FROM HARDSCAPE TO HABITAT

CREATING CLIMATE RESILIENCE IN URBAN PUBLIC SCHOOLYARDS

ALICIA BARTOLI-ARNOLD

Site: Madison Park Academy
Grade 6-12 Public School Campus
Oakland, California

CONTENTS

INTRODUCTION

As a seasoned educator and artist now transitioning into landscape architecture, I am drawn to reimagine urban educational outdoor spaces. With two decades of experience in urban public education, I have seen firsthand how thoughtfully designed environments can spark cognitive growth and nurture ecological connection. Committed to design as a form of activism, my vision is to develop collaborative approaches that create equitable, sustainable, and inspiring spaces where we can learn, play, and reconnect with natural systems in the urban landscape.

The profession of landscape architecture stands at a critical intersection of educational justice, environmental justice, and community empowerment. Through this lens, I seek to design environments that engage directly with natural systems, fostering immersion in the stories of water, land, life, and community.

As major urban landowners, public school districts hold a unique opportunity to advance climate resilience through large-scale improvements in heat island reduction and stormwater management. Within this context, my project envisions outdoor spaces that are welcoming, beautiful, and interactive living models of environmental stewardship.

At its core, this project is about cultivating relationships and responsibility: strengthening community, advancing climate resilience, and inspiring future generations to form deep connections with the living systems that sustain us.

-Alicia Bartoli-Arnold, September 2025

PROJECT OVERVIEW

PROJECT STATEMENT

Every child deserves to live and learn in a safe, healthy, and engaging environment.

By transforming the asphalt schoolyards at Madison Park Academy through adaptive green infrastructure, this project will create **renewed living and learning environments** and **restore connections** to the San Leandro Creek ecosystem. The underutilized adjacent park will be integrated into the site design as a **community resource** to support **health, wellness, and reconnection to nature** for the neighborhood.

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LOCATION

SITE

DOWNTOWN OAKLAND

"THE FLATLANDS"

THE OAKLAND HILLS

SAN LEANDRO CREEK

LAKE CHABOT

OAKLAND INTERNATIONAL AIRPORT

CITY OF SAN LEANDRO

SAN FRANCISCO BAY

0' 600' 1200' 3000'

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PROJECT JUSTIFICATION | A HIGH NEED

This campus redesign project at Madison Park Academy represents a long-overdue ecological reconciliation in Sobrante Park, a neighborhood where historical redlining practices have manifested as concrete realities.

SOBRANTE PARK NEIGHBORHOOD | OAKLAND, CA

RAMPANT DUMPING[1]

HEAVY AIR POLLUTION[2]

CLOSED PARK[3]

DILAPIDATED PARK[4]

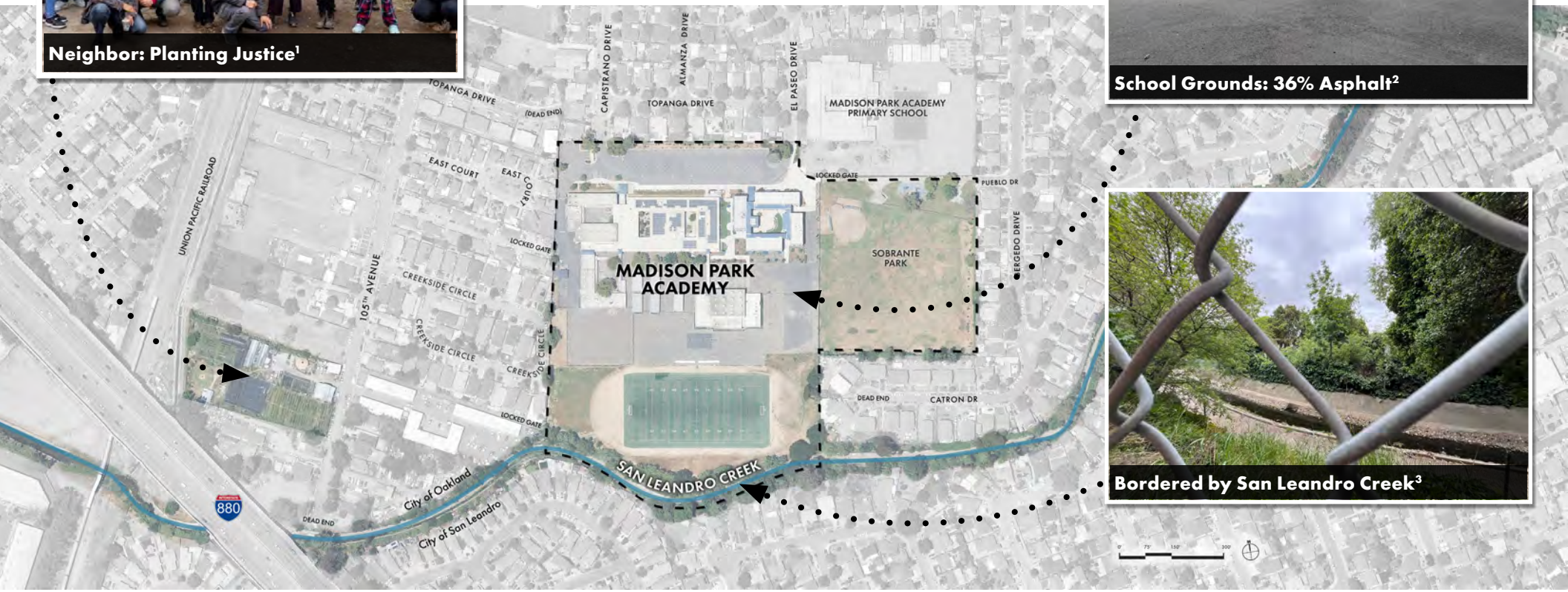
EXCESSIVE URBAN HEAT[5]

Every child deserves to live and learn in a safe, healthy, and engaging environment.

PROJECT JUSTIFICATION | A GREAT OPPORTUNITY

Neighbor: Planting Justice[1]

School Grounds: 36% Asphalt[2]



Bordered by San Leandro Creek[3]

PLANTING JUSTICE[4]

- This land is stewarded by indigenous Lisjan Ohlone women through Sogorea Te Land Trust
- Addresses food insecurity
- Offers Student jobs and internships
- Supports formerly incarcerated people

SAN LEANDRO CREEK

- 1 of only 3 daylighted creeks in Oakland[5]
- Community desires reconnection to creek[6]

HARDSCAPE EXPANSE

- Community desires more open green space[6]
- Community is concerned about health disparities in the neighborhood and wants more trees[7]

- Students
- Teachers
- Administrators
- Support Staff
- Families
- Community Members

"MPA calls themselves *'la familia'* or *'the family,'* and I feel like it's really real. We're so close."

- Pamela, 11th Grade[1]

Data: [2, 3]

Images: Madison Park Academy[4], Wikipedia[5], WalMart[6]

USERS, CLIENTS, STAKEHOLDERS, AGENCIES

USERS

- Students
- Teachers
- Families
- Administration
- Neighbors
- Friends of San Leandro Creek organization
- Planting Justice + Sogorea Te' Land Trust

CLIENTS

- School Community
- Madison Park Parent Teacher Association
- Oakland Unified School District

STAKEHOLDERS

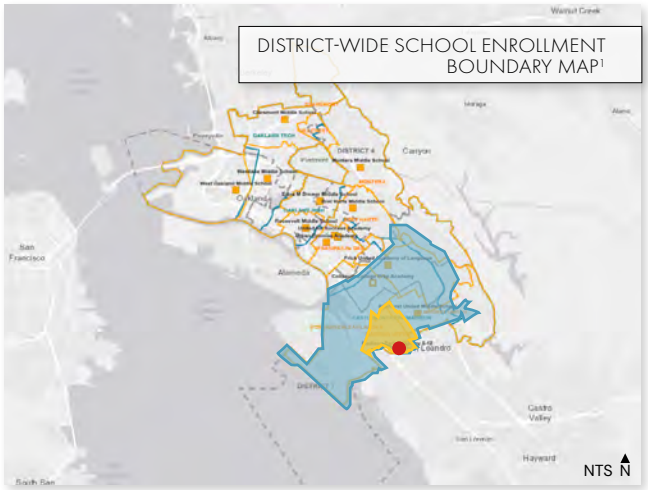
- Oakland Unified School District
- Friends of San Leandro Creek
- Planting Justice + Sogorea Te' Land Trust

AGENCIES OF JURISDICTION

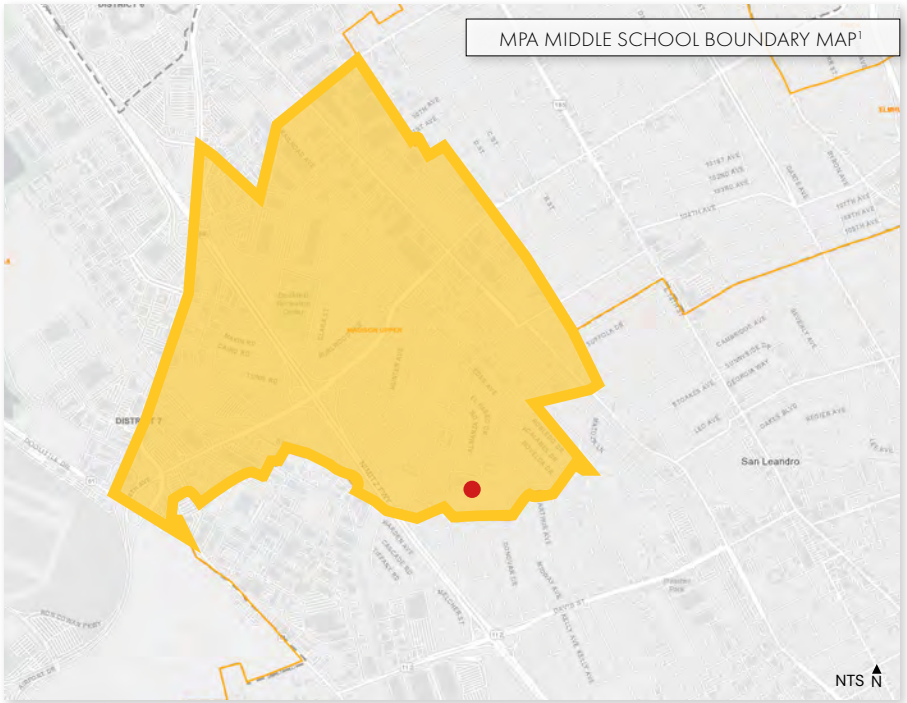
- East Bay Municipal Utility District (EBMUD)
- Oakland Unified School District (OUSD)
- City of Oakland
- Alameda County Flood Control & Water Conservation District
- Alameda County Public Works Agency
- East Bay Parks
- Oakland Parks and Recreation

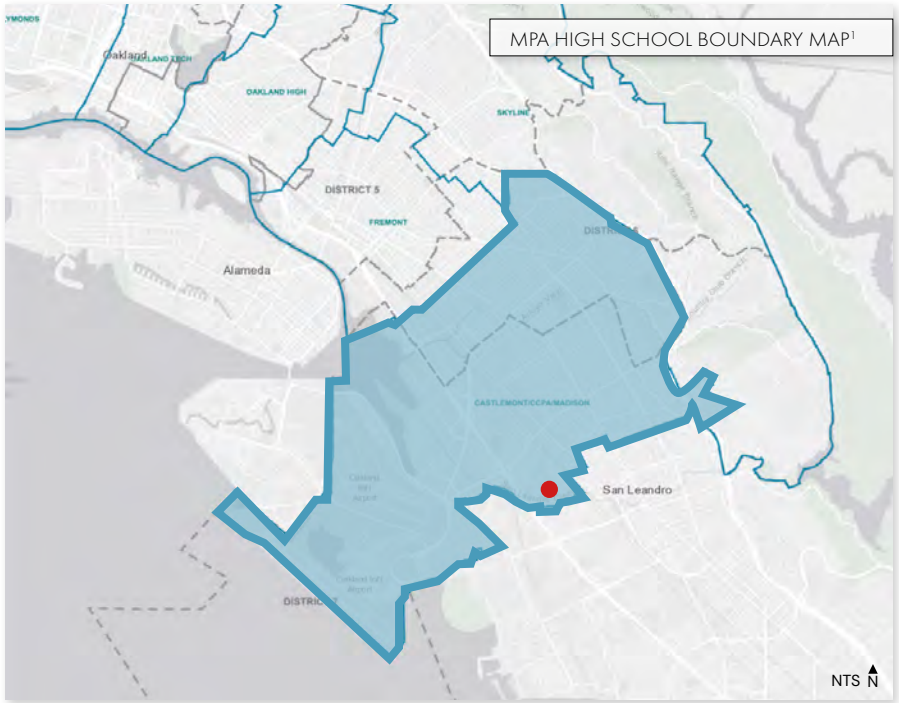
LEGEND

- MIDDLE SCHOOL ENROLLMENT BOUNDARY
- HIGH SCHOOL SCHOOL ENROLLMENT BOUNDARY
- SITE



WHERE STUDENTS OF MADISON PARK ACADEMY LIVE





SCHOOL DATA

Madison Park Academy is unique in Oakland Unified School District, as it contains a primary, middle, and high school located at the same site.

As a result, students and families are close-knit, developing deep, trusting relationships as they move through their educational journey.[1]

STUDENT GENDER DATA[3]	
FEMALE	47%
NON-BINARY	0%
MALE	53%

LEARNING IMPACT DATA[3]	
ENGLISH LEARNERS	39.9%
HOMELESS	6.5%
SOCIOECONOMICALLY DISADVANTAGED	99.5%
FOSTER YOUTH	0.6%
STUDENT WITH DISABILITIES	15.5%

STUDENT ETHNICITY DATA[3]	
HISPANIC OR LATINO	80.9%
BLACK OR AFRICAN AMERICAN	11.4%
NATIVE HAWAIIAN OR PACIFIC ISLANDER	2.7%
ASIAN	1.1%
WHITE	1.1%
FILIPINO	0.2%
TWO OR MORE RACES	0.8%

SCHOOL PROFILE[2]

- Grade Span: 6-12
- Student Enrollment: 664
- Title 1 *(High Poverty Indicator)*: Yes - Schoolwide
- School Graduation Rate: 88.5%
- OUSD Graduation Rate: 79.5%
- School Dropout Rate: 8%
- OUSD Dropout Rate: 10%
- School Graduates Meeting CSU/UC Requirements: 70.1%
- District Graduates Meeting CSU/UC Requirements: 61.3%

Image: CalMatters[4]

BENEFITS OF SCHOOLYARD GREENING

"Public schoolyards are public land."

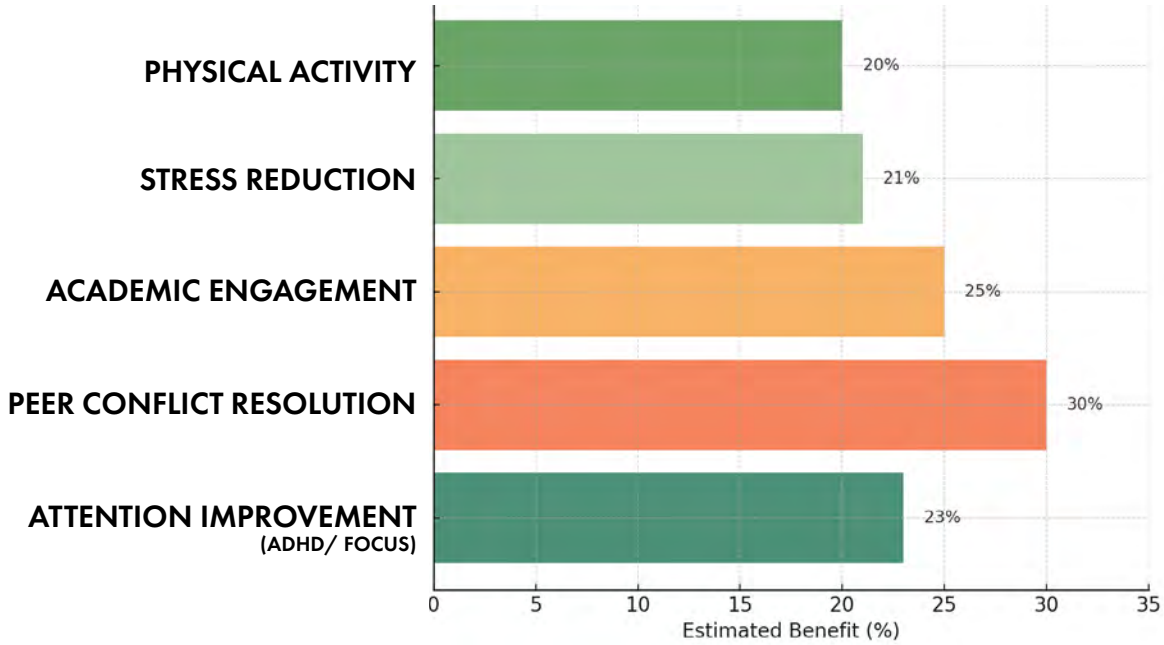
- Alejandra Chiesa, Bay Area Program Director for The Trust for Public Land[5]

1° increase = 1% decrease

in average outdoor temperature = **in performance on standardized testing[3]**

- UCLA Department of Public Policy & the Luskin Center for Innovation[3]

Positive Outcomes of Schoolyard Greening[4]



Sources:

1. EPA
2. Public News Service
3. R. Jisung Park et al, 2020
4. Bikomeye et al, 2021,
5. Trust for Public Land

GOALS AND OBJECTIVES

Image: Madison Park Academy[1]

INSPIRE

Inspire students to reach their full potential and thrive

1. **Cultivate creativity and curiosity through interactions with nature**
   - ★ Outdoor kitchen and farm
   - ★ Maker Space
   - ★ Classroom gardens
2. **Heal relationships among people and natural ecological systems**
   - ★ Living Laboratory
   - ★ Nature-based classrooms
   - ★ Lisjan Ohlone Garden
3. **Improve physical and mental health outcomes and promote wellness**
   - ★ Natural Meadows: regulate nervous system
   - ★ Outdoor Fitness Stations
   - ★ Shaded gathering areas

Image: Shutterstock[2]

CONNECT

Connect the community through providing a safe, supportive neighborhood hub

1. **Unite people in vibrant, multi-purpose gathering spaces**
   - ★ Amphitheater
   - ★ Community garden
   - ★ Vehicular pads and hookups
2. **Cultivate a strong sense of belonging through recognition and shared wisdom**
   - ★ Restorative Justice Circle
   - ★ Community Commons
   - ★ Multi-lingual signage
3. **Improve physical safety in the neighborhood**
   - ★ Connection to proposed multi-modal trail
   - ★ Visible, well-lit nodes and paths
   - ★ Improved vehicular circulation

Image: Getty Images

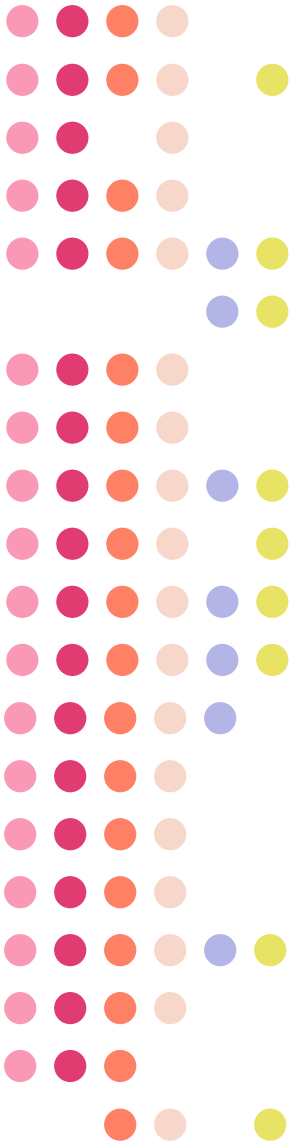
PREPARE

Prepare the next generation to build a sustainable, climate-resilient future

1. **Revitalize the San Leandro Creek as a thriving ecosystem and learning landscape**
   - ★ Improved physical connection to creek
   - ★ Habitat restoration corridor
   - ★ Stabilized Stream Banks
2. **Employ urban heat reduction & stormwater cleaning & infiltration strategies**
   - ★ Rooftop gardens
   - ★ Bioswale & Infiltration basins
   - ★ Urban forest
3. **Foster environmental stewardship and a culture of climate resilience**
   - ★ Stream monitoring station
   - ★ Interactive LID demonstration areas
   - ★ Bolstered connections to Planting Justice

PROGRAM ELEMENTS + THEIR USERS

USERS



PROGRAM ELEMENTS

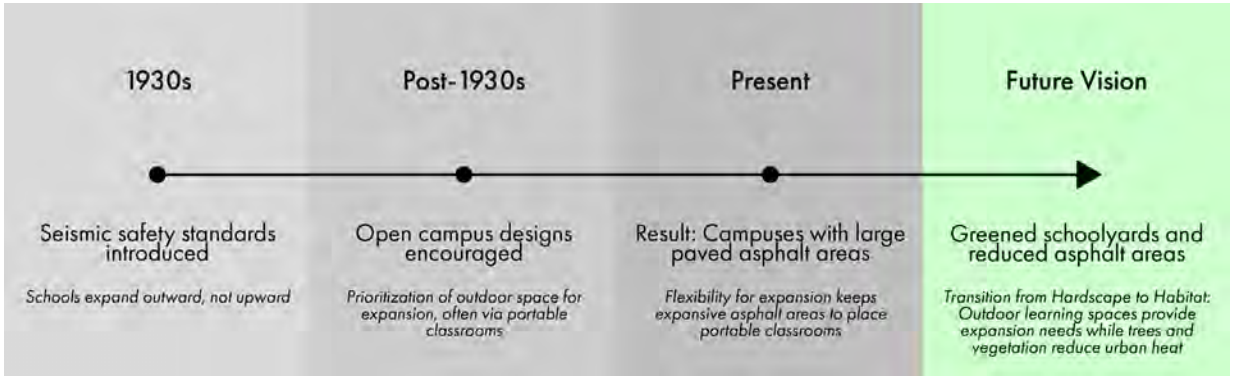
PROGRAM ELEMENTS	APPROXIMATE SIZE
Outdoor Amphitheater	7,000 FT^2
Outdoor Classrooms	10 @ 500 FT^2 each
Teacher / Staff Outdoor Lounge	300 FT^2
Spaces to Eat Lunch	3 @ 500FT^2 each
Creek Habitat Restoration Area	65,000 FT^2
Family Meeting and Community Space	1500 FT^2
Maker Space	2000 FT^2
Hangout Lounges	15 @ 200 FT^2 each
Solar Panel Shade Structure @ Parking Lot	15,000 FT^2
Outdoor Science Laboratory	10,000 FT^2
Farm / Food Production	85,000 FT^2
Fitness Equipment Stations	35 @ 100 FT^2 each
Restorative Justice Circle	400FT^2
Portable Classrooms	5 @ 1650 FT^2 each
Fire Drill Assembly Area - Use Athletic Field	75,000FT^2
Basketball Courts	6 @ 70' x 42' each
Main Parking Lot	40,000FT^2
Middle School Courtyard	7000 FT^2
Bus Dropoff Lane	11' wide minimum
Dumpster Service Area	3 @ 144 FT^2 per pad

RESEARCH + ANALYSIS

HISTORICAL CONTEXT | WHY IS THERE SO MUCH ASPHALT?

Many schoolyards in Oakland are described as "blank asphalt" or "more parking lot than play area," which is a more pronounced in higher-density or under-resourced neighborhoods.[2]

- Trust For Public Land



Source: [1]

Historical reasons for paved schoolyards[1]

- *One-story, open-air campus designs aimed to house fluctuating student populations*
- *Emphasis on physical education, sports, and military preparedness*
- *Narrow definitions of "play" requiring hard courts/fields*
- *Proposition 13 anti-tax movement (1978) dramatically reshaped California's school funding system, creating sustained underinvestment in facilities and over-reliance on local taxes*

Current barriers to greening schoolyards in OUSD

- *Approval processes and Division of the State Architect (DSA) permitting are systemic barriers for all campuses.*[3]

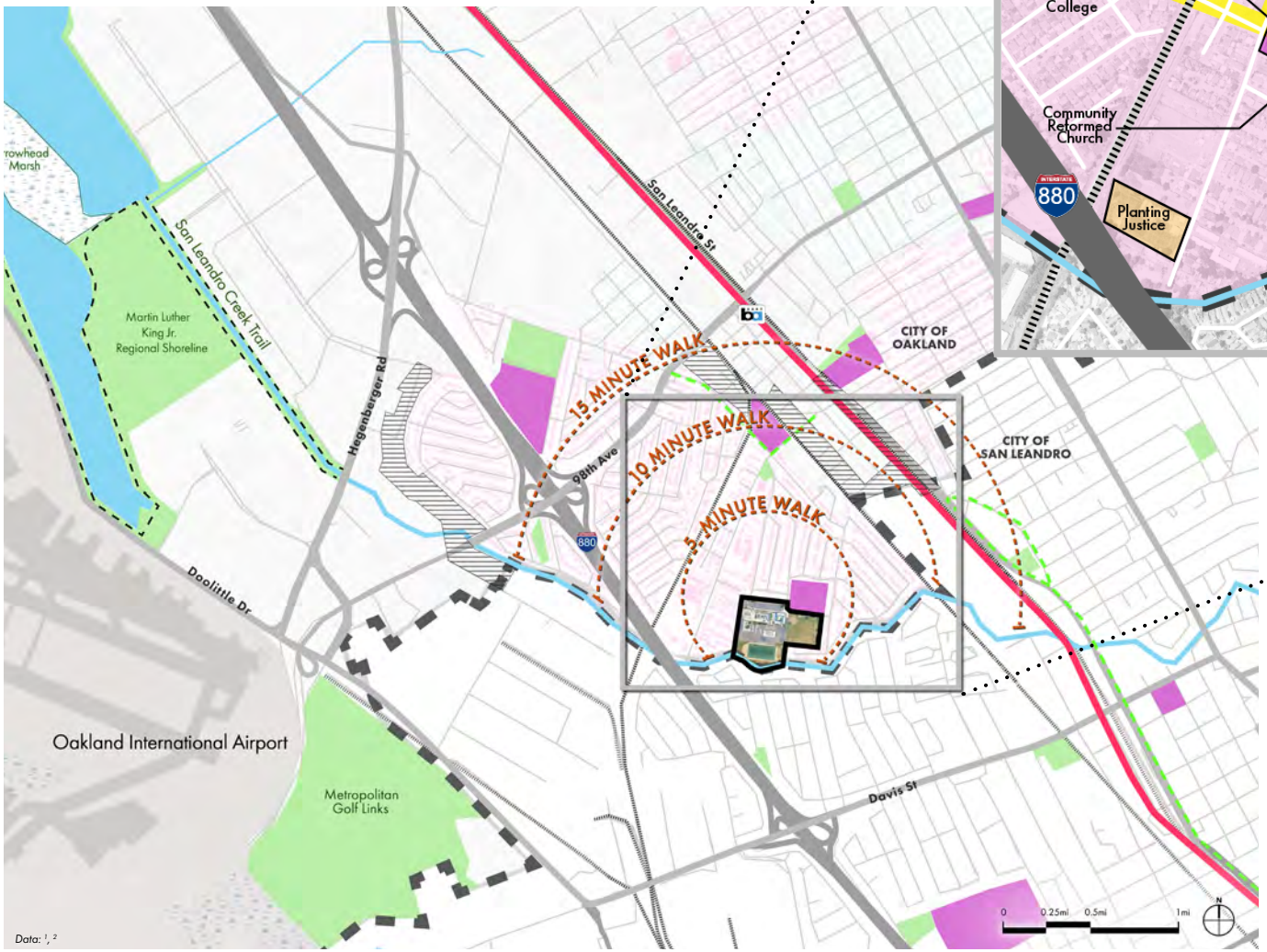
- OUSD Living Schoolyards Guidelines

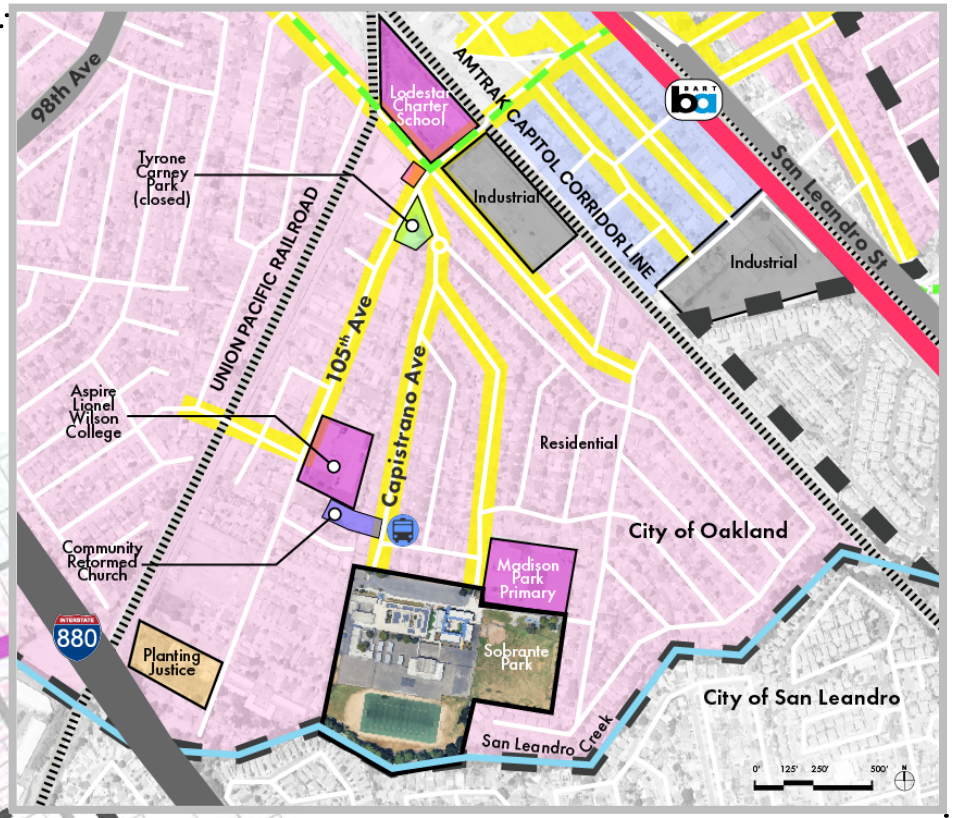
- *Many sites' maintenance burdens are too high and district-level gardener capacity is limited, with only 12 gardeners for the entire district comprised of 82 schools.*[4]

- OUSD / Green Schoolyards Schoolyard Forest Case Study

- *The existing Living Schoolyards for Oakland program emphasizes "readiness" as a selection criterion—meaning schools with local support, site feasibility, and fewer permitting obstacles are more likely to be selected for greening projects.*[5, 6]

CONTEXT | THE NEIGHBORHOOD





LEGEND

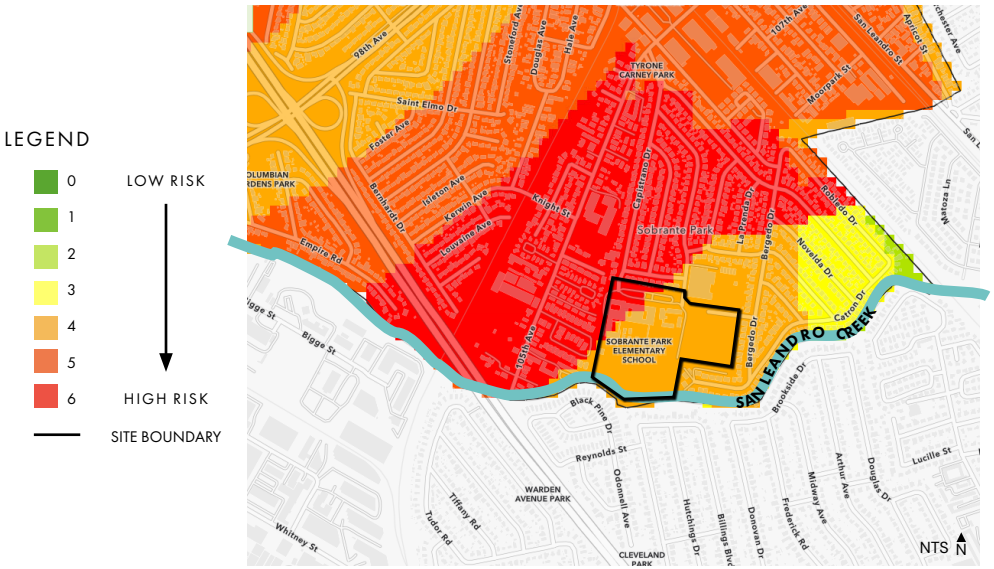
- PRIMARY ROADS
- SECONDARY ROADS
- TERTIARY ROADS
- TRAFFIC CONGESTION AREAS
- SITE BOUNDARY
- BIKE LANE
- RAIL
- ROUTE DOES NOT CONTINUE
- BUS STOP
- SCHOOLS
- PARKS
- SINGLE FAMILY RESIDENTIAL
- OTHER RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- CITY LIMITS

ENVIRONMENTAL CONDITIONS

- High climate risks for flood vulnerability and urban heat[1]
- Environmental hazards caused by proximity to industry and heavy transportation create disproportionate health conditions such as asthma[1]
- Neighborhood infrastructure suffers continual neglect from the city[2]

AIR POLLUTION RISK[1]

FLOOD RISK[1]



URBAN HEAT RISK[1]

Sources:
1. Analyzing Environmental Vulnerabilities in Oakland.
2. Youth Uprising

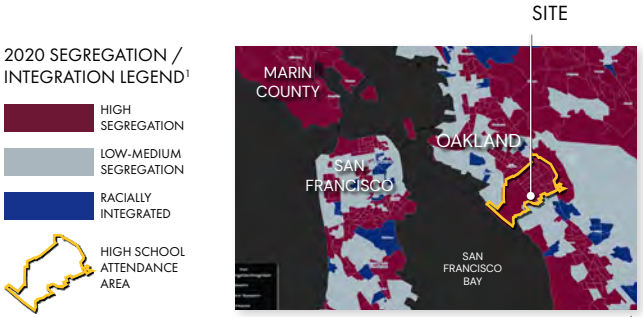
SOCIOECONOMIC CONDITIONS

THE LASTING IMPACTS OF REDLINING

- ~ 100% of students living with high poverty[1]
- Extreme rates of violent crime, high school dropout, teen pregnancy, and high unhoused population[2]
- ~ 100% students of color living in a highly racially segregated neighborhood[2]

"Every flatland neighborhood, running from Berkeley south into Oakland and from Oakland southeast toward San Leandro was marked with the 'hazardous' red."

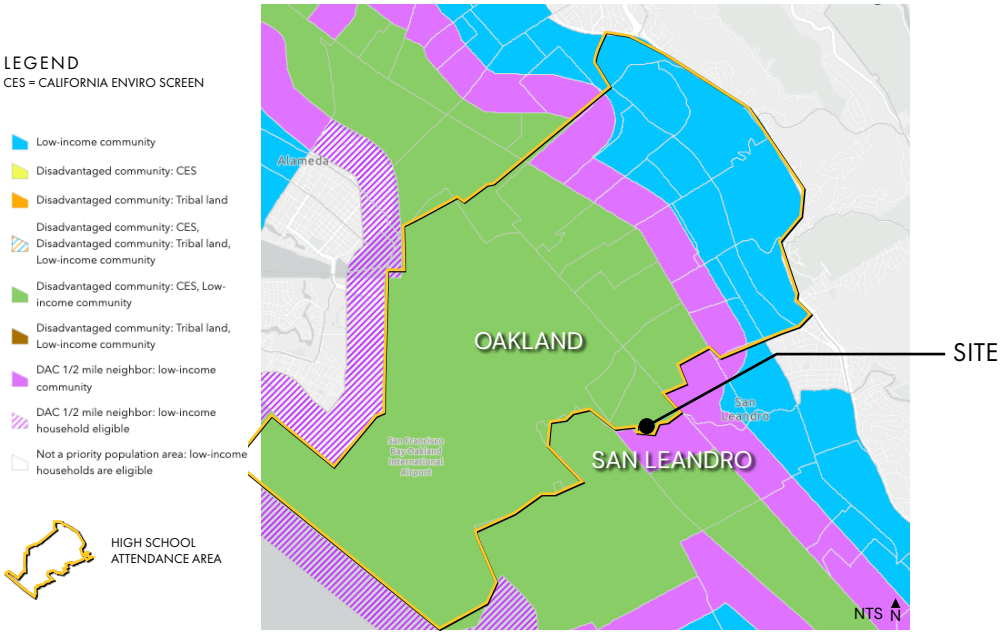
- Mapping Inequality[2]



Racial segregation in the Bay Area in 2020[1]

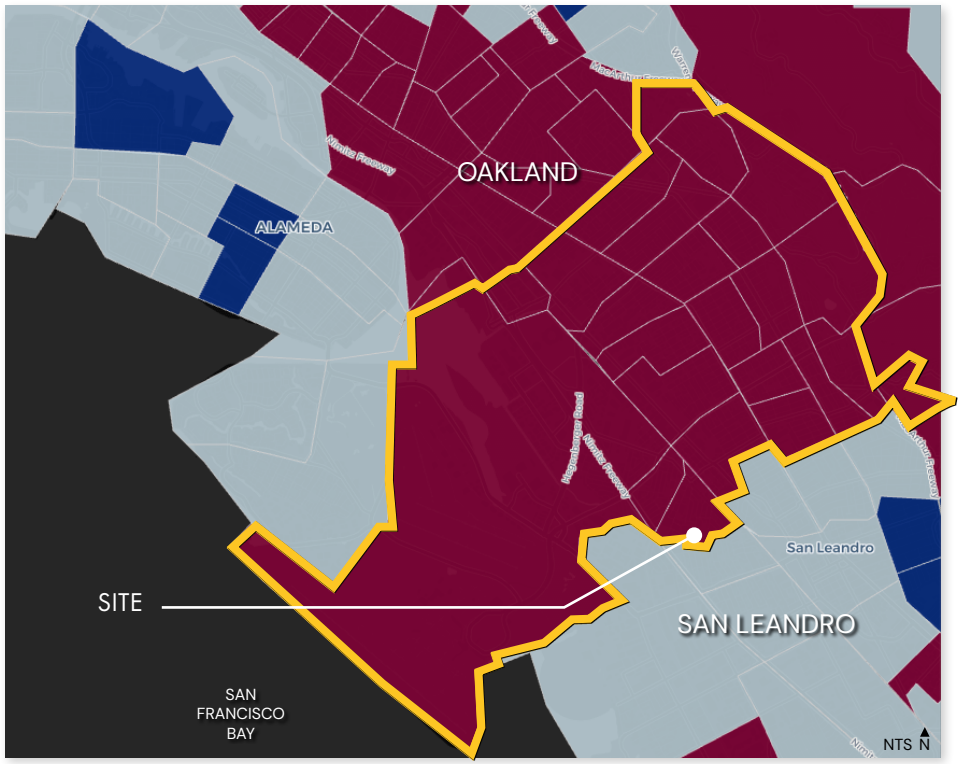
ECONOMIC DATA[1]

CALIFORNIA CLIMATE INVESTMENTS PRIORITY POPULATIONS DATA



RACIAL SEGREGATION DATA[1]

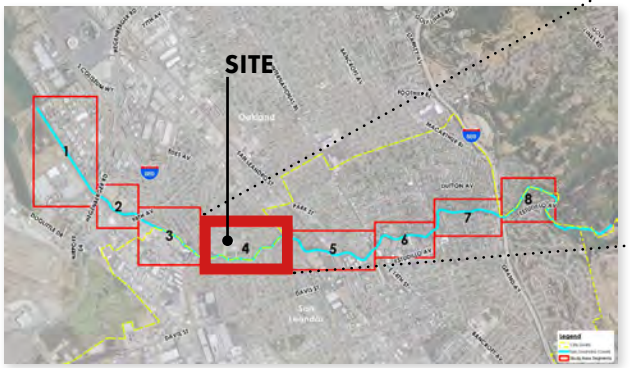
RACIAL SEGREGATION IN SITE LOCALITY IN 2020



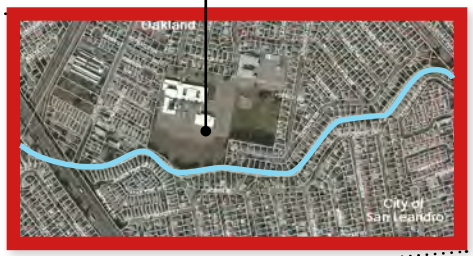
Sources:
1. Othering & Belonging institute
2. Mapping Inequality

CONNECTIVITY

TRAIL CONNECTIVITY STUDY AREAS[1]



SEGMENT 4[1]



LEGEND

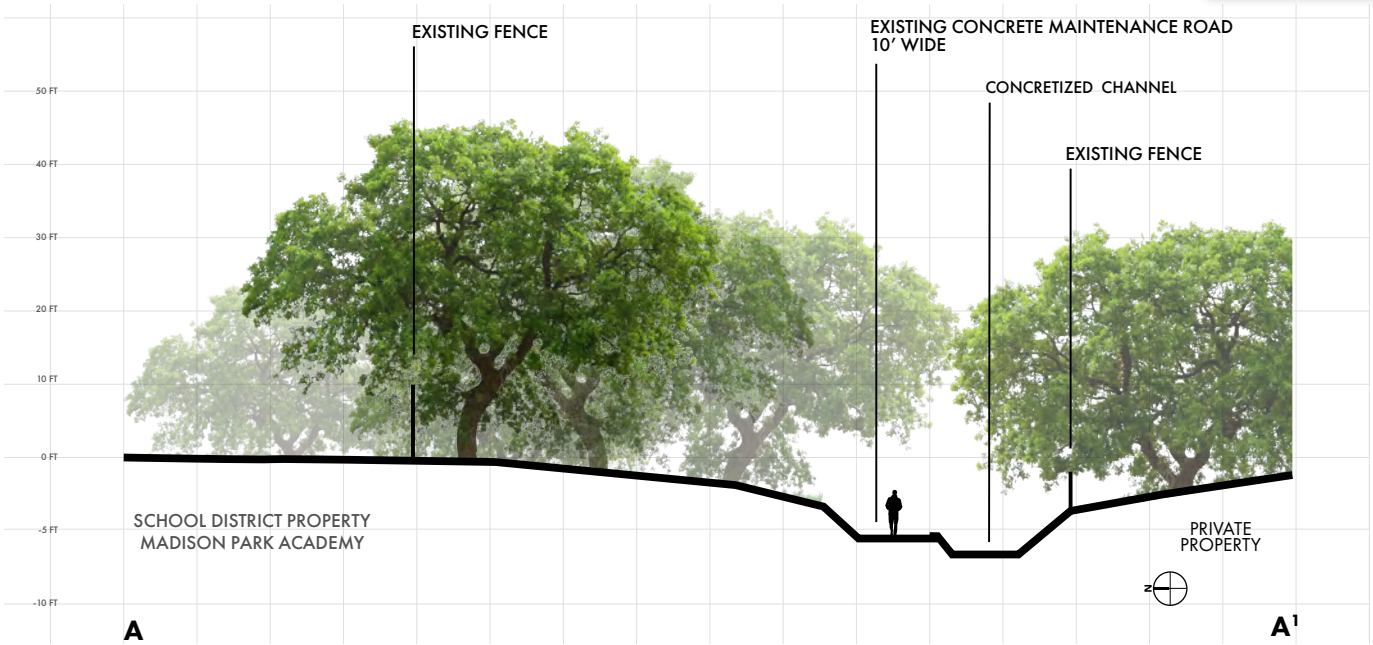
- STUDY AREA SEGMENTS
- SAN LEANDRO CREEK
- SITE SEGMENT
- CITY LIMITS

NTS

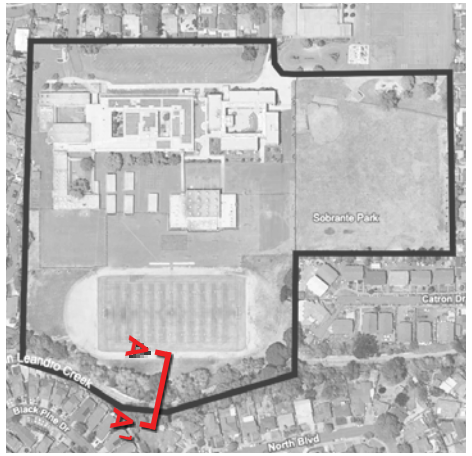
SAN LEANDRO CREEK TRAIL MASTER PLAN FEASIBILITY STUDY - 2017[1]

EXISTING CONDITIONS[1]

EXISTING CREEK SECTION A-A[1]



KEY MAP



EXISTING SITE USAGE

Image: Homes.com

TOPANGA DRIVE (DEAD END)
CAPISTRANO DRIVE
TOPANGA DRIVE
EL PASEO DRIVE
MADISON PARK ACADEMY PRIMARY SCHOOL
MAIN PARKING LOT
MADISON PARK ACADEMY MIDDLE SCHOOL
MADISON PARK ACADEMY HIGH SCHOOL
PUEBLO DR
BERGEDO DRIVE
SOBRANTE PARK (PUBLIC PARK)
HEALTH CENTER
GYMNASIUM
PORTABLE CLASSROOMS
SECONDARY PARKING LOT (RARELY USED)
ATHLETIC FIELD
CITY OF OAKLAND
CITY OF SAN LEANDRO
SAN LEANDRO CREEK
0' 75' 150' 300'

LEGEND

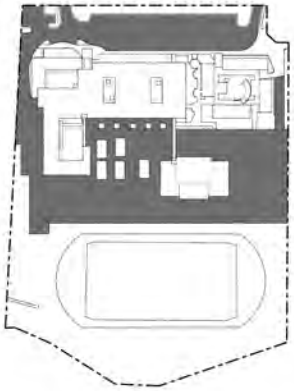
- A PUBLIC BUS STOP
- B MAIN SITE ENTRY
- C MIDDLE SCHOOL ENTRY
- D SECONDARY SITE ENTRY
- E HIGH SCHOOL ENTRY
- F HIGH SCHOOL COURTYARD
- G HIGH SCHOOL SEATING AREA
- H SHARED COURTYARD
- I MIDDLE SCHOOL YARD
- J HIGH SCHOOL YARD
- K ENTRY TO ATHLETIC AREA
- L ASPHALT P.E. AREA
- M ASPHALT BASKETBALL AREA
- N GARDEN AREA (UNUSED)
- O NEW TREE PLANTINGS
- P LOCKED GATE - UNUSED
- Q ASPHALT PATH -UNUSED
- R TALL CHAIN LINK FENCE

SITE BOUNDARY

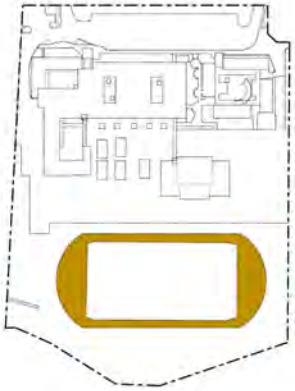
FENCE

EXISTING SURFACE MATERIALS | SCHOOL SITE

ASPHALT

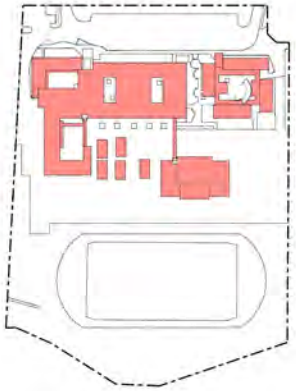


DG OR SIMILAR

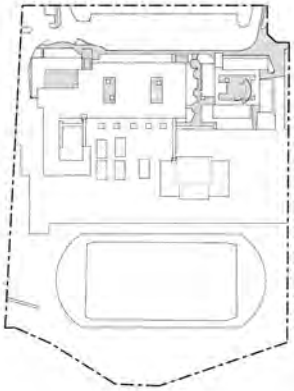


ARTIFICIAL TURF

ROOF SURFACES



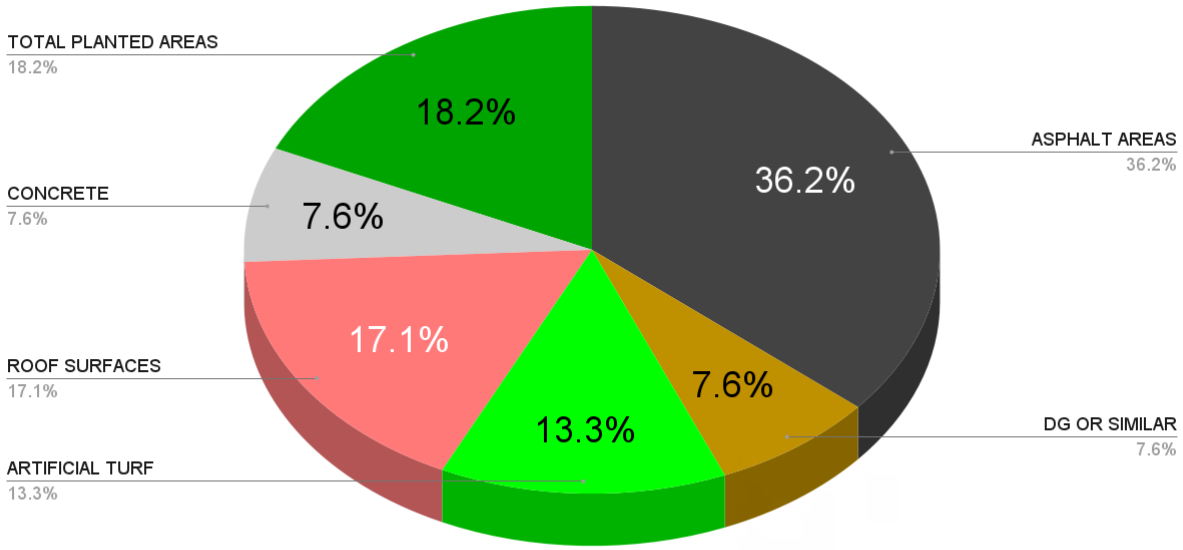
CONCRETE



PLANTED AREAS

DATA POINT	SQ FEET	ACRES
TOTAL AREA OF SITE	652704	14.98402204
TOTAL LANDSCAPE AREA	556306	12.77102847
ASPHALT AREAS	223807	5.137901745
DG OR SIMILAR PERMEABLE	47088	1.080991736
ARTIFICIAL TURF	82583	1.895844812
ROOF SURFACES INCLUDING OVERHANGS	106114	2.436042241
CONCRETE	47429	1.088820018
TOTAL PLANTED AREAS	112492	2.582460973
TOTAL IMPERMEABLE SURFACE AREA	362152	8.313865932
TOTAL PERMEABLE SURFACE AREA	242164	5.559320478

SURFACE MATERIAL PROPORTIONATE TO SCHOOL SITE AREA (~ 15 ACRES)



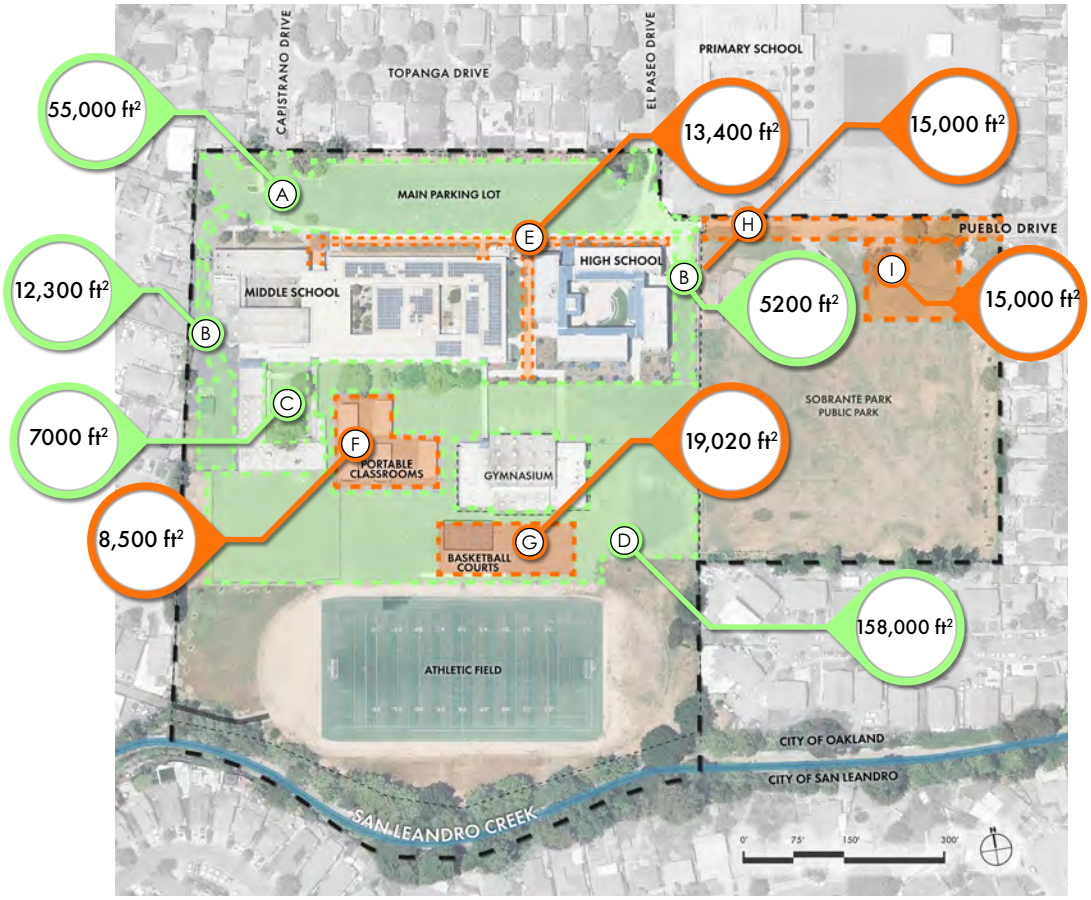
HARDSCAPE ANALYSIS

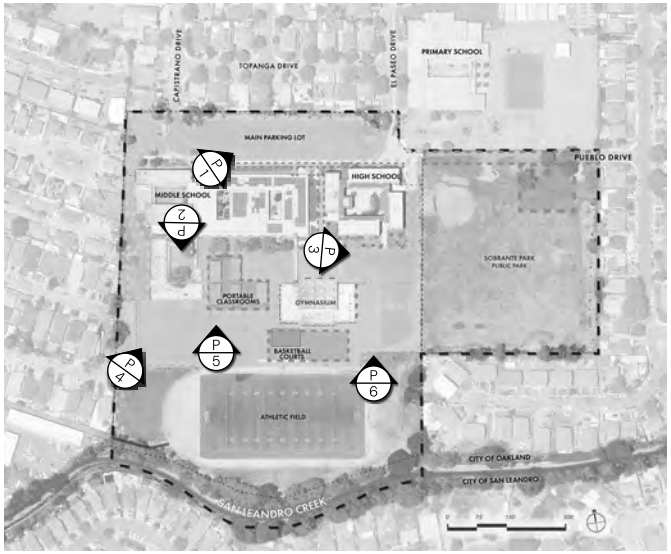
OPPORTUNITIES
HARDSCAPE CAN BE CHANGED OR REMOVED

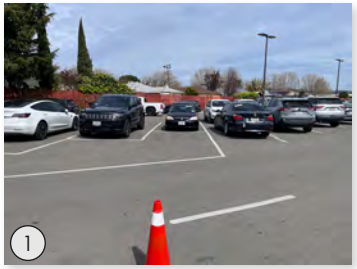
- (A) Existing parking lot can be replaced with permeable pavers
- (B) Existing asphalt service lanes can be replaced with permeable pavers
- (C) Concrete in courtyard in disrepair; must be updated
- (D) Asphalt expanse can be replaced with decomposed granite + planted areas

CONSTRAINTS
HARDSCAPE MUST REMAIN OR BE INSTALLED

- (E) Concrete sidewalks and paths to remain
- (F) Portables must remain on asphalt footprint, not necessarily in existing location
- (G) Asphalt basketball courts to remain; could be painted with reflective paint
- (H) Pueblo Drive will be opened to traffic; must add hardscape
- (I) New parking lot to be added

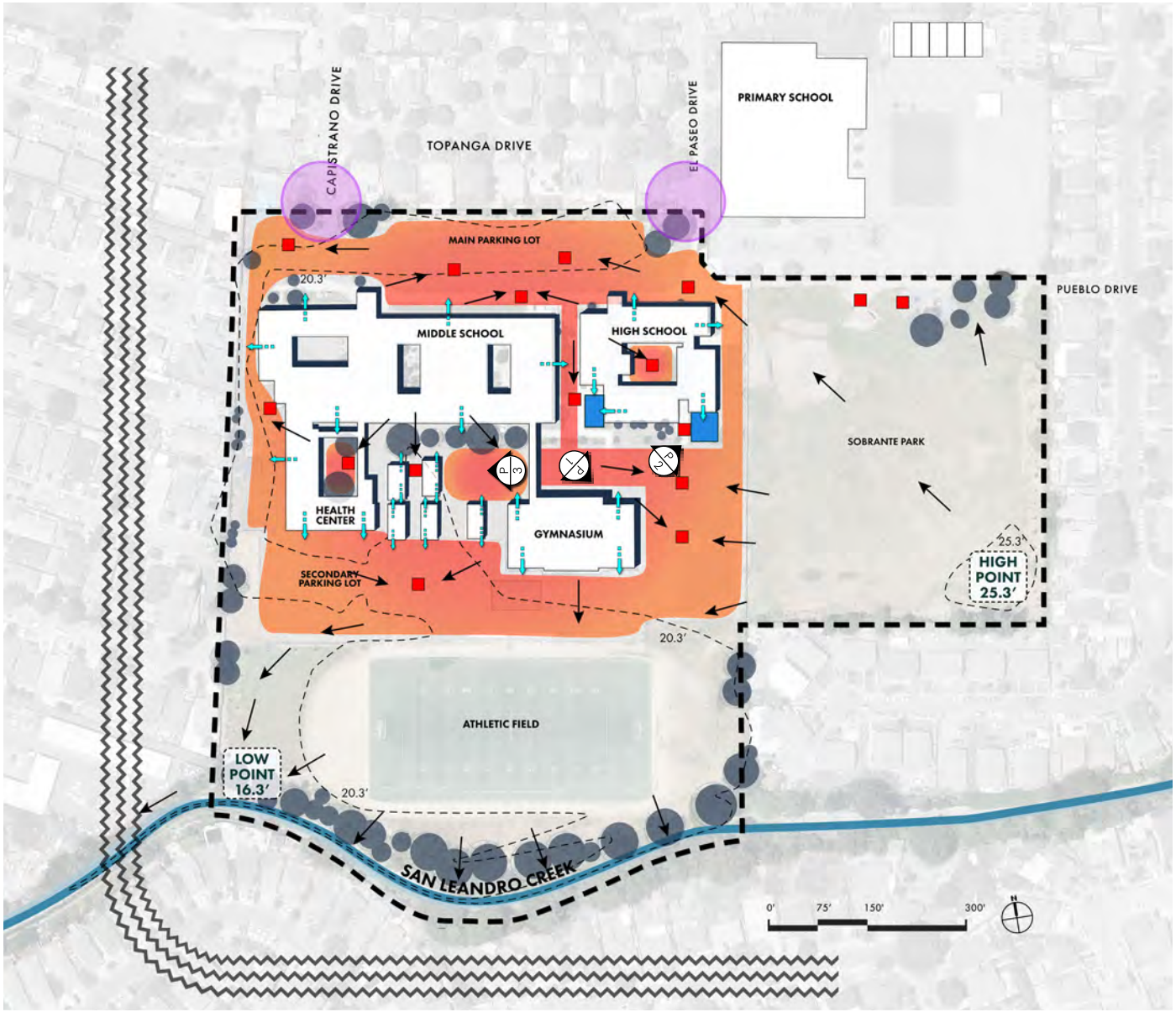




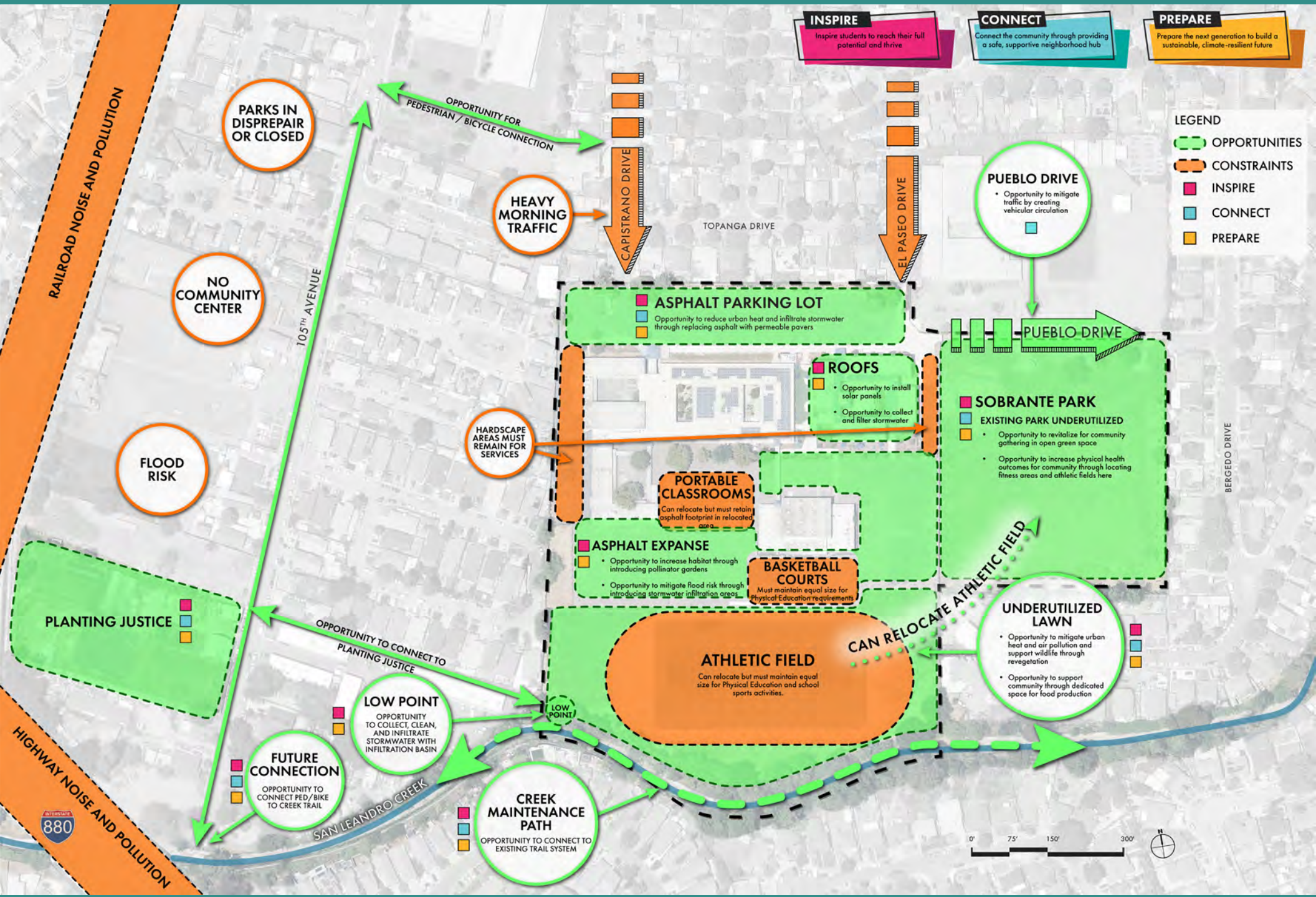


ENVIRONMENTAL CONSIDERATIONS

5% EXISTING TREE CANOPY COVERAGE ON THIS SCHOOL SITE[1]



OPPORTUNITIES & CONSTRAINTS



DESIGN PRECEDENT 1

ROBERT LOUIS STEVENSON STORMWATER SCHOOLYARD

LOCATION: SUNSET DISTRICT, SAN FRANCISCO, CA
PROJECT TYPE: EDUCATIONAL CAMPUS
FIRMS MILLER COMPANY LANDSCAPE ARCHITECTS
SIZE: 1 CITY BLOCK
YEAR COMPLETED: 2017

Pilot Project for "Stormwater Schoolyards" Initiative[1]

- Project is a collaboration between San Francisco Public Utilities Commission & San Francisco Unified School District
- 476,300 gallons of stormwater managed each year on this site

Permeable paving in sunken seating area creates infiltration opportunities[1]

Bioswales are cut into hardscape to manage stormwater runoff[1]

Site Plan: Miller Company Landscape Architects[1]

PROJECT GOALS[2]

Outdoor Environment:

- Provide a safe, fun, and usable schoolyard for outdoor learning and play

Stormwater Management:

- Enhance stormwater performance by diverting roof and asphalt runoff

Schoolyard Greening:

- Enhanced nature play areas and stormwater education

GUIDING PRINCIPLES[1]

- **Collaborative Design**
- **LID Strategies**
- **Universal Design**

PROGRAM ELEMENTS[1]

- Permeable Paving
- Infiltration Basins
- Dry creek beds
- Nature Play Areas
- Educational Signage
- Earthworks and boulders
- Seating areas
- Cistern

PROJECT TAKEAWAYS

- Incorporating **infiltration basins** and **dry creek beds** to clean and infiltrate stormwater
- Creating fun **active play areas** with **natural materials** that inspire connections to nature
- Utilizing **permeable pavers** to replace asphalt areas
- **Cutting into hardscape** to create infiltration areas and also act as **integrated educational elements** that reinforce sustainability principles

Sources:
1. San Francisco Public Utilities Commission Planning Report
2. San Francisco Unified School District

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DESIGN PRECEDENT 2

DOWNTOWN OAKLAND EDUCATIONAL CAMPUS

LOCATION: OAKLAND, CA
PROJECT TYPE: EDUCATIONAL CAMPUS
FIRM PGA DESIGN
SIZE: 2 CITY BLOCKS
YEAR COMPLETED: 2014

Stormwater capture provides water for irrigating the non-edible planting areas.[1]

Food is grown directly on the school grounds in a highly visible and well-used area.[1]

Aerial view of completed site.[1]

PROJECT GOALS[1]

Green Energy:

- Center sustainability to create a Zero New Energy Campus

Education:

- Central to the design: educational programming and interactive play environments

Light:

- Light plays a central role in the design, from building orientation to photovoltaic panels that cover parking for additional shade

GUIDING PRINCIPLES[1]

- **Solar Gain**
- **LID Strategies**
- **Universal Design**

PROGRAM ELEMENTS[1]

- Stormwater capture cisterns
- Edible schoolyard
- Highly reflective paving
- Basketball Court
- Multi-purpose play field
- Ample Gathering + Seating Areas

PROJECT TAKEAWAYS

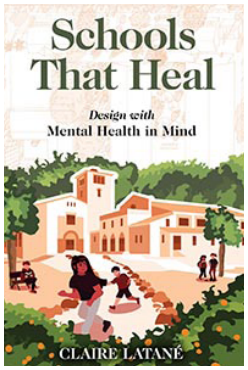
- **Capturing stormwater in cisterns** for reuse in non-edible planting areas
- Utilizing **highly reflective paving** to reduce the heat effect. For asphalt areas that needs to stay, treating those areas with **solar-reflective paint** will help mitigate urban heat
- An **edible schoolyard** will create rich opportunities to engage students and instill sustainability values

Sources:
1. PGAdesign

CONCEPTUAL DEVELOPMENT

DESIGN METHODOLOGIES

SCHOOLS THAT HEAL: DESIGN WITH MENTAL HEALTH IN MIND [1,2]



CONTEXT

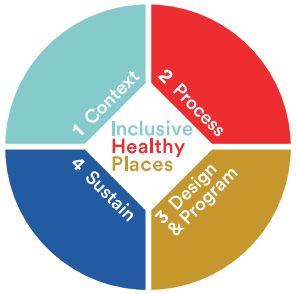
Landscape Architect Claire Latané wrote this book with research supported by a LAF fellowship to investigate and explore the connections between school environments and mental health.[1]

APPLICATION

This book will be used towards improving mental health outcomes for the students at the school through design choices. Guiding Principles to be used:

- Employ nature-based design solutions to help regulate the nervous system
- Use design to connect to and support existing mental health and restorative justice initiatives at the school
- Design with environmental and ecological literacy at the core of the program
- Collaborate in the design process with students
- Use design to nurture teachers and other adults at school

INCLUSIVE HEALTHY PLACES [3]



CONTEXT

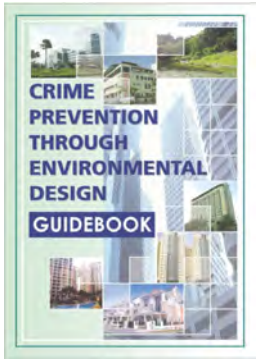
This framework was developed by Gehl and the Robert Wood Johnson Foundation to promote health equity.[3]

APPLICATION

The framework will be used to guide my design process in the following ways:

- To invite more physical activity in the space
- To promote social connection
- To promote a sense of belonging
- To consider maintenance in the design

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN [4]



CONTEXT

This guidebook provides practical implementation of the CPTED principles, both 1st and 2nd generation.

APPLICATION

The following summary of strategies from this framework will be employed in my design:

- Design for clear sight lines
- Provide adequate lighting
- Minimize concealed / isolated routes
- Avoid designing areas that could cause entrapment or isolation
- Design active spaces
- Create a sense of belonging
- Provide clear signage and information

UNIVERSAL DESIGN [5,6]

CONTEXT

Development of this approach was led by Ronald Mace at North Carolina State University with an interdisciplinary team of researchers, designers, and engineers with the purpose to provide guidance on designing the built environment for maximum benefit for all users, regardless of ability.[5]

APPLICATION

The 7 Principles of Universal Design will be used as a framework to inform and evaluate design choices for this project.

- Principle 1: Equitable Use
- Principle 2: Flexibility in Use
- Principle 3: Simple and Intuitive Use
- Principle 4: Perceptible Information
- Principle 5: Tolerance for Error
- Principle 6: Low Physical Effort
- Principle 7: Size and Space for Approach and Use

LOW IMPACT DEVELOPMENT DESIGN STRATEGIES [7]

CONTEXT

This approach defines clear goals for stormwater management in the urban landscape that mimic natural systems.

APPLICATION

The following strategies will be employed in my design:

- Reducing runoff volume
- Improving water quality
- Preserving natural areas
- Creating multifunctional landscapes
- Groundwater recharge
- Preventing pollution
- Infiltration
- Filtration
- Storage/ cisterns for reuse

CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL [8,9]

CONTEXT

This manual was developed by researchers at UC Berkeley to provide guidance for design strategies to support critical species.[8]

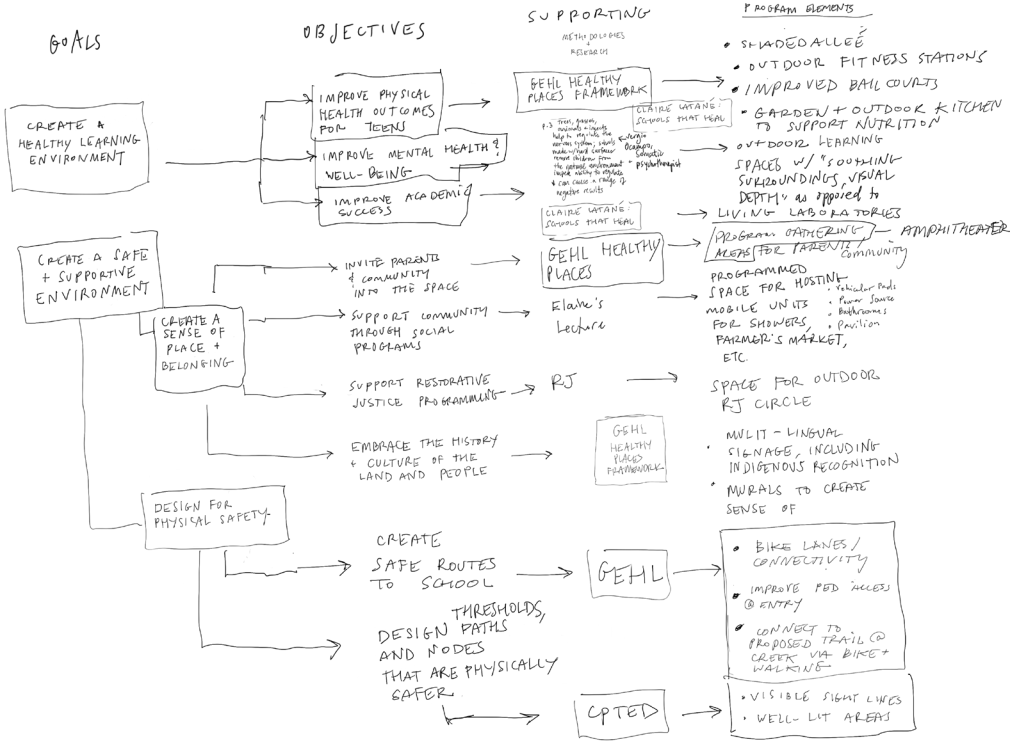
APPLICATION

The manual will be used to design for stream health and for the reintegration of Steelhead Trout, as this is a main goal of the Friends of San Leandro Creek and is supported by Alameda County Flood Control.[8,10]

Summary of Guiding Principles to be Used:

- Restore natural creek beds
- Provide places for trout to linger
- Open up elements that impede migration
- Stabilize banks
- Vegetate with native riparian species

PROGRAM DEVELOPMENT



INSPIRE

Inspire students to reach their full potential and thrive

OBJECTIVES	POTENTIAL PROGRAM ELEMENTS	SUPPORTING METHODOLOGIES	
1. Spaces that cultivate creativity and curiosity through interactions with nature	Outdoor maker space with natural materials - connect to Lisjan Ohlone people around traditional plant uses	Schools that Heal	Universal Design
	Guided paths	Universal Design	Inclusive Healthy Places
	Native Healing Garden - connect to Lisjan Ohlone people around traditional plant meanings and uses	Inclusive Healthy Places	Universal Design
	Outdoor kitchen / classroom - connect to Lisjan Ohlone people around traditional foods	Inclusive Healthy Places	Universal Design
	Natural materials used in programming such as large stones and logs	Inclusive Healthy Places	
	Co-create design with students via charrette sessions	Schools that Heal	Universal Design
2. Spaces that heal relationships among people and natural ecological systems	Living laboratory areas	Schools that Heal	Universal Design
	Nature-based classroom areas	Schools that Heal	Universal Design
	Pollinator community mural	Universal Design	
	Watershed mural	Universal Design	LID
	Lisjan Ohlone mural	Inclusive Healthy Places	Universal Design
3. Spaces that improve physical and mental health outcomes and promote wellness	Improve areas for play and athletics: outdoor fitness stations, natural playing fields (reducing asphalt), planting trees to improve air quality	Inclusive Healthy Places	Universal Design
	Increased shaded areas for gathering: shaded allee, shaded seating areas	Inclusive Healthy Places	Universal Design
	Natural meadows for nervous system regulation	Schools that Heal	Universal Design
	Pocket gathering spaces for smaller groups	Universal Design	Schools that Heal

CONNECT

Connect the community through providing a safe, supportive neighborhood hub

OBJECTIVES	POTENTIAL PROGRAM ELEMENTS	SUPPORTING METHODOLOGIES	
1. Create areas for multi-purpose gathering	Outdoor Amphitheater	Inclusive Healthy Places	Universal Design
	Shaded pavilion	Inclusive Healthy Places	Universal Design
	Community gathering space (shaded, accessible after hours/ weekends)	Inclusive Healthy Places	Universal Design
	Vehicular pads and hookups for mobile units, farmer's market, fairs, etc	Inclusive Healthy Places	Universal Design
2. Create a sense of belonging	Support Restorative Justice programming through outdoor RJ circle	Schools that Heal	CPTED
	Murals that celebrate people's history	Inclusive Healthy Places	CPTED
	Improved entry and circulation	Universal Design	CPTED
	Multi-lingual guided signage that represents the languages spoken by students and families	Inclusive Healthy Places	Universal Design
	Recognize Lisjan Ohlone people through signage, connection to plant uses in healing garden	Inclusive Healthy Places	Universal Design
3. Improve physical safety	Create safe routes to school through improved pedestrian access at entry	Inclusive Healthy Places	Universal Design
	ADA-compliant paths and nodes that have visible sight lines and are well-lit	CPTED	Universal Design
	Connect to proposed bike trail on San Leandro Creek	Inclusive Healthy Places	Universal Design
	Design safe access to San Leandro Creek	CPTED	Universal Design

PREPARE

Prepare the next generation to build a sustainable, climate-resilient future

OBJECTIVES	POTENTIAL PROGRAM ELEMENTS	SUPPORTING METHODOLOGIES	
1. Revitalize the local ecosystem	Improve stormwater infiltration and connection to the creek	LID	
	restore steelhead trout to the creek through restoring natural creek bed	CA Salmonoid Stream Habitat Restoration Manual	
	repair and restore natural riparian habitat	CA Salmonoid Stream Habitat Restoration Manual	
	Improve creek flood capacity	LID	CA Salmonoid Stream Habitat Restoration Manual
	Create bank stability	LID	CA Salmonoid Stream Habitat Restoration Manual
	Create vegetated swales for overflow	LID	
	Improve physical connection to San Leandro Creek creek via access through fence and paths	Universal Design	Inclusive Healthy Places
	Reduce, slow, and filter stormwater runoff	LID	
	Create stormwater capture for water-efficient irrigation methods	LID	
	Remove invasive species and revegetate with native plantings	LID	CA Salmonoid Stream Habitat Restoration Manual
2. Employ urban heat island reduction strategies	Reduce asphalt areas and replace vegetated areas	LID	
	Increase tree canopy cover	LID	
	Replace parking lot with permeable pavers	LID	
3. Foster environmental stewardship and climate resilience	Interactive demonstrational educational programming around stewarding the watershed and ecosystem	Universal Design	LID
	Bolster connections to Planting Justice and Friends of San Leandro Creek	Universal Design	LID
	Instructional bioswales	LID	Universal Design
	Stream monitoring station	Universal Design	LID

CONCEPTUAL DIAGRAMS

THE SPIRAL

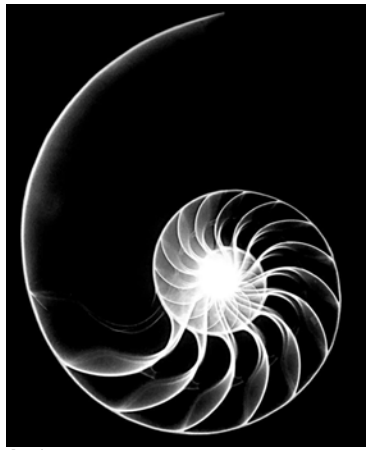
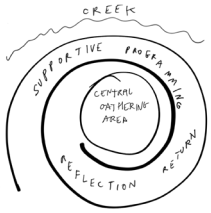


Figure 1

Figure 2

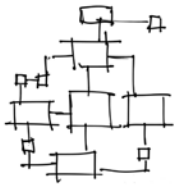


PARTI

REFERENCES THE PATH THE LEARNER TAKES AS THEY REVISIT, REFLECT, AND CONTINUE TO GROW IN INCREASING LEVELS OF COMPLEXITY

THE MOSAIC

Figure 3



PARTI

Figure 4

CONSISTS OF INDIVIDUAL PIECES THAT COULD STAND ALONE, BUT WHEN CONNECTED, CREATE A COMPLETE PICTURE

THE CONSTELLATION

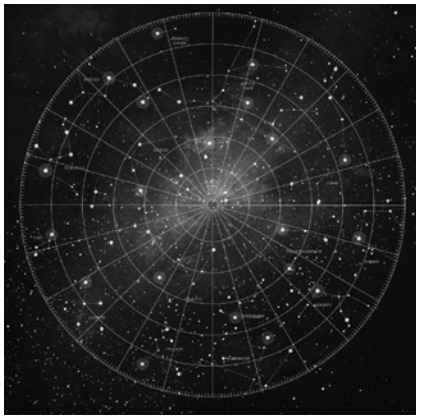


Figure 5

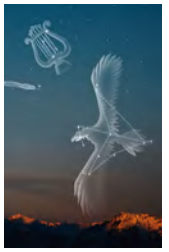
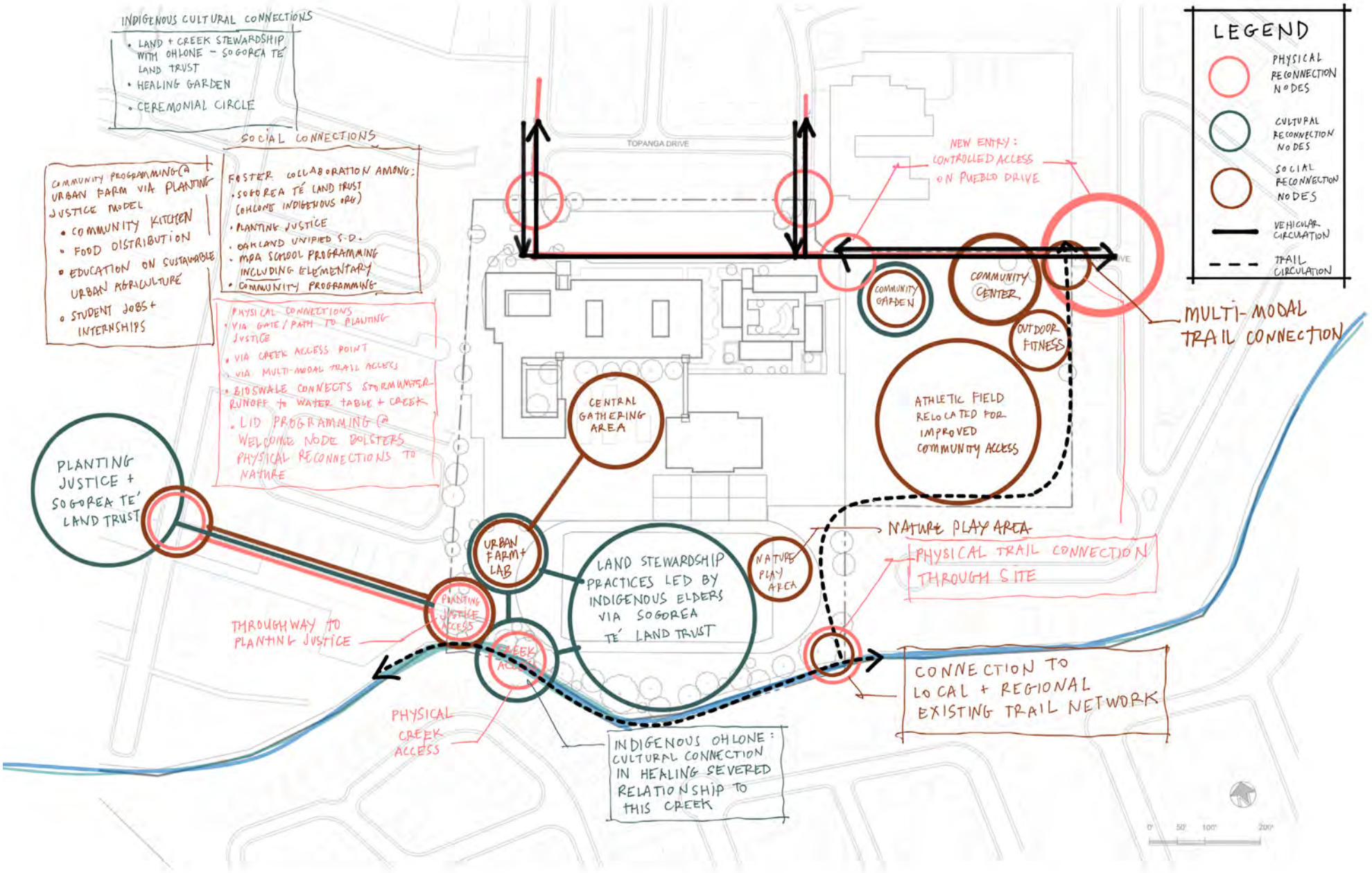


Figure 6

PARTI

A COLLECTION OF NODES THAT INVITE LEARNERS TO CHOOSE THEIR OWN PATHS AND MAKE THEIR OWN STORIES

SITE-SPECIFIC FUNCTIONAL DIAGRAM



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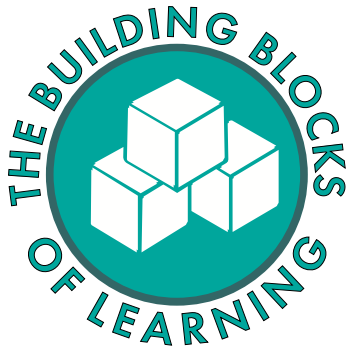
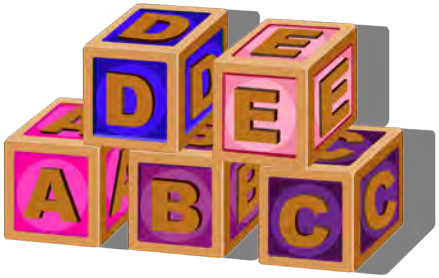
DESIGN METAPHOR

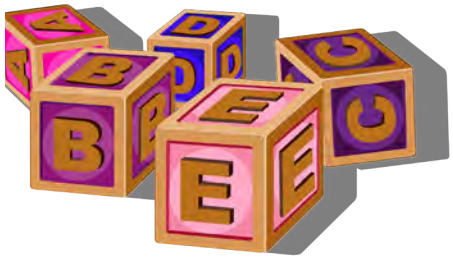


We learn through our lived experiences, navigating our own path as we make meaning of our world.

As we continue to learn, we are able to engage in increasingly complex processes. these are the **building blocks of learning.**



BUILDING BLOCKS OFFER STRUCTURE AND SUPPORT FOR THE FOUNDATIONS OF LEARNING.



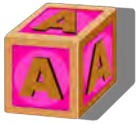
YET, THEY CAN ALSO BE MOVED, STACKED, AND REARRANGED, REFLECTING PLAY, AGENCY, AND POSSIBILITY.

PARTI

HARDSCAPE → HABITAT

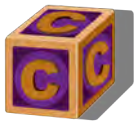
URBAN → WILD

DESIGN INTERVENTIONS MOVE FROM MORE STRUCTURED TO MORE ORGANIC

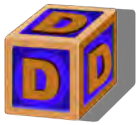


Block A: Perceive

Block B: Understand



Block C: Engage

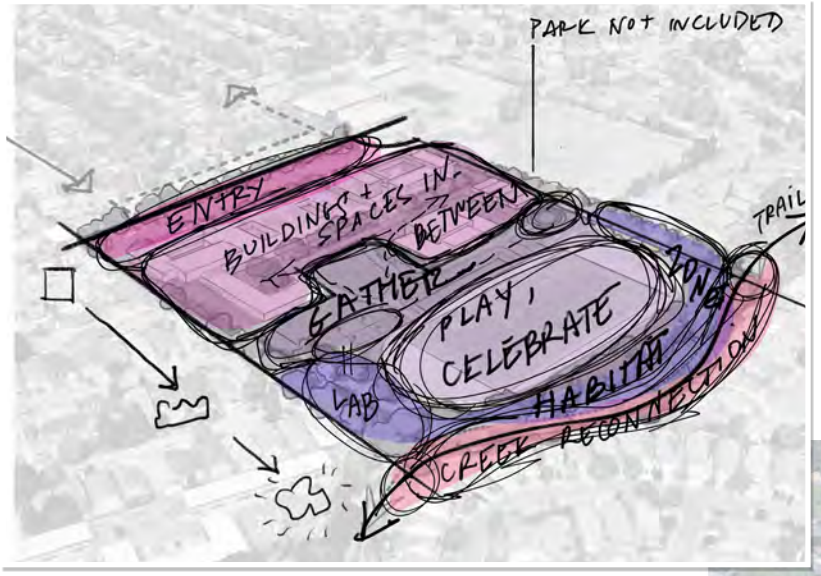


Block D: Reflect

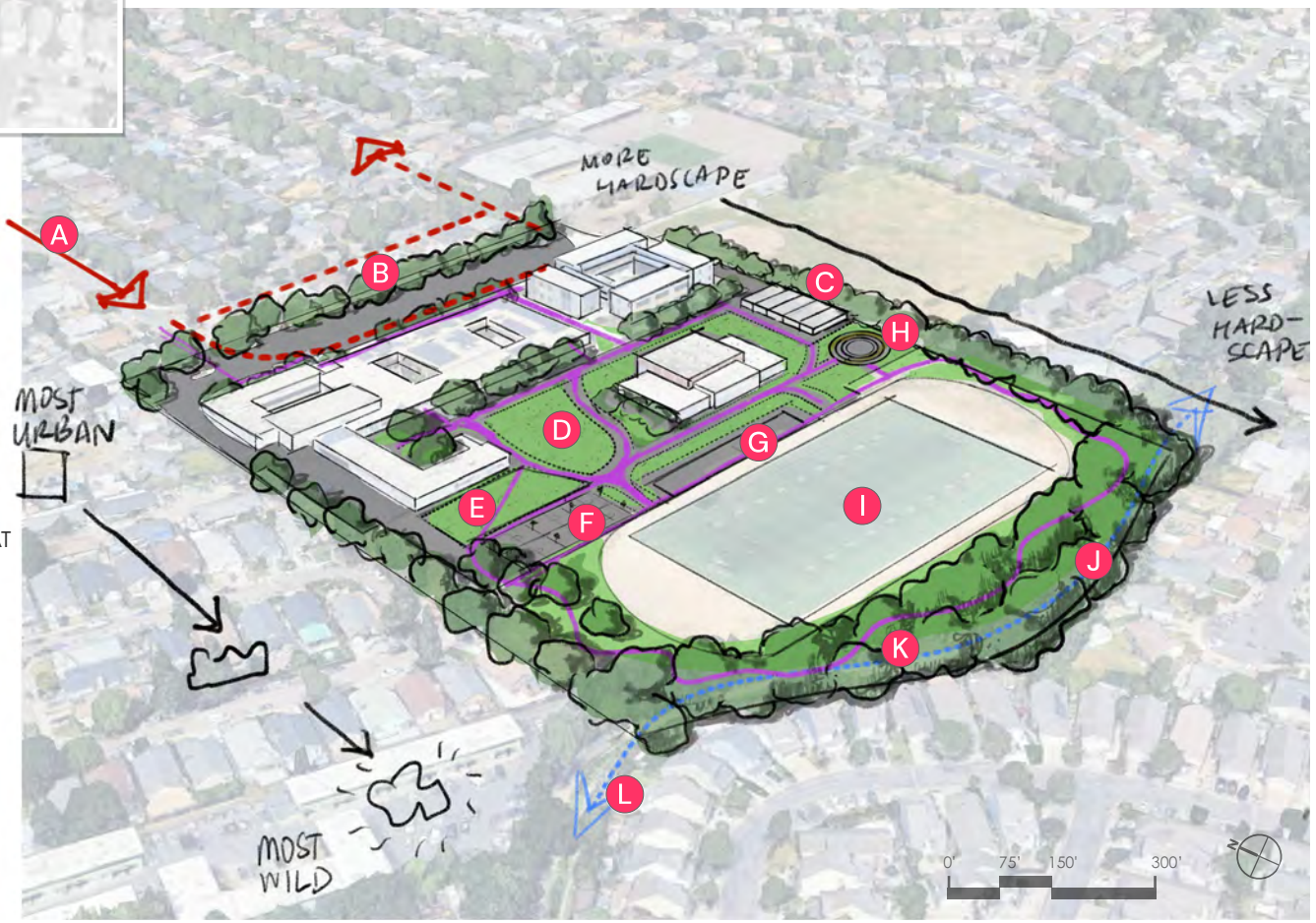
Block E: Synthesize

BLOOM'S TAXONOMY OF LEARNING PROVIDES A FRAMEWORK FOR THE DESIGN.

CONCEPTUAL DESIGN 1 | MEETING THE CREEK



"To exist, humanly, is to name the world and change it."
-Paulo Freire, *Pedagogy of the Oppressed*[1]



KEY FEATURES

- A ENTRY REMAINS THE SAME; TRAFFIC FLOW IS REDIRECTED
- B VEGETATION IS USED IN PARKING LOT TO MITIGATE URBAN HEAT
- C PORTABLES ARE RELOCATED TO OPEN UP CENTRAL QUAD AREA
- D ASPHALT REMOVED IN CENTRAL AREAS; REMAINS FOR PATHS
- E GARDEN AREA INTRODUCED
- F BASKETBALL COURTS ARE RELOCATED
- G SPECTATOR AREA ENLARGED
- H AMPHITHEATER INTRODUCED
- I FIELD REMAINS IN PLACE
- J RIPARIAN HABITAT RESTORED AT SOUTHERN EDGE
- K WALKING PATHS AND CREEK ACCESS ARE INTRODUCED
- L CONNECTION TO CREEK TRAIL CREATED

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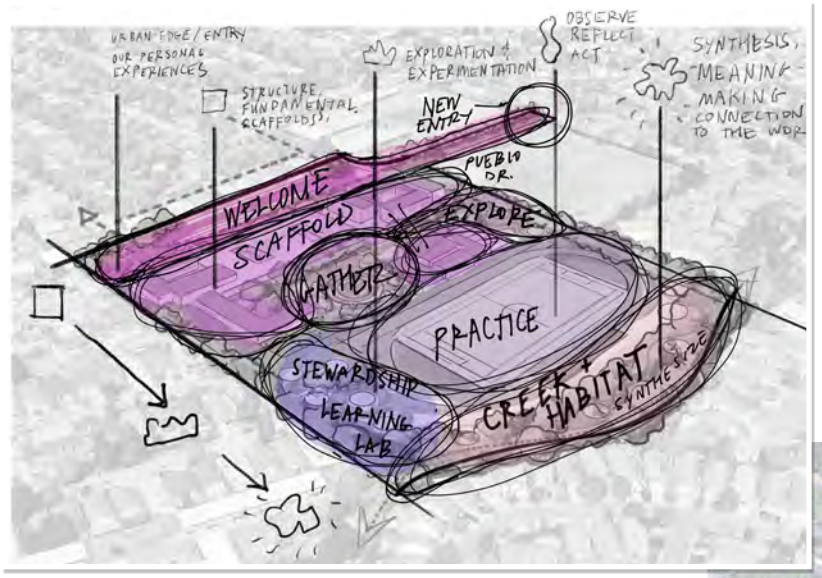
CONCEPTUAL DESIGN 2 | NATURE'S EMBRACE



"No one is born fully-formed: it is through self-experience in the world that we become what we are."

-Paulo Freire[1]

KEY FEATURES

- A RE-ROUTED TRAFFIC VIA PUEBLO DRIVE
- B BIOSWALES INFILTRATE GROUNDWATER IN PARKING LOT
- C ROOF STORMWATER COLLECTION (BLUE AREAS)
- D SMALLER HANGOUT AREAS
- E PORTABLES ARE ABUTTED TO GYMNASIUM
- F CENTRAL GATHERING AREA - AMPHITHEATER
- G BASKETBALL COURTS ARE RELOCATED
- H TRACK ADDED TO FIELD
- I NATURE CLASSROOM AREAS
- J INFILTRATION BASIN CLEANS SITE STORMWATER
- K SPECTATOR STAND RELOCATED
- L POLLINATOR MEADOW
- M CONNECTION TO CREEK TRAIL

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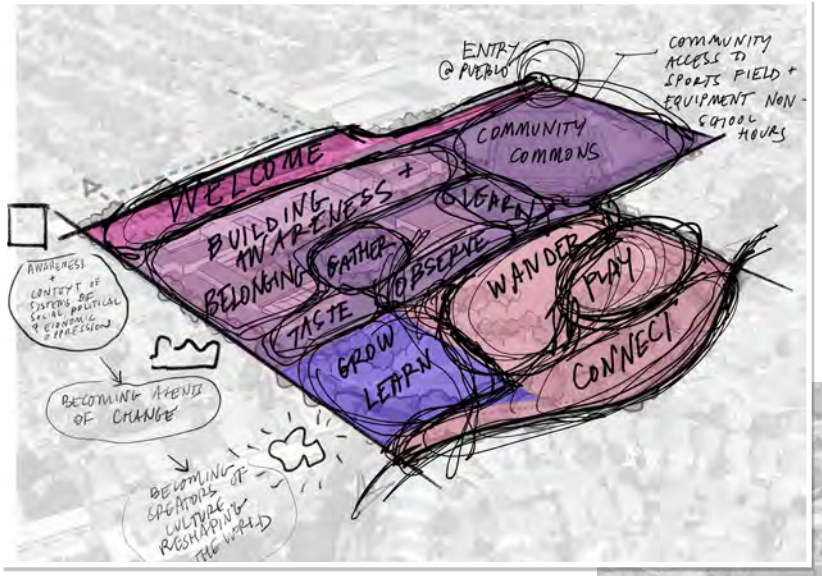
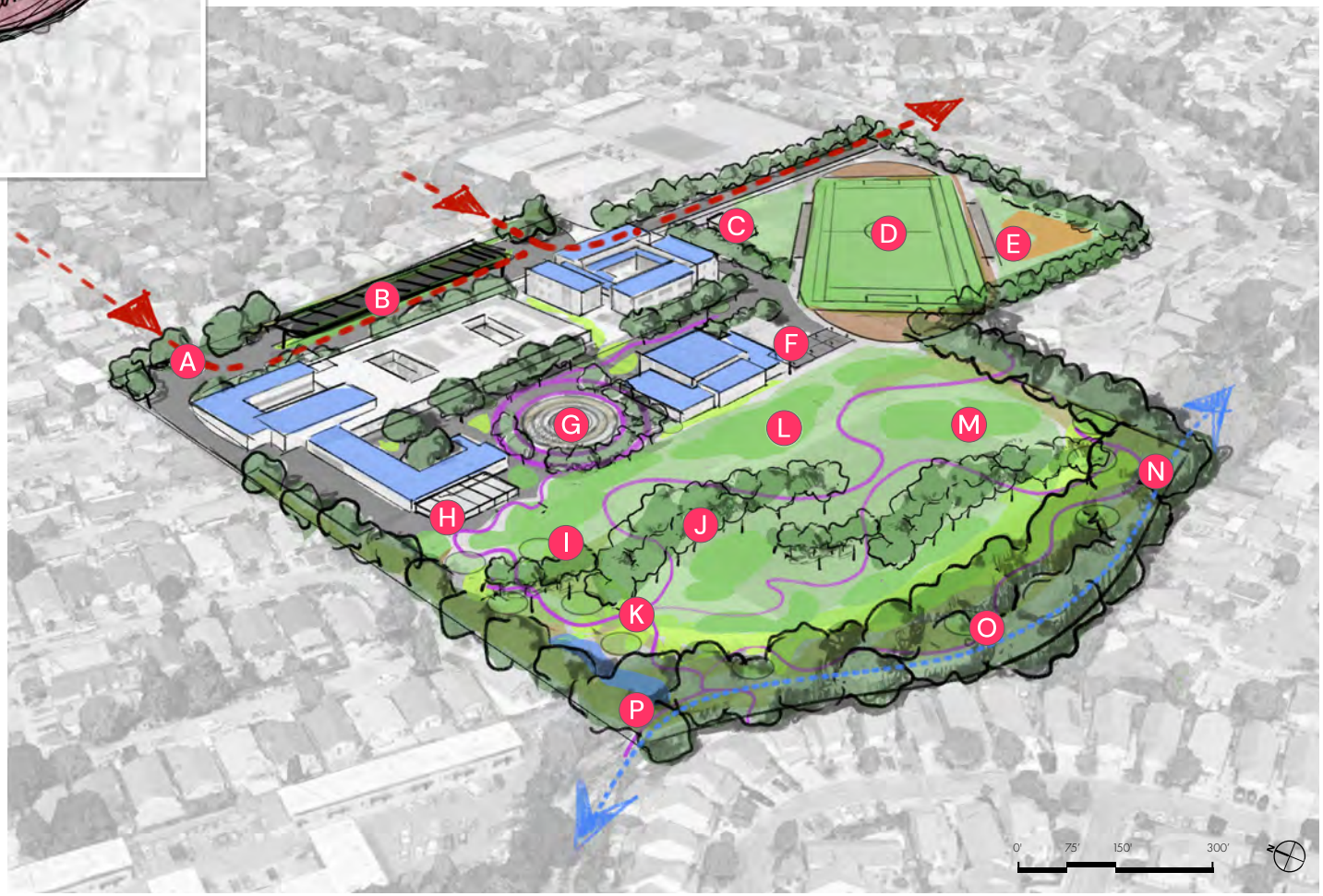
FINAL CONCEPTUAL DESIGN | URBAN MEETS WILD



"Liberating education consists in acts of cognition, not transferals of information."

Paulo Freire, Pedagogy of the Oppressed[1]



KEY FEATURES

- A PERMEABLE PAVERS IN LOT REPLACE ASPHALT
- B SOLAR PANEL SHADE STRUCTURES IN PARKING LOT
- C NEW COMMUNITY CENTER
- D FIELD RELOCATED
- E OUTDOOR FITNESS AREAS
- F BASKETBALL COURTS RELOCATED ADJACENT TO SPORTS FIELD
- G LARGE AMPHITHEATER'
- H PORTABLES ARE RELOCATED TO WESTERN EDGE
- I NATURE PATH AND CLASSROOMS
- J URBAN FOREST
- K OUTDOOR LABORATORY AREAS
- L URBAN FARM
- M POLLINATOR GARDENS AND REFLECTION AREAS
- N STABILIZED CREEK BANKS
- O CONNECTION TO CREEK TRAIL
- P CONNECTION TO PLANTING JUSTICE

SPATIAL NARRATIVE

MOST HARDSCAPE

Block A: Perceive

Learning Principle: Developing Awareness
Location: Entry and urban edges of campus.
Qualities: Most urban, most hardscape

Block B: Understand

Learning Principle: Developing Critical Consciousness
Location: Existing buildings and the spaces between them
Qualities: Hardscape interventions emerge

Block C: Engage

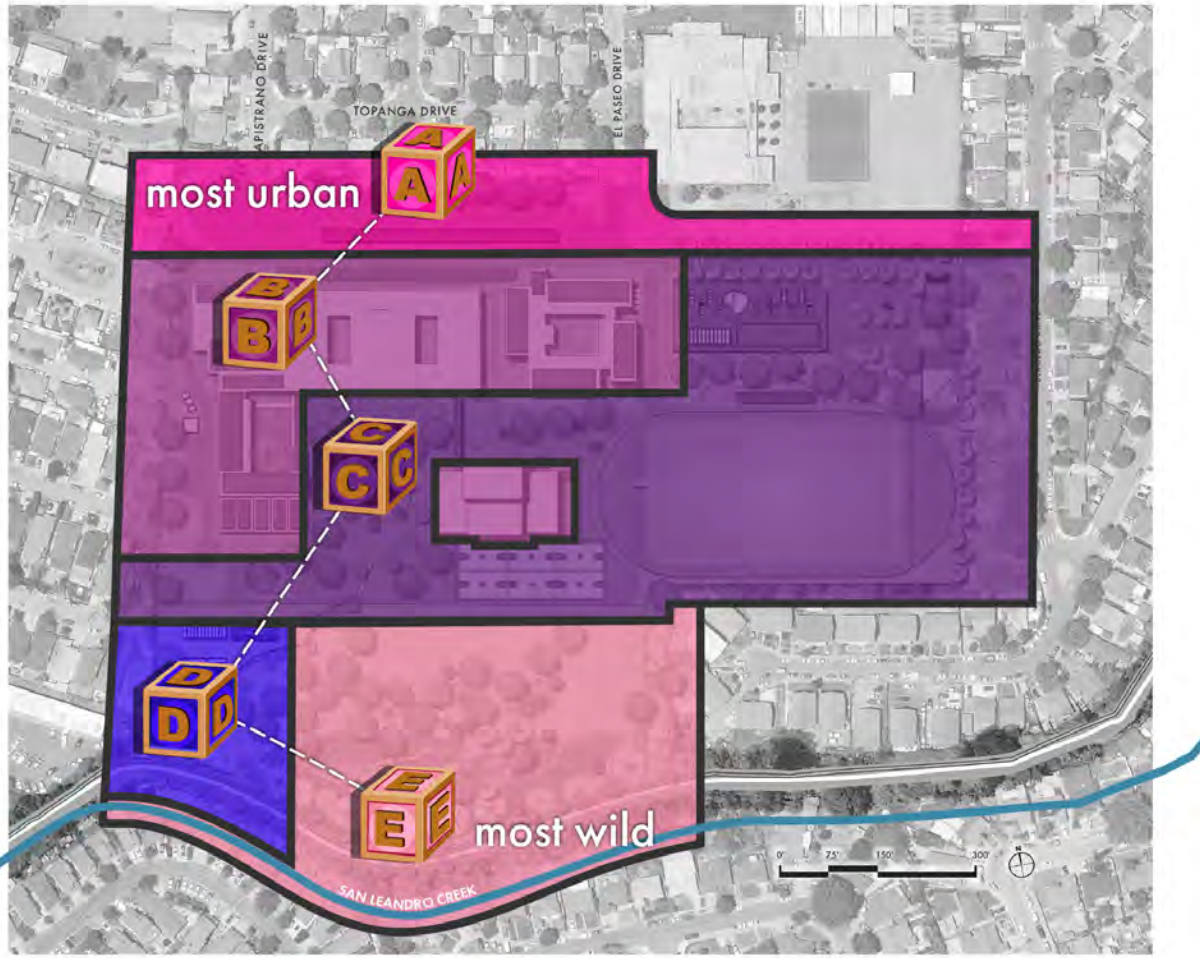
Learning Principle: Becoming Agents of Change
Location: Mid-campus Quad
Qualities: Learning blocks nestled among nature

Block D: Reflect

Learning Principle: Ongoing Reflection and Action
Location: Living Laboratory and Farm
Qualities: Spaces of ecological interdependence

Block E: Synthesize

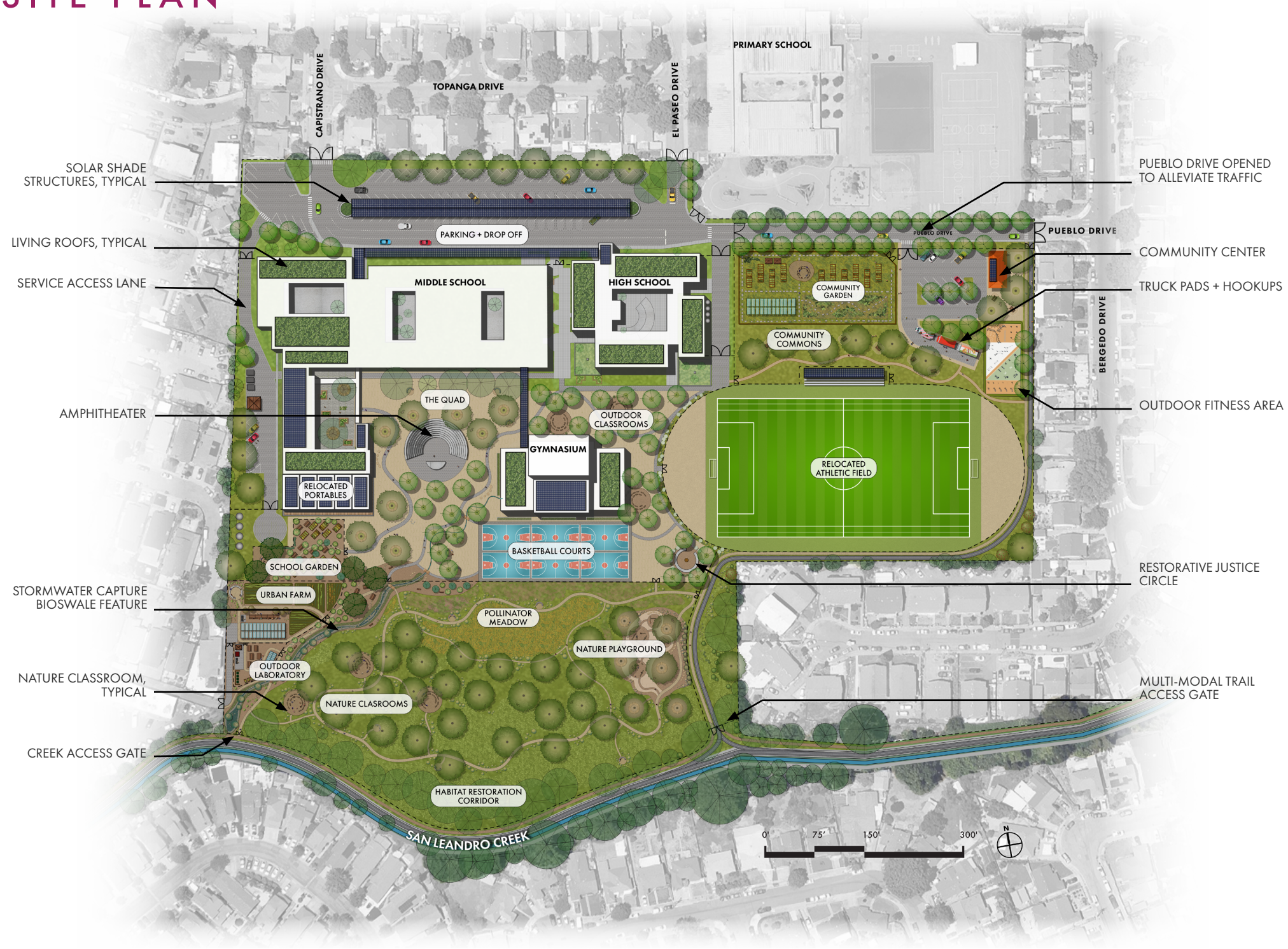
Learning Principle: Climate Resilience as Collective Practice
Location: Habitat restoration corridor
Qualities: Least hardscape, most wild



MOST HABITAT

SITE DESIGN

SITE PLAN



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DESIGN FEATURES

SOLAR PANEL SHADE STRUCTURES

Figure 1

WELCOMING THRESHOLDS

Figure 2

OUTDOOR FITNESS AREA

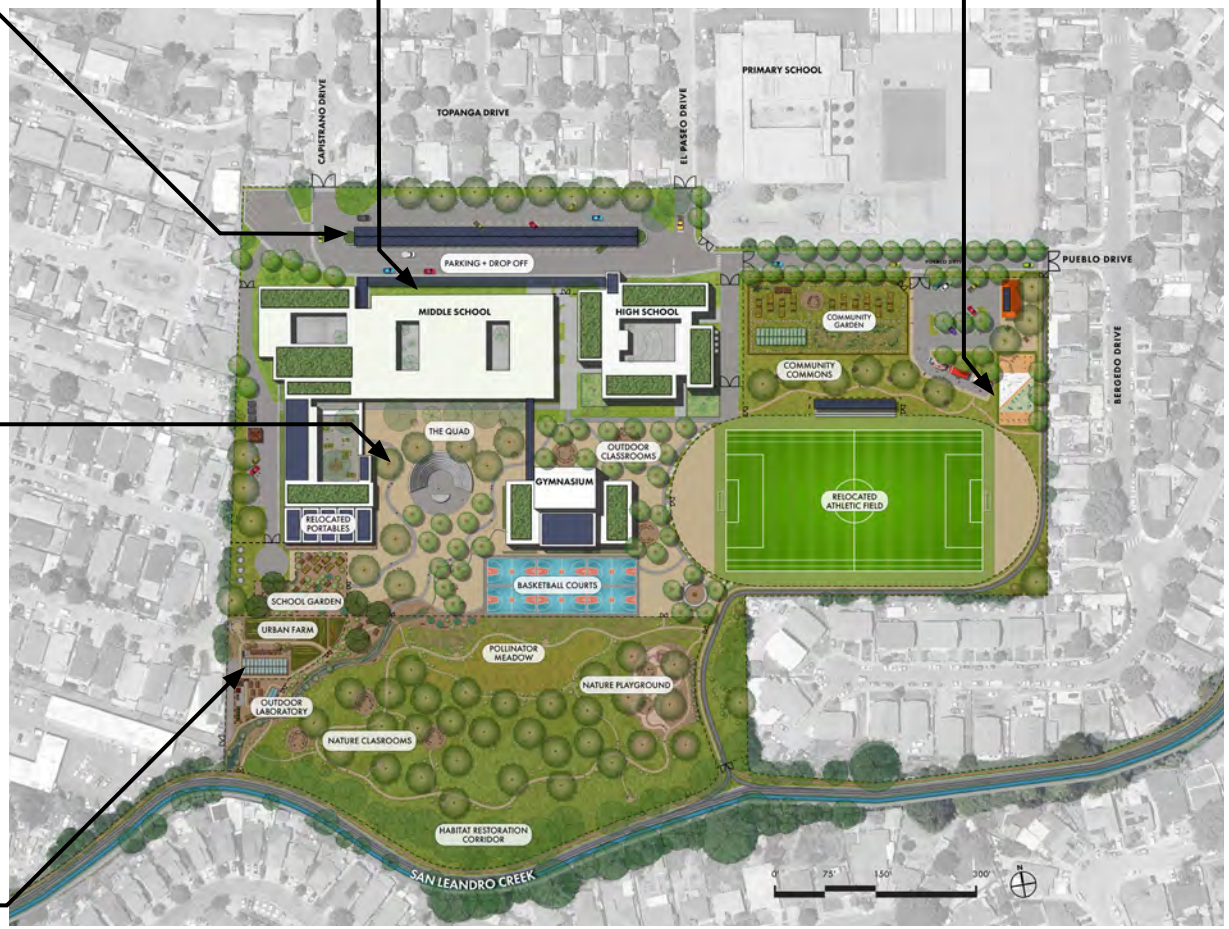
Figure 3

AMPLE SEATING AND GATHERING

Figure 4

URBAN FARM

Figure 5

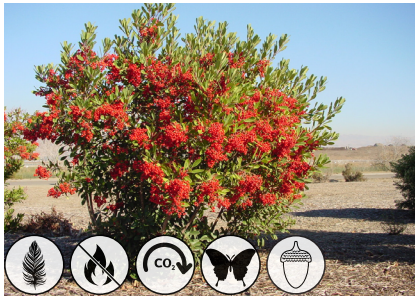


HARDSCAPE INSPIRATION

PLANT INSPIRATION

All images: CalScape

PLANT PALETTE | SEASONAL COLOR INTEREST



Heteromeles arbutifolia
Toyon

Stipa pulchra
Purple Needlegrass

Salvia apiana
White Sage

Agrostis densiflora
California Bent Grass

Epilobium canum
California Fuchsia

Eschscholzia californica
California Poppy

Achillea millefolium
Common Yarrow

Pseudognaphalium biolettii
Bicolored Everlasting

PLANT SELECTION DETAILS

- OHLONE CULTURAL SIGNIFICANCE
- FIRE RESISTANT
- CARBON SEQUESTERING
- SUPPORTS HUMMINGBIRDS
- SUPPORTS BUTTERFLIES AND MOTHS
- SUPPORTS BIRDS
- SUPPORTS BEES
- CALIFORNIA NATIVE

SEASONAL COLOR

WINTER	TOYON BERRIES AND FOLIAGE	WHITE SAGE FOLIAGE	CALIFORNIA FUCHSIA FOLIAGE	YARROW FOLIAGE	PURPLE NEEDLEGRASS FOLIAGE	CALIFORNIA BENT GRASS FOLIAGE	CALIFORNIA POPPY FOLIAGE	BICOLORED EVERLASTING BLOOMS AND FOLIAGE
SPRING	TOYON FOLIAGE	WHITE SAGE BLOOMS AND FOLIAGE	CALIFORNIA FUCHSIA FOLIAGE	YARROW BLOOMS AND FOLIAGE	PURPLE NEEDLEGRASS SEEDPODS AND FOLIAGE	CALIFORNIA BENT GRASS SEEDPODS AND FOLIAGE	CALIFORNIA POPPY BLOOMS AND FOLIAGE	
SUMMER	TOYON BLOOMS AND FOLIAGE	WHITE SAGE BLOOMS AND FOLIAGE	CALIFORNIA FUCHSIA BLOOMS AND FOLIAGE	YARROW BLOOMS AND FOLIAGE	PURPLE NEEDLEGRASS SEEDPODS AND FOLIAGE	CALIFORNIA BENT GRASS SEEDPODS AND FOLIAGE	CALIFORNIA POPPY BLOOMS AND FOLIAGE	
FALL	TOYON FOLIAGE	WHITE SAGE FOLIAGE	CALIFORNIA FUCHSIA BLOOMS AND FOLIAGE	YARROW FOLIAGE	PURPLE NEEDLEGRASS FOLIAGE	CALIFORNIA BENT GRASS FOLIAGE		

All Images: CalScape.org

LOW IMPACT DEVELOPMENT PLAN

Underground Cisterns[1]

Solar-Reflective Paint[2]

Living Roofs[3]

Natural Materials[4]

LID ELEMENTS

STORMWATER MANAGEMENT STRATEGIES

1. Permeable Paving, Typ.
2. Underground Cisterns
3. LID Demo Area
4. Living Roofs, Typ.
5. Above-ground Cisterns, Typ.
6. Rainwater Capture Feature
7. Bioswale Demonstration Area
8. Berms and Basins
9. Bioretention Pond
10. Creek Monitoring Station

ENVIRONMENTALLY-AWARE STRATEGIES

11. Bike Paths made from Recycled Asphalt from Site
12. Natural Materials Used in Site Furnishings
13. Native Plantings for Stormwater Cleaning
14. Solar-Reflective Paint on Existing Asphalt
15. Wildlife Habitat Restoration Area

GREEN ENERGY STRATEGIES

16. Solar Panels
17. Bikeability Increased
18. Walkability Increased

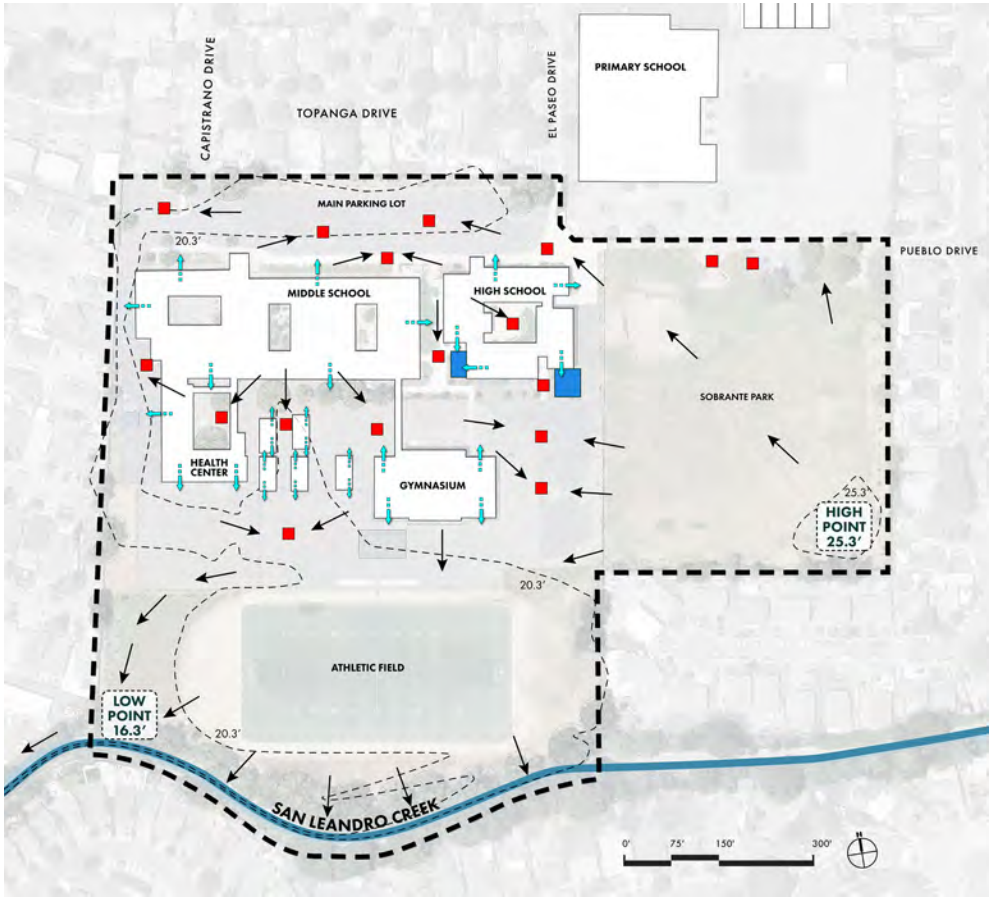
ALICIA BARTOLI-ARNOLD

STORMWATER DIAGRAM

LEGEND

- STORM DRAIN INLET
- INFILTRATION BASIN
- LIVING ROOF
- RAIN GARDEN
- BELOW-GROUND CISTERN
- ABOVE-GROUND CISTERNS
- SITE BOUNDARY
- DIRECTION OF FLOW
- ROOF FLOW
- PIPE CONNECTION
- BIOSWALE

BEFORE



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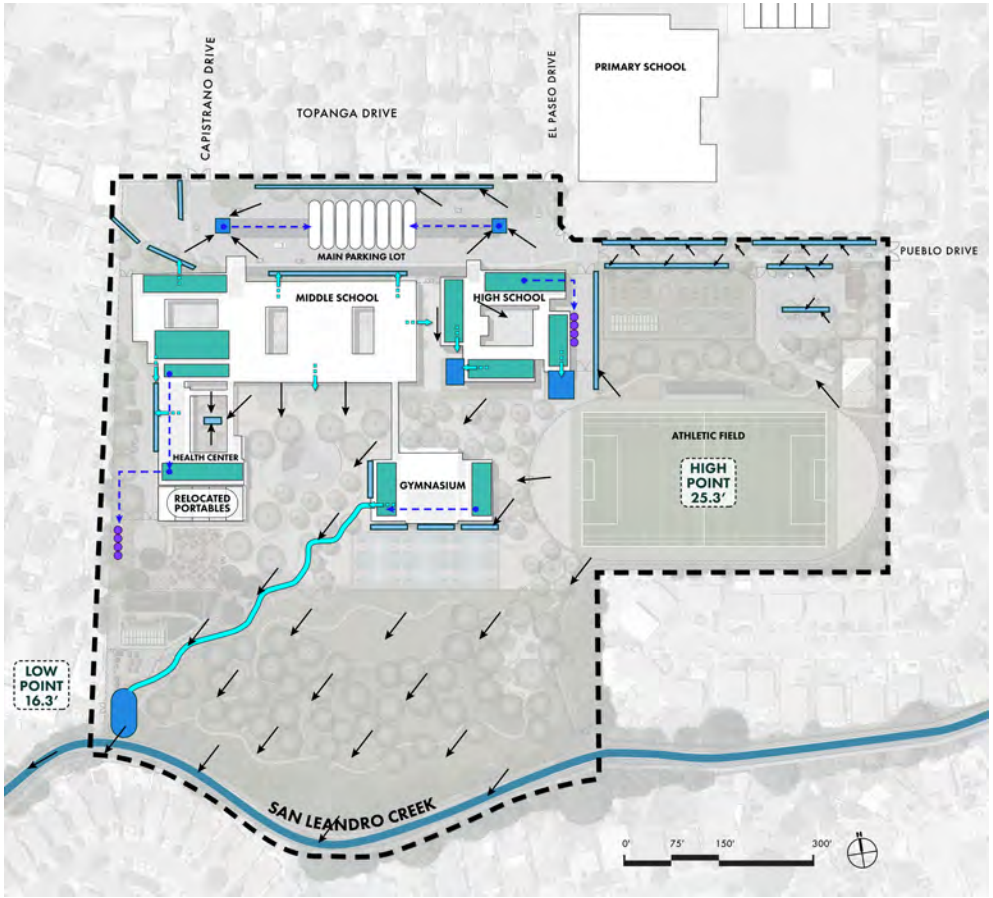


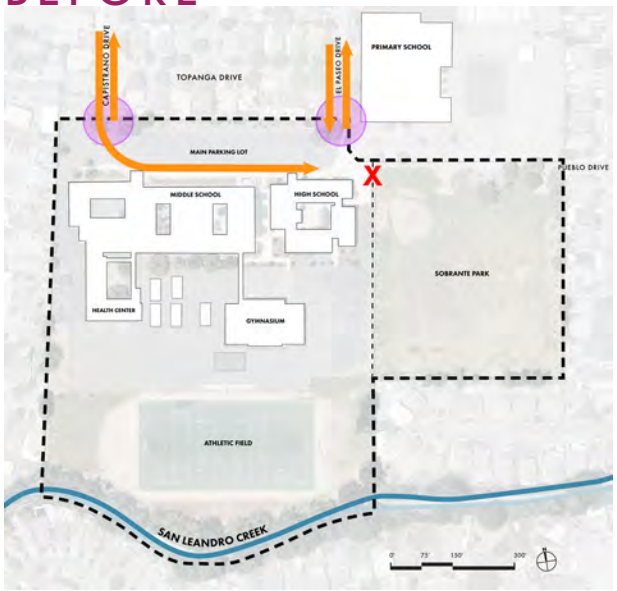
CIRCULATION DIAGRAM

LEGEND

- PRIMARY VEHICULAR CIRCULATION
- SECONDARY VEHICULAR CIRCULATION
- PRIMARY PEDESTRIAN CIRCULATION
- MULTI-MODAL TRAIL
- SITE BOUNDARY
- ENTRY NODE
- NO ENTRY PERMITTED
- ADDED PARKING

TRAFFIC CONGESTION AREAS

BEFORE



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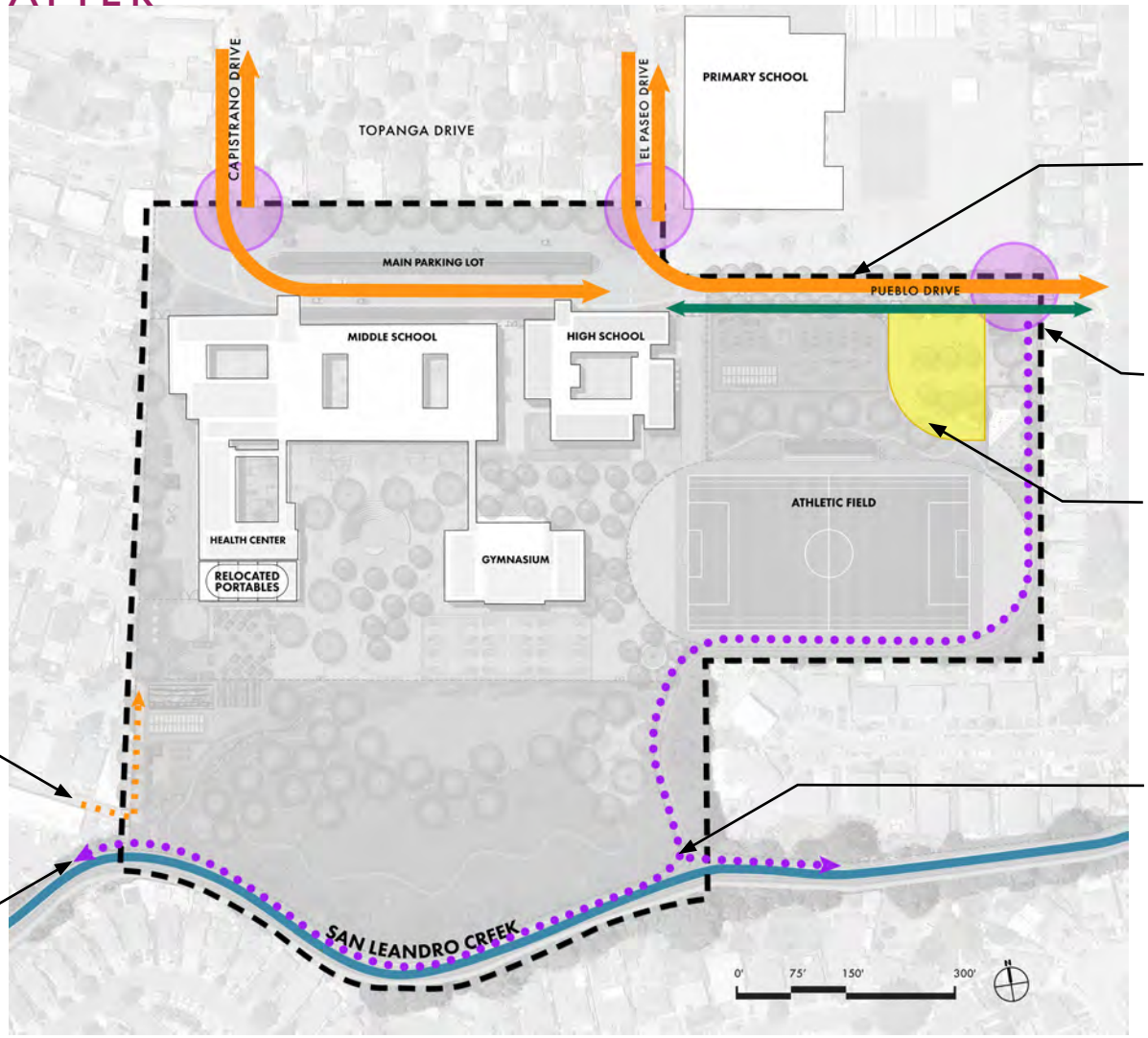


ONE-WAY TRAFFIC IN MORNING ON PUEBLO DRIVE ALLEVIATES TRAFFIC

MULTI-MODAL TRAIL ACCESS POINT

ADDED PARKING + FOOD TRUCK PADS

NEW ACCESS ROAD CONNECTS URBAN FARM TO PLANTING JUSTICE / INDIGENOUS LAND TRUST

MULTI-MODAL TRAIL SEGMENT CONNECTS TO EXISTING SAN LEANDRO CREEK TRAIL

GATE CONNECTS TO CREEK AND MULTI-MODAL TRAIL

ALICIA BARTOLI-ARNOLD

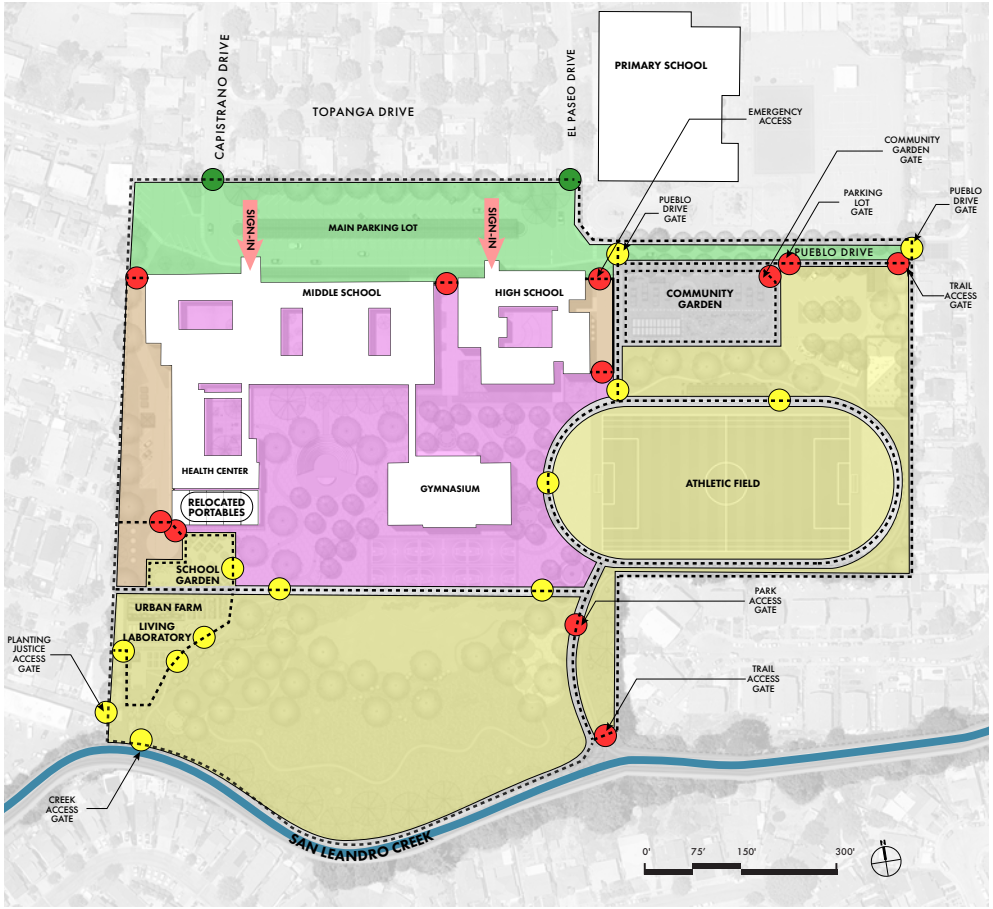
SAFETY DIAGRAM

SITE HOURS: 7AM-DUSK

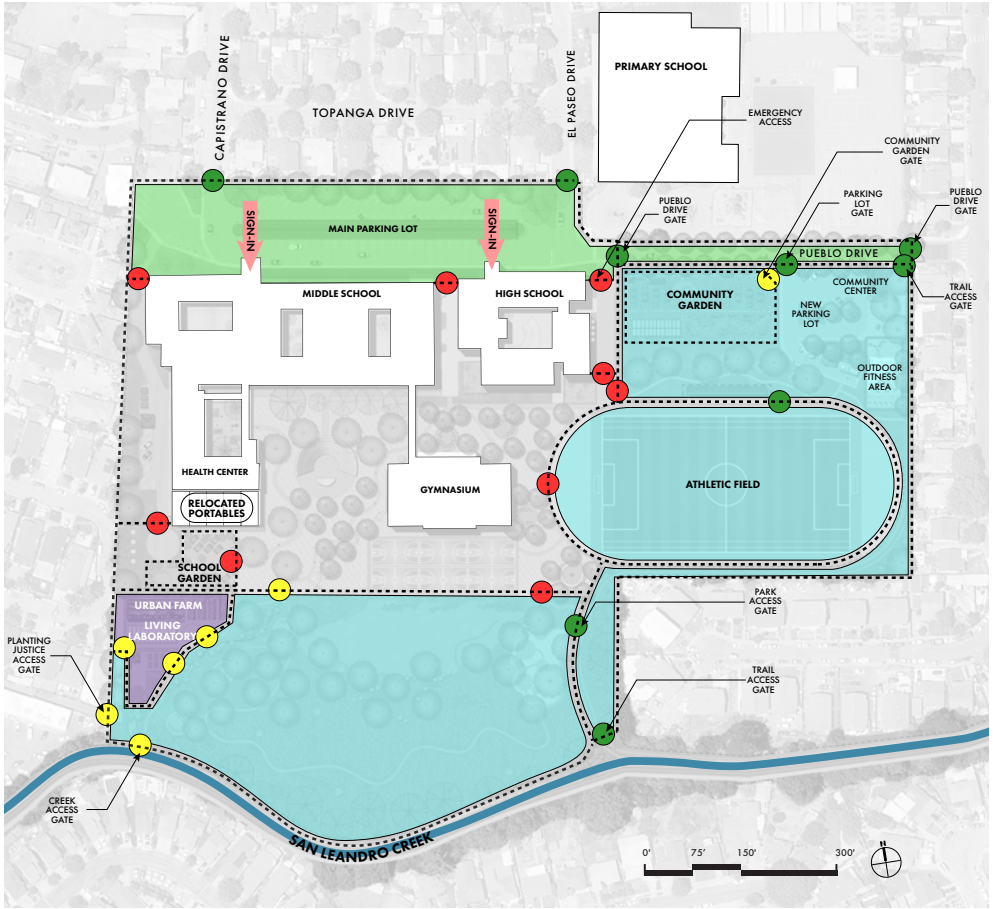
LEGEND

- PUBLICLY ACCESSIBLE AREAS 7AM-DUSK
- DURING SCHOOL STUDENT ACCESS AREAS
- DURING SCHOOL SUPERVISED STUDENT ACCESS AREAS
- STAFF AND UTILITY ACCESS AREAS
- PUBLICLY ACCESSIBLE AREAS AFTER-SCHOOL HOURS
- COMMUNITY PARTNER ACCESS AFTER SCHOOL HOURS
- OPEN GATE
- SUPERVISED USE GATE
- CLOSED GATE
- FENCE
- SITE BOUNDARY

DURING SCHOOL HOURS



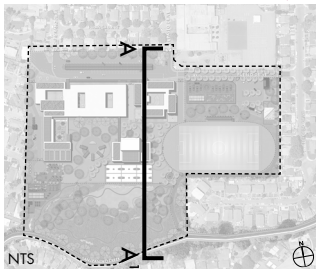
AFTER SCHOOL HOURS



DESIGN DETAILS

SECTIONS

KEY MAP



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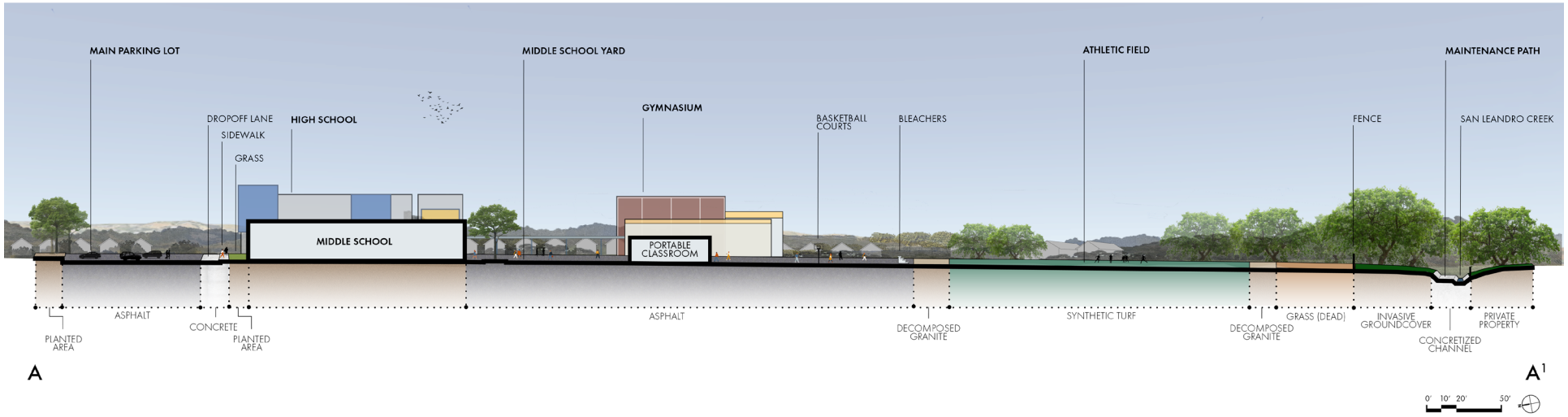

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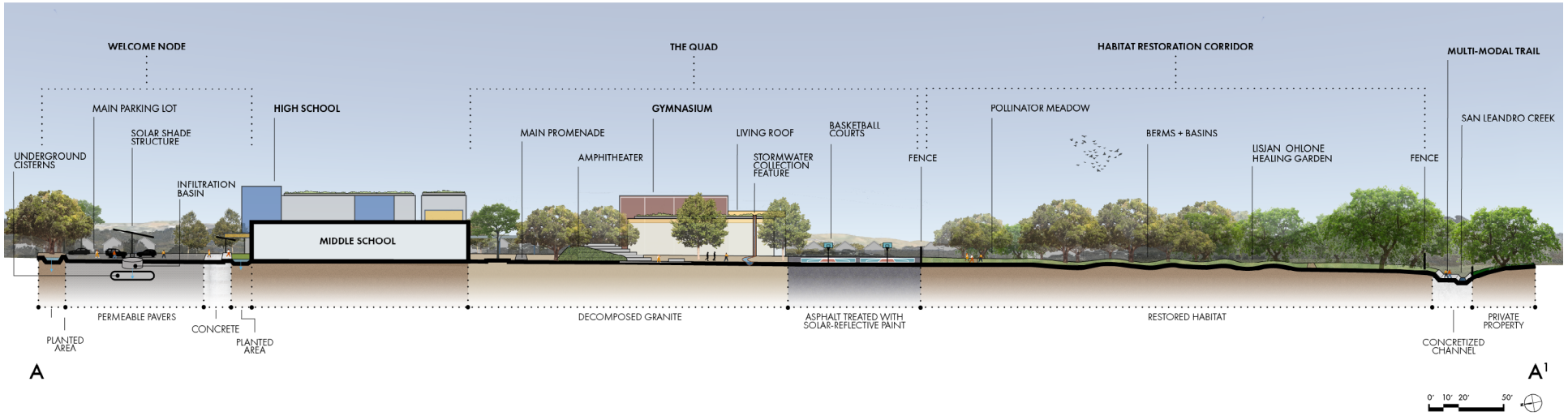
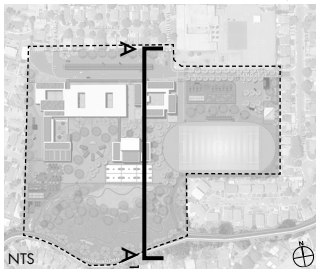
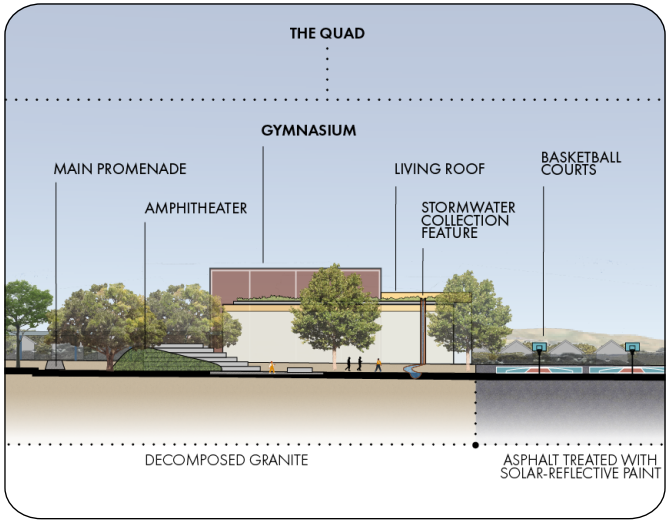
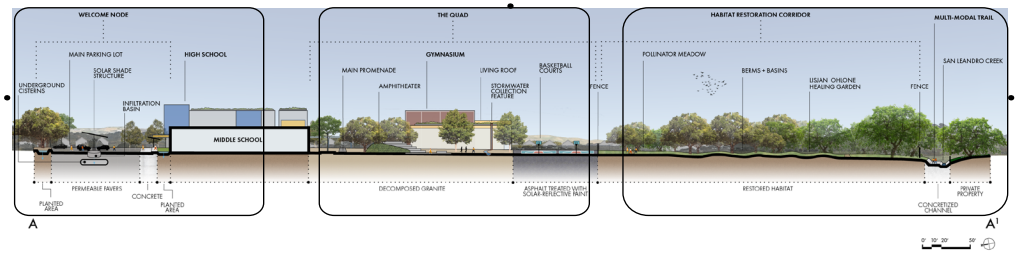


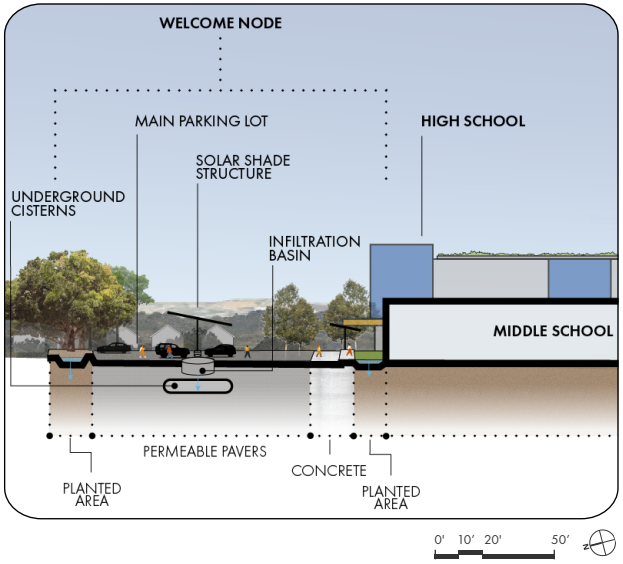
SECTION A-A[1] DETAILS

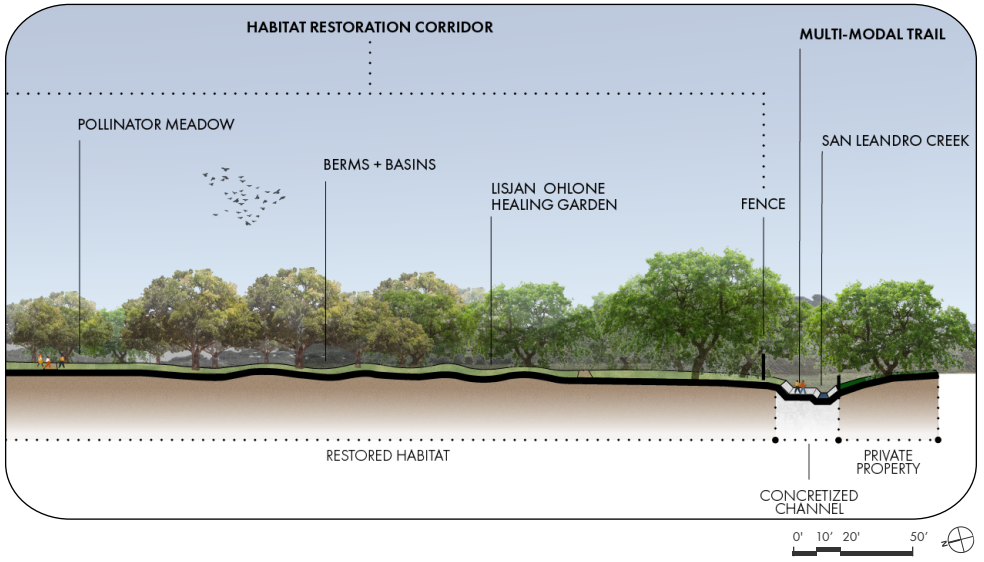
KEY MAP







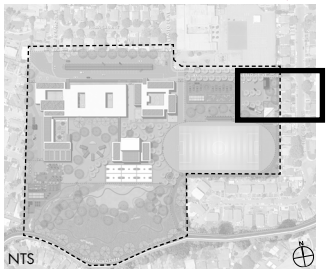




Block A: Perceive

Learning Principle: Developing Awareness
Location: Entry and urban edges of campus.
Qualities: Most urban, most hardscape

KEY MAP



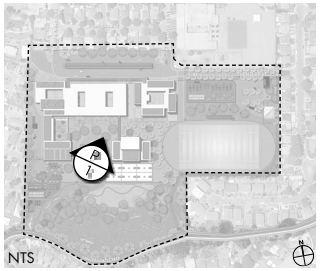
PLAN VIEW

ALICIA BARTOLI-ARNOLD

Block B: Understand

Learning Principle: Developing Critical Consciousness
Location: Existing buildings and the spaces between them
Qualities: Hardscape interventions emerge

KEY MAP



BEFORE

Figure 1: Author

DESIGN INSPIRATION

Figure 2: Landezine

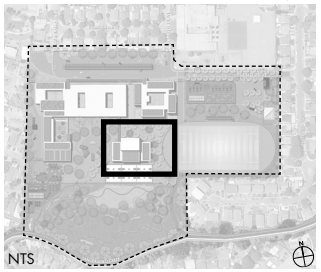
Figure 3: Landezine

AFTER

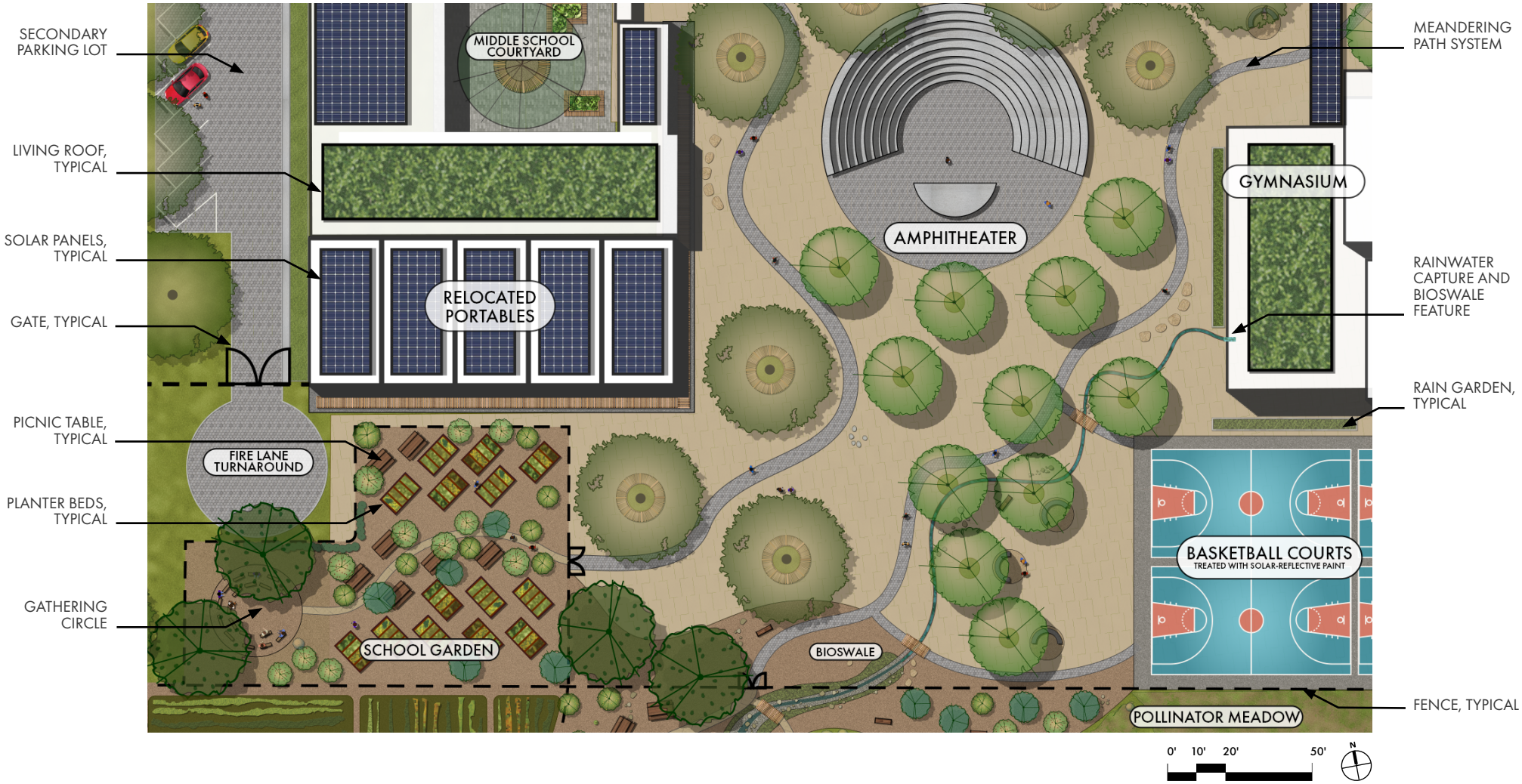
Block C: Engage

Learning Principle: Becoming Agents of Change
Location: Mid-campus Quad
Qualities: Learning blocks nestled among nature

KEY MAP



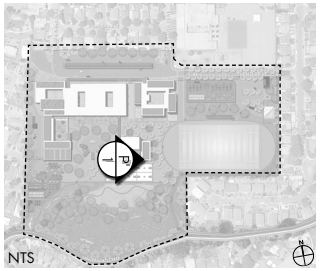
PLAN VIEW



Block C: Engage

Learning Principle: Becoming Agents of Change
Location: Mid-campus Quad
Qualities: Learning blocks nestled among nature

KEY MAP



BEFORE

Figure 1

AFTER

DESIGN INSPIRATION

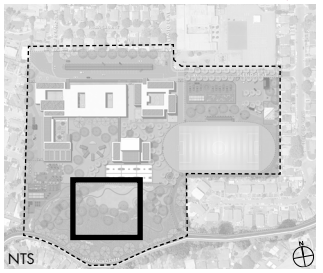
Figure 2

Figure 3

Block D: Reflect

Learning Principle: Ongoing Reflection and Action
Location: Living Laboratory and Farm
Qualities: Spaces of ecological interdependence

KEY MAP

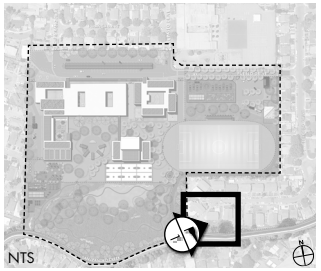


PLAN VIEW

Block E: Synthesize

Learning Principle: Climate Resilience as Collective Practice
Location: Habitat restoration corridor
Qualities: Least hardscape, most wild

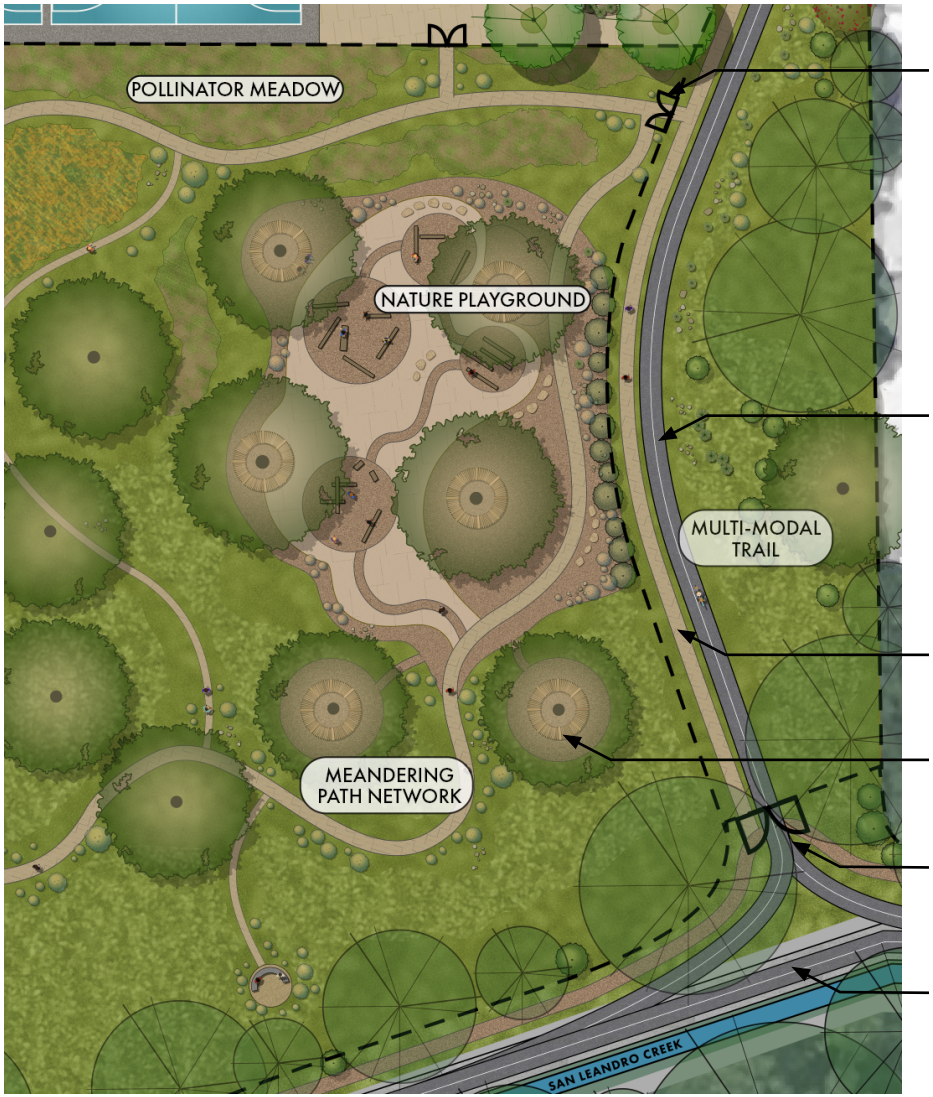
KEY MAP



PERSPECTIVE VIEW

Figure 1: Author

PLAN VIEW



PLAYGROUND AND HABITAT CORRIDOR ACCESS GATE

REUSED ASPHALT FROM DEMOLITION

DECOMPOSED GRANITE PATH, TYPICAL

CIRCULAR WOODEN SEATING , TYPICAL

TRAIL ACCESS GATE

SAN LEANDRO CREEK TRAIL - PROPOSED

Figure 2: Author

CONCLUSION

INSPIRE
Inspire students to reach their full potential and thrive

CONNECT
Connect the community through providing a safe, supportive neighborhood hub

PREPARE
Prepare the next generation to build a sustainable, climate-resilient future

196,693 ft² less asphalt

from 223,807 sq ft to 27,114 sq ft,
which lowers average surface temperatures by

~34°F

and makes the air feel

3–6°F cooler

+ 30,000 ft²

Additional outdoor nature-based educational areas

246% increase

in solar energy generating capacity with additional 30,000 FT² solar array coverage

76,500 sq ft of asphalt replaced with permeable pavers =

+ 47,700 gallons

water infiltration capacity for a 1-inch storm.

+ 410,000 ft² open green space

Revitalized and reactivated for the community

60 oak trees + 75 sycamore trees = 163,500 ft²

increase in shade in the summer at maturity from tree canopy

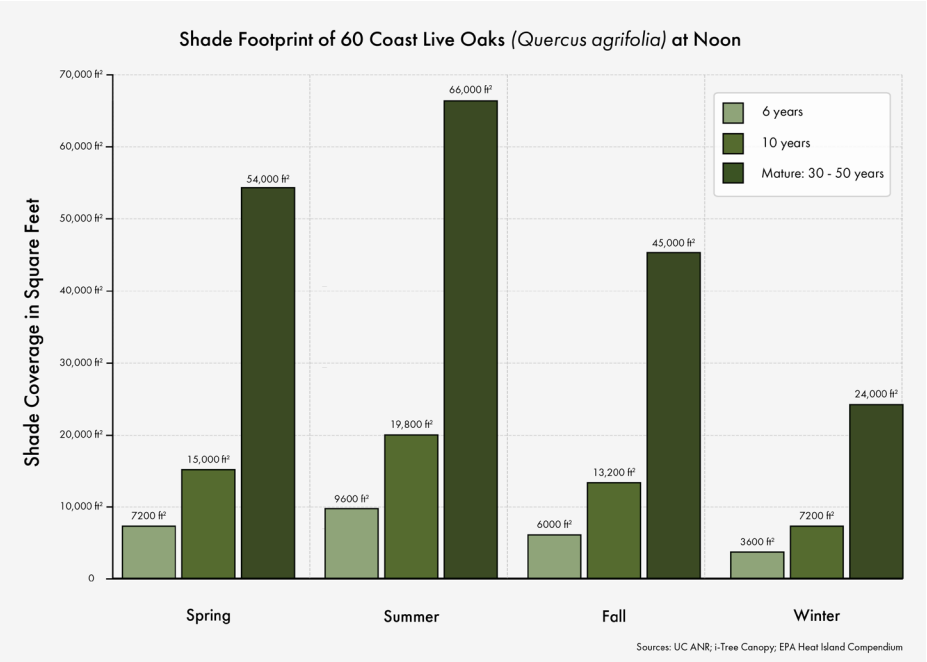
INSPIRE
Inspire students to reach their full potential and thrive

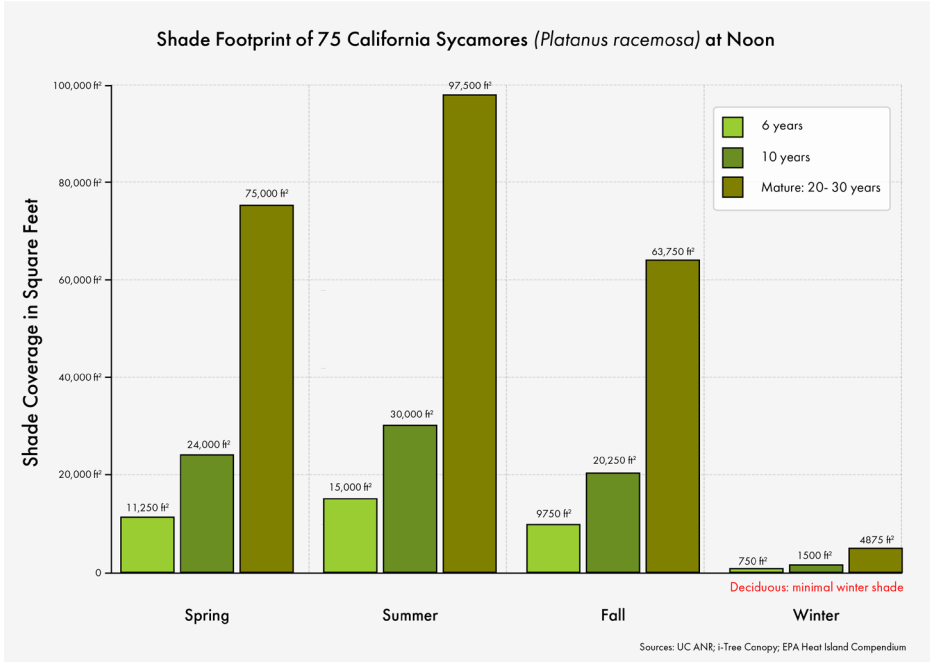
CONNECT
Connect the community through providing a safe, supportive neighborhood hub

PREPARE
Prepare the next generation to build a sustainable, climate-resilient future

60 oak trees
+
75 sycamore trees
=
163,500 ft²

increase in shade in the summer at maturity from combined tree canopy





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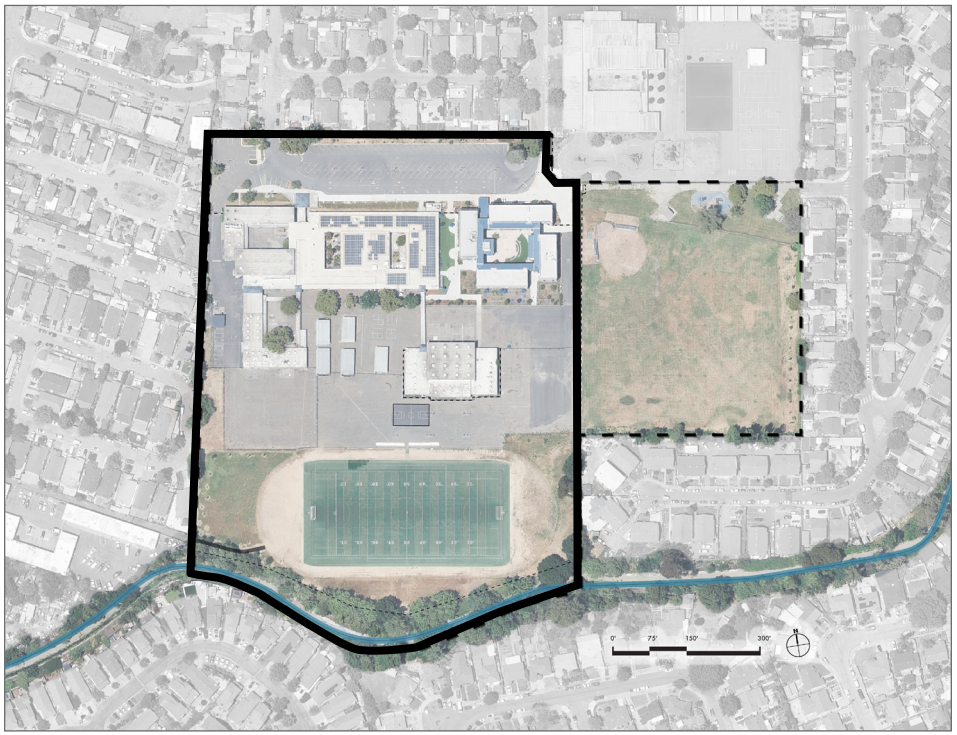
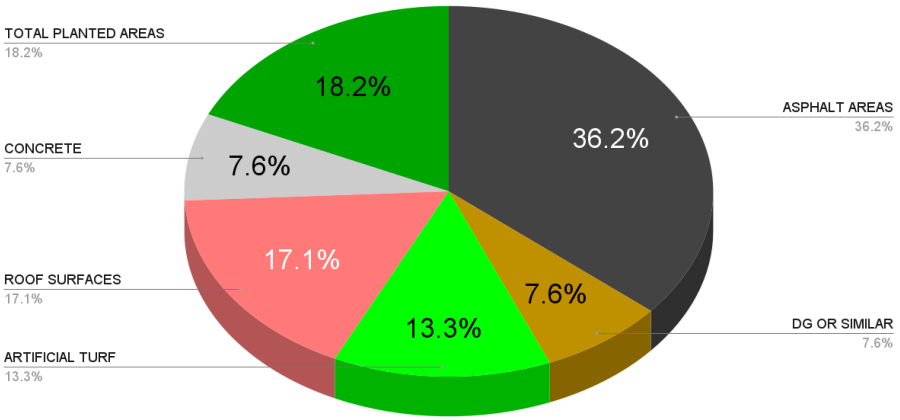
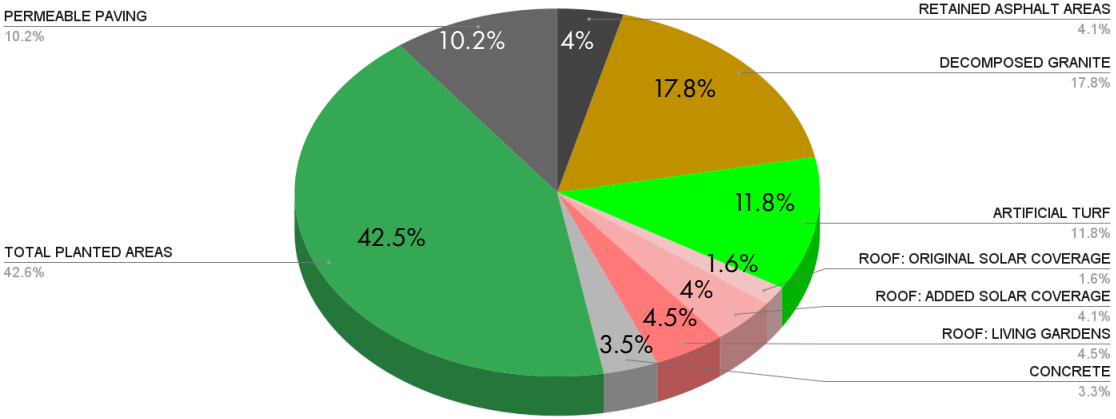


SURFACE MATERIAL PROPORTIONATE TO SCHOOL SITE AREA (~ 15 ACRES)



AFTER

SURFACE MATERIAL PROPORTIONATE TO ENTIRE SITE AREA (~ 20 ACRES)



FROM HARDSCAPE


TO HABITAT

CITATIONS + IMAGE CREDITS

ALL SOURCES ANNOTATED ON PAGE WHERE NOT CITED HERE.

UNANNOTATED IMAGES, FIGURES, AND RENDERINGS ARE BY THE AUTHOR.

TITLE PAGE

1. "Madison Park Academy (6-12)." Homes.Com, https://www.homes.com/school/oakland-ca/madison-park-academy-6-12-school/2w814bpvmex3b/. Accessed 29 June 2025.
2. Teacher photo: New Highland Academy picture day

PROJECT STATEMENT

1. Satellite Map Image: Google Earth
2. Image: Author

LOCATION

1. All map images: Google Earth

PROJECT JUSTIFICATION - A HIGH NEED

1. "OAKLAND STATE OF MIND," Instagram, 24 Apr. 2024, https://www.instagram.com/oaklandstateofmind.tv/reel/C6ICM-wURs9-/.
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3. Tyrone Carney Park - Dirks, Sandhya. Oakland's Sobrante Park Fights to Resurrect a Neighborhood Jewel | KQED. 19 Aug. 2015, https://www.kqed.org/news/10647780/oaklands-sobrante-park-fights-to-resurrect-a-neighborhood-jewel.
4. Image: Author
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PROJECT JUSTIFICATION - A GREAT OPPORTUNITY

1. "Planting Justice — Blog." The Good Table, 3 Apr. 2025, https://www.the-good-table.org/blog/tag/Planting+Justice.
2. Image: Author
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4. "Community News: Exciting News from Planting Justice!" The Good Table, 17 May 2023, https://www.the-good-table.org/blog/a-radical-nursery-deemed-oaklands-hidden-gem.
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6. "East Oakland Neighborhoods Initiative." City of Oakland, https://www.oaklandca.gov/topics/east-oakland-neighborhoods-initiative. Accessed 17 May 2025.
7. "East Oakland Neighborhoods Initiative (EONI) Community Plan." https://cao-94612.s3.amazonaws.com/documents/FINAL-PRINTED-EONI-PLAN.pdf.

USERS, CLIENTS, STAKEHOLDERS, AGENCIES

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2. CIF Census Data - Madison Park Academy. https://madisonpark.ousd.org/athletics/cif-census-data.
3. EdData - School Profile - Madison Park Academy 6-12. https://www.ed-data.org/school/Alameda/Oakland-Unified/Madison-Park-Academy-6--12. Accessed 19 May 2025.
4. Home - Madison Park Academy. https://madisonpark.ousd.org/. Accessed 26 June 2025.
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6. "Premium Black and White Size 5 Soccer Ball." Walmart.Com, https://www.walmart.com/ip/Premium-Black-and-White-Size-5-Soccer-Ball/767081021. Accessed 26 June 2025.

SCHOOL DATA

1. Virtual Showcase - Madison Park Academy. https://madisonpark.ousd.org/about-us/virtual-showcase.
2. EdData - School Profile - Madison Park Academy 6-12. https://www.ed-data.org/school/Alameda/Oakland-Unified/Madison-Park-Academy-6--12. Accessed 19 May 2025.
3. "Madison Park (MPA) Upper (01 61259 6066450) 2023-24 Community School Plan.Pdf." Google Docs, https://drive.google.com/file/d/1PTQFcMZC7v-7iXc9HQeOHeByWl54c79h/view?usp=drive_web&usp=embed_facebook. Accessed 19 May 2025.
4. Image: Wiener, Jocelyn. "The Pandemic Laid Bare Existing Inequalities. California's Kids Felt the Pain." CalMatters, 30 June 2021. calmatters.org, http://calmatters.org/health/coronavirus/2021/06/california-covid-inequality-oakland-rockridge/.

BENEFITS OF SCHOOLYARD GREENING

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2. White, Mike Moen. "Milwaukee Program Helps Schools Ditch Playground Asphalt for Natural Settings." Public News Service, 4 Jan. 2024, www.publicnewsservice.org/2024-01-04/environmental-health/milwaukee-program-helps-schools-ditch-playground-asphalt-for-natural-settings/a88066-1
3. Park, R. Jisung, Joshua Goodman, Michael Hurwitz, and Jonathan Smith. "Heat and Learning." American Economic Journal: Economic Policy, vol. 12, no. 2, May 2020, pp. 306–39
4. Bikomeye, Jean C., et al. "The Impact of Schoolyard Greening on Children's Physical Activity and Socioemotional Health: A Systematic Review of Experimental Studies." International Journal of Environmental Research and Public Health, vol. 18, no. 2, Jan. 2021, p. 535. www.mdpi.com, https://doi.org/10.3390/ijerph18020535.
5. "Hot Spots." Trust for Public Land, https://www.tpl.org/stories/hot-spots. Accessed 29 July 2025.

GOALS AND OBJECTIVES

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3. The Trust for Public Land. Oakland Unified School District Living Schoolyards Guidelines. Feb. 2024, www.tpl.org/wp-content/uploads/2024/02/OUSD_LivingSchoolyardGuidelines_v7.1_FINAL.pdf
4. Oakland Unified School District, and Green Schoolyards America. Schoolyard Forest Case Study. 30 Oct. 2023, static1.squarespace.com/static/57682b81725e25259d8396e3/t/653fdf8f8f5138631b22c6d3/1698684821339/23_10_30%2BOakland%2BUSD%2BCase%2BStudy.pdf
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6. State Coastal Conservancy. Living Schoolyards for Oakland: Grant Program Proposal. Sept. 2017, scc.ca.gov/webmaster/ftp/pdf/sccbb/2017/1709/20170928Board15_Living_Schoolyards.pdf.

CITATIONS + IMAGE CREDITS

NEIGHBORHOOD CONTEXT

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CIRCULATION DIAGRAM

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SAFETY DIAGRAM

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STORMWATER DIAGRAM

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BLOCK C PERSPECTIVE

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EVALUATION - PROJECT OUTCOMES

Sources annotated on the page

EVALUATION - SURFACE MATERIALS

Sources annotated on the page

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