUS.

15. PLANS AND SPECIFICATIONS - CONTRACTOR RESPONSIBLE TO ENSURE WORK CONFORMS TO PLANS AND SPECIFICATIONS. AT ONSET OF CONSTRUCTION, VERIFY PLANS ARE CURRENT. WHERE REQUIRED BY CITY OR TOWN, CONTRACTOR SHALL CONSTRUCT ONLY OFF CITY OR TOWN STAMPED PLANS. REVISIONS TO CITY OR TOWN STAMPED PLANS SHALL CONFORM TO CITY OR TOWN FIELD CHANGE PROCEDURES AND DOCUMENTATION.

16. SIMULTANEOUS ZONE OPERATION - THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO OPERATE MULTIPLE ZONES SIMULTANEOUSLY BASED ON INDIVIDUAL ZONE FLOW. THE DESIGN IS INTENDED TO OPERATE MULTIPLE VALVES, UP TO THE MAXIMUM FLOW IN THE POINT OF CONNECTION NOTE. REFER TO CONTROLLER SPECIFICATION FOR MAXIMUM SIMULTANEOUS VALVE COUNT.

17. BACKFLOW DEVICES: ALL CONNECTION COMPONENTS AND BACKFLOW DEVICES SHALL BE LEAD-FREE. CONTRACTOR SHALL CONTACT WATER SERVICE PROVIDER FOR ANY ADDITIONAL REQUIREMENTS REGARDING BACKFLOW TESTING.

18. WATER BUDGETS AND PROJECTIONS - HYDROSYSTEMS-KDI HAS BASED THE IRRIGATION DESIGN AND THE ASSOCIATED PROJECTED WATER USE UPON SUCH FACTORS AS CITY OR WATER DISTRICT IMPOSED REQUIREMENTS, PUBLISHED PLANT SPECIES WATER NEEDS, SELECTED IRRIGATION METHOD EFFICIENCIES AS REPORTED BY INDEPENDENT TESTING FACILITIES, HISTORICAL WEATHER DATA FOR THE PROJECT LOCATION, AND PROPER MAINTENANCE PROCEDURES. HYDROSYSTEMS* KDI IS NOT RESPONSIBLE, AND ACCEPTS NO RESPONSIBILITY, FOR THE ACTUAL WATER USAGE VARIATION THAT IS A RESULT OF FIELD MODIFICATIONS TO THE SYSTEM NOT MATCHING CONSTRUCTION DOCUMENTS, IMPROPER MAINTENANCE, WASTE DUE TO SYSTEM DAMAGE OR VANDALISM, OR WEATHER CONDITIONS THAT DEVIATE FROM PUBLISHED 30 YEAR HISTORICAL AVERAGES.

19. PRESSURE TESTING - CONDUCT MAINLINE TEST IN PRESENCE OF CONSULTANT. ARRANGE FOR PRESENCE OF CONSULTANT 48 HOURS IN ADVANCE OF TESTING. SUPPLY FORCE PUMP AND ALL OTHER TEST EQUIPMENT. COMPRESSED AIR SHALL NOT BE USED FOR PRESSURE TESTING SYSTEM.

19.1. AFTER BACKFILLING, AND INSTALLATION OF ALL CONTROL VALVES, FILL PRESSURE SUPPLY LINE WITH WATER, AND PRESSURIZE TO 40 PSI OVER THE DESIGNATED STATIC PRESSURE OR 120 PSI, WHICHEVER IS GREATER, FOR A PERIOD OF 2 HOURS.

19.2. LEAKAGE, PRESSURE LOSS - TEST IS ACCEPTABLE IF NO LOSS OF PRESSURE IS EVIDENT DURING THE TEST PERIOD.

20.3. LEAKS - DETECT AND REPAIR LEAKS.

20.4. RETEST SYSTEM UNTIL TEST PRESSURE CAN BE MAINTAINED FOR DURATION OF TEST.

20.5. BEFORE FINAL ACCEPTANCE, PRESSURE SUPPLY LINE SHALL REMAIN UNDER PRESSURE FOR A PERIOD OF 48 HOURS.

20.6. PRESSURE TEST SHALL BE SCHEDULED AND PASSED PRIOR TO SCHEDULING OF SUBSTANTIAL COMPLETION WALK-THROUGH.

- 19.1 AFTER BACKFILLING, AND INSTALLATION OF ALL CONTROL VALVES, FILL PRESSURE SUPPLY LINE WITH WATER, AND PRESSURIZE TO 40 PSI OVER THE DESIGNATED STATIC PRESSURE OR 120 PSI, WHICHEVER IS GREATER, FOR A PERIOD OF 2 HOURS.
- 19.2 LEAKAGE, PRESSURE LOSS - TEST IS ACCEPTABLE IF NO LOSS OF PRESSURE IS EVIDENT DURING THE TEST PERIOD.
- 20.3 LEAKS - DETECT AND REPAIR LEAKS.
- 20.4 TEST SYSTEM UNTIL TEST PRESSURE CAN BE MAINTAINED FOR DURATION OF TEST.
- 20.5 BEFORE FINAL ACCEPTANCE, PRESSURE SUPPLY LINE SHALL REMAIN UNDER PRESSURE FOR A PERIOD OF 48 HOURS.
- 20.6 PRESSURE TEST SHALL BE SCHEDULED AND PASSED PRIOR TO SCHEDULING OF SUBSTANTIAL COMPLETION WALK-THROUGH.

△	DATE:	DESCRIPTION:
PROJECT:		

PROJECT:

**BLUFF LAKE NATURE
CENTER**

SCALE:	AS NOTED
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RAWN BY:	KJD
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DATE:	3/29/24
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SHEET NAME:

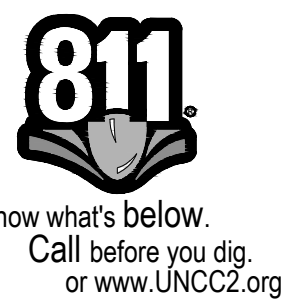
IRRIGATION NOTES & SCHEDULE

SHEET NUMBER: _____

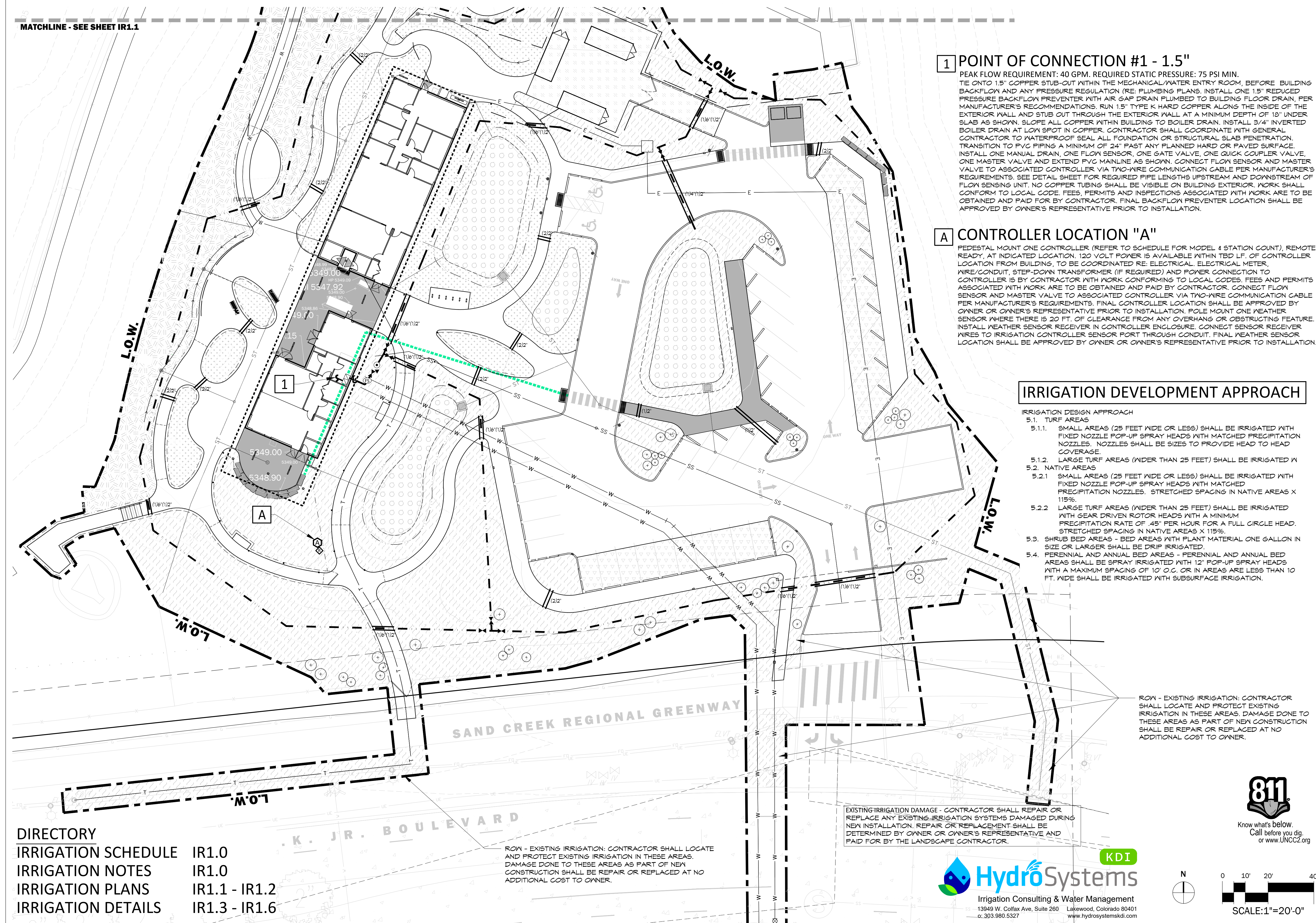
IR1.0

PROJECT PHASE:

**DESIGN
DEVELOPMENT**



LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO



DATE:	DESCRIPTION:
PROJECT:	
BLUFF LAKE NATURE CENTER	
11255 E. M.L.K. JR BLVD. DENVER, CO 80238	
SCALE:	AS NOTED
DRAWN BY:	KJD
CHECKED BY:	JSB
DATE:	3/29/24
SHEET NAME:	

IRRIGATION PLAN

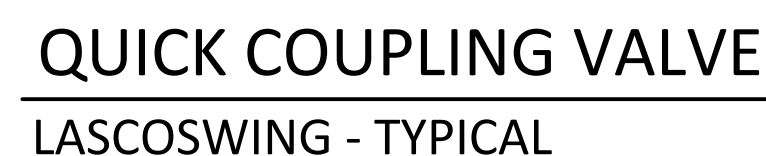
SHEET NUMBER:

IR1.2

PROJECT PHASE	
---------------	--

DESIGN DEVELOPMENT

LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO



SHEET NAME:

IR1.3

DESIGN DEVELOPMENT

IRRIGATION SCHEDULE	IR1.0
IRRIGATION NOTES	IR1.0
IRRIGATION PLANS	IR1.1 - IR1.2
IRRIGATION DETAILS	IR1.3 - IR1.6



LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO



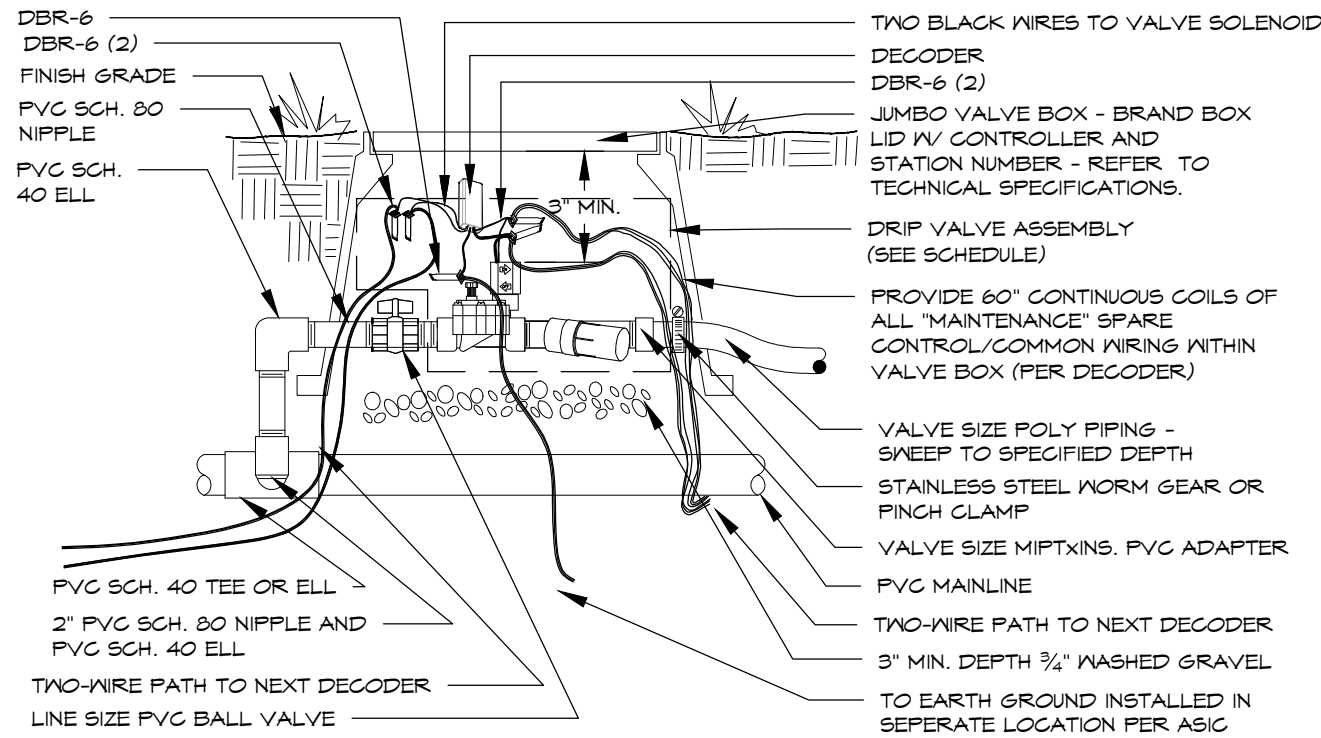
IRRIGATION SCHEDULE	IR1.0
IRRIGATION NOTES	IR1.0
IRRIGATION PLANS	IR1.1 - IR1.2
IRRIGATION DETAILS	IR1.3 - IR1.6



Know what's below.
Call before you dig.
or www.UNCC2.org

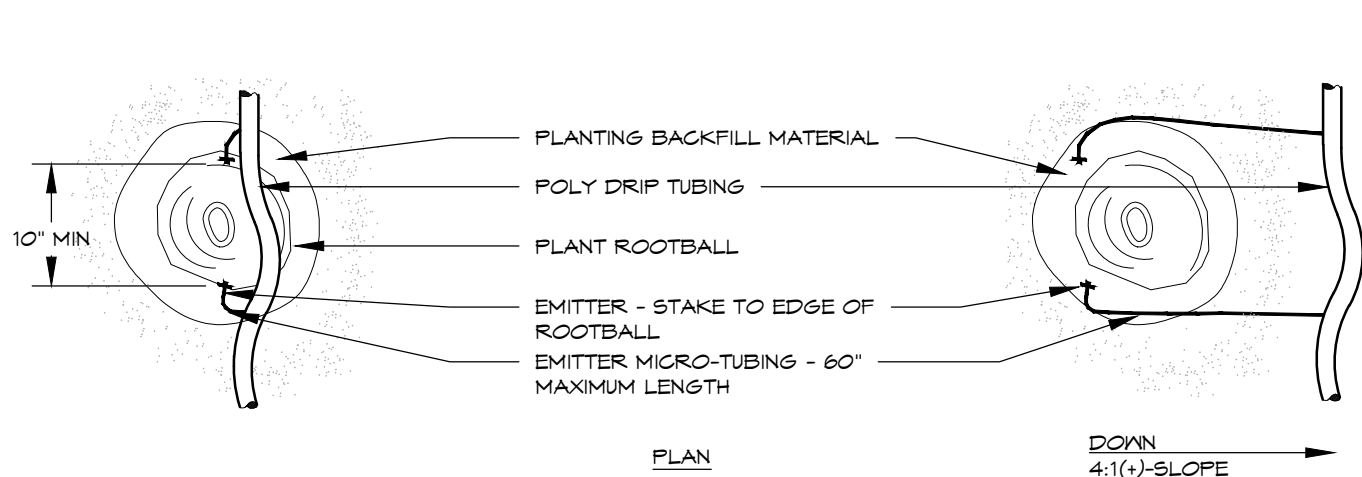
	DATE:	DESCRIPTION:
PROJECT:		
BLUFF LAKE NATURE CENTER		
11255 E. M.L.K. JR BLVD. DENVER, CO 80238		
SCALE:	AS NOTED	
DRAWN BY:	KJD	
CHECKED BY:	JSB	
DATE:	3/29/24	
SHEET NAME:		
IRRIGATION DETAILS		
SHEET NUMBER:		
IR1.4		
PROJECT PHASE:		
DESIGN DEVELOPMENT		

NOTE:
INSTALL ASSEMBLY TO REST ON GRAVEL SUMP. CONTAIN ENTIRE ASSEMBLY WITHIN BOX. NO VALVE BOX EXTENSIONS WILL BE ACCEPTED. PROVIDE 3'-4" CLEARANCE BETWEEN TOP OF CONTROL VALVE SOLENOID AND BOTTOM OF VALVE BOX LID. TOP OF VALVE BOX TO BE FLUSH WITH FINISH GRADE. VALVE BOX SHALL NOT REST ON DRIP TUBING.

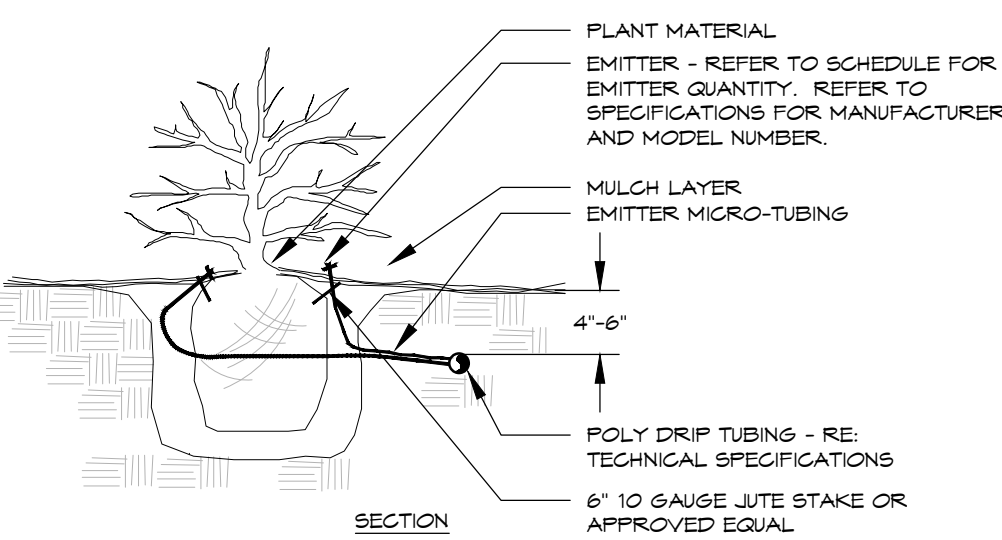


DRIP VALVE
TWO-WIRE SYSTEM - KIT - POLY PIPE

17

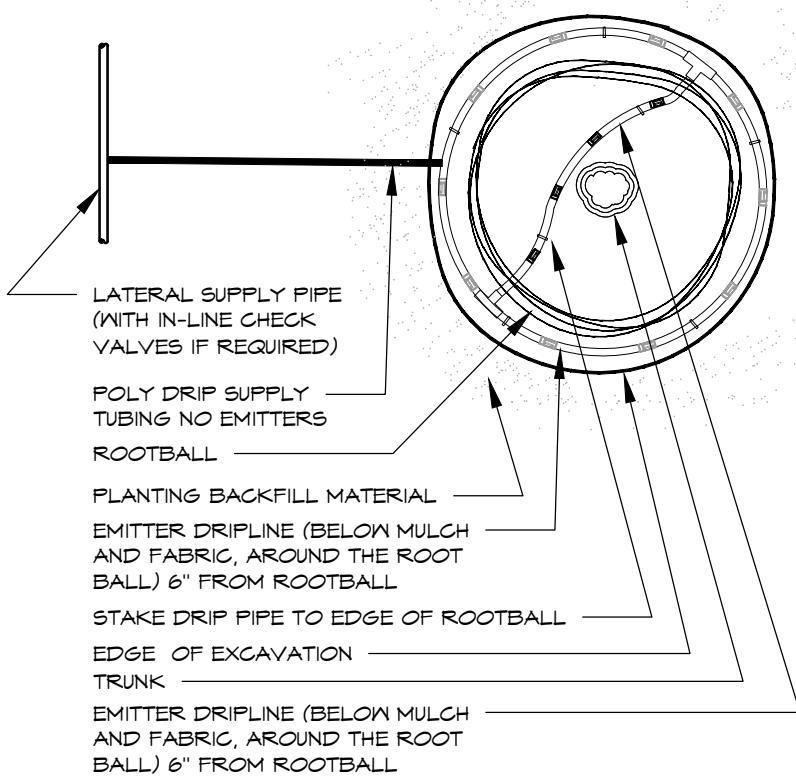


PLANT SIZE	EMITTER FLOW RATE	EMITTER QTY. AT MULCHED BED LOCATIONS	EMITTER QTY. AT NATIVE SEED LOCATIONS
1 - 2 GALLON MATERIAL	0.5 GPH	ONE EACH	ONE EACH
5 GALLON MATERIAL	0.5 GPH	TWO EACH	TWO EACH
1 1/2" CALIPER TREE	1.0 GPH	THREE EACH	FOUR EACH
2" CALIPER TREE	1.0 GPH	FOUR EACH	SIX EACH
2 1/2" CALIPER TREE	1.0 GPH	SIX EACH	EIGHT EACH
3" CALIPER TREE	1.0 GPH	EIGHT EACH	TEN EACH
3 1/2" CALIPER TREE	1.0 GPH	NINE EACH	ELEVEN EACH
4" CALIPER TREE	1.0 GPH	TEN EACH	TWELVE EACH
6 FT. CONIFEROUS TREE	1.0 GPH	FOUR EACH	SIX EACH
8 FT. CONIFEROUS TREE	1.0 GPH	SIX EACH	NINE EACH
10 FT. CONIFEROUS TREE	1.0 GPH	EIGHT EACH	TWELVE EACH
12 FT. CONIFEROUS TREE	1.0 GPH	TEN EACH	FOURTEEN EACH



- NOTES:
- INSTALL EMITTERS ON OPPOSING SIDES OF ROOTBALL. THREE OR MORE EMITTERS SHALL BE EQUALLY SPACED AROUND ROOT BALL.
 - EMITTERS ARE TO BE INSTALLED TO CLEAR SURFACE BY A MINIMUM OF 1" AND A MAXIMUM OF 2".
 - FLUSH ALL LINES THOROUGHLY, INCLUDING EMITTER MICRO-TUBING PRIOR TO EMITTER INSTALLATION.
 - IF PLANTING ON A 4:1 SLOPE OR STEEPER, INSTALL BOTH EMITTERS ON UPHILL SIDE OF ROOT BALL.
 - EMITTERS SHALL BE SELF-FLUSHING, PRESSURE COMPENSATING-TYPE UNLESS NOTED OTHERWISE WITHIN TECHNICAL SPECIFICATIONS.
 - DRIP VALVE ZONES ARE DESIGNED TO ACCOUNT FOR DIFFERENCES IN PLANT REQUIREMENTS (HYDROZONES) AND SUN EXPOSURE.
 - CONTRACTOR SHALL ENSURE HYDROZONES ARE VALVED SEPARATELY AS SHOWN ON PLAN.
 - SITE CONDITIONS MAY DICTATE THAT MULTIPLE SUN EXPOSURES ARE VALVED TOGETHER DURING THE DESIGN PROCESS. CONTRACTOR SHALL ADJUST EMITTER SCHEDULE AS FOLLOWS:
 - EMITTER QUANTITIES SHALL REMAIN THE SAME BUT EMITTER GALLONAGES SHALL BE DOUBLED FOR PLANTS WITH SOUTH AND WEST EXPOSURES.
 - EMITTER QUANTITIES AND GALLONAGE SHALL BE AS SHOWN IN SCHEDULE FOR PLANTS WITH NORTH AND EAST EXPOSURES.
 - PLANTINGS WITH NORTH AND EAST EXPOSURE SHALL DICTATE VALVE RUN-TIMES AND CONTRACTOR SHALL ADJUST SCHEDULING ACCORDINGLY.

18

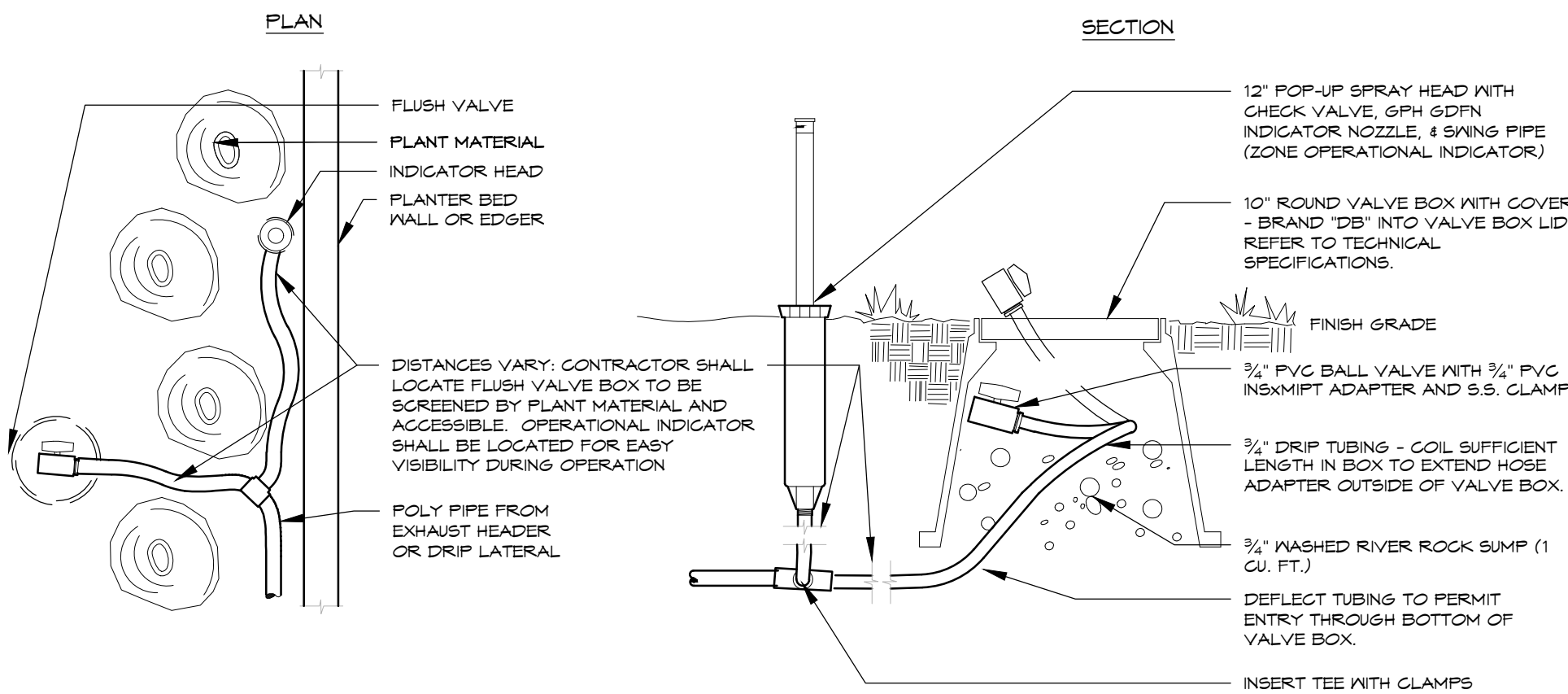


PLANT SIZE	MINIMUM EMITTER QTY. PER TREE
5 GALLON SHRUBS	THREE EACH
1 1/2" CALIPER TREE	EIGHT EACH
2" CALIPER TREE	TWELVE EACH
2 1/2" CALIPER TREE	SIXTEEN EACH
3" CALIPER TREE	TWENTY EACH
3 1/2" CALIPER TREE	TWENTY-TWO EACH
4" CALIPER TREE	TWENTY-FOUR EACH
6 FT. CONIFEROUS TREE	TWELVE EACH
8 FT. CONIFEROUS TREE	EIGHTEEN EACH
10 FT. CONIFEROUS TREE	TWENTY-FOUR EACH
12 FT. CONIFEROUS TREE	TWENTY-EIGHT EACH

- NOTES:
- EMITTERS SHALL BE EQUALLY SPACED AROUND ROOT BALL.
 - EMITTER FLOW RATE PER SCHEDULE.
 - DRIPLINE EMITTER SPACING PER SCHEDULE.

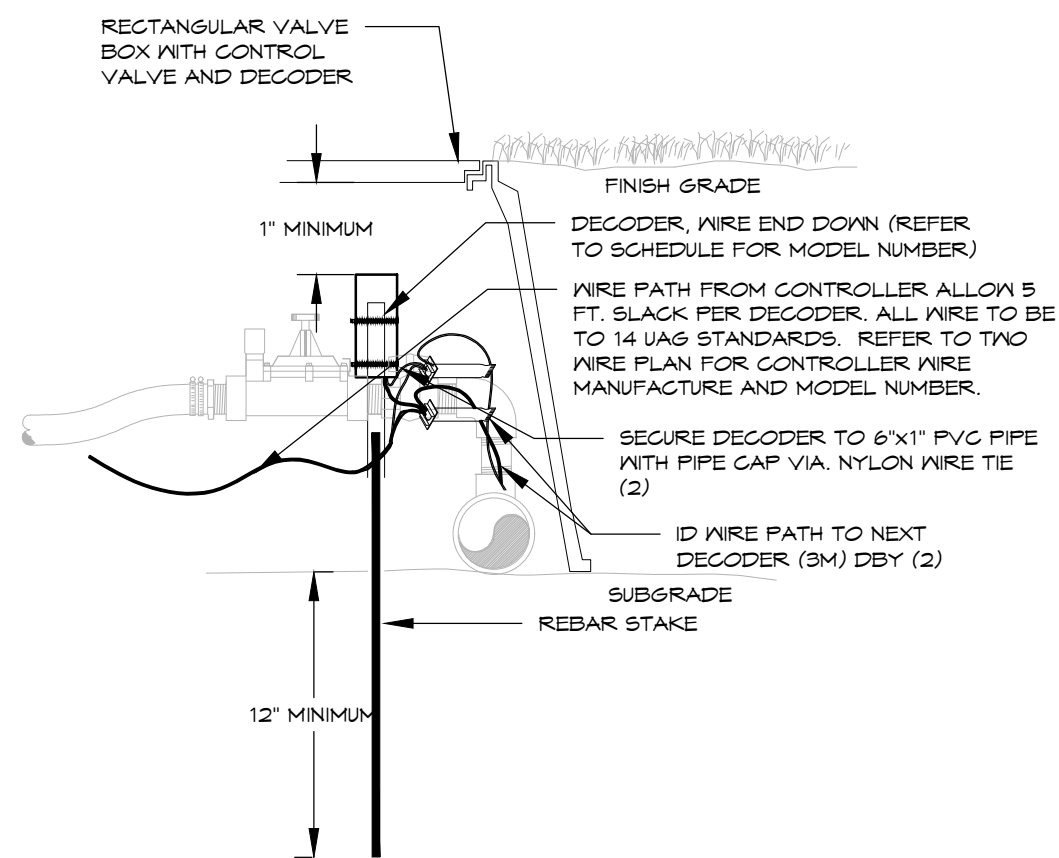
SUBSURFACE EMITTER TREE RING

19



DRIP FLUSH VALVE
WITH OPERATIONAL INDICATOR

20

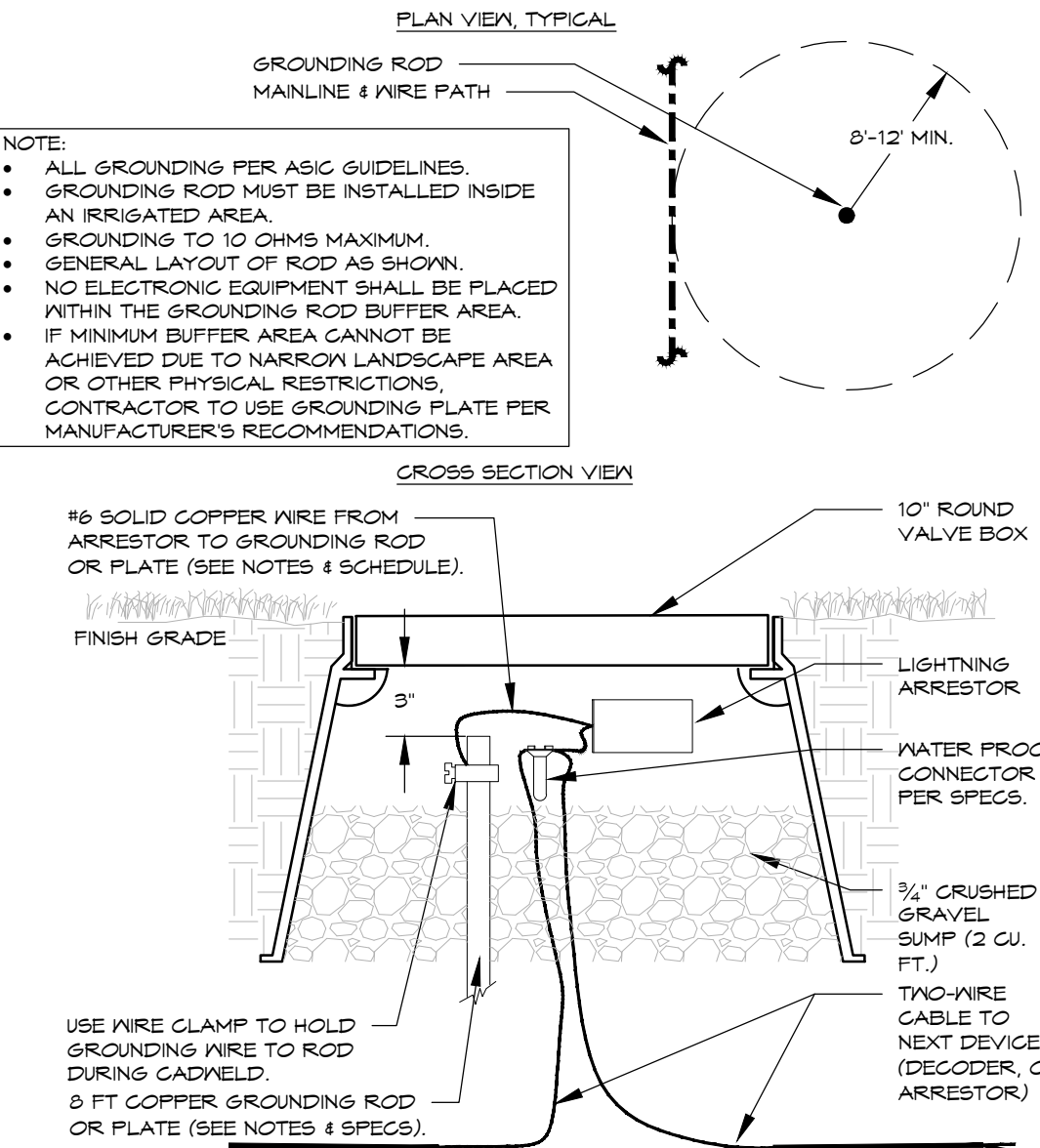


DECODER INSTALLATION
TWO-WIRE SYSTEM

21

DIRECTORY	
IRRIGATION SCHEDULE	IR1.0
IRRIGATION NOTES	IR1.0
IRRIGATION PLANS	IR1.1 - IR1.2
IRRIGATION DETAILS	IR1.3 - IR1.6

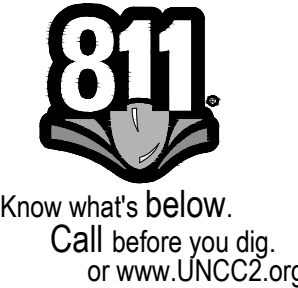
LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO



TWO-WIRE SYSTEM - TYPICAL

22

IRRIGATION SCHEDULE	IR1.0
IRRIGATION NOTES	IR1.0
IRRIGATION PLANS	IR1.1 - IR1.2
IRRIGATION DETAILS	IR1.3 - IR1.6



SHEET NUMBER:

IR1.6

PROJECT PHASE:

**DESIGN
DEVELOPMENT**

ARCHITECT
Shape Architecture Studio
23 Lincoln St / Ste 200
Denver, CO 80203

LANDSCAPE ARCHITECT
Superbloom
23 Lincoln St / Ste 200
Denver, CO 80203

CIVIL ENGINEERING
Elevation Consulting Group, Ltd.
Denver, Colorado

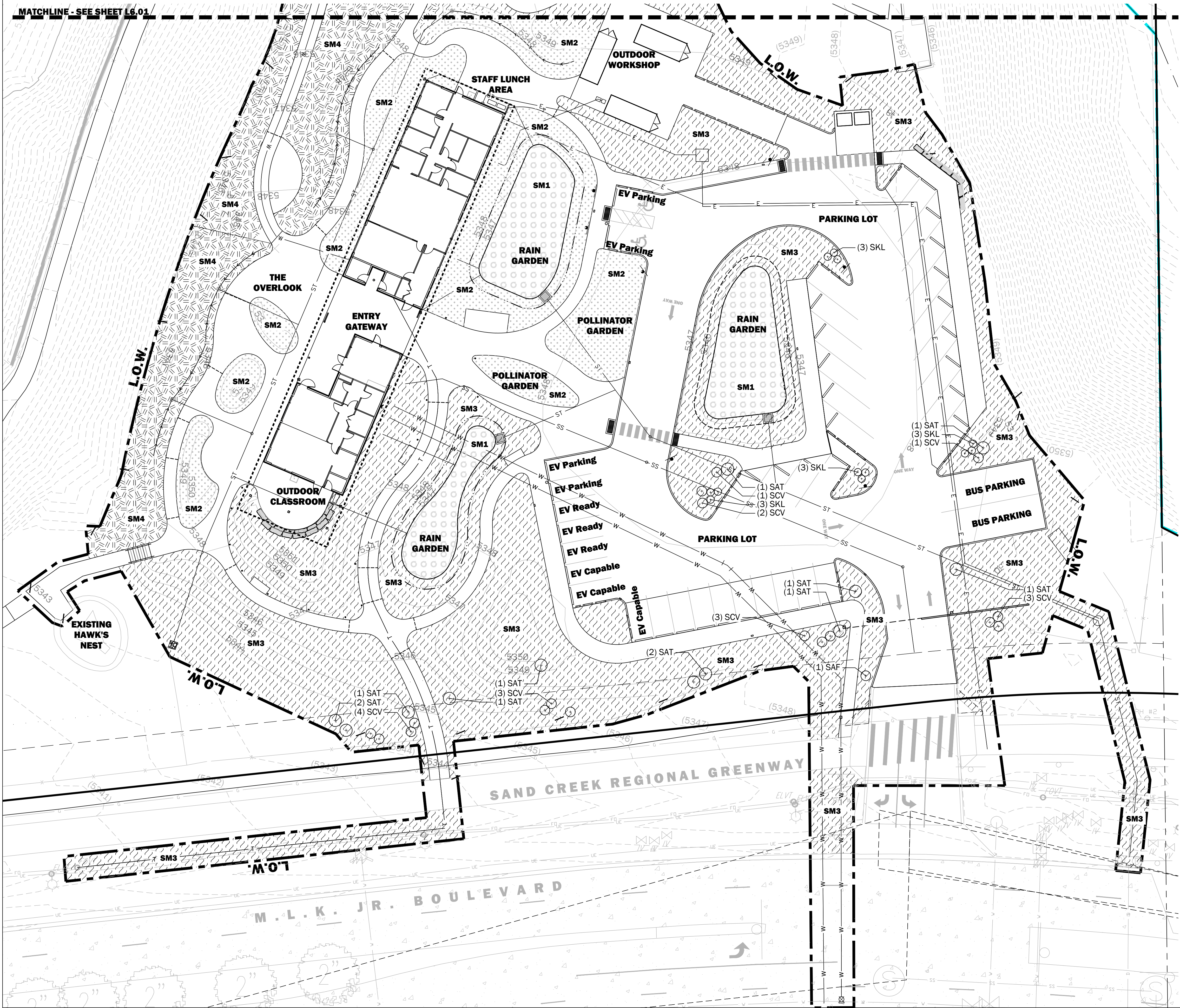
STRUCTURAL ENGINEERING
Studio NYL
3461 Ringsby Ct / Unit 315
Denver, CO 80216

MEP ENGINEERING &
BUILDING ENVELOPE
Resource Engineering Group
126 Bellview Ave / Suite 201
Crested Butte, CO 81224

LIGHTING DESIGN
Cullen Lighting Studio
Boulder, CO

	Rain Garden Seed Mix
	Pollinator Garden Seed Mix
	Sagebrush Steppe Seed Mix
	Xeric Meadow Seed Mix
	Proposed Deciduous Shrub
	Existing Tree to Remain, DBH Per Site Survey

• EB1		EB1 Light Fixture Foundation
• EP1		Lighting Fixture Type EP1
• EP2		Lighting Fixture Type EP2
• EP3		Lighting Fixture Type EP3
• ED1		Lighting Fixture Type ED1
• EW1		Lighting Fixture Type EW1
		Sign
		Vegetated Drainage Swale
		Property Line
		Parking Setback, 30' Per OS-B Zoning
		Building Setback, 20' Per OS-B Zoning
		Limit of Zone AE: Floodway
		Matchline
		Limit of Work
• E		Proposed Underground Power
• W		Proposed Water Line
• SS		Proposed Sanitary Sewer
• ST		Proposed Storm
• T		Proposed Telecommunication Line



DATE:	DESCRIPTION:
PROJECT:	
BLUFF LAKE NATURE CENTER	
11255 E. M.L.K. JR BLVD. DENVER, CO 80238	
SCALE:	AS NOTED
DRAWN BY:	
CHECKED BY:	
DATE:	3/29/24
SHEET NAME:	

PLANTING PLAN 1

SHEET NUMBER

L6.00

PROJECT PHASE: **DESIGN DEVELOPMENT**

SM2SM4

PLANTING SCHEDULE

<u>SYMBOL</u>	<u>CODE</u>	<u>QTY</u>	<u>COMMON NAME</u>	<u>BOTANICAL NAME</u>	<u>SIZE</u>	<u>CONTAINER</u>
<u>SHRUBS</u>						
⊖	SAF	1	False Indigo	Amorpha fruticosa	#5	Container
⊕	SAT	12	Big Sagebrush	Artemisia tridentata	#5	Container
⊖	SCV	17	Yellow Rabbitbrush	Chrysothamnus viscidiflorus	#5	Container
⊕	SKL	12	Winterfat	Krascheninnikovia ceratoides lanata	#3	Container

INTERIOR PARKING LOT LANDSCAPING REQUIREMENTS

Note: Bluff Lake Nature Center is requesting a Variance for Tree Planting in Parking Lot

Upland Species Present On Site and Due to the Additional Interior Parking Lot Landscaping Provided Above the Minimum Required.

[illegible]

	DATE:	DESCRIPTION:
PROJECT:		
BLUFF LAKE NATURE CENTER		
11255 E. M.L.K. JR BLVD. DENVER, CO 80238		
SCALE:		AS NOTED
DRAWN BY:		
CHECKED BY:		
DATE:		3/29/24
SHEET NAME:		
PLANTING SCHEDULES AND NOTES		
SHEET NUMBER:		
L6.02		
PROJECT PHASE:		
DESIGN DEVELOPMENT		



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Colorado Front Range National Wildlife Refuge Complex
6550 Gateway Road, Headquarters
Commerce City, Colorado 80022-4358



In Reply Refer to:
FWS/R6/NWRS/CFRNWRC

July 30, 2024

Dear Colorado Natural Resources Trustees:

The Colorado Front Range National Wildlife Refuge Complex, which manages the Rocky Mountain Arsenal National Wildlife Refuge, fully supports the Bluff Lake Nature Center's "Stormwater Management System Improvements Project," and specifically Bluff Lake's application to the Natural Resource Damages Fund (NRD). Bluff Lake has been a great partner to us over the past decade and has proven themselves to be successful managers of NRD funds as evidenced by their previous NRD grants which have established a year-round lake at Bluff Lake.

We are grateful to have partners like the Bluff Lake Nature Center who are equally devoted to sustainably managing natural areas along the Front Range of Colorado. With an increase in development in surrounding areas, Bluff Lake plays a vital role in the stormwater management of the northeast metro Denver area, and this project provides an opportunity to showcase the many different types of stormwater systems that can be used in an urban setting.

I am happy to visit with members of the grant evaluation committee if you have questions. I am easiest to reach via email, megan_klosterman@fws.gov or through my cell phone: 701-495-2389. Thank you for your consideration.

Sincerely,

MEGAN
KLOSTERMAN

Digitally signed by MEGAN
KLOSTERMAN
Date: 2024.07.30 12:45:44 -06'00'

Megan Klosterman
Deputy Refuge Complex Manager

SUPERBLOOM

JULY 30TH, 2024

Superbloom
Landscape
Architecture
750 Pennsylvania St
Denver, CO 80203
(720) 310-0255

Dear Colorado Natural Resources Trustees,

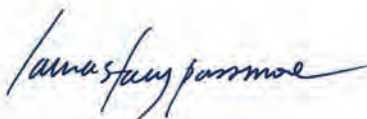
We are writing to support Bluff Lake Nature Center's submission to the Rocky Mountain Arsenal Natural Resource Damages for their project "Stormwater Management System Improvements Project." We were hired by Bluff Lake Nature Center (BLNC) in 2022 to complete the Landscape Architecture design of their Campus Improvements Project, a large component of which includes extensive stormwater management systems.

At Superbloom our mission is to craft meaningful connections between people and the land through dynamic design, environmental stewardship, and deep research. We are bold and experienced designers of projects large and small, with a passion for leading large-scale landscape master plans with complex histories and ecologies.

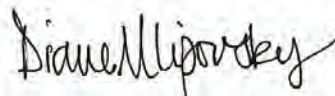
Our practice is founded on innovative design principles and challenging the status quo to advance the field of design and advocate for new forms of public spaces. We are known for our major large-scale, award-winning landscape projects, including 1881 Park, Warm Springs Preserve, and Bluff Lake Nature Center. With decades of experience in community engagement, master planning, and educational and cultural landscapes, our projects have transformed over 2,000 acres into ecologically-rich and inspiring public spaces.

For our design of Bluff Lake Nature Center, we worked closely with Elevation Consulting Group, Ltd. Elevation is a civil engineering consulting firm specializing in site development and permitting within multiple market sectors across the State of Colorado. Their projects have ranged from small urban infill sites to large land development projects of over 3,000 acres. Their leadership has over 26 years of extensive experience in development projects, including low impact development/sustainable design, drainage analysis, storm detention and flood control facilities.

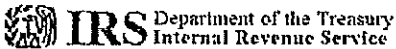
Bluff Lake plays a vital role in the stormwater management system of the Northeast metro Denver area, and this project provides an opportunity to showcase the many different types of stormwater management systems that can be used in an urban setting and that utilize landscape-driven approaches to stormwater management. We are so excited to be working on this project because we recognize the great opportunity to blend conservation and restoration work with enhanced public access, awareness and education.



Stacy Passmore
Principal / Co-Founder



Diane Lipovsky
Principal / Co-Founder



Department of the Treasury
Internal Revenue Service
P.O. Box 2508
Cincinnati OH 45201

In reply refer to: 0248164838
Feb. 06, 2012 LTR 4168C E0
84-1305302 000000 00

00017646
BODC: TE

BLUFF LAKE NATURE CENTER
9801 E COLFAX AVE STE 100
AURORA CO 80010-2155



022499

Employer Identification Number: 84-1305302
Person to Contact: MR. BROWN
Toll Free Telephone Number: 1-877-829-5500

Dear TAXPAYER:

This is in response to your Jan. 26, 2012, request for information regarding your tax-exempt status.

Our records indicate that you were recognized as exempt under section 501(c)(3) of the Internal Revenue Code in a determination letter issued in JUNE 1995.

Our records also indicate that you are not a private foundation within the meaning of section 509(a) of the Code because you are described in section(s) 509(a)(1) and 170(b)(1)(A)(vi).

Donors may deduct contributions to you as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to you or for your use are deductible for Federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

Please refer to our website www.irs.gov/eo for information regarding filing requirements. Specifically, section 6033(j) of the Code provides that failure to file an annual information return for three consecutive years results in revocation of tax-exempt status as of the filing due date of the third return for organizations required to file. We will publish a list of organizations whose tax-exempt status was revoked under section 6033(j) of the Code on our website beginning in early 2011.

0248164838
Feb. 06, 2012 LTR 4168C E0
84-1305302 000000 00
00017647

BLUFF LAKE NATURE CENTER
9801 E COLFAX AVE STE 100
AURORA CO 80010-2155

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely yours,



S. A. Martin, Operations Manager
Accounts Management Operations

Rachel J. Hutchens

Cell: (303) 506-4168

E-mail: racheljennaehutchens@gmail.com

PROFESSIONAL EXPERIENCE**Bluff Lake Nature Center****Feb. 2018-present***Executive Director*

July 2018-present

- Responsible for strategic planning to ensure that BLNC's mission to "educate individuals to be engaged, resilient, and curious; conserve a natural area in the city; further equity in outdoor access; and nurture the health and well-being of communities and ecosystems" is fulfilled through programs, community outreach, and site management.
- Leader during organizational growth over the past five years including doubling budget size, tripling number of year-round team members, doubling program participants, and doubling annual donors.
- Develop and manage relationships with partners and members of the community including other nonprofit organizations, government agencies, project partners, public land agencies, corporations, foundations, individuals, community groups and media.
- Oversee conception and implementation of all ongoing development initiatives including corporate solicitations, foundation proposals, large donor giving, public sector and government grant writing and special event management.
- Manage day-to-day fiscal operations of the organization including developing annual budgeting (~\$700K annual), ensuring completion of annual financial audit, overseeing grant completion and fulfillment of capital projects.
- Manage capital campaign including fundraising efforts of \$7.25M, relationship with architect, contractor, and owner's representative firms.
- Hire and supervise BLNC staff including Development Director, Education Director, Natural Resource Manager, CPA, and other contract employees.
- Serve as liaison between Board and staff and oversee implementation of all Board directives, policies, and procedures as well as keep the Board updated on all operations, changes, and problems.

Environmental Programs Manager and Summer Camp Co-Director

Feb. 2018-July 2018

- Organized and facilitated all education programs (including nature based field trips, summer camp, family days, volunteer scheduling, administrative tasks/event planning, school outreach, etc.).
- Built and trained a cadre of environmental education volunteers and summer camp counselors
- Implemented and further developed BLNC's inquiry-based educational philosophy and built relationships with community members including parent groups, schools, and other nonprofits.

Missouri History Museum**2012-2018***K-12 Programs Coordinator*

2015-2018

- Contributed to growth of K-12 programming from 25,000 annual participants to over 50,000
- Trained and managed schedules for a team of museum educators and interns
- Led educational outreach visits to St. Louis County Juvenile Detention Center
- Served on Accessibility Committee and exhibit teams as representative of Education & Visitor Experience
- Facilitated educator professional development opportunities
- Developed and facilitated interdisciplinary educational programming for K-12 audiences

St. Louis Science Center**Summers 2013 and 2014***Academic Summer Camp Counselor*

- Developed and facilitated programs for K-12 students, both onsite and outreach

EDUCATION AND PROFESSIONAL COHORTS

Yale University School of Management, Women's Executive Leadership

2023

University of Denver, Institute for Leaders in Development, Capstone: *How to Sustain Your Nonprofit's**Development Practices Before, During, and After Leadership Transitions*

2021-2022

Community Resource Center, Nonprofit Management and Leadership Course

2019-2020

University of Colorado, B.A., History. Graduated Summa cum Laude.

PROFESSIONAL ORGANIZATIONS

Friends of the Front Range Wildlife Refuges, Board Member- Secretary	2019-present
Metro Denver Nature Alliance, Member	2018-present
Colorado Nonprofit Association, Member	2018-present
Sand Creek Regional Greenway Partnership, Board Member- Secretary	2019-2023

PRESENTATIONS AND PUBLICATIONS

Moving Mountains Conference	2023
<i>Bright Future Ahead, A Panel Discussion On Nonprofit Leadership</i>	
Colorado Nonprofit Association	2023
<i>How to Sustain Your Nonprofit's Development Practices Before, During, and After Leadership Transitions</i>	
American Alliance of Museums Annual Conference	2017
<i>Onsite-Insight: ACTivists in ACTion</i>	
<i>Emerging Innovators Forum: Mapping Justice: Detention Center Outreach</i>	
History Happens Here, <i>Have You Met an ACTivist Yet?</i>	2017
www.historyhappenshere.org/archives/7900	
History Happens Here, <i>Reaching Beyond Our Walls</i>	2017
http://www.historyhappenshere.org/archives/7932	

TRAININGS AND CERTIFICATIONS

300+ hours training in diversity, anti-bias, and accessibility with organizations such as the Anti-Defamation League, Paraquad, and Deaf, Inc.	ongoing since 2012
Community Resource Center: Nonprofit Management and Leadership Course	2019
International Coalition of Sites of Conscience Facilitated Dialogue Design Practicum	2017
MindsEye: Audio Description	2016
Visual Thinking Strategies	2016
American Board: Teaching Certification (History)	2015

GRANT, CONTRACT, AND AWARD ADMINISTRATION

BLNC Campus Improvements Capital Campaign Capital Campaign (\$6.3M raised, \$8.5M goal)	2021-present
Natural Resource Damages Fund: <i>Bluff Lake Dam Reinforcement and Habitat Restoration</i> (\$50K annually)	2018-present
Science and Cultural Facilities District: Denver, Arapahoe, and Adams County (\$130K annually)	2018-present
Great Outdoors Colorado: Northeast Metro Coalition (\$40K annually)	2018-present
American Alliance of Museums: <i>Diversity, Equity, Accessibility, and Inclusion Award</i>	2017
Paraquad: <i>Shine the Light Award</i>	2017
Institute of Museum and Library Services: <i>Museums for America: #1 in Civil Rights: The African American Freedom Struggle in St. Louis</i>	2016
Institute of Museum and Library Sciences: <i>Museums for America: History Hypothesis</i>	2015

SUPERBLOOM

STACY PASSMORE AICP, LEED AP Principal & Co-Founder



Stacy Passmore is a landscape designer and urban planner with 15 years of experience working with communities to initiate innovative designs through public engagement. She has 7-years of experience working in mountain towns on the Western Slope where she worked as planning and design coordinator for a small architectural firm in Telluride Colorado. In this role she navigated complex community approval processes involving boards such as the Historic Architecture and Landmark Commission. She has also worked extensively with environmental nonprofits including, the Solar Living Institute in Mendocino County, The Clearwater Sloop, The Chife Foundation and the San Miguel County Green Building Task Force. Stacy also led the landscape design of a sustainable agricultural community design in West Africa, including a fish farm, earth brick factory, and extensive market fields that hybrid ecology and local economies. She is currently co-leading the design of a Sustainable Future Farm Park in Aurora, CO, and the Wild Bear Nature Center in Nederland, CO.

CERTIFICATIONS & AFFILIATIONS

- Certified Planner (AICP)
- LEED AP (GBGC)
- Small Business Enterprise (SBE) and Woman-Owned Business (WBE) (CDOT, City & County of Denver)
- American Society of Landscape Architects (ASLA)
- Colorado Women in Design

RECOGNITION / LEADERSHIP

2022 Jeff Harnar Award for Contemporary Architecture, 1881 Farm Park

2019 Artist Residency
Telluride Art & Architecture

2019 Landscape with Beavers,
Places Journal

2019 Artist Residency, Nature
Art & Habitat - Italy

2018 Charles Eliot Traveling
Fellowship - Harvard University

2017 Penny White Project Fund
Award - Harvard University

EDUCATION

2018	Harvard University Graduate School of Design Master in Landscape Architecture, with Distinction
2010	University of British Columbia School of Community & Regional Planning Master in Community & Regional Planning
2003	New York University, Gallatin School Bachelors of Arts, Urban Studies

PROFESSIONAL POSITIONS

2020-	Superbloom - Principal
2018-2020	Civitas Inc. - Landscape Designer
2018	Agency Landscape & Planning - Landscape Designer
2012-2016	New York City Department of City Planning - Special Projects Planner
2010-2012	The Chife Foundation - Lead Urban Designer
2003-2008	Tommy Hein Architects - Project Coordinator & Studio Manager

SELECTED PROJECTS

2022-ongoing	Warm Springs Preserve, Ketchum, ID
2021-ongoing	1881 Farm Park, Aurora, CO
2019-ongoing	Wild Bear Nature Center, Nederland, CO
2021-ongoing	Populus Living Roof, Denver, CO
2021	Mt Crested Butte Town Park Vision Plan, Mt. Crested Butte, CO
2021	El Jets Cantina & Sky Outpost, Grand Junction, CO
2021-ongoing	West Meadows Ranch Residence, San Miguel County, CO
2021-ongoing	Wilson Mesa Ranch Residence, San Miguel County, CO
2021-ongoing	Regenerative Meadow Orchard, Englewood, CO
2020 - 2021	Wetland Restoration, Fort Morgan, CO
2019-2020	Cache la Poudre Wetland Restoration, Greeley, CO *
2018-2020	Flex Park at Virginia Key, Miami, FL *
2018-2020	Nature Playscape, Central Park, Denver CO *

* Work Completed as a Landscape Designer at Civitas

SUPERBLOOM

DIANE LIPOVSKY PLA Principal & Co-Founder



Diane Lipovsky is a landscape architect, artist and co-founding principal of Superbloom in Denver, CO. With over 12 years of experience designing public-interest landscapes, Diane's work explores the intersections of art and design, nature, culture, public health, technology and resilience. Her work has received numerous awards including the American Architecture Award from the Chicago Athenaeum and recognition from ASLAs Colorado and North Carolina and the American Planning Association.

In her previous work at Civitas in Denver, Diane was the lead designer for the North Carolina Museum of Art's acclaimed 34-acre Ann and Jim Goodnight Museum Park. The park design engages art with nature, elevating public health and broadening the definition of the traditional interior gallery. Diane is currently co-leading the design of a sustainable farm park in Aurora, CO, and the community engagement and design process for a nature reserve in Ketchum, ID.

CERTIFICATIONS & AFFILIATIONS

- Professional Landscape Architect (PLA) (CO #LA.0001431; MA #3018)
- Small Business Enterprise (SBE) and Woman-Owned Business (WBE) (CDOT, City & County of Denver)
- American Society of Landscape Architects (ASLA)
- Colorado Women in Design

RECOGNITION / LEADERSHIP

Jeff Harnar Award for Contemporary Architecture, 1881 Farm Park, 2022.

American Planning Association's Great Places in America, Great Public Space. Neponset River Greenway. 2019.

Chicago Athenaeum American Architecture Award, Ann & Jim Goodnight (NCMA) Museum Park. 2018.

Raleigh Environmental Award, NCMA Museum Park. 2018.

Sir Walter Raleigh Award for Community Appearance, NCMA Museum Park. 2018

Colorado ASLA Merit Award, NCMA Museum Park. 2018.

ULI York Award of Excellence (Triangle Chapter), NCMA Museum Park. 2017.

EDUCATION

2010	Harvard University Graduate School of Design Master in Landscape Architecture
2005	University of Southern California, School of Cinema-Television Bachelor of Arts in Cinema-TV Critical Studies, magna cum laude

PROFESSIONAL POSITIONS

2020-	Superbloom - Principal
2013-2020	Civitas Inc. - Landscape Architect & Project Leader
2010-2013	Crosby Schlessinger Smallridge - Landscape Designer

SELECTED PROJECTS

2022-ongoing	Warm Springs Preserve, Ketchum, ID
2021-ongoing	1881 Farm Park, Aurora, CO
2019-ongoing	Wild Bear Nature Center, Nederland, CO
2020-ongoing	Populus Living Roof, Denver, CO
2021	Mt Crested Butte Town Park Vision Plan, Mt. Crested Butte, CO
2018-2020	Flex Park at Virginia Key, Miami, FL *
2017-2020	Prairie Retreat Park at High Line Canal, Aurora, CO *
2016-2020	High Prairie Park at Painted Prairie, Aurora, CO *
2013-2016	Ann & Jim Goodnight Museum Park, NCMA, Raleigh, NC *
2016-2020	Painted Prairie Pocket Parks & Green Courts Design, Aurora, CO *
2016-2020	Painted Prairie Town Center Streetscape Design, Aurora, CO *
2016-2020	Painted Prairie, New Urbanist Neighborhood Plan, Aurora, CO *
2018-2020	Prairie Retreat Park Concept Design at High Line Canal, Aurora, CO
2011-2012	Walden Pond River Reservation Master Plan, Concord, MA +
2010-2013	Cuyahoga River Restoration/Towpath Trail, Cleveland, OH +
2010-2013	Neponset River Greenway, Boston + Milton, MA +
* Work Completed as Project Leader / Landscape Architect at Civitas	
+ Work Completed as a Landscape Designer at Crosby/Schlessinger/Smallridge	



Mr. Thomas, a LEED Accredited Professional, has over 17 years of experience in commercial and residential land development design. His technical expertise includes low impact development/sustainable design, drainage analysis, storm detention and flood control facilities, utility design, street and parking lot design, stormwater quality management, erosion control, easement and right-of-way delineation, site grading and earthwork, preparation of engineering studies, technical reports, cost estimates, details and specifications from conceptual phases through final construction documents. Lincoln has extensive experience interfacing with and leading multidisciplinary design teams, as well as leading the many faceted review and approval processes associated with private, local, state, and federal jurisdictional agencies.

EDUCATION

Bachelor of Science
Civil Engineering
Colorado School of Mines
2003

PROFESSIONAL LICENSURE AND ASSOCIATIONS

Licensed Engineer in the State
of California, 2007, P.E.
#70480

Licensed Engineer in the State
of
Colorado, 2008, P.E. #42350

LEED (Leadership in Energy
and Environmental Design)
Accredited Professional

REPRESENTATIVE EXPERIENCE:

Environmental Learning for Kids Education Center, Denver, CO

Served as the Project Manager and Principal-in-Charge for this Denver Parks and Recreation improvement project. The project consisted of new education facility, parking lot and utilities. Services included grading and utility plan, private storms sewer construction plans and final drainage report.

Rocky Mountain Lake Park Walks, Picnic Area and Shoreline Restoration, Denver, CO

Served as the Project Manager and Principal-in-Charge for this Denver Parks and Recreation improvement project. The project consisted of new concrete trails, new pedestrian access points, new picnic areas and minor shoreline restoration. Services included grading plan, erosion control plans and sewer use and drainage permit.

Sonny Lawson Park Restroom, Denver, CO

Served as the Project Manager and Principal-in-Charge for this Denver Parks and Recreation improvement project. The project consisted of new restroom facility and flatwork. Services included grading and utility plan.

Mount Falcon Trailhead Feasibility Study, Jefferson County, CO

Project Manager for the Master Planning effort associated with the Mount Falcon Trailhead project for Jefferson County Open Space. The major focus of the project was to provide consolidated expanded parking, picnic and restroom areas and wayfinding improvements.