

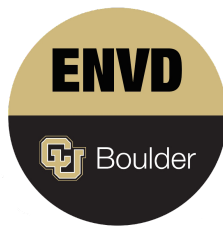
# Eco-Healing Project Report

*A Collaboration between City of Boulder, CU-Boulder Program in Environmental Design, Whittier International Elementary School, and Growing Up Boulder*

Written by Growing Up Boulder  
March 2023



*Elevated Adolescence participants sharing how they felt when thinking about how nature can help their community heal from the fires. Photo by Luciana Escribens*



# Acknowledgements

(Children and youth listed in green)

## City of Boulder

Mark Davison, Senior Planning Manager, Parks and Recreation - Eco-healing Project Sponsor

Curry Rosato, Education and Outreach Manager, Open Space and Mountain Parks (OSMP)

David Ford, Education and Outreach Program Manager, OSMP

Juanita Echeverri, Education and Outreach Program Manager, OSMP

Leidy Pineda Flores, Bilingual Education and Outreach Senior Representative, OSMP

Bill Wildenburg, Senior Landscape Architect, OSMP

Ilene Flax, Senior Landscape Architect, OSMP

Jeff Haley, Deputy Director, OSMP

Youth participants in the 2022 OSMP Junior Rangers Program, Climate and Leadership Crews

## University of Colorado - Boulder

Emily Greenwood, MLA, Teaching Assistant Professor, Environmental Design (ENVD)

Ella Schrader, Teaching Assistant, ENVD

Undergraduate students in the Fall 2022 LAND 3100-010 ENVD Studio

Stacey Forsyth, Director, CU Science Discovery

Alex Rose, Broader Impacts Liaison, CU Science Discovery

Youth participants in the Summer 2022 CU Science Discovery Calwood Camp

## Whittier International Elementary School

Tamar van Vliet, English Language Development (ELD) Teacher

Alysia Hayas, International Baccalaureate Coordinator and ELD Teacher

Audrey Wintory, ELD Teacher

4th graders in the English Language Development Program

## Growing Up Boulder

Mara Mintzer, Executive Director

Cathy Hill, Education Director

Deryn Wagner, Senior Project Manager - Eco-healing Project Lead

Luciana Escibens, Participatory Planning Associate

Jetzabel Martinez, Bilingual Engagement Specialist

Olivia Szeliga, Development and Communications Coordinator

Paola Garcia Barron, GUB Youth Intern for the Summer 2022

Polly Lasch, Urban Planning and Engagement Intern

All the other young people engaged in this project, including attendees of the September 2022 Nature Kids Boulder event and the October 2022 Roll 'n Stroll event

# Table of Contents

Overview	3
Youth Engagement Process	3
Youth Engagement Results	9
Preferred Ways to Connect with Nature	9
Ideas for Nature-based Facilities, Programs, and Media	11
Sensory Experiences in Nature	14
Design Concepts from ENVD Studio	14
Next Steps	16
Additional Links	17



*ENVD College student showing 4th-graders how their ideas influenced their design. Photo by Deryn Wagner*

## Overview

In response to the Marshall Fire, which devastated the greater Boulder community in late December 2021, Growing Up Boulder (GUB) partnered with the City of Boulder, the University of Colorado (CU), and Whittier Elementary School to explore the concept of “eco-healing”, or the ways nature connection can foster emotional resilience for young people living in a wildfire prone community. More than 130 children and youth ages 6-22 participated, offering insights and preferences about the types of nature-based programs, media, and facilities they feel would most support their emotional wellbeing. This input then led to theoretical design interventions around the Marshall Fire site, conceived by students in an undergraduate studio as part of CU's Program in Environmental Design (ENVD).

The following objectives guided the project:

- Elevate young voices in understanding and interpreting the range of experiences and emotions stemming from the Marshall Fire and wildfire risk in general.
- Deepen conversations with young people about their feelings living in a wildfire-prone place, and how time outdoors can inspire their emotional resilience.
- Invite input from young people on future interpretive interventions that inspire hope about the future of nature.

Major findings demonstrate how, as a whole, the young people engaged in this project:

- Show great interest in outdoor art as a tool for eco-healing, both as an activity to participate in and as an object to observe, interact with, and learn from.
- Prefer interactive, outdoor exhibits that are open-ended and self-guided over adult-led programs or traditional educational signs.
- Find emotional benefits from spending free time outdoors either alone or with family and friends at both day and evening outdoor events.
- Exhibit different preferences depending on age and ability level.

Inspired by [research by Louise Chawla](#) on the ways nature connection enhances young people's capacity to handle emotions around environmental loss and degradation, this project ran concurrently with another closely-related GUB project ([Nature Connection, Action and Hope](#)). Together, these two projects emphasize the importance of fostering young people's agency in how they enjoy and protect nature.

## Youth Engagement Process

To reach a range of ages, abilities, and backgrounds, GUB worked with the following groups to gather input and ideas. In total, this project ran between June and December 2022, with most youth engagement transpiring between June - September so that the fall ENVD studio could be informed by youth input.

Group	Description	# Participants	Age range
Elevated Adolescence	2 sessions of middle school prep camp for rising 6th graders	56	11-12
Junior Rangers Climate Crew - City of Boulder Open Space and Mountain Parks (OSMP)	High school employees engaged in trail building and ecosystem management, with an emphasis on climate science and action	10	14-18
Junior Rangers Leadership Crew - OSMP	High school employees engaged in trail building and ecosystem management, with an emphasis on leadership development	13	14-18
CU Science Discovery	Underrepresented high school participants in a week-long camp focused on forest health and recovery after wildfire	8	14-18
Nature Kids Boulder	Latinx families and children participating in a bilingual nature hike, focused on forest health and recovery after wildfire	18	6-16
Roll 'n Stroll	Families and children participating in an inclusive nature hike for those who are and are not experiencing disabilities	8	8-15
Whittier International Elementary School	Fourth-grade English language learners	13	8-10
CU ENVD	College students enrolled in a design studio explored interpretive facilities, programs, and media that could support emotional resilience and education around the Marshall Fire site	12	18-22
<b>Total</b>		<b>138</b>	<b>6-22</b>



*OSMP Rangers and Nature Kids Boulder participants learning about wildfires. Photo by Deryn Wagner*

### **By the Numbers**

- **138** Children and youth engaged between the ages of 6-22, including 13 fourth grade Whittier Elementary students and 12 CU ENVD students
- **9** different groups of children and youth engaged from the community
- **3** Whittier Elementary teachers
- **6** Growing Up Boulder Staff
- **1** CU ENVD educator
- **7** OSMP staff
- **2** Parks and Recreation staff
- **293** direct engagement hours
- **368** GUB team hours

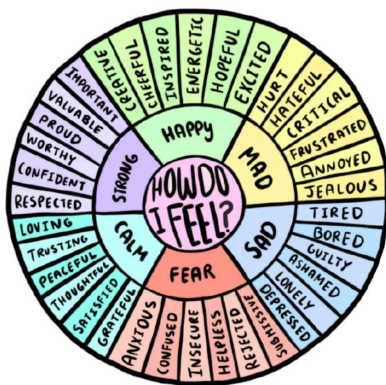
To gather input, GUB staff used mixed methods, such as:

- An interactive game: Recognizing that participants may not have had direct experiences with the Marshall Fire, GUB staff designed a fun, two-part activity that mimicked both a wildfire evacuation and the calm and hope that re-emerge as grasses start to grow back and communities start to rebound after a disaster. The game also connected young people with how emotions show up in our bodies.



CU Discovery participants playing the interactive game. Photos by Deryn Wagner.

- **Discussion:** The game set the stage for meaningful discussion regarding the various emotions felt during both parts of the activity. GUB staff used a graphic showing an emotions wheel that helped young people find words for their feelings about both wildfire and recovery. Staff also used photographs of natural recovery processes that occur after a wildfire and facilitated discussion about how wildfire is a part of our local ecosystem.



The Emotions Wheel used to help participants connect with their feelings and emotions towards wildfires and nature connection leading to healing and hope (left) and a group of Whittier Elementary students using the Emotions Wheel (right). Photo by Luciana Escribens

*"It's sad what can happen to the world, but it's also really cool how it can grow back to a beautiful ecosystem".*

*—Elevated Adolescence participant*

- [Visual preference survey](#): With support city staff from OSMP and Parks and Recreation, GUB compiled a list of current and potential opportunities for children and youth to connect with nature in the Boulder area, including interpretive programs, media and facilities, as well as unstructured opportunities to enjoy nature alone or with friends and family. Through a voting exercise, the resulting visual preference survey was used to understand young people’s preferences for which opportunities they thought would most support emotional resilience in a wildfire-prone community. It should be noted that several of the pictures and descriptions on the survey evolved slightly over time based on input from participants and partners, so not all participants voted on the same items.



*Whittier Elementary students and Elevated Adolescence participants choosing which nature-based activities would help their community heal from the recent wildfires. Photos by Luciana Escribens*

- [Design exercise](#): Using results from the survey, GUB then assigned small groups to one or more of the top preferences. Each group was given a set of loose, natural materials like cardboard, string, popsicle sticks, leaves, sticks, and seeds and tasked to design a space where their chosen activity could take place. For example, groups assigned to outdoor art were encouraged to create the kind of installation that would foster hope about the future of nature. Groups were then invited to write down a description of their creation and share their ideas with the full group.



*Elevated Adolescence and CU Discovery participants sharing about their designs. Photos by Luciana Escribens and Deryn Wagner.*



- Sensory experience worksheet: Rather than using the tools described above for Roll 'n Stroll participants, GUB and City staff designed a [worksheet](#) to record emotional reactions to different sensory inputs experienced along the trail. It allowed parents and caregivers of children with cognitive impairments to observe conditions that stimulated both comfortable and uncomfortable emotions. It also invited all participants to slow down and connect with their emotional responses to nature.



*Roll 'n Stroll participants using the sensory experience worksheet. Photos by Hailey Schnieders.*

As a meaningful conclusion to this project, Associate Professor Emily Greenwood then designed her fall 2022 ENVD studio (LAND 3100-10 Interpretive Education in the Landscape as a Means of Eco-Healing) to further develop young people's preferences and ideas into design concepts for trailheads along the Dirty Bismarck trail loop in south Boulder near the origin of the Marshall Fire. ENVD students were invited to work directly with 4th graders on site at Whittier Elementary School during GUB's week-long engagement and to hear them present their ideas virtually. At the end of the semester, ENVD students also presented to these same 4th graders, who in turn traveled to the CU campus for an intergenerational share-out event. These interactions deepened understanding about the needs and wants of young people and inspired clear, creative design interventions which are being used at OSMP as design inspiration moving forward.



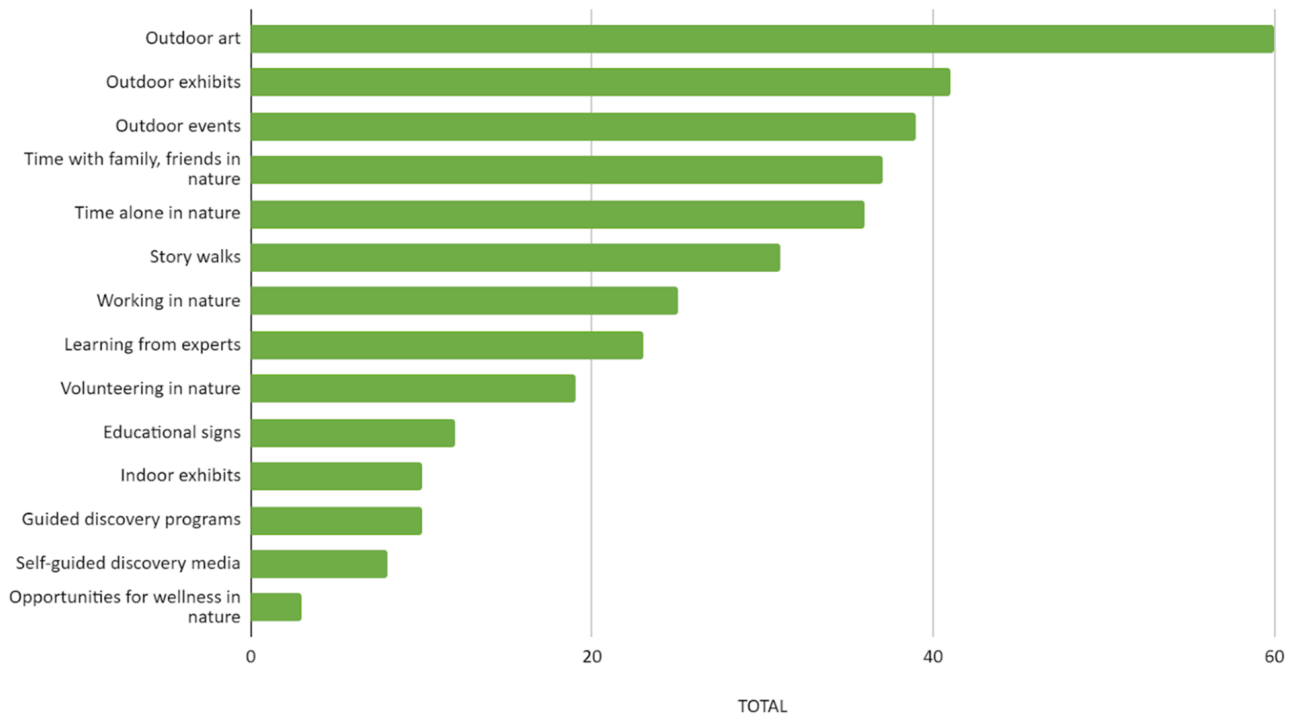
4th graders exploring interactive interpretive exhibits, inspired by their ideas and designed by college students.

Photos by Deryn Wagner and Luciana Escribens.

## Youth Engagement Results

### Preferred Ways to Connect with Nature

The results of the visual preference survey are shown in figure 1 below. As a means for promoting emotional resilience in Boulder's wildfire prone community, *outdoor art* rated the highest according to the children and youth engaged through this project. With *outdoor exhibits*, *time with family and friends in nature*, and *time alone in nature* also falling into the top five preferences, these findings suggest that overall, many of these young people enjoy unstructured opportunities to be in nature. Outdoor events also rated highly, suggesting that socializing outdoors is highly sought-after and rejuvenating for these children and youth.



*Figure 1 - Which Nature-Based Activities Would Help Our Community Heal After Recent Wildfires? Combined results of all visual preference surveys administered*

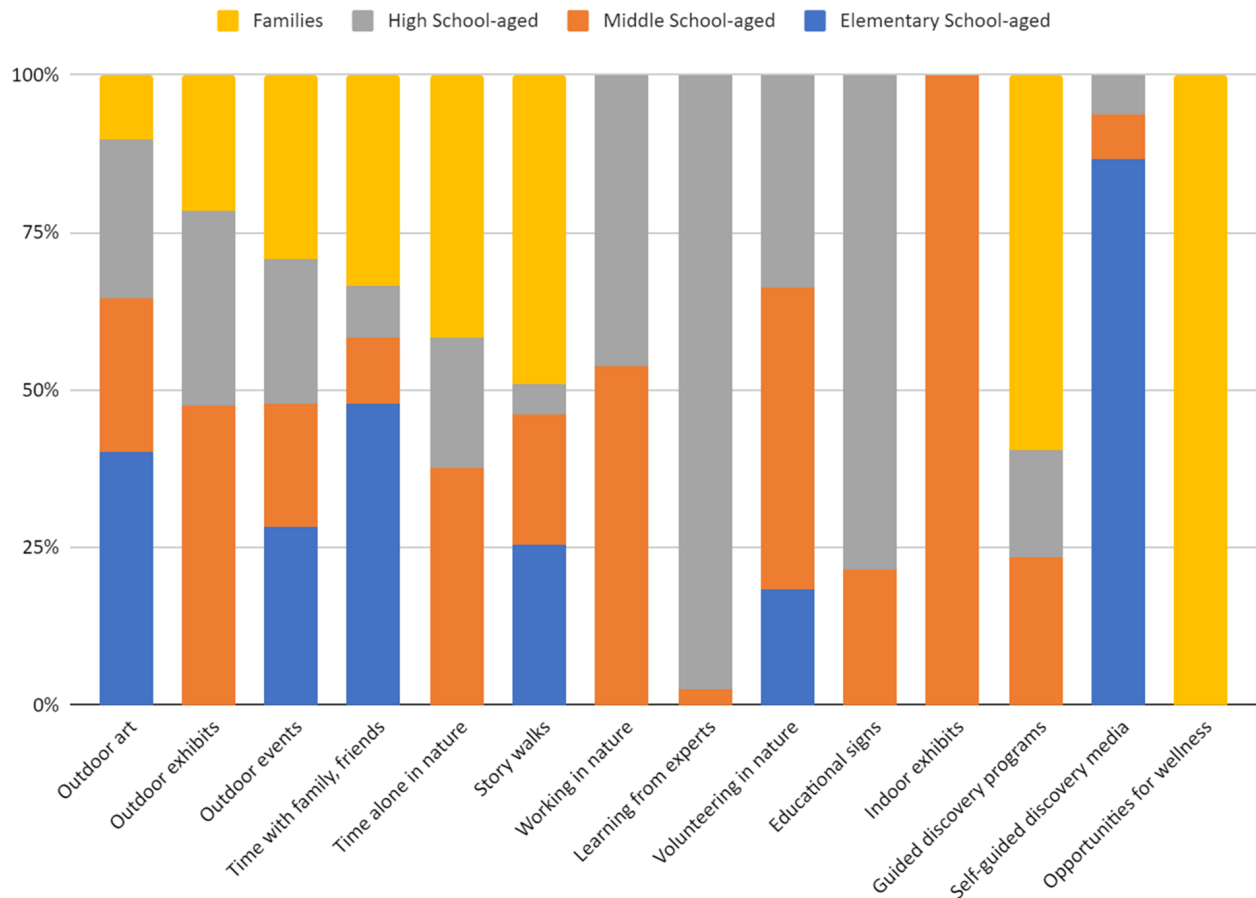
Collectively, these findings suggest that for these children and youth:

- Youth-led engagement with nature, such as unstructured opportunities to spend time alone, with family or friends, and to engage with outdoor art in open-ended ways, is more healing and restorative than adult-led activities such as guided discovery programs. This could be attributed to less familiarity or experience with lower rated options like formal programs or opportunities for wellness, which itself could reflect preferences among parents and caregivers or lack of exposure to the opportunities.
- More open-ended, self-guided interpretive facilities like outdoor art, outdoor exhibits, and story walks are perceived to be more appealing and rejuvenating than less interactive, more limiting educational signs.
- Opportunities to work, learn, and volunteer in nature are also considered therapeutic, especially among teens.

As illustrated in figure 2, a further breakdown of these preferences according to age ranges reveals additional insights:

- Elementary-aged children who participated in the project are most drawn to self-guided discovery media like explorer backpacks with magnifying glasses and other tools inside, followed by time in nature with family and friends. They prefer these backpacks more than all other opportunities and more than all other age groups.
- Youth in middle school overwhelmingly chose indoor exhibits such as those in the OSMP Ranger Cottage as the most beneficial way to engage with nature. This anomaly deserves further exploration outside this project to understand underlying reasons.

- High school students place the most value on educational and professional opportunities such as learning from experts, educational signs, and working in nature. This finding tracks with teens' cognitive development and readiness as compared to younger children.
- Participating families rated opportunities for wellness the highest, suggesting that programs like forest bathing appeal to parents and caregivers. Discussion during the bilingual event with Nature Kids Boulder reinforced this concept, as one mother said, "Ah, sometimes I just need to get away into nature! I would love a program that helps me relax outside."



*Figure 2 - Visual preference survey results by age range*

## Ideas for Nature-based Facilities, Programs, and Media

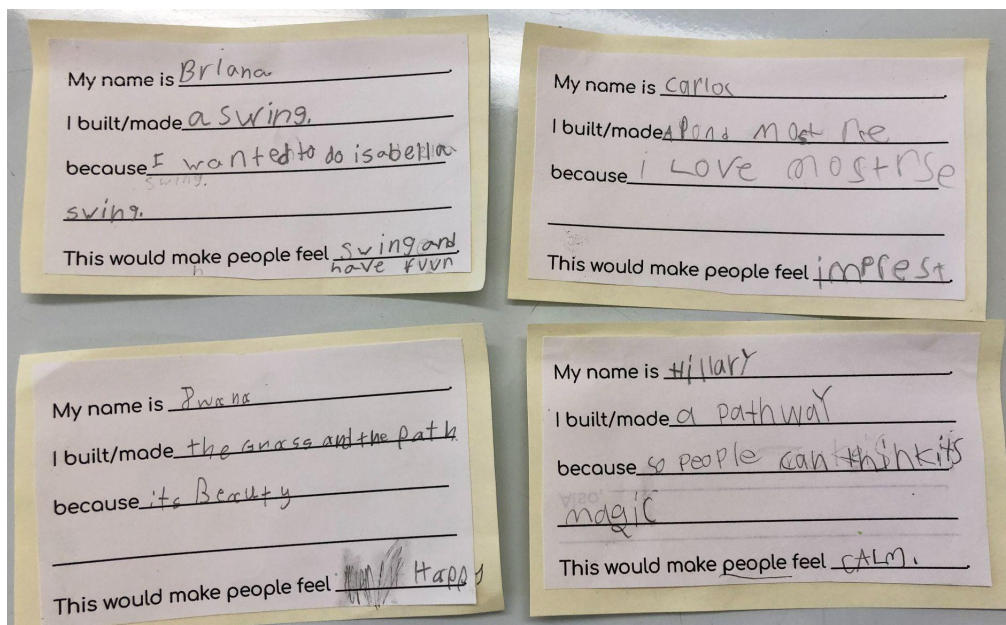
Organized around top results from each visual preference survey, small groups produced models and short narratives describing how nature-based facilities, programs, and media could be designed to maximize mental health benefits for the Boulder community. Groups were also invited to integrate other concepts with their assigned primary focus. The table below summarizes these ideas, in order of combined, overall preference. Opportunities that did not get explored directly, like guided discovery or wellness programs are not included in the table.



A group of Junior Rangers building their proposal and their final product. Photos by Luciana Escribens

Facility, program or media	Ideas
Outdoor art	<ul style="list-style-type: none"> <li>• A place to sit and draw while out in nature</li> <li>• Nature art park that includes elements like a tunnel bridge, a tire swing, and a place to make patterns with flower</li> <li>• Interactive art installations that teach about wildfire</li> <li>• Art pieces co-located with storywalk facilities</li> <li>• A mural along a creek showing Mother Nature entangled in trash and pollution, but there are people working together to remove the trash and plant trees</li> <li>• Sun paper for making art (to be included in discovery backpack)</li> </ul>
Outdoor exhibits	<ul style="list-style-type: none"> <li>• <a href="#">Telephone booth</a> with interpretive wildfire content wrapped around exterior and interactive phone inside where visitors can call to learn more about wildfire and how they can help</li> <li>• <a href="#">Nature tunnel</a> with a surrounding river, next to a barn</li> <li>• <a href="#">Educational playground</a> to teach about fires where you can climb to the top and learn about a crown fire</li> <li>• An <a href="#">interactive outdoor exhibit</a> that shows the 3 different stages of a wildfire. A trail would loop you back around to learn how to prevent a wildfire.</li> </ul>
Outdoor events	<ul style="list-style-type: none"> <li>• <a href="#">Outdoor amphitheater</a> where families can see performances, including those related to wildfire and also other topics, both day and night</li> </ul>
Time with family, friends	<ul style="list-style-type: none"> <li>• Nature park for spending time with family and friends</li> <li>• Rope swing like the one in the movie Encanto</li> </ul>
Time alone in nature	<ul style="list-style-type: none"> <li>• Benches made out of trees to sit and pray</li> <li>• Have a lot of space for grass and paths to admire its beauty</li> <li>• Have binoculars to observe your surroundings well</li> </ul>
Story walks	<ul style="list-style-type: none"> <li>• Story walk about wildfire that goes over a bridge and incorporates art</li> <li>• Write a story about a pond monster</li> </ul>

Facility, program or media	Ideas
Working in nature	<ul style="list-style-type: none"> <li>● Plant trees</li> <li>● Take care of the wild</li> <li>● Respect nature</li> </ul>
Learning from experts	<ul style="list-style-type: none"> <li>● <a href="#">Ranger-led programs</a> that teach the benefits and science of wildfire and forest management</li> </ul>
Volunteering in nature	<ul style="list-style-type: none"> <li>● <a href="#">Volunteer programs</a> to pick up trash, plant seeds, and <a href="#">protect the environment</a>, the city, and the animals</li> <li>● Teach the kids that their feedback and activities will reach the city and have a great impact</li> </ul>
Educational signs	<ul style="list-style-type: none"> <li>● A large <a href="#">stick</a> that half indicates the effects of fire and the other half shows greenery—showing that fires are not always completely destructive</li> <li>● Provide children with a background of the what and why of wildfires, and who and what gets affected by wildfires</li> </ul>
Indoor exhibits	<ul style="list-style-type: none"> <li>● Timelapse of post-fire growth</li> <li>● Shacks and structures for safety in the wild</li> </ul>
Self-guided discovery media	<ul style="list-style-type: none"> <li>● Updated discovery backpack that includes more art supplies</li> </ul>



Fourth grade Whittier Elementary student's description of their preferences and design models.

## Sensory Experiences in Nature

Of the seven total responses from the Roll 'n Stroll event, only three were fully completed, suggesting that the exercise could be improved moving forward. However, all input received offers insights into how nature-based facilities, programs, and media can better foster comfortable emotions for those experiencing disabilities by offering a range of different opportunities. For example, one person wrote that they felt “crowded, constrained, fear . . . unsure if what I need will be accessible.” In contrast, another person wrote that the “cozy trails” made them feel “gratitude, strength.” Similarly, one person wrote that uneven trails gave them uncomfortable feelings, while another parent or caregiver noted that when their child felt bumpy trails, it seemed to make the child feel calm and peaceful. This variation in emotional responses to the same conditions reinforces the need to provide a range of experiences and supports for a range of abilities and disabilities.



*Roll 'n Stroll participants. Photo by Hailey Schnieders.*

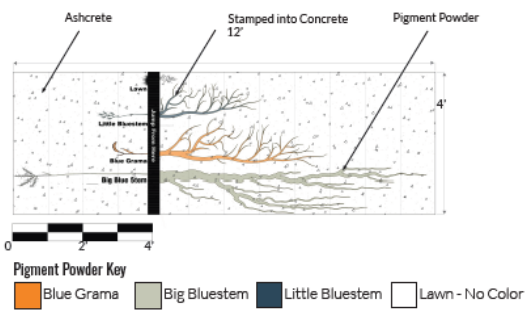
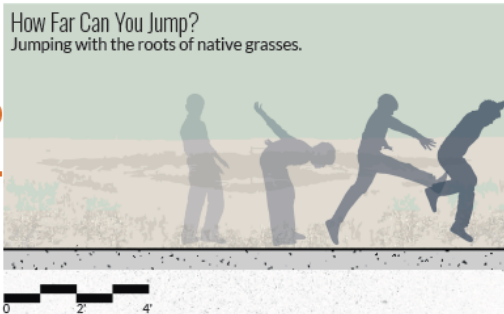
## Design Concepts from ENVD Studio

Using youth input, ENVD students produced the following design concepts and models for nature-based facilities in four locations around the Marshall Fire site:

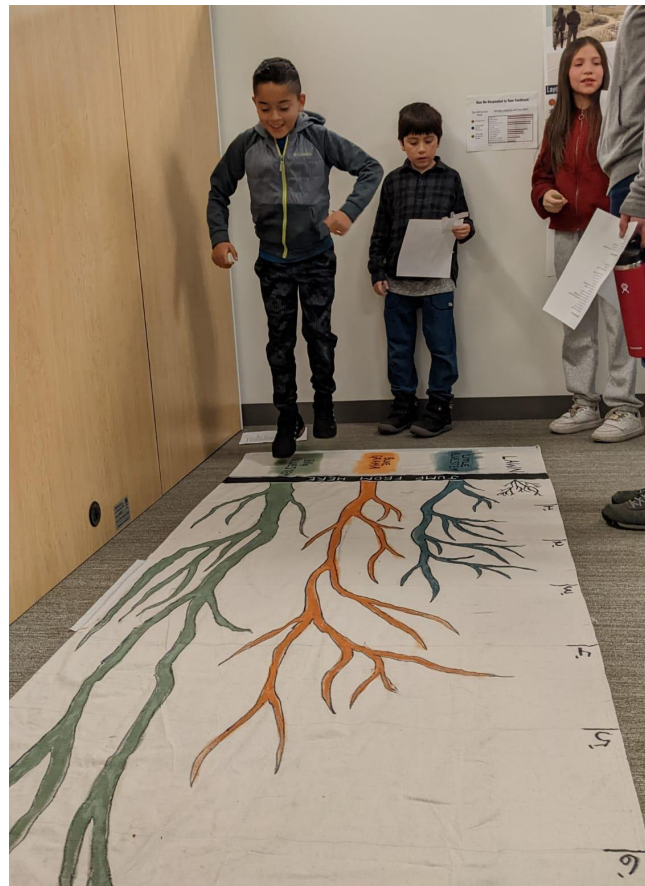
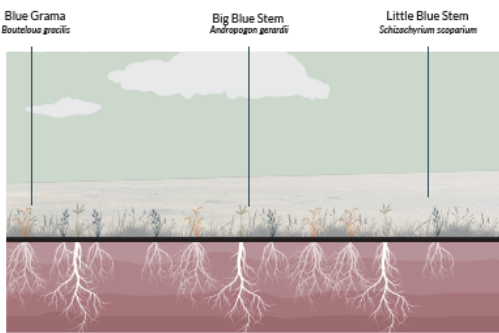
- [66th St Access Point](#) by Kaela Horton, Annie Geoghehan, and Athena Kullman
- [Cherryvale Access Point](#) by Ella Lapello, Max Faust, and Jack Jensen

- [Marshall Mesa Trailhead](#) by George Haynes, Sadie O'toole, Dawson Hodgson, and Austin Shoer
- [Oerman Roche Trailhead](#) by Taylor Atkins, Halley Douglas, Maddy Rubinoff, and Carter Boswell

Jumping Roots



Native Grasses  
Found within the trail system



Concept for an interactive art piece that both engages and educates visitors about the resilience of native grasses, by Kaela Horton, Annie Geoghehan, and Athena Kullman.





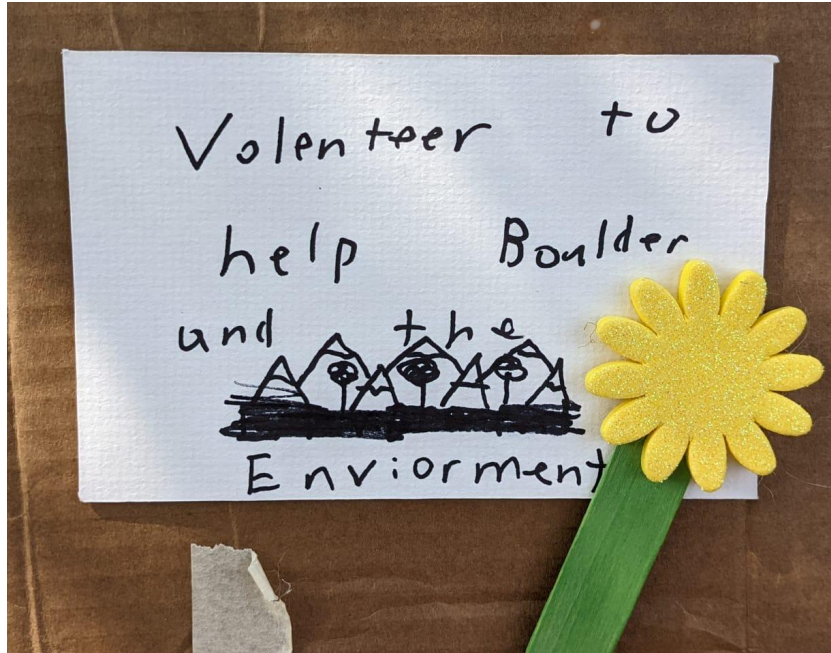
*ENVD students sharing about their college experience with Whittier Elementary fourth graders and their teachers.  
Photo by Luciana Escribens.*

***“This is not just an exercise for learning, they are part of something real,  
and the same for the college students.”***

*- Guest at December 2022 Share-out Event with 4th graders and ENVD students*

## **Next Steps**

Ideas gathered throughout this project will serve city staff and the Boulder community for years to come. Staff from OSMP and Boulder Parks and Recreation have plans to advance and incorporate this work into capital projects over the next 2-3 years. City education staff also look forward to processing and incorporating young people’s feedback about interpretive programming and media. Citywide partners are also exploring how to advance the concept of eco-healing to promote the mental health benefits of nature connection for all ages, abilities, and backgrounds.



*Elevated Adolescence participant suggestions. Photo by Luciana Escribens.*

## Additional Links

[Childhood, Nature Connection and Constructive Hope by Louise Chawla](#)

[Copy of an Activity Outline - Whittier Elementary](#)

[Engagement Photos](#)

[ENVD student share out guest reflections](#)

[Letters from Whittier students to CU students](#)

[Pictures of results and design concepts](#)

[Visual preference survey files](#)