DATE: **June 1, 2023**

TO: **WCA Governing Board**

FROM: **Johnathan Perisho, Project Manager**

THROUGH: **Mark Stanley, Executive Officer**

SUBJECT: **Item 14: Consideration of a resolution to certify completion of the Green Regional Environmental Enhancement Network Project (RMC15112).**

RECOMMENDATION: That the Watershed Conservation Authority (WCA) Governing Board certify completion of the Green Regional Environmental Enhancement Network (GREEN) Project grant number RMC15112.

PROJECT DESCRIPTION: The GREEN Project funded WCA support on work throughout the WCA territory on regional planning, communications, and site scale work under a grant awarded by the Rivers and Mountains Conservancy (RMC). Primary outcomes developed and advanced include the following:

- River Park Equestrian Center — Construction Drawing (CD) package developed, LA County Planning approvals secured through April 2025, plan set preparation for Building and Safety review pending implementation funding
- GREEN Portal — Technical report developed on web applications that may support RMC/WCA mission advancement, support work for relevant features of Gateway Greening Plan
- Cal Poly Pomona 606 Studio — Work and reports completed on participatory design and planning now shared as resources through the Gateway Greening Vision Plan site
- Lower Los Angeles River Revitalization (AB530) — Plan work completed, several project opportunities in various stages of development
- Los Angeles River Ranger Program Establishment Plan (AB1558) — Plan complete, pilot program development is in process
- Los Angeles River Master Plan Update — Plan work completed, approved June 14, 2022
- San Gabriel River and Tributaries Greenway Initiative — Plan development has progressed into the San Gabriel Valley Greenway Network Strategic Implementation Plan
- Emerald Necklace Feasibility and Implementation Plan — Plan work completed, implementations of individual projects are in various stages of planning, design, or development
- Measure W Watershed Area Steering Committee and Stormwater Investment Plan — Representation and recommendations ongoing and applications for funding plans, studies and/or projects is progressing regionwide
- Measure A Parks Needs Assessment — Study work completed and program implementation in various stages of progression

A report on project developments is included as Exhibit A. This report highlights project efforts, identified major challenges, and includes discussion and recommendations on next steps for tasks and efforts across the region. Highlights include recommendations on continued engagement, recommendations on spatial analysis and major considerations for prioritizing impactful project work such as risk assessments and

layering benefits, and in coordination with regional agencies recognizing data gaps for measuring project impacts, namely for ecology, social equity, and carbon sequestration.

A technical report on a GREEN Portal wireframe and methods report is included as Exhibit B. Through years of project work, the Watershed Conservation Authority (WCA) staff and partners have identified needs for a platform to share resources and geospatial data relevant for advancing watershed planning and implementation of multi-benefit environmental projects across Los Angeles County and parts of Orange County. This platform would provide tools to assemble and host cross-jurisdictional data, plans, and funding into an integrated webtool to help share and visualize information, thereby increasing public accessibility to and awareness of watershed planning. By providing context for environmental efforts and connecting communities to relevant spatial data, references, programs, and funding opportunities the platform could promote equity, efficiency, and community and ecological benefits. This Methods Report lays out a vision for components of a web-based platform that could be assembled to serve a variety of watershed-based programs. These components could be assembled with themes and messaging that matches the program(s) that fund the platform, whether local programs such as Measure W or Measure A or state programs such as California Natural Resources Agency (CNRA).

Site plans for River Park Equestrian Center are located are accessible at a Dropbox link here due to size of documents: https://www.dropbox.com/sh/mctgu0d9ut4anlo/AAA8OlJeOggG9kKW1xJIxyKda?dl=0

In 2020 and 2022 remaining project funds under a task for watershed priority projects were reallocated to development of construction drawings for an implementation project recognizing potential to convert a significant challenge into a high-profile opportunity at the River Park Equestrian Center. Demonstrating leading practices at a location becoming one of the largest regional parks along the San Gabriel River will celebrate culture and outdoor recreation while also realizing influential solutions to improve water quality, habitat, air quality, and further improve outdoor recreation access for a variety of passive recreation uses with a roughly quarter-mile trail extension to the wider park and facilitating horse keeping and riding, walking, bird watching, and interaction with animals demonstrated to support positive physical and mental health outcomes.

BACKGROUND: The GREEN Project was awarded and certified by the RMC May 6, 2016 with line item and time extensions approved for a performance period through April 30, 2023. Through the GREEN Project WCA staff collaborated with a cross section of agencies and key stakeholders to provide guidance and technical assistance in the identification and implementation of greening projects and programs to enhance, expand, and increase access to functioning open spaces for water security, clean air, habitat integrity, public health, community equity and recreation. Staff time supported the development of initiatives, and collection of plans, projects, and funding opportunities referenced throughout efforts in addition to background development on an open database portal for the purpose of catalyzing and supporting the implementation of greening projects throughout the region.

The following tasks have been included as part of the GREEN Project:

0 Project Management
1 Stakeholder Development and Stewardship Building
2 Watershed Needs Priority Projects
3 Greenway Development
4 Community Engagement Strategies Analysis
5 GREEN Project Portal
6 Indirect

The GREEN project was proposed to build on the work first completed under the Watershed Coordinator program, funded by a grant from the Department of Conservation between 2008 and 2012 with matching funding from the Rivers and Mountains Conservancy. This seminal work implemented in partnership with the San Gabriel Valley Council of Governments and the Council for Watershed Health proved highly beneficial in moving projects forward and creating a vision for new projects. Measurable benefits from the 2008–2012 Watershed Program included the identification of projects, programs, and policies, and through the technical services the WCA provided in areas such as: GIS mapping and analysis, public outreach, presentations, city policies/ environmental document reviews and comment letters, project/event planning, project management, graphic design, correspondence, and general administrative support.

The WCA GREEN project similarly took lessons learned from the original Watershed Coordinator program and expand reach to beyond the San Gabriel River Watershed with the inclusion of the Lower Los Angeles River and tributaries, and the portion of the Santa Ana River Watershed within the RMC/WCA territory in Orange County. GREEN embraced new technology to explore functions and compile references and content relevant for a regional open data platform that may aid in the forwarding of open space, green infrastructure, and nature-based solutions, to support inventory and tracking progress of project investments, and potentially applications as an integrated tool to aid grantees in applying for and being competitive in securing grants.

FISCAL INFORMATION: Final grant closeout is contingent on certification of project completion. There is no fiscal impact.

Green Regional Environmental Enhancement Network (GREEN) Project Report

Watershed Conservation Authority
100 Old San Gabriel Canyon Road
Azusa, CA 91702

2023

Overview

STATUS OF PRIMARY OUTCOMES DEVELOPED AND ADVANCED

- River Park Equestrian Center — Construction Drawing (CD) package developed, LA County Planning approvals secured through April 2025, plan set preparation for Building and Safety review pending implementation funding
- GREEN Portal — Technical report developed on web applications that may support RMC/WCA mission advancement, support work for relevant features of Gateway Greening Plan
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- Measure A Parks Needs Assessment — Study work completed and program implementation in various stages of progression

The original founding document of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) *Common Ground* and the Watershed Conservation Authority (WCA) itself were established on the principles of watershed planning. In the words of John Wesley Powell, "[a] watershed is that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community." Watershed planning is approaching solutions from holistic perspectives taking into consideration diverse elements geographically and socially interconnected. An approach that can serve as a basis for methods to support and to be responsible members of communities.

The complexity of the terms "watershed" and "watershed planning" is observed to present challenges to understanding and applications. However, recognition of the number of factors impacted by our actions in the built environment is critical. Narrower focus may be simple—within a single jurisdiction, a single discipline, or to serve single purposes such as recreation in a park or infrastructure to quickly drain water to manage flooding. While simple ways of looking may be enticing for manageable scope and steps on discrete projects, every action is impactful on the dependence of diverse living beings on native plants and space to thrive, on needs of people and all living beings to safely move through space, to make a living

and feel senses of community and belonging, rivers moving both water and sediment, and the resources we depend upon being finite and not disposable if we are to realize abundance now and in time to come.

Complexity and difficulty cannot absolve responsibilities to work toward choices that better serve community and wellbeing. The Green Regional Environmental Enhancement Network (GREEN) Project has been an effort to advance the work of the WCA toward these ends, recognizing the legacy of the agency and potential as a multi-jurisdictional entity with a broad scope. Significant efforts have been made working with and advising leading organizations, being part of conceptualization and playing key roles in advancing significant initiatives including the now completed Lower Los Angeles River Revitalization Plan through the AB530 process, the now developing San Gabriel Valley Greenway Initiative, expansion of the now launched Gateway Cities and Rivers Urban Greening Vision Plan, and other efforts. At the same time, over the period of project performance a succession of project managers led the project through several shifts of focus. This document serves as a summary and look ahead on what has been realized and what understanding has been developed through the lens of this project.

The following tasks have been included as part of the GREEN Project:

0 Project Management
1 Stakeholder Development and Stewardship Building
2 Watershed Needs Priority Projects
3 Greenway Development
4 Community Engagement Strategies Analysis
5 GREEN Project Portal
6 Indirect

Efforts are described by section, including work completed and recommendations for ongoing and future efforts. Each section starts with an overview of work under this grant and ends with a Concepts section on recommendations for significant efforts and next steps.

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0 Project Management

SUMMARY OF WORK COMPLETED

- WCA Labor
- WCA Mileage/Other
- Permitting

- Project administration and contract procurement
- Project management, reporting, grant admin, closeout

DISCUSSION AND RECOMMENDATIONS

This work is WCA staff time to support management of grant and initiatives under the following tasks, including direct staff time to manage and deliver task products. Significant work has been completed over the performance period by many WCA staff members to facilitate, coordinate, and manage project tasks and efforts. Additionally, as on many projects, this task represents staff time supporting individual tasks specifically and wider project delivery.

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1 Stakeholder Development and Stewardship Building

SUMMARY OF WORK COMPLETED

- WCA Labor
    - LLAR and Other
    - WASC Process/Misc Other
    - Emerald Necklace Strategic Coordination Committee
    - San Gabriel Mountains Community Collaborative
    - Participating as appointed committee member on Safe Clean Water Area committee Upper San Gabriel River Watershed
    - Engagement with local governments, agencies, and groups and continued involvement to support local and regional initiatives
    - Discussion with community members to develop culturally relevant communications around engagement

- Stakeholder outreach to agencies and groups
- Develop framework for Watershed Conservation Stewardship Programs
- Support leading regional initiatives to improve watershed health
- Seek feedback from municipal partners on WCA projects
- Promoting the concept of Nature based Solutions, biodiversity-friendly, and integrative approaches to water conservation and watershed management

Much of the work of the WCA has been realized through coordination, facilitation, and partnerships. A small office of staff and large territory of the RMC/WCA necessitates leveraging opportunities and running with those already running. This involves sharing information and leading data and studies, listening, interpreting information, and developing materials to communicate and learn how to develop and support integrative and nature-based solutions to watershed health which can be realized with finite time and resources. Work under this task funded participation and coordination including but not limited to:

- *Regional Efforts* including but not limited to:
    - Safe, Clean Water Program Watershed Area Steering Committees (WASCs)
    - San Gabriel River Emerald Necklace
    - San Gabriel Mountains Community Collaborative

    - San Gabriel Valley Council of Governments (SGVCOG)
        - Generation of content for SGVCOG Twitterchat on topics of Water Resiliency and Emergency Planning
    - Urban Waters Federal Partnership
    - Southern California Association of Governments SoCal Greenprint
    - Gateway Council of Governments (GCOG)
        - Presentations of WCA work in progress to GCOG
        - Participation in GCOG Climate Action Planning Framework workshops
        - Working with GCOG planner and Gateway Water Management Authority (GWAM) to identify priority projects
- *State level Efforts*
    - WCA participation in CNRA visit to San Gabriel Mountains and foothills
    - WCA participation in 30x30 workshops, WCA comment on 30x30 Draft plan
    - WCA feedback on TPL Budget Request letters
- *Content* Development for work of RMC and partners, including research, data collection, and production of maps and educational materials
- *Dialog* directly with stakeholders and experts pursuant to identification and advancement of strong projects, programs, and communications across the territory and beyond
- Discussion with community members to develop culturally relevant communications around engagement

Engaging community members to develop culturally relevant communications around watershed health

RMC/WCA territory is vast and both economically and culturally diverse. Watershed projects, whether small or large, can only be successful if they respond to, serve, and inspire communities they are intended for. Stakeholders who are more educated about the planning process are able to offer more effective feedback on proposed projects, and identify opportunities for new projects. Due to the challenges of covering such a large and diverse territory, cultivating engaged and informed stakeholders is an ongoing and long term feedback loop that includes developing effective messaging about watershed health or nature-based solutions, as well as listening to the ways in which our diverse stakeholders already relate to watersheds, nature, community, and passive recreation. GREEN enabled WCA staff to reach out to emerging leaders in different fields and different parts of our territory to discuss their own work and perspectives on watershed restoration, learn about current WCA projects and how community perspectives could inform such projects, and demonstrate interest in continued dialogue on projects going forward. Reaching out to emerging community leaders in different parts of our watersheds who show engagement in different approaches to environmental issues and different approaches to watershed knowledge – but who are not already working in environmental fields– is an investment in developing future project partners and developing culturally relevant messaging on watershed issues.

DISCUSSION AND RECOMMENDATIONS

- Creating inventory or community groups interested in property acquisitions, keeping ongoing record of locations, interests, and opportunities for open space where community are already demonstrating capacity for stewardship.
- Partnering with Theodore Payne Foundation to empower their ongoing Wild Urban Interface communications around fire management, consider also connecting with California Native Plant

Society and California Botanic Garden in supporting program work that leverages existing investment private property owners are making in land management.
- Engaging emerging leaders in projects through small consultant contracts that are designed to build capacity and professional environmental experience.
- Hire local consultants whenever possible (local to each project, and local to RMC/WCA territory).
- Structure future opportunities for procurement to accommodate a wide range of expertise levels and to encourage a broad range of types of local expertise.
- Actively reach out to emerging leaders and voices in RMC/WCA territory.
- Support funding opportunities for programming that help to cultivate meaningful stakeholder engagement.

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2 Watershed Needs Priority Projects

SUMMARY OF WORK COMPLETED

- WCA Labor
- BlueGreen
- Martin Kammerer Consulting
- Lynne Dwyer Landscape Architect

- LLAR Projects/Other
- River Park Equestrian Center Master Plan
- River Park Equestrian Center CD's/Permits
- Engagement in advancing Emerald Necklace project planning working group. Investigating potential of Equestrian Centers as water quality projects
- AB530 process by participating in the Implementation Advisory Group (IAG), gathering of data and plans throughout the WCA region, involvement in committees advancing Emerald Necklace project planning, became involved in the Los Angeles River Environmental Flows Study stakeholder working group
- Coordinating development of innovative methods for modeling and communicating strategic solutions, involvement in committees advancing project planning

Work on this project shifted through the first amendment issued February 2020 from the broader scope to the development of construction drawings specific to the River Park Equestrian Center. Earlier work focused on advancing regional planning, notably in the following:

- Gathering regional and local data and plan documents
- *Lower LA River Revitalization Plan* through the AB530 process Implementation Advisory Group (IAG) and Water and Environment committee including giving presentations and sharing information
- *Emerald Necklace* Implementation Plan and Strategic Coordination advancement
- *San Gabriel Valley Greenway Network* promoting expansion of greenways in the San Gabriel Valley and conducting early study, stakeholder representation, and contributing to scope of consultants currently developing the Strategic Implementation Plan

- *LA River Environmental Flows Project* stakeholder working group participation, leading up to supporting RMC and Santa Monica Mountains Conservancy (SMMC) initiative to invest and expand on gaps in the Flow Study through separate project work

Gathered regional and local data and plan documents have informed perspectives of WCA and RMC staff, and has also been actively shared and incorporated into discussions and presentations in regional initiatives as well as more discrete work advanced by the WCA specifically such as the Gateway Cities and Rivers Urban Greening Vision Plan, San Gabriel Valley Greenway Network, and park projects. These inventories have been critical in informing and working to guide actions in the shared WCA/RMC territory.

Lower LA River Revitalization Plan

In the AB530 process the WCA and Friends of the Los Angeles River representatives were important voices reminding the group of the significance of in-channel vegetation, context, water supply and water conservation priorities, watershed planning more generally, and nature based solutions. From the WCA this perspective was shared both from a technical standpoint, and through an understanding of engagement efforts through the Gateway Cities and Rivers Urban Greening Vision Plan overlapping the same study area, giving clear preference for vegetated areas, shade, and nature services. The development of guidelines was also a significant point for plan strategy. This role was significant in contributing to the 155 projects identified in the plan, and in pressing for inclusion of elements and language that later proved instrumental as the points were echoed by wider communities and experts commenting later in the process.

Emerald Necklace

The Emerald Necklace Implementation plan as spearheaded by local groups and government and completed by the WCA through the consultants Withers & Sandgren would realize a contiguous loop between the Rio Hondo and San Gabriel Rivers in the San Gabriel Valley. This is the heart of the now developing San Gabriel Valley Greenway Network Strategic Implementation Plan to convert 151 miles of LA County Flood Control District facilities into accessible trails. Emerald Necklace Strategic Coordination meetings were started by the WCA, and ongoing participation has been instrumental in realizing the 2017 Board of Supervisors motion for the initiative, and also in continuing to advance projects to complete the loop and improve river and greenway-adjacent projects to optimize connection and access to surrounding communities, while simultaneously addressing the priorities identified below. The WCA continues to be a vocal voice and key member advancing projects and raising priorities with our JPA partner Public Works and supporting resource allocations and the work of local organizations.

LA River Environmental Flows Project

Local government municipalities and agencies have interest in more efficiently reusing treated water. However, effluent from treated water has served as a significant part of base flows in the LA River and San Gabriel River in recent time. These flows have been made all the more significant as historic surface water flows have also been significantly reduced as urban areas have been designed to drain rainwater as quickly as possible and groundwater has been pumped to historic lows in the last decade. The Los Angeles River Environmental Flows Project was initiated by the State Water Resources Control Board, in coordination with City of Los Angeles, Los Angeles County Department of Public Works, and Los Angeles County Sanitation Districts, to evaluate potential effects resulting from future reductions in flow input from the Los Angeles River's wastewater reclamation plants.

WCA participation and review of content in the committee alongside RMC, SMMC, and Mountains Conservation and Recreation Authority (MRCA) staff has been instrumental in initial coordination and recognition of gaps and needs for the study to more effectively represent actual impacts of potential changes to regulatory policies. Out of participation on the committee the WCA has supported development of supplemental work outside the GREEN Project through a joint initiative together with the MRCA, RMC, and SMMC.

River Park Equestrian Center

Equestrian keeping is embedded in the cultures within the RMC/WCA territory. At the same time, equestrian facilities present recognized leading challenges for water quality targets and land management. In 2020 and 2022 remaining project funds for this task were reallocated to development of construction drawings for an implementation project recognizing potential to convert a significant challenge into a high-profile opportunity. Demonstrating leading practices at a location becoming one of the largest regional parks along the San Gabriel River will celebrate culture and outdoor recreation while also realizing influential solutions to improve water quality, habitat, air quality, and further improve outdoor recreation access for a variety of passive recreation uses with a roughly quarter-mile trail extension to the wider park and facilitating horse keeping and riding, walking, bird watching, and interaction with animals demonstrated to support positive physical and mental health outcomes.

A 60'-wide, quarter-mile-long swale and vegetated areas across the site will also provide an additional buffer along the 605 Freeway. Currently there is not even a sound barrier to mitigate the environmental impacts of heavy 24-hour traffic on the surrounding residential community, not only providing water and air quality benefits but also supporting urban cooling, carbon sequestration, and managing localized flooding and dust particulates. This improvement also follows the course of the remnant Avocado Creek, a natural low point with impressive soil infiltration capacity to better manage flows, groundwater recharge, and to regenerate significant habitat.

Over the project period construction drawings have been prepared as a project deliverable for entitlements and implementation of the swale and landscape improvements integrated with facilities focused on managing water and ecological resources. To date the Los Angeles County Department of Regional Planning has approved plan documents through April 2025 and a set has been prepared for the Los Angeles County Building and Safety Division pending implementation funding.

DISCUSSION AND RECOMMENDATIONS

Priorities

Feasibility and suitability are primary considerations. What is possible, and what can have the most benefit and impact—both at any given time, and long-term. Land next to a river has unique opportunities and risks, just as the Wild Urban Interface (WUI) presents unique opportunities and risk, and many priorities and considerations are important on any given project.

There are significant, diverse, and even sometimes conflicting priorities across the expansive RMC/WCA territory. Facilitating natural system functions through the maximization of space for water capture, conservation, and locally native and site appropriate plants are leading approaches across priorities. These are significant actions both for acquisitions and continuous parks and open spaces as well as for

interventions within more diverse land uses. Geophysically, riparian areas—particularly work in upper watersheds—may be most impactful. Socioculturally, work where people are and have been historically underserved may be most impactful. Where priorities overlap there is exceptional potential.

- **Water security** has long been challenged by climate and demand—which benefits from diverse, local sources of water capture and infiltration that maximize extensive underground capacity—as well as conservation measures minimizing use and demand
- **Water quality** is closely associated and impacted by outflow and inputs from a large metropolitan area—clean water going into groundwater and reservoirs is most accessible for water security, natural resources, and recreation—which most benefits from interface with healthy soil, microbiota, and diverse biological systems that can filter and reduce concentrations of pollutants—as well as mechanical methods to filter out trash, debris, and pollutants
- **Air quality** is similarly impacted by inputs from the large metropolitan area and is the greatest environmental contributor to premature death worldwide (Lelieveld, Pozzer, Pöschl et al. 2020), further impacted by geologic features restricting air movement particularly in summer months—which benefits from agency priorities for healthy soil, greening, and urban forest
- **Cooling** is critical as heat is the leading cause of direct mortality from disasters—which again can be powerfully impacted by agency priorities for healthy soil, greening, and urban forest, and surface water flows
- **Biological richness and diversity** locally and globally are most impacted by loss of space and threats of changing climate and conditions—from increased heat and less frequent, more intense storms to house cats—but can be powerfully influence by presence of native plant species that can be interplanted in habitat islands and between buildings in the dense urban grid alike—and also through proximity to improved space and accommodations to support species movement—most notably in wetland and riparian habitats
- **Cultural richness and senses of place** responding to local environments—from historic arroyos, springs, the Zanja Madre, and river lagoons to downtown civic spaces and identities of established neighborhoods and diverse expressions of individuals—significant to include and serve
- **Transportation and particularly active transportation** making destinations and resources accessible—which can be realized through thoughtful linear and network connections and proximity of interventions
- **Economic security**—economy derived from the Latin *oeconomus*, literally manager of the home from the Greek *nomos* for "law" and sharing the root *oikos* for "home" with ecology, literally study of the home. These terms are rooted both in needs for resilient industries for exchange of currency and services, and in resource management that can continue to be a foundation for security for generations to come—impacted by environmental quality and livability of places—significantly impacted by all priorities, orientation, and amenities provided.

Watershed Needs Priority Projects respond to all of the above concurrently and more. Opportunity is another significant dimension of timing, closely related to the conceptual scopes of Tasks 1 Stakeholder Development and Stewardship Building, 4 Community Engagement Strategies, and projects like the 5 GREEN Portal that may leverage available tools to develop understanding and connect collaborators with resources.

Geospatial Analysis

Given the large area of the territory, effective tools to narrow down target areas include (1) considering opportunities through land use and (2) the layering of digital geospatial datasets and applications in form

similar to the McHargian overlay method. Opportunities can be consolidated more generally through land uses, which can be evaluated to set priorities and project outcomes at scales that do not necessitate site-specific considerations. The LA area also has rich, high-quality data that can be applied through basic approaches such as raster calculation to effectively generate "heat maps" instrumental to identify target areas. Significant datasets to prioritize through digital geospatial applications include:

- Slope—prevailing slopes >6% are most optimal for water management potential
- Soil infiltration rates—greater than 1"/hour is considered effective, but higher rates can be more impactful
- Impermeable surfaces—investing in permeability and most significantly healthy soil in areas with a high degree of impermeability can be impactful
- Disadvantaged community maps, including CalEnviroScreen which, while presenting redundancies, incorporate robust data layers relevant to identify environmentally impacted and historically underserved communities deserving of investment prioritization
- Unconfined groundwater aquifers and forebays—locations where capture of stormwater and dry weather flows has greatest potential to infiltrate to groundwater
- Urban canopy processed for negative space—a lack of urban canopy can be a significant indicator of lacking access to open space and natural resources
- Heat islands

Layering "heat maps" under jurisdictional layers can provide additional perspective on distribution and equity. Even with the benefit of word of mouth from engagement and contacts on leading opportunities, such analytical methods can provide an additional layer of justification for strategic interventions of limited time and resources.

Disasters

Fire, flood, and erosion risks are significant factors in considering project opportunities. Note, however, while CalFire has reliable data on fire and erosion risks there is currently not consistent reliable flood risk data in the region. At the same time, the USGS ARkStorm Scenario projects storm events on the order of the flood of 1862 could result in more than three times the impacts of the larger earthquake scenarios projected and are just as likely to occur (USGS 2018). Climate change is projected to result in less frequent, more intense storms aggravating both risks of drought and flood events. In the US, significant disasters averaged $19.5 billion a year in the 1980's, escalating to an average of $153 billion a year over the last 5 years (NOAA 2022). River adjacent areas will be most impacted, as evidenced by Army Corps studies on limited reaches of the LA River. A leading researcher Dr. Lucy Jones has observed that localized planning is key to better understand and adapt to these risks to achieve the same level of comprehensive responses the ShakeOut earthquake scenario has generated through localized plans.

Rivers, Creeks, and Streams

Maximizing connected riparian and wetland cover is one of the most impactful priorities in alignment with the missions of the WCA and RMC. Riparian and wetland habitat cleanses air and water more effectively, sequesters more carbon, and supports more species richness and diversity than any other landscape cover in our region. Across the world these spaces are key in managing disaster impacts including flood, managing water resources, and they are foundational for the health of wider natural systems, supporting system functions and wider ranging species. While many land uses may be feasible for properties along waterways, there are few exceptions that may be more suitable than the potential for wetland cover to

address leading challenges in the region from resource management to open space access, cultural uses, health, safety, and regional solutions to our status as an ecological hotspot for the diversity of species and threats that they face here. To optimize benefits and minimize impacts over time actions are best conducted through long-term policy and deliberate action, and not reactively in response to flooding, gentrification, and fragmentation of landscapes.

Context: Opportunities and Challenges

Treating water where it falls—near the source—is a guiding principle for watershed planning and management. From a single parcel to large metropolitan areas, lower reaches of a drainage will have greater volume of water concentrated in fewer channels, which can be significantly more challenging to manage than in smaller and simpler approaches nearer to sources. This is particularly pronounced in the lower Los Angeles and San Gabriel Rivers where flow volume and velocity can exceed most imaginable interventions even in small storm events, let alone the largest recorded events and projections. Additionally, in the Los Angeles Basin the upper reaches have more opportunity for surface water infiltration to groundwater aquifers due to geologic formations, and more connections to existing habitat refugia for benefits to wildlife and defensible space in the WUI.

The Angeles National Forest in the San Gabriel Mountains was originally established for water resources. Contributing factors are significantly higher rates of precipitation in the mountains and capacity to hold water over time. The steep, quickly growing, and quickly eroding slopes of the San Gabriel Mountains aggravated by an intense fire-flood-erosion cycle of the local Mediterranean climate have also limited development across much of the upper reaches of the territory, from the San Gabriel Mountains to the Puente and San Jose hills. These factors can also make foothill and mountain properties more affordable for acquisition, and more contiguous and less impacted by diverse land uses for more affordable management.

A significant population and cultures around natural resource uses also bring disproportionately large populations of people to mountain and foothill areas, including a majority of users documented from recognized DACs as evidenced through surveys at the East Fork of the San Gabriel River and inquiries evaluated through Google Analytics. This said, there is a significant tension across the RMC/WCA territory. While geophysical opportunities are generally greater in the upper watershed, and there is pronounced use among diverse populations, there are deep layers of benefits including quality of life and health outcomes around proximity to spaces demonstrating environmental quality—and disproportionately there are more historically underserved areas in the lower watershed for significant potential socioeconomic benefits.

In the last century riparian areas have presented risks and unsavory conditions, both for risks of flood and sediment movement and also for decades as dumping grounds for industries and later as cheap land for impactful transportation and utility corridors. As communities in the basin were redlined in overt racial discrimination and also by economic conditions often diverse and lower-income populations were pushed into these areas. As a result today rivers and streams geographically often still run alongside communities that have been historically underserved. As evidenced by the ARkStorm scenario and precedents in other parts of the country and world these are still among the highest-risk locations—possibly the highest risk—in LA County where floods will occur. At the same time, acquisitions, improvements, and associated gentrification and displacement have had devastating impacts on communities.

Riparian plant communities support the highest species richness and diversity in the region, with the highest potential to support water quality, air quality, and cooling. River and stream-adjacent land has the most potential to manage storm flows and reduce maintenance required in managing sediment movement. They have also become among the rarest natural lands left to us. These lands are most suitable for the priorities identified in this section. However, the potential impacts of unmitigated action are challenges.

Concepts

Flood Study

Flood by projections can result in the most damage of anticipated disasters in the LA Basin and risk is not understood. Study of flooding specific to the LA Basin is key for best managing expected impacts. The ShakeOut Scenario was localized to specific areas, which facilitated clearer understanding of likely impacts and the overwhelming benefits of proactive action. An ARkStorm Scenario specific to Los Angeles would be instrumental for identifying best opportunities for proactive management.

This study would necessarily extend beyond the territory of the RMC/WCA. Accordingly, this concept is strongly recommended for awareness and readiness to comment and partner on opportunities for recognition and investment.

Stormwater Management Study

This is a recommendation to invest in comprehensive evaluation of water capture project precedents and monitored installations both locally and in other regions to represent potential impacts of collective approaches. Specifically, the recommendation to invest in quantifications of total anticipated demand alongside planned and possible capital and distributed projects—factoring for different climate scenarios. This effort would be foundational for proactive planning to recognize what is expected, what project work and what associated methods may be most significant to prioritize, and whether there may be need for new strategies.

There have been significant efforts to represent the potential of water management projects to address water quality and to a lesser extent water supply challenges in the LA Basin. The 2015 City of Los Angeles Stormwater Capture Master Plan represents significant concepts, significantly recognizing that there is not enough space for capital projects to meet targets and that distributed infrastructure across land uses would be necessary for a majority of water capture potential. However, the study did not detail how this would be possible or the actual potential of collective projects. The 2016 Bureau of Reclamation and Los Angeles County Flood Control District Los Angeles Basin Study similarly recognized significant benefits of distributed and reclamation projects together with capital projects in addressing stormwater management, however, these assessments were completed at a high level and subsequently there has not been support for the assumptions of either study that would profoundly benefit from greater clarity, specificity, and precedents.

At this time billions have been spent and are being spent through state and local funds on capital grey and grey-green infrastructure projects. Many of these, such as underground chamber projects and large-scale drywells have not demonstrated impacts over time. In 2018 the Southern California Water Coalition could not identify even a full three dozen monitored projects in all of Southern California, none of them consistently monitored or comparable in methods, and few representative of total cost impacts. Project

planning and development is almost exclusively based on projections and assumptions without basis in reliable data, with significant doubts over cost impacts of actual outcomes.

Project Monitoring

There is a significant need for monitoring data, and pursuant to development of useful and applicable monitoring data there is significant need for consistent standards. A consistent framework for project monitoring would be instrumental for comparing project impacts. This is most significant for water capture and conservation efforts which can potentially be readily quantified, but is also relevant for efforts to quantify other project measures including impacts on equity, habitat, and carbon capture recognized as data gaps by experts in the region including WCA staff and The Nature Conservancy.

Land Banking

Long-term planning is necessary for responsible action on rivers in the region. River-adjacent property is among the highest if not highest risk for disasters that will occur. This land also has the highest potential to address regional priorities, including serving populations closer to where they live. At the same time, populations within hundreds of yards of the existing flood channel are significant and may be devastated by swift and unmitigated actions.

Priority river-adjacent areas as defined by comprehensive flood study may be considered for long-term acquisitions managed for flood, water resources, and biological resources. Insurance companies are already divesting from insuring river-adjacent property, which may offset possible development pressure over time and natural movement away from highest risk areas. This action may be slowed and mitigated by a land banking program and first option to acquire properties over a generation or more. While such steps may take 100 years, risks are already accelerating and reactions are likely to be significantly more damaging than proactive planning.

Proactive management is key. The National Institute of Building Sciences 2017 study evaluated 23 years of federally funded mitigation grants and found that the nation can save $6 in future disaster costs for every $1 spent on hazard mitigation.

Diversifying Implementation

There is not enough space for capital projects alone to realize the targets that must be met for climate and long-term resilience in the region. All land uses are significant, and empowering the public and private land owners is increasingly critical in these interests. In densely developed urban areas, models for bringing park-like green space and nature-based solutions is key. Such green spaces will be necessary for managing regional water quality, water supply, flood risk management, air quality, sequester carbon, to address park equity, reduce urban heat island, general public health and wellbeing, and contribute to biodiversity. Residential rebate programs, partnering with local organizations and experts to support guidance material on best practices and resources for professionals and the public, and promoting adaptive development of properties such as retrofitting parking lots, parkways, and other public properties may leverage investments for scalable significantly greater impact over time.

Inventory

WCA staff to continue working with RMC and partners to identify which project lists and types are most comprehensive to represent park and open space, land conservation and protection, and resource

management projects across LA County and the RMC/WCA territory in Orange County compiled and formatted for accuracy and clarity. These lists could be available for hosting digitally over time. Optimally, such action and assessment would also identify and estimate time and staff demands necessary to continue updating this data over time as no entities are known to be regularly updating digital data Application Program Interfaces (APIs) specific to project inventories and associated data details.

3 Greenway Development

SUMMARY OF WORK COMPLETED

- WCA Labor
- Laurie Collins
- LLAR Planning/Other
- Compton Creek/Misc Other
- Parque Dos Rios II Bioswale Safe, Clean Water/Measure W Technical Resources Feasibility Study

- Interpretation and Wayfinding
- Continued identification of gaps in the greenway network, compiling of data for finished and proposed greenways in the WCA area, and working with Flood in launching SGV Greenway Network and related project development
- Forwarding opportunities for Greenway-adjacent acquisitions
- Support greenway development and coordinate with local agencies
- Identify connections, expansion, and gap closures of existing greenway network
- Identify and address challenges to greenway development
- Promote river greenway development through a potential 'River District' for region's major urban waterways (long-term)

This task is effectively an extension of Task 2 Watershed Needs Priority Projects specific to greenways recognizing the significance of focusing on riparian and riparian-adjacent land to address priorities. Work has concerned support for greenway initiatives and projects within a quarter mile to half mile of rivers and tributaries pursuant to the CA Greenway Development and Sustainment Act of 2015 (AB 1251), notably:

- *San Gabriel Valley Greenway Network* engagement, early advancement, and concept development substantially contributing to the 2017 board motion and subsequent action
- *LA River Ranger Program* engagement and early advancement, including contributions toward concepts for a special river district or overlay zone
- *Parque dos Rios* concept development and coordination for improvements and expansion
- *Evaluation of potential projects* and forwarding conservation outcomes around both the Upper San Gabriel River and Lower LA River
- Compton Creek Plan effort engagement

San Gabriel Valley Greenway Network

The concept to convert LA County Flood Control District facilities into trails and open spaces in large part came out of planning around the Emerald Necklace described under Task 2. The connection of rivers and streams to the network has long been recognized and promoted by the WCA and local groups. This effort would not be possible without coordination and the work of local organizations including Amigos de los Rios, Active SGV (formerly Bike SGV), and Council for Watershed Health watershed coordinators among others. As part of this grant work WCA has been instrumental in coordination and education, referencing plans and precedents, developing content, and taking inventory and reporting on opportunities for San Jose Creek, Puente Creek, and Big Dalton Spreading Grounds in developing early concept plans and recommendations that later developed into plan scope and an agreement for WCA support for the LA County Flood Control District for the SGV Greenways and advancement of projects in the wider territory.

LA River Ranger Program

The Lower LA River flows through 14 cities, County unincorporated areas, and jurisdictions of the City of Los Angeles, County agencies, Caltrans, and the Army Corps of Engineers among others. The significantly fragmented jurisdictions and associated maintenance and safety measures and services have been recognized as a significant challenge to consistent facilities and improvements. Ahead of and through the AB530 process work through this grant included coordinating in separate meetings and evaluations that have contributed to public documents, and eventually formed into work to advance a River Ranger pilot program for the lower river.

Parque dos Rios

The City of Southgate has expressed interest in potential for water capture at the Parque dos Rios site owned and operated by the WCA—which also naturally drains into a mirror site south of Imperial highway that has long been a focus of planning and interest for river-adjacent improvements. Together the sites would significantly increase opportunities for greening and habitat at the confluence of the LA River and Rio Hondo, a focus area for the Lower LA River Master Plan. Staff has retrieved early plan documents and, working with partners, developed early concept plans for water capture and treatment potential on site, which may also extend to potential acquisition work. This work was separately used to apply for Safe, Clean Water Program resources, which included expansion of site study and geotechnical evaluation. Unfortunately geotechnical study identified a previously unrecorded waste site that was not identified in an initial study of the site, and which presents challenges for further development opportunities. However, retaining slopes and lining the existing drainage channel together with potential of the southern site still present significant habitat, water quality improvement, and even water capture potential if the southern site is clear of subsurface waste. Additional work has included limited scoping and evaluation of environmental compliance requirements set by County Public Health, as well as identification of additional work that may be necessary to make the site safe and available to the public. These efforts are particularly significant as several other projects are being developed in the vicinity which face similar prevailing conditions being tested at this location in real time. There are also few other Lower LA River sites identified through planning efforts that represent as much contiguous river-adjacent acreage.

Evaluation of potential projects and forwarding conservation outcomes around both the Upper San Gabriel River and Lower LA River

- Communications with community stakeholders to forward conservation outcomes on various parcels under threat of development. Education of community stakeholders regarding factors

that influence ability of conservancies to take on projects. Barriers and opportunities and challenges. Opportunities for public input during the planning process.
- Communications with biologists and members of community naturalist stakeholder groups regarding biological resources and restoration opportunities in the mainstem of the San Gabriel River.
- Communications regarding small tributaries in SGV and LLAR.
- Communications regarding applying environmental benefits prioritization to sites already identified for in the Lower Los Angeles River Master Plan.

Interpretation and Wayfinding

Interpretive and educational signage are graphic displays of information in public spaces within our greenways that help visitors 'interpret' what they are seeing and experiencing. They can include educational messages and content to inform the public of a site's historic, cultural, or ecological significance. Beyond providing information, they should spark the public's curiosity by allowing them to interpret the experience in their own way. These signs can also inspire a feeling of stewardship in site visitors, strengthening awareness of cultural and natural resources. Wayfinding signs orient and guide people through the built environment. They help give geographic context and understanding of how to physically navigate a park, trail, or urban area. They can include directional or guidance signs that enhance a visitor's experience of a place.

In the past few years, WCA has developed a series of interpretative and wayfinding signage for several major park and trail projects, including at the River Park in Avocado Heights, Parque Dos Rios, and Walnut Creek Habitat and Open Space (These signs can be accessed here). This signage has been developed under each project's respective grant funding.

Efforts under GREEN include coordination of Walnut Creek signage installation with the City of San Dimas in support of the broader trail improvements that make up the Walnut Creek Nature Loop.

Significance:

Visitors who experience poor-quality signage exhibits may be less likely to want to engage with these kinds of exhibits and miss out on crucial messaging. Conversely, a visitor who has had an enriched experience from compelling, high-quality signage, will come to expect the same in other locations and is more likely to value and care for public spaces. As the National Park Service describes: "Visitors who discover personal relevance and meaning will be more inclined to participate in conserving a site's resources so that future generations can enjoy them" (Bacher, Kevin et al. 2007). This may then translate into larger, overarching support for resource protection and preservation across our region. Improving signage across projects will increase active use and a higher level of visitor expectation and engagement.

Recommendations:

- Continue to prioritize work and staff time investments through comprehensive assessments of wider watershed and surrounding communities.
    - Make consistent reference back to *Common Ground* and *Common Ground* update.
    - Support both regional mapping and monitoring of implementation to identify and dedicate resources where investments have greatest impact.

- Continue to offer interpretive messaging in multiple languages, where appropriate.
    - Where possible, engage with stakeholders and the larger community to help identify areas of interest and to shape interpretive content.
    - Use high-quality materials that can hold up to environmental conditions and vandalism.
    - In funding requests, develop robust budgets that can accommodate the cost of more resilient materials and increased time for signage development and collaboration.

Concepts

San Gabriel River Watershed Management Study

The San Gabriel River is the most significant source of local water supply and has a vast network of tributaries that have potential to tie together the vast and varied communities of the San Gabriel Valley, but continues to be underrecognized for potential as an urban park network, alternative transportation network, and important biodiversity resource. The San Gabriel River has large reaches that are soft bottom that could have comparable integrity to soft bottom portions of the LA River in urban areas, and has avian, amphibian, fish, and plant habitat of state-wide importance. Yet this great regional river's environmental resource value has been largely displaced by its critical role in managing local water supply. The trend toward environmental Flows studies on important major rivers including the LA River reflect acknowledgement that river ecosystems have value, and that ecosystem value should be balanced with human uses of river flows.

Wetland and riparian systems are understood to support more species, capture and cleanse more water, and sequester more carbon than other land cover types while also providing a host of additional benefits central to the wellbeing and regeneration of healthy urban and ecological communities. A watershed management whitepaper and/or subsequent study would be imperative to outline methods to identify existing conditions and potential management and mitigation measures that may be necessary to support no-net-loss in-channel riparian systems in the urban San Gabriel River. Included methods and cost estimates may evaluate existing peak flows and how much flood water could potentially be managed through off-channel and in-channel improvement scenarios. Implementation of the study detailed by this whitepaper would provide a list of land management and project priorities to optimize investment impacts and land management over time. The approaches identified through this study may also inform investments for other rivers, creeks, and streams throughout the region.

DISCUSSION AND RECOMMENDATIONS

The role of open space and conserved land in climate change challenges—extreme heat in combination with Urban Heat Island, local water capture, flood control mitigation, soil building, carbon sequestration, biodiversity.

Note that regionally, there have been many planning initiatives and water management plans that advocate at various levels of detail for multibenefit projects and watershed scale planning. However, implementation of integrative approaches has been stymied by the challenge of coordinating among numerous entities that already have their own priorities and institutional structures—priorities and structures that were established in an era before widespread recognition of climate change.

Various state level initiatives offer promise as tools and resources to further WCA's mission: Governor Newsom's 30x30 executive order to conserve 30 percent of our lands and coastal waters by 2030, CNRA's Natural Lands Working Group, and Judy Chu's San Gabriel Mountains State Recreation Area. These state initiatives may offer some additional resources for watershed restoration to address climate change, protect biodiversity, expand equitable access to nature, and build resilience through nature-based solutions, however, WCA's urbanized territory requires continued advocacy for urban approaches to conservation.

In this territory, high land cost and complexities around implementation are challenges. At the same time, because LA County alone is home to a quarter of the population of California, conservation activities in the urban core have profound and multi-layered outcomes that reverberate beyond our neighborhoods.

In our densely urban areas, protecting habitat and species where relatively high-quality habitat already exists is important, but this approach must be supplemented by alternative urban approaches to conservation:

- Support for LA River Restoration is important, but equal attention should also be devoted to other rivers and their numerous small tributaries across the region. The San Gabriel River has potential for ecological restoration that are closely tied to regional water supply and water quality benefits. Regionally, small tributaries provide some of the best opportunities for ecological restoration that can rehabilitate the seasonal cycles of the region's historic waterways, while also providing truly sustainable native habitat along with co-benefits.
- While conservancies should continue to seek to acquire lands that are well situated to provide ecosystem benefits, major conservation potential is opened up when existing urban land uses can be retrofitted for habitat benefits and hydrological restoration. For example, most of our urban fabric is privately owned. One of the largest land uses by percentage in the Los Angeles Region is single family residential. Providing mechanisms for management for biodiversity planning and management in residential neighborhoods will have dramatic potential to contribute to conservation gains.
- Hydrologic restoration is an important component of habitat restoration that should not be neglected. Moreover, with climate change, and the pattern of storms that drop record-breaking amounts of precipitation, we need to incentivize conservation of lands that are uniquely situated for infiltration or to absorb and detain stormwaters for implementation of Nature based flood mitigation solutions.
- In the Los Angeles Region, many areas that are likely to be able to support productive habitat, due to their advantageous hydrology/geologic situation may not currently look like productive habitat. They may instead look like golf courses, parking lots, schools or industrial or mining areas. We need models and mechanisms transition such lands to conservation uses, as opportunities occur.
- In the Los Angeles Region, hydrologic cycles have been drastically altered by an extensive storm drain system that has enabled dense development. Additional study is recommended to identify where restoration of hydrological cycles would have the most benefit in terms of regional priorities (local water capture, UHI, park access, biodiversity, active transportation).
- Acquisition and reclamation of open space lands should also be prioritized in key areas that are likely to serve as climate change refugia due to aspect and hydrology. A model of species distribution under different climate change scenarios, developed by Southern California Coastal Water Research Project (SCCWRP), is an example of the kind of analysis that may inform prioritization of conservation efforts in this region. (This particular model focuses on riparian species only: https://sccwrp.shinyapps.io/flowecology/)

- Land banking and floodplain buyback programs will be critical tools in rehabilitating lands that can contribute to climate resilience and habitat connectivity while acknowledging the high costs of land, and finite resources.
- There is need for pilot projects to demonstrate principles of nature-based watershed restoration in WCA territory. Need to identify opportunities and partners, such for restoration of small tributaries and restoration of watershed function in areas that have high infiltration or retention capacity.

There is a need to prioritize projects that circumvent institutional barriers (state and local) while also seeking to lift some of those barriers:

- Form an inter-agency thinktank of conservancies and researchers to work on policy change that can be legislated. This thinktank should include urban conservancies as well as university experts on sustainability as well as stakeholders from Northern California and Central Valley. Climate change impacts on the sustainability and resilience of water supplies affect every part of California.
- Conservancy work in Sacramento would benefit from further expanding focus beyond securing funding for conservancy interests based on proposed bills. Long term benefits may also be sought through policy change. For example: updating zoning to account for how different land uses may be retrofit or rezoned to ameliorate climate change impacts.
- The San Gabriel Valley is a particularly important area for WCA to focus on in the future due to the contribution of watershed area to local water supply. All of the San Gabriel Valley is part of the collection area of Whittier Narrows Dam. Enhancing the ability of land to capture and absorb and store water will increase local water supply, provide opportunities to restore wetland and riparian systems, carbon capture, improve water quality, enhance biodiversity, park access.
- Seek dialogue with Water Masters regarding getting more water into aquifers.

4 Community Engagement Strategies Analysis

SUMMARY OF WORK COMPLETED

- WCA Labor
- Cal Poly Pomona

- Staff continues to engage local universities and outreach efforts to develop best practices, and maintains social media to advance outreach
- Undertake landscape analysis of civic engagement strategies that have and have not worked with greening projects locally and nationally
- Engage key stakeholders and constituencies through targeted strategic outreach campaign
- Report on innovative developments, publishing a quarterly blog, newsletter, and/or website/social media posts

This task has been concerned with engagement to advance priorities of the RMC/WCA, evaluation of communication methods, and applications of methods that can serve as lessons learned for future

practice. In February 2020 this task was reduced in scope to less than half the total value, oriented more directly on applications and lessons learned. Significant efforts have included working with:

- Cal Poly Pomona Participatory Planning—California Polytechnic University Pomona Department of Landscape Architecture masters program 606 Studio on participatory planning and design on the lower LA River
- *AB530 Lower LA River Working Group* engagement efforts and implementation committee to advance understanding and practices
- *US Forest Service* engagement on coordination with local communities and transit to trails
- Local experts and stakeholders on program opportunities including empowerment of the sharing of indigenous perspectives and proactive wildlife programming

Involving local community in development of projects is instrumental in ensuring planned elements serve primary users, demonstrate respect, and leverage sources of knowledge and opportunities to cultivate stewardship. Most fundamental is organizing engagement efforts around sourcing feedback that will influence decision making—targeting areas where feedback and interest would generate the most likely change in response to ideas and recommendations. People are often experts where they live, and in the areas that are the focus of their work. From regional planning efforts to parcel-scale developments targeted questions highlighting key points of concern provide structure and genuine intent to involve people.

Cal Poly Pomona Participatory Planning

Historically underserved communities in the LA area often have limited access to parks and open spaces, are highly dense, and include residents that are predominantly low income. These communities have at many points been involved in planning and design efforts that have not materialized into implementations. This has been notable in East San Gabriel Valley and Lower LA River communities where connecting with people can be challenging. Projects can often take years and even decades from point of conception to acquisitions, planning, fundraising, approvals, and ultimately construction and opening. These long timelines and sporadic engagement efforts that ultimately do not result in tangible neighborhood improvements can be discouraging to residents and lead to distrust.

Participatory planning and design can involve a range of methods to connect with people, facilitate, and even to lead planning processes through the interests, knowledge, and creativity of participants involved. Broadly, participatory design is a method by which local community knowledge and expertise is called upon to shape design decisions that will directly affect their community. Projects which utilize a participatory design-build approach tend to focus on improvements which start with local residents and their priorities for improving their neighborhood. The Cal Poly Pomona 606 Studios championed this work in 2016 and 2017 in Lower LA River communities. These efforts are documented in studies included with this report submission, “Community Constructed” and “Collective Efforts.”

The processes applied in this work included early, small-scale project developments that could be made immediately to get people invested and engaged in the process, and to see immediate change. They included short-term, low-budget design-build projects that leveraged community priorities, skills, and interests. Often improvements as simple as a bench or shade structure can change daily life in ways significant for wellbeing. As part of this 2-year engagement effort, residents and students designed and built projects that immediately improved the communities, and which set a foundation for these communities and their residents to influence, shape, and design larger future improvements along the LA

River. Working with people to understand and support near-term projects, and to also work together in imagining and planning out longer-term, bigger visions can be powerful approaches to build understanding and support for best practices, realize improvements people genuinely want and will enjoy, and support maintaining strong work long-term.

WCA staff met and coordinated with faculty and students supporting sourcing data and in the development of scope, in reviewing approaches and making recommendations, and supported the university in the acquisitions of completed project work.

AB530 Lower LA River Working Group

Throughout the AB530 process partner agencies and organizations recognized a history of district in river adjacent communities. East Yard Communities for Environmental Justice notably made high-profile commentary leveraging news organizations to make critiques. Connecting with local community members was consistently challenging, and a variety of approaches were ultimately employed to hear from people what improvement would look like to them, and what they wanted to see in their neighborhoods and on a river trail.

The WCA worked with the Flood Control District on recommendations and concept development. Methods included:

- Consensus-based decision making
- Surveys
    - Consistent questions designed to facilitate content analysis to meaningly inform decision-making
    - Limited, targeted questions with multiple choice options alongside alternatives to share more information
    - Visuals on potential configurations to frame expectations and source preferences and inspirations
    - Limited demographic information to track diversity of respondencents relative to demographics of areas served
- Special events
    - Hosting movies in the LA River channel itself, generating interest through novelty and passively demonstrate feasibility of in-channel uses
    - Hosting events mirroring or compatible with intended uses—meetings and meetups including bike rides and walks—for shared experiences to demonstrate potential experiences, priming people to see challenges and opportunities in considering what would improve experiences
- Presentations of material
    - Graphic material that is direct to points intended is accessible and respects time of audience to pay attention and respond
    - Meetings scheduled at a range of times including evenings and weekends for people that work regular hours

Concepts

DISCUSSION AND RECOMMENDATIONS

Baseline recommendations include the above methods on the AB530 process and the following:

- Connecting with groups active in the area, and sourcing recommendations from County Supervisor deputies and/or city staff as feasible and appropriate to identify events and community leaders
- Going to people where they are, and posting in locations people frequent
- For evening and noon meetings serving food when feasible is significant and respectful, and similarly childcare as feasible. This is a challenge in State-funded projects with restrictions established for good purpose but in conflict here.
- Identifying and communicating in languages of audience is instrumental.
- Primarily English-communicated and English-speaking events rarely generated significant participation by users that did not speak English as a primary language. Smaller group sessions focused on other dominant languages spoken in a study or project area may be impactful.
- Focused small groups and kitchen table meetings can be instrumental in connecting with people in more targeted, meaningful ways that can generate outstanding feedback.

Stormwater Retrofit and 'Backyard' Habitat Programs

There are not enough resources and there is not enough space across the LA basin for capital projects alone to ensure climate resilience and to achieve targets for priorities including water supply and water quality, wellness outcomes, and to slow let alone stop losses of biodiversity and richness. Paradigm shifts are necessary to change how land is managed everywhere we live and work. Programs to share information and incentivize water capture projects and habitat measures can be among the most cost-effective methods to realize outcomes dollar-for-dollar as well as connecting with people more directly and building collective capacity and stewardship.

Significant investments are necessary for workforce development and development of experienced labor pools and associated resources to improve prevailing land management practices—and to support expectations and policy for project work to consistently include the most effective measures that are simple to integrate into any improvements—including grading for rainwater capture and planting locally native plants.

Partnering with local organizations and local property and business owners for targeted retrofits—particularly where impacts can be measured—are significant approaches to support the necessary ramping up of capacity and examples of good work—and to move forward not just in public spaces, but in all spaces equitably. Where feasible supporting participatory planning is a particularly appropriate framework for engaging in these efforts.

Empowering Indigenous Community

Indigenous communities are keepers of knowledge and history intrinsically worthy of respect and appreciation for enrichment of senses of place, identity, belonging, and responsible participation in the places we live as networks of people and living beings—and not just as resources to use. Empowering leading and sharing is significant for demonstrating respect and building opportunities for appreciation. Investing and partnering with local groups to share experiences and perspectives can be instrumental in serving historically underserved and exploited populations, and in expanding awareness, populations served, and the richness of the projects we imagine, develop, and improve.

5 GREEN Project Portal

SUMMARY OF WORK COMPLETED

- WCA Labor
- Paradigm
- Exemplifi
- Amazon GGP Hosting
- ESRI ArcGIS Online

- Development of GREEN Project Portal
- Develop protocols for updating data and sharing information on portal long-term

The GREEN Project Portal is a concept developed out of a gap in regional and local plan integration, and matching resource needs and content specific to greening, including park and open space development, land and resource conservation, and best practices across land uses to best support community wellbeing, equity, climate resilience, and natural heritage.

GREEN Portal Wireframe and Methods Report—Web Development and Water Capture Methods

- Staff Time / Consultant Contract
- Detailed wireframe and methods ready for implementation pending funding o Complete graphic wireframe detailing all pages and outlining content to be included in complete or partial launch
    - Report detailing content, methods, computer languages, etc. necessary for complete or partial launch
    - Estimates including development and management for evaluation of total cost impacts and to be prepared to select elements as desired and feasible by project partners and funding availability
- Public launch and troubleshooting report-out on lessons learned and elements to be recommended for broader GREEN Portal
    - Address comments received
    - Document process and elements to be recommended through GREEN Portal Wireframe and Methods Report
    - Launch: publish, sharing, highlighting local voices and local project work developed through GREEN Project

GREEN Portal Wireframe and Methods Report—Web Development and Water Capture Methods

- Deliverables: detailed wireframe and methods ready for implementation pending funding
    - Complete graphic wireframe detailing all pages and outlining content to be included
    - Report detailing content, methods, computer languages, etc. necessary for launch

- Estimates including development and management for evaluation of total cost impacts and to be prepared to select elements as desired and feasible by project partners and funding availability

This report has clarified feasibility, scope, and total costs that could be anticipated for a range of elements determined to be instrumental for delivering park, open space, conservation, and resource management projects. Depending on complexity of a comprehensive web Portal costs could range from $500k–$1M or more, and operational costs would be determined through technical investigation and evaluation. The evaluation would be based on an internal draft strategy plan.

ESRI ArcGIS Online

Under GREEN, staff was able to learn and make use of the latest tools offered through ArcGIS Online to create interactive maps. Maps were developed for both the Gateway Cities and Rivers Urban Greening Vision Plan (GCRGVP) as well as WCA's website, showing visitors where current WCA projects are located and providing additional information about ongoing efforts.

As part of the GCRGVP, ArcGIS mapping tools developed by WCA staff include the "Mapping Tools" section, which provides further inventory of the region. Through the planning process, WCA has recognized that many communities do not have in-house access to mapping software and public datasets. Mapping Tools was created as a handy resource to view past and future projects in the Gateway Cities Region, view land use types, and explore demographic, health, and pollution burden data from CalEnvironScreen.

DISCUSSION AND RECOMMENDATIONS

- Powerful tools exist to manage, assess, and share complex information in approachable ways. The Wireframe and Methods report provides a la carte options that could be pursued to significantly improve understanding and regional communications around open space priorities, and also to streamline conservancy application processes, project inventories, and followup.
- Complex applications require that staff and/or consultants stay current on updates to digital content over time, as well as invest time to document and train other staff to maintain functionality of these kinds of applications in the face of staff turnover.
- WCA staff has only scratched the surface of basic web mapping as a tool for public engagement and education. "Story Maps" alone have potential to more effectively share information that has been gathered through various planning efforts. These and other tools may better leverage work for visibility and impact.

Concepts

Filling Data Gaps

Methods whitepapers detailing leading methods and estimated on specific areas of study would be instrumental. Over nearly a decade staff in working with local groups have been identifying needs and challenges in quantifying data for key areas of public and public service interest. Some of these gaps have been further highlighted in discussion with The Nature Conservancy staff through their work with the Southern California Association of Governments on a Greenprint initiative for much of Southern California

modeled after a similar system applied in the Bay Area. This includes regional data inventories relevant for park and open spaces, land conservation and protection, and resource management.

The following are data gaps highlighted as major priorities:

- Ecology—species counts or habitat cover, e.g. City of LA Biodiversity Index. Local organizations and government including City of LA Sanitation, City of LA Regional Planning, Stillwater Sciences, and UCLA have been working toward scaling up regional indices based on the Singapore Index now applied by other governments across the world to support consistent inventories and assessments aligned to advance positive outcomes. Some limited investment could potentially further support these efforts.
- Social Equity/Environmental Justice—Identify and detail defensible methods for meaningful measures and impact evaluation. As a proxy to provide insight on this element, GREEN Project benefit measures estimating population served within 1/4 mile of both projected and completed 'greened' (improved) landscapes has been considered. There are likely other measures that may be more relevant for prioritization or indicative of positive outcomes.
- Carbon Sequestration—Identify and detail defensible methods for approximating carbon sequestration impacts at the regional scale. Meaningful evaluation of carbon sequestration includes diverse and complex variables that are difficult to meaningfully measure and project. However, identifying defensible measures to at least provide a sense of impacts could support consistent prioritization of actions, e.g. by project types, if not consistently accurate detail in determining actual volumes.

RMC/Regional Coalition Portal Applications

Gaps highlighted in the Portal Wireframe and Methods Report are of regional significance and would significant improve the work of regional conservancies, governments, and partners across the region. There are needs to communicate impacts, compare apples to apples with data, to promote development of consistent data, and to support applications for Conservancy operations that can streamline project implementation and project portfolio management. The WCA recommends review of the report and discussion of options that may be of interest to highlight for future investments.

6 Indirect

Line item of up to 10% in indirect as an eligible grant cost for administration and associated operational costs proportionate to WCA expenditures.

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A Vision for a Green Regional Environmental Enhancement Network (GREEN) Web Portal: Methods and Data Inventory

MAY 2023

PREPARED FOR
WATERSHED CONSERVATION AUTHORITY

PREPARED BY
PARADIGM ENVIRONMENTAL

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ABBREVIATIONS

API	Application Programming Interface
AIN	Assessor ID
APN	Assessor Parcel Number
BAILA	Biodiversity Analysis in Los Angeles
OEHHA	CA Office of Environmental Health Hazard Assessment
CCI	California Climate Investments
Cal-IPC	California Invasive Plant Council
CNPS	California Native Plant Society
CALVEG	Classification and Assessment with Landsat of Visible Ecological Groupings
DWR	Department of Water Resources
DAC	Disadvantaged Communities
EDA	Economically Distressed Area
EWMP	Enhanced Watershed Management Program
GGP	Gateway Greening Plan
GIS	Geographic Information System
GLAC	Greater Los Angeles Coutny
GREEN Portal	Green Regional Environmental Enhancement Network Portal
IRWMP	Integrated Regional Water Management Plan
LA DPW	Los Angeles Department of Public Works
LAFCD	Los Angeles Flood Control District
MRCA	Mountains Recreation and Conservation Authority
MS4	Municipal Separate Storm Sewer System
PDF	Portable Document Format
PNG	Portable Network Graphics
RMC	San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
SCW	Safe, Clean Water
SGV	San Gabriel Valley
SMMC	Santa Monica Mountains Conservancy
SCCWRP	Southern California Coastal Water Research Project
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UCLA	University of California, Los Angeles
US BLM	US Bureau of Land Management
WASC	Watershed Area Steering Committee
WCA	Watershed Conservation Authority
WMP	Watershed Managmenet Program
WRAMPS	Watershed Reporting and Adaptive Management Planning System

1 OVERVIEW

Through years of project work, the Watershed Conservation Authority (WCA) staff and partners have identified needs for a platform to share resources and geospatial data relevant for advancing watershed planning and implementation of multi-benefit environmental projects across Los Angeles (LA) County and parts of Orange County. This platform would provide tools to assemble and host cross-jurisdictional data, plans, and funding into an integrated webtool to help share and visualize information, thereby increasing public accessibility to and awareness of watershed planning. By providing context for environmental efforts and connecting communities to relevant spatial data, references, programs, and funding opportunities the platform could promote equity, efficiency, and community and ecological benefits.

This Methods Report lays out a vision for components of a web-based platform that could be assembled to serve a variety of watershed-based programs. These components could be assembled with themes and messaging that matches the program(s) that fund the platform, whether local programs such as Measure W or Measure A or state programs such as California Natural Resources Agency (CNRA). Within this document the Portal is given a placeholder name, the Green Regional Environmental Enhancement Network (GREEN) Portal (Portal), with an initial vision that the Portal will create a space where relevant data and tools are linked together through a broader multi-benefit environmental project lens such that long-term visions and context for future environmental efforts can grow. This Methods Report presents the conceptual system design and user interface wireframes for the Portal, which would link a series of tools to meet the objectives. During Portal implementation, the combination of components would be selected based on the funding program and targeted users.

Figure 1-1 below outlines the elements of the watershed visioning process that could be supported by the Portal. The list below describes the Portal's goals and the following sections focus on realizing these goals through user interface wireframes, functions and methods, and cost estimates for the Portal:

Share comprehensive plan and project information

- Inventory key program and project data, and datasets relevant to environmental work.
- Communicate data visually and spatially using georeferenced data.
- Provide a means to evaluate data and identify gaps in functionality and scope. Ability to manipulate and view data sources in different combinations and scales.
- Provide data tools to manipulate and interpret data as needed. Tools could be measurement (linear and spatial) for example.
- Support the public in exploring and developing watershed planning projects and programs.

Represent and forecast greening impacts and outcomes

- Visualize and project potential outcomes of proposed greening projects through benefit estimations.
- Project impacts of already complete projects through benefit estimates.

Link resources to watershed planning implementation

- Provide links to primary sources of referenced plans and organizations.
- Provide information and tools to connect user to funding opportunities.

Provide context for planning and project implementation

- Include spatial data for relevant jurisdictions.

- Include spatial data relevant to program work, including but not limited to, land use, geophysical and hydrologic characteristics.
- Include context narrative for components like Benefits, Programs, and Greening.
- Support reporting requirements.

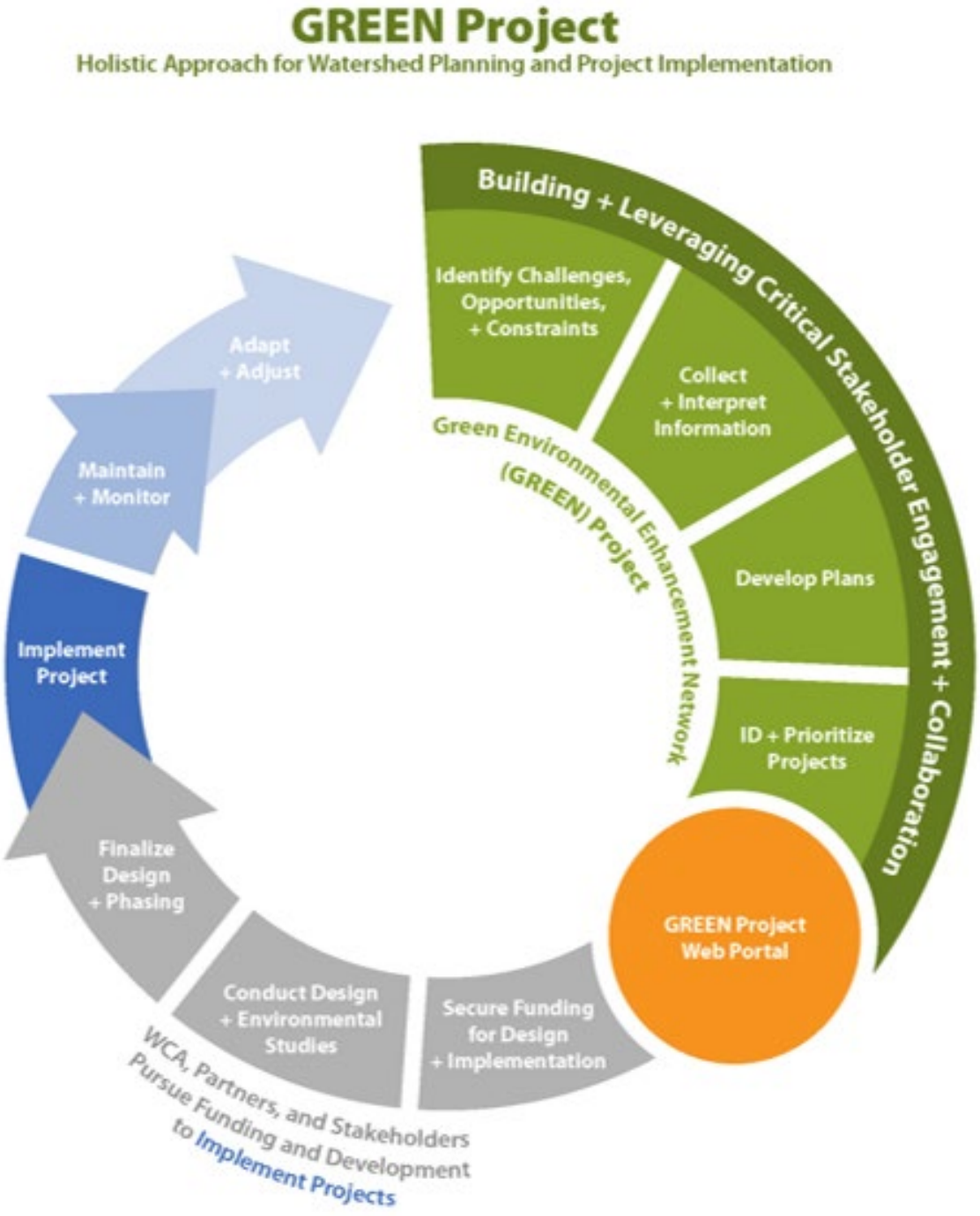


Figure 1-1. GREEN Project Watershed Planning and Web Portal Approach.

2 PORTAL CONTENTS

2.1 Overview and Landing Page

The Portal hopes to advance planning, design, and implementation of environmental projects and will link relevant spatial data, strategies, ongoing work, and funding opportunities. Further, using geospatial data, the Portal will display projections and profiles of project impacts to help imagine potential benefits. The Portal wireframes below use a navigation bar with nine pages; Visualize Projects, Search Engine, Map, Programs, Dashboard, Partners, Funding, Reporting, and Admin.

The default landing page for the Portal will be a web map which will intuitively and functionally guide users. Through the landing page users will be able to learn more about the Portal itself, toggle Map layers, or advance to another page. The landing page features an About popup window to provide context and narrative behind the Portal, sample text is shown in Figure 2-2 but final content is to be provided by the site host. Statistical data callouts and graphics from other pages could be added to create a holistic overview of the Portal on the landing page but this would be considered a high functionality feature. While the layout and functions of the Portal must be designed to be intuitive, every potential user cannot be assumed to understand functions. A basic breakdown of functions and how to use them may be instrumental in ensuring a wide audience can make use of the tools of this Portal, this tutorial would be accessible through the landing page.

Although the landing page is ultimately the Map page, web map details and functionalities are detailed in the following section (Section 2.2) while Table 2-1, Figure 2-1, and Figure 2-2 below focus on features specific to the landing page.

Table 2-1. Functionality Levels, Landing Page.

Functionality Level	Defining Functions	Cost Range
Low	• Learn more about the Portal pop up window • PDF description of site and functionality	$30k - $40k
Medium	Build upon “Low” functions plus the following: • Video content describing the Portal content and functionality	$35k - $45k
High	Build upon “Low” and “Medium” functions plus the following: • Interactive Portal tutorial that walks the user through pages with clicks	$45k - $50k

Note that development of the landing page would also include development of core backend components and core system architecture. Costs also include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

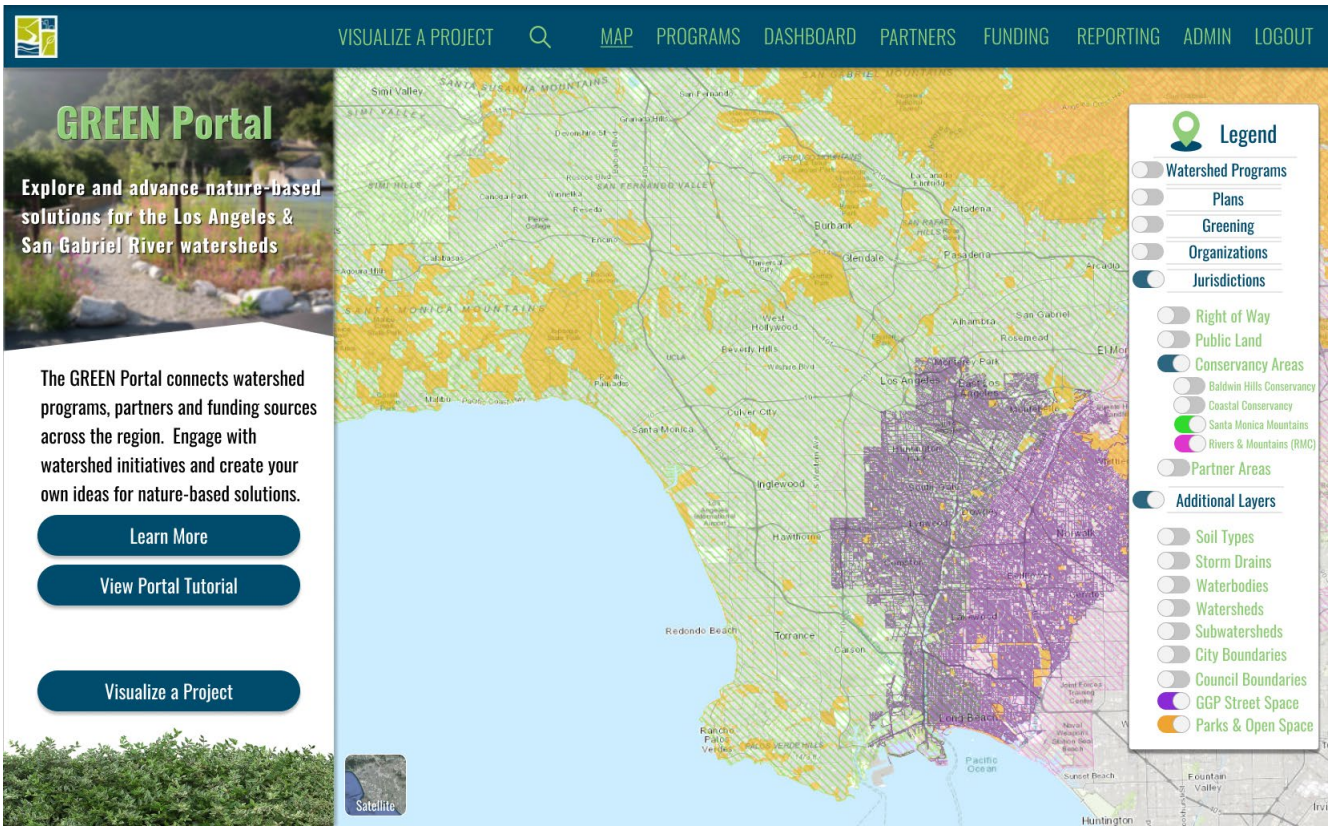


Figure 2-1. GREEN Portal, Landing Page and Contents Overview.

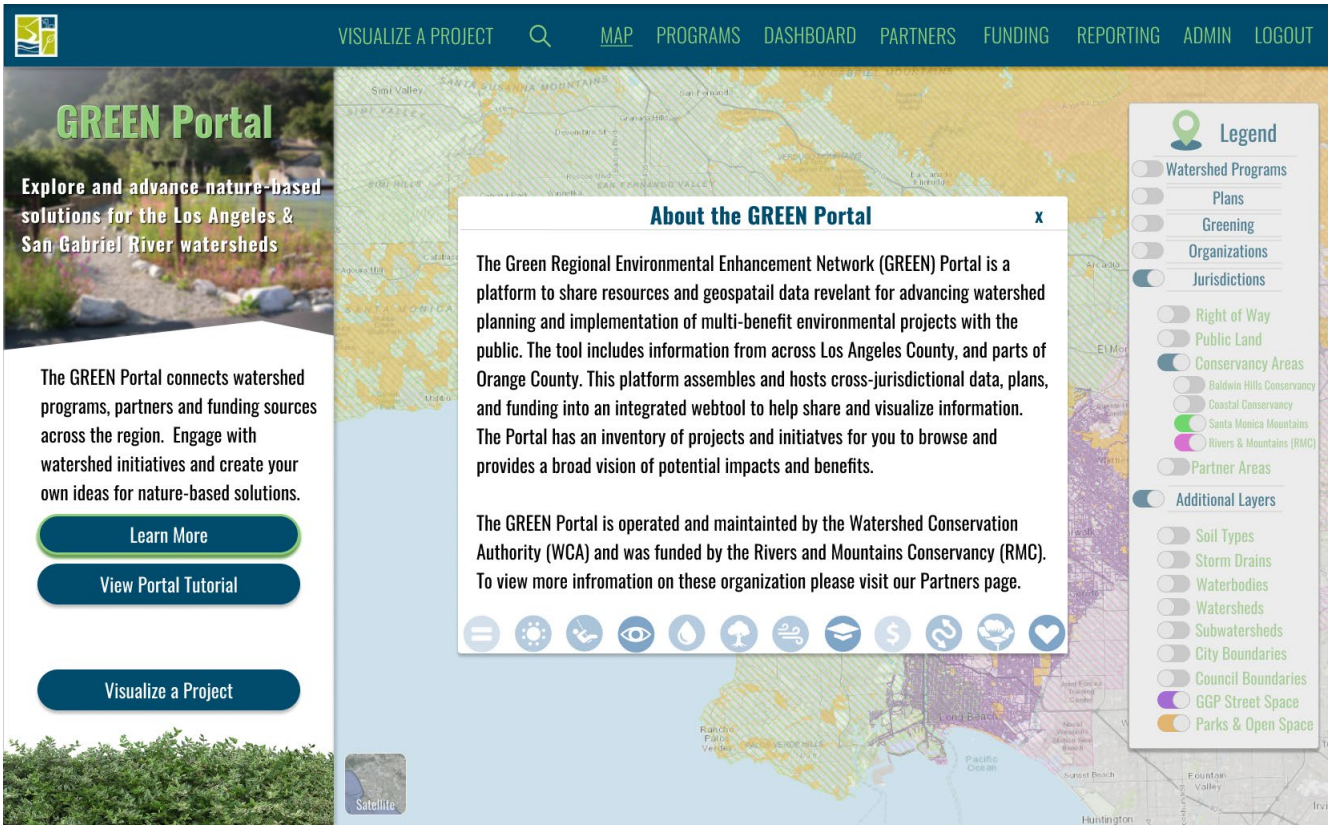


Figure 2-2. GREEN Portal, Landing Page and popup About window.

2.2 Map

The system is centered around a web map that adds critical geospatial context to the GREEN Portal. The Map hosts and displays geospatial data layers relevant to watershed planning and is key to the functions and success of the other pages and therefore the platform. The user will be able to toggle data layers as needed via a legend or data bar to the side of the map. Additionally, drop-down lists will be embedded in the toggles to support organization and data management. Optimally, layers will be linked as a database listing project inventories, communities, and greening layers used for projecting program impacts together with basic geometric algorithms. Potential layer groups include jurisdictions, plans, programs, greening, organizations, and a miscellaneous layer category. Detailed descriptions of these categories and a few examples of relevant layers are below. A working list of all potential layers and information to be digitized and added to the Portal is outlined in Section 6.

Jurisdictions: The Jurisdictions layer group includes jurisdictions of varying size. Layers could include municipalities, unincorporated communities, political representative jurisdictions, and State and regional agencies such as State conservancies like RMC, Santa Monica Mountains Conservancy (SMMC), or Baldwin Hills Conservancy.

Plans: The Plans layer group will provide spatial representation for study areas associated with major regional plans such as the LA River Master Plan, San Gabriel River Master Plan, Emerald Necklace, Watershed Management Programs (WMPs), and more. Outlines of plan extents and other desired details will need to be downloaded or manually digitized.

Programs (and related projects): Programs and associated projects will be spatially represented through this layer group. Projects would at a minimum be represented as spatial dots, with potential to upgrade to polygons. Example programs and projects may include Safe Clean Water, LA River Master Plan, and Conservancy project applications. Outlines of program extents, project location, and other desired details will need to be downloaded or manually digitized.

Greening: The Greening layer group includes data layers from holistic inventories and analyses conducted with multi-benefit projects in mind. Layers in this group would support nature-based solutions across all land uses, parks, open spaces, and trails. Example layers include data piloted through the Gateway Greening Plan like total space between structures, unpaved street right-of-way, and County Park Needs Assessment data.

Organizations: The Organizations layer group organizes nonprofit and community organization service areas with reference to jurisdictional boundaries as identified through the organization's missions and engagement. These groups make important contributions across diverse environmental and public service fields, connecting these resources to project work may be valuable for future projects and partners. Outlines of organization extents and other desired details will need to be downloaded or manually digitized.

Layers: The Layers group is a miscellaneous category and includes data that may be informative to project considerations. Example layers include trails, soils, aquifers, precipitation, and land use.

Mapping functionality will differ based on application choices. Although it is possible to customize the Map around ESRI Open-Source Application Programming Interfaces (API) with linkage to Geographic Informational System (GIS) servers, which would allow users to have the most flexibility, there is a trade off with cost and build time to consider. Table 2-2 below outlines potential functionalities and associated costs.

Table 2-2. Functionality Levels, Map.

Functionality Level	Defining Functions	Cost Range
Low	• Toggleable layers and adjustable styles • Projects are displayed as spatial dots • Multiple baselayers (aerial, street, etc.) available for use • Labeling and clustering of features to improve map experience	$30k - $40k

Medium	Build upon "Low" functions plus the following:
	• Embedded links to provide direct access to a layer's original source data
	• Added search bar to quickly locate a location with latitude and longitude coordinates or an address.
	• Projects displayed as polygons
	• Tools
	  ○ Zoom and select map extent tool
	  ○ Measurement tool
	  ○ Upload and download (data delivery) of shapefiles
		$40k - $70k

High	Build upon "Low" and "Medium" functions plus the following: • User has ability to control layer visibility and view attributes and descriptions. See Figure 2-4 below for an example of potential layer functionalities. • Changeable layer styles and colors • ESRI Open-Source API with linkage to GIS servers • Raster processing	$80k - $100k

Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

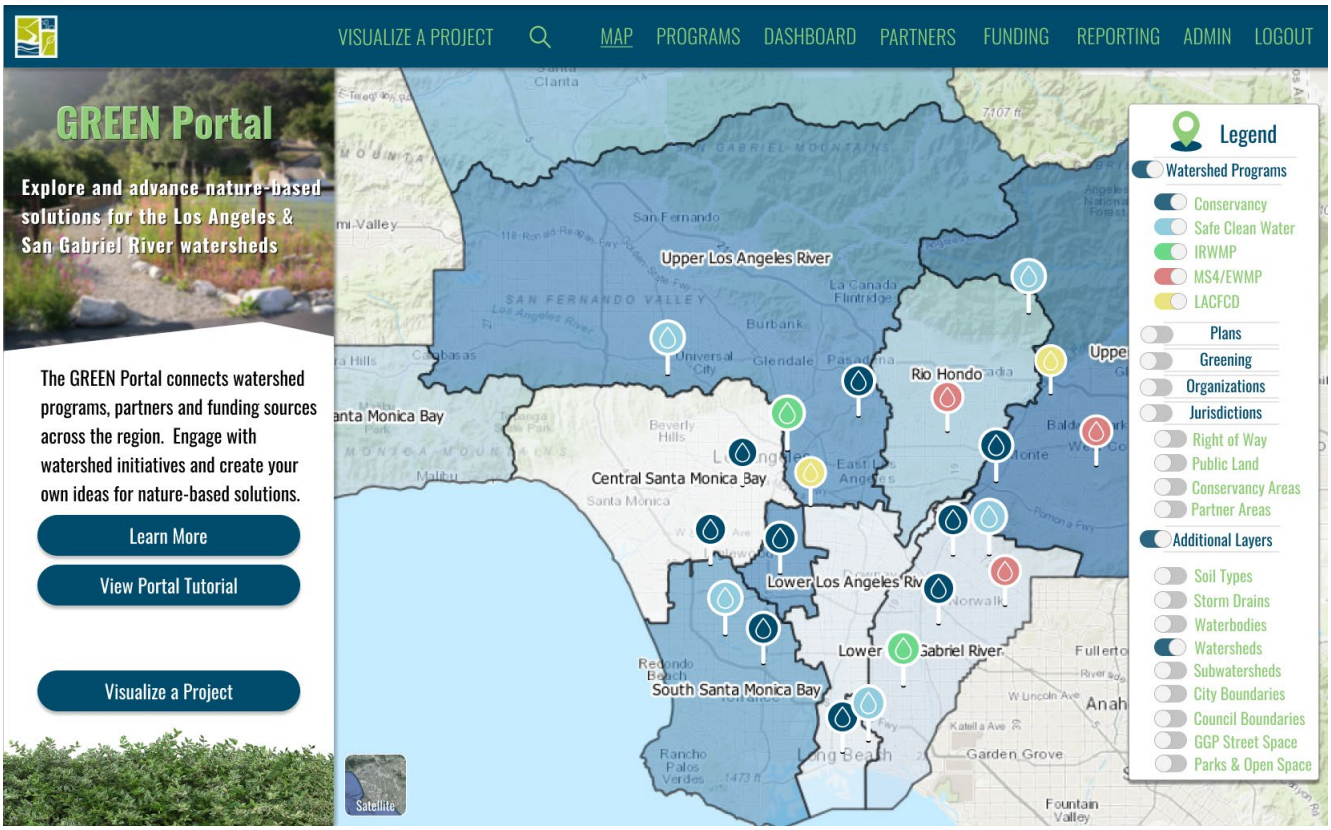
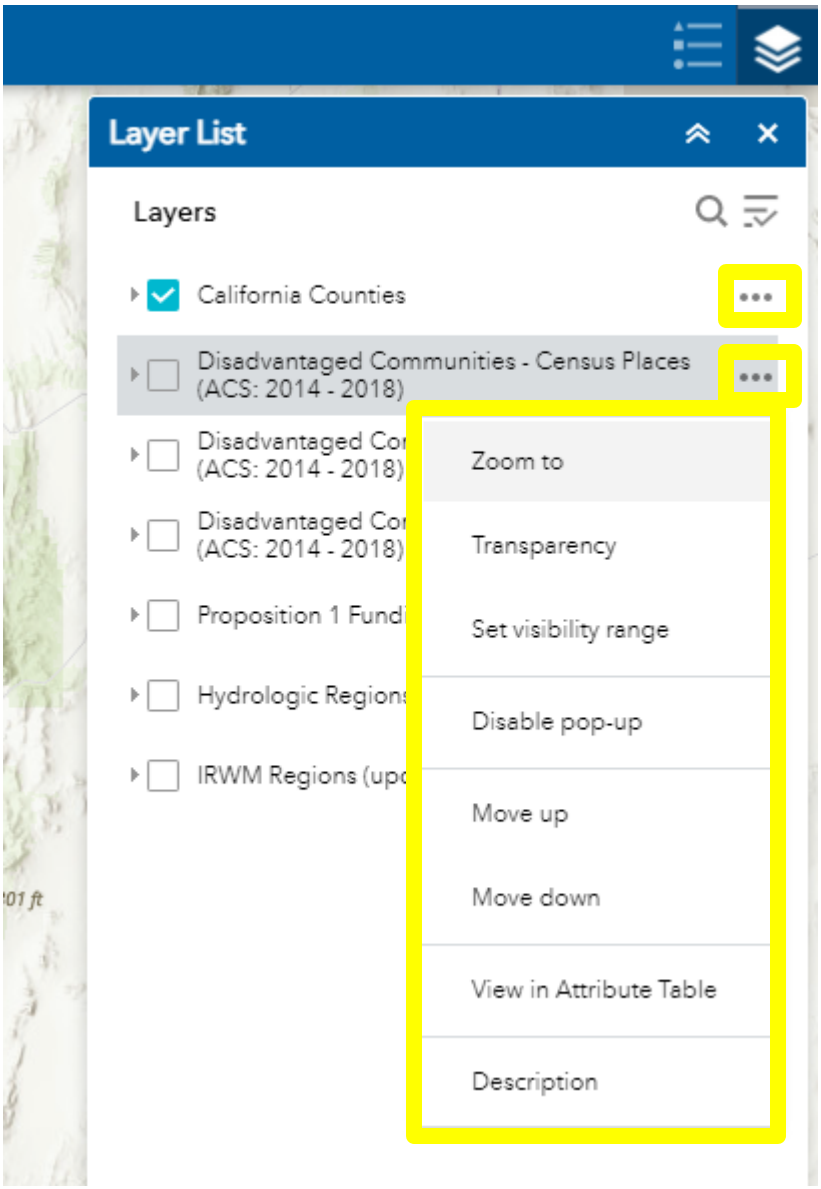


Figure 2-3. GREEN Portal, Map.



(Source: Department of Water Resources, Disadvantaged Communities (DACs) Mapping Tool)

Figure 2-4. GREEN Portal, Potential Map Layer Capabilities.

2.3 Visualize Project

Visualize Project will make watershed planning more accessible to a broader audience by allowing users to visualize and explore their ideas in a technical setting. Users from all backgrounds will be able to use the Visualize Project page to better understand implementation and potential benefits associated with their ideas. This page will be especially interactive and will allow users to measure spaces, outline a project footprint, view potential features and benefits, and submit projects as recommendations to Partners. The user can draw or upload project footprints which will automatically populate information like footprint and capture area, amongst other benefits. Details like the project address, latitude and longitude, parcel ID, municipality, land cover distribution, soil classification(s), watershed, and nearest climate station can all be derived through summarizing information based on spatial overlays.

Benefit quantification and library of benefits will depend on the chosen level of functionality, Section 3.3 Multiple Benefits Quantification explores possible avenues for quantification. After identifying a potential project location, and viewing theoretical benefits, the user will have the opportunity to visualize their project in a three dimensional street view (Figure 2-7 and Figure 2-8). At this step the user can export their project to PDF or picture formats and/or share as a recommendation.

Submitted projects could be compiled as community listings. A link to the list of community submitted projects will be made available to the public and the Map page could include a layer with spatial references to these projects. Creating a community project list would require site host staff to review submissions and either manually add projects to the list and data layer or automate that process. Allowing users to see projects submitted by members of their community increases collaboration and efficiency and promotes public feedback into the system. Table 2-3 below outlines potential functionalities and associated costs.

Table 2-3. Functionality Levels, Visualize Project.

Functionality Level	Defining Functions	Cost Range
Medium	• Measurement functions: create temporary lines or polygons to estimate area • Upload and download (data delivery) of shapefiles • Ability to draw and measure directly on the map including drainage delineations • Linkage to GIS server to support geoprocessing and corresponding licensing • System generates estimates of stormwater capture and water quality benefits by project • Use of rasters for geoprocessing • Export functions will allow a direct interface to PDF/PNG/JPEG • 3-D visualization Rendering using stock images	$70k - $100k
High	Build upon “Low” and “Medium” functions plus the following: • Additional multiple benefits quantification to community such as resiliency, habitat restoration, heat island / health effects, and more • Added community project listings where users can view other ideas submitted by their community. Community submitted projects could optionally be added as a layer in the Map page by the site host staff • 3-D visualization rendering as a transparent skin over a google street style view	$100k - $150k

Note that Low functionality level is excluded as a moderate level of functionality is considered necessary to achieve the desired outputs and user experience. Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

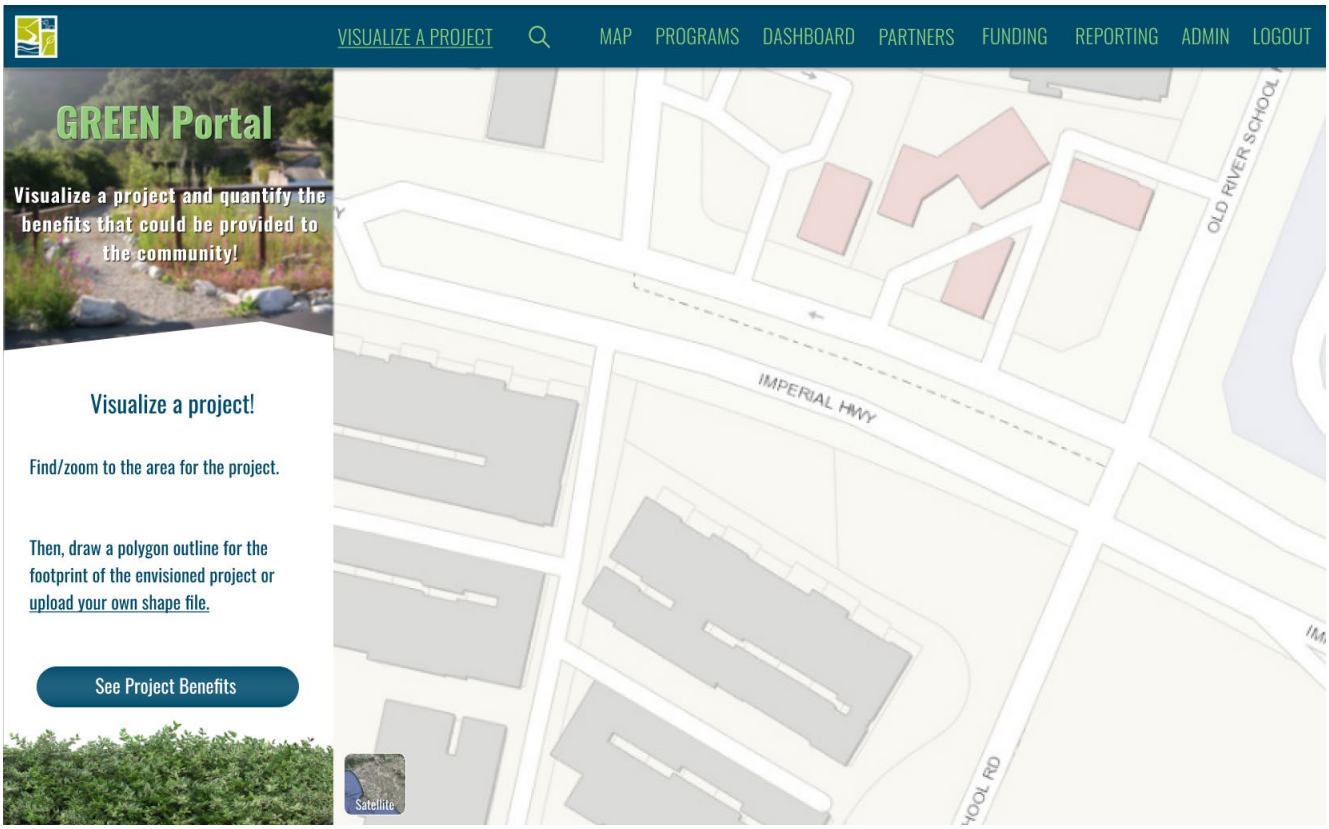


Figure 2-5. GREEN Portal, Visualize Project 1.

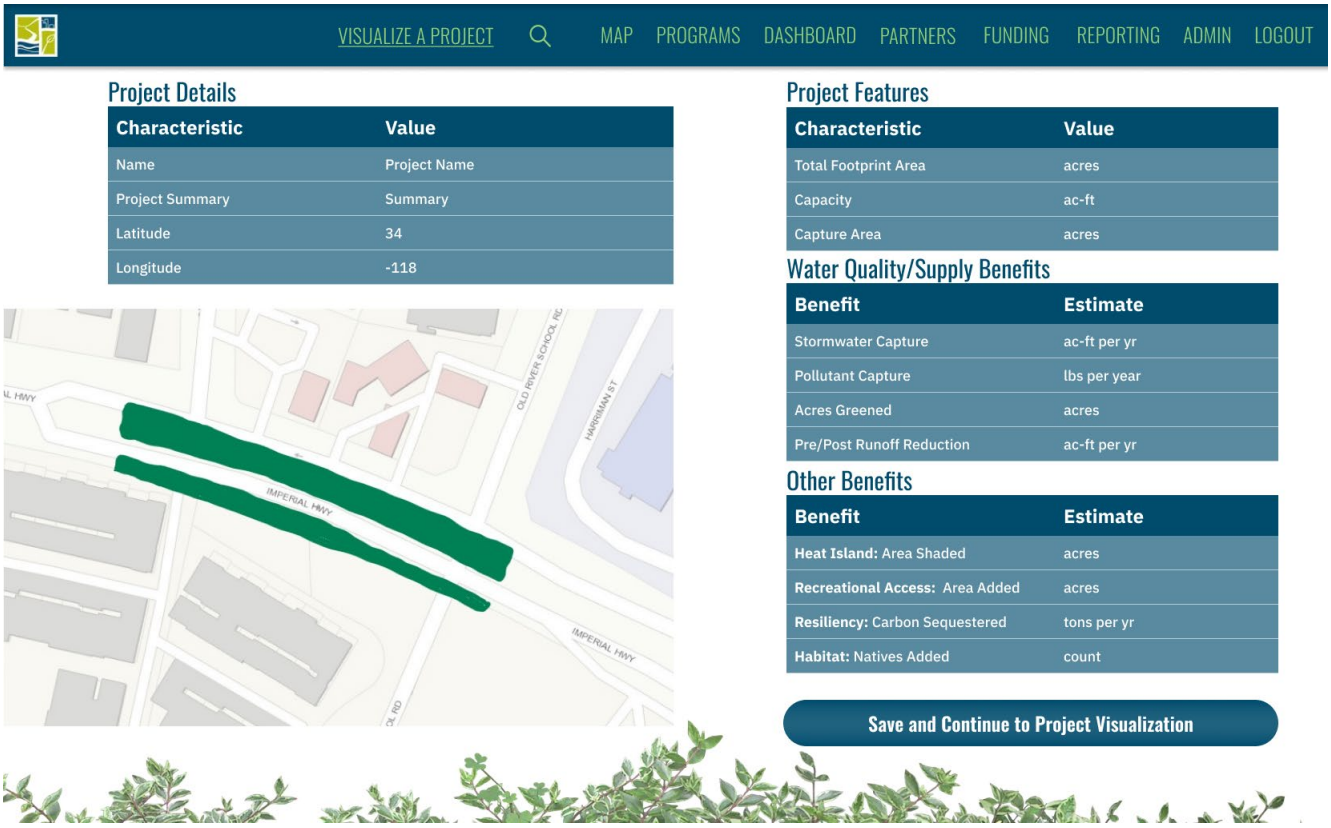


Figure 2-6. GREEN Portal, Visualize Project 2.

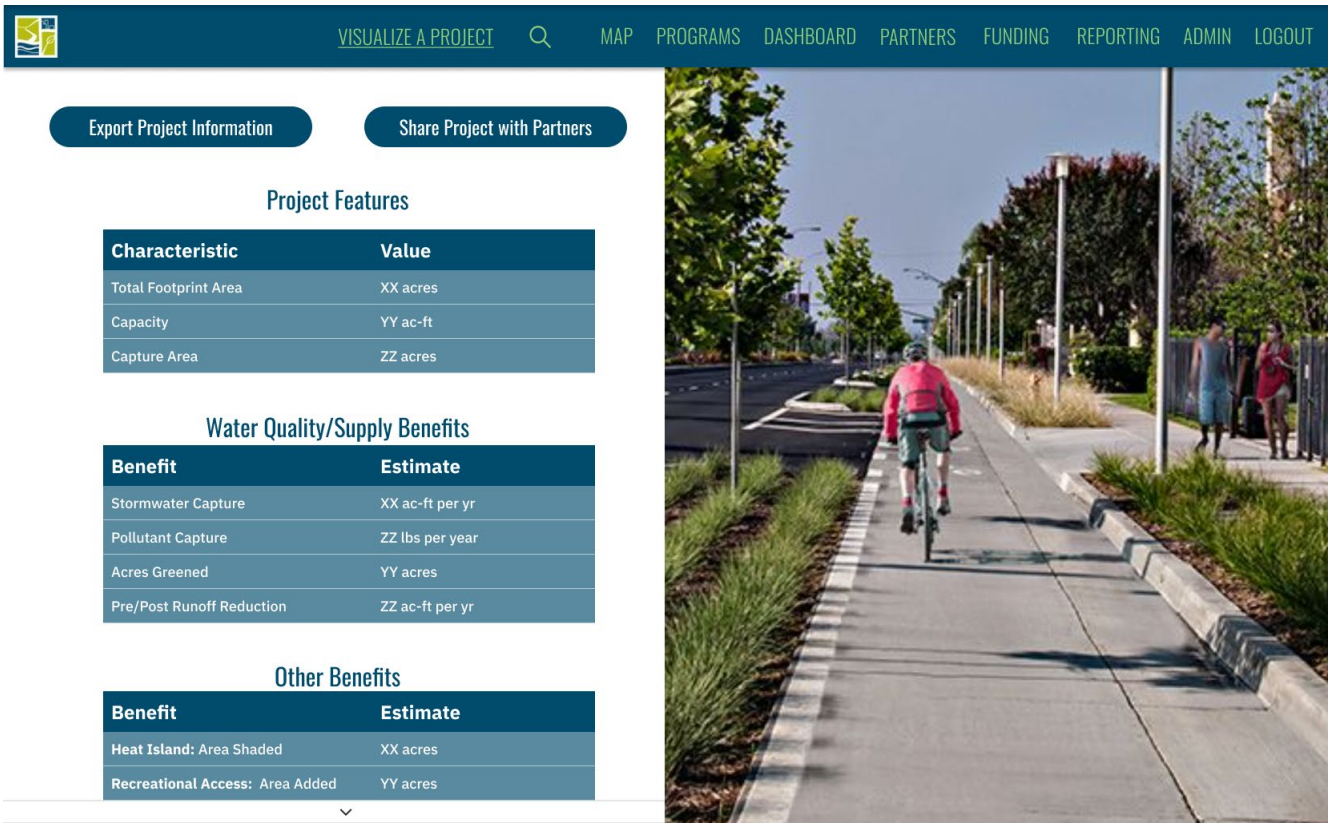


Figure 2-7. GREEN Portal, Visualize Project 3a.

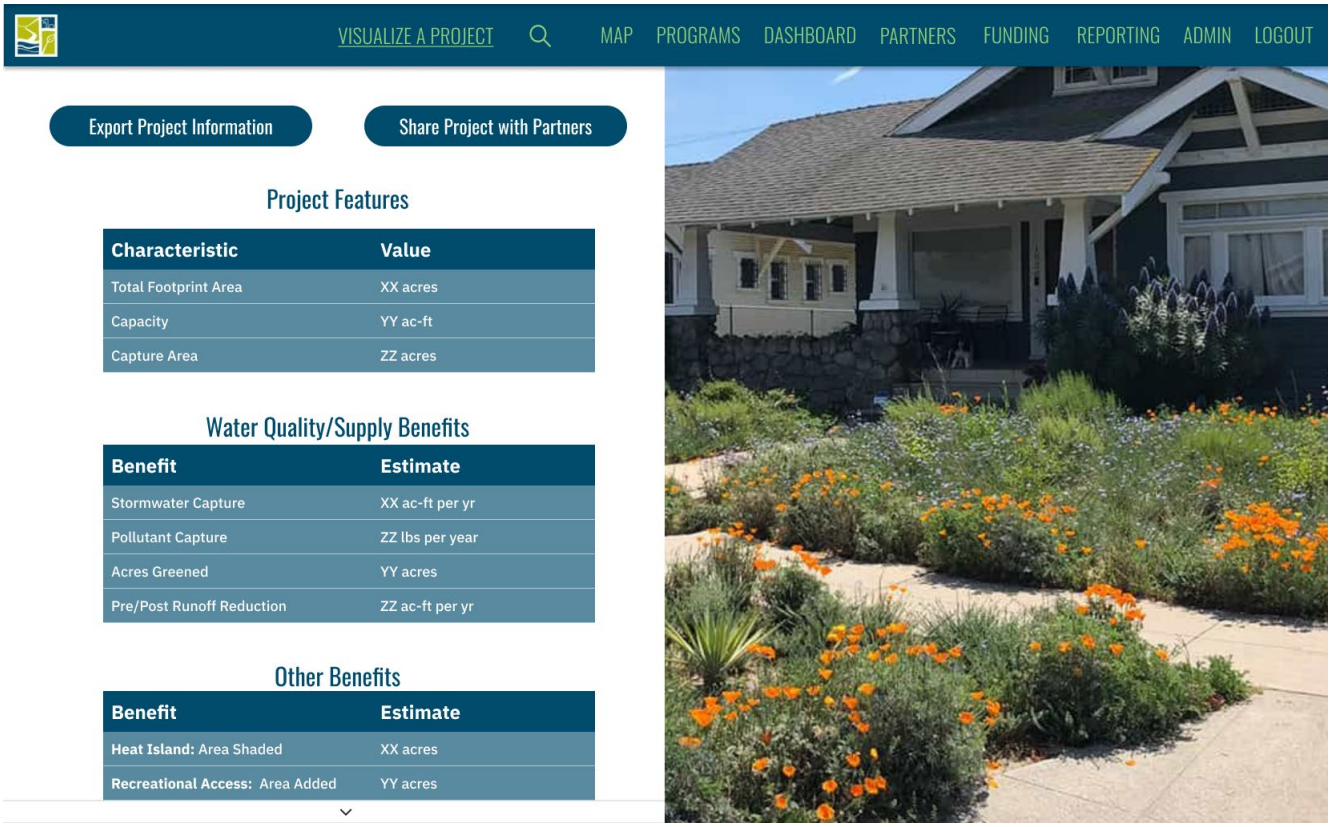


Figure 2-8. GREEN Portal, Visualize Project 3b.

2.4 Watershed Programs

Watershed Programs will provide an inventory of programs, projects, and plans. Through this page the user will be able to browse relevant Watershed Programs, see a brief description, and follow links to the program's website or view associated projects in the Map page. An embedded link to the Map page will provide a convenient mechanism to geolocate a given Program's projects and impacts. The view program summary feature allows users to quickly view a key information about the program via a popup window that displays information like the program area, funding, and benefits targeted (Figure 2-10). Further, Program summaries could be compiled into a comprehensive, downloadable data table. Information from this table could also inform other pages like the Dashboard. For example, the project status attribute would consider four categories (planned, partially funded, fully funded (through construction), and complete), those that are planned can be added to estimated outcomes for maximum greening impacts and completed projects can be used to estimate current impacts in the Dashboard. This data table could be editable by site host staff, who have with limited technical backgrounds, so that Programs and their information can be edited, added, or removed and easily uploaded back into the system as needed. Watershed Programs wireframe in Figure 2-9 shows a few example programs, and a working list of all potential programs to add to the Portal is in Section 6.2

There are several options for uploading and downloading program information and for creating program summaries, including manual entry and bulk uploading. As a high functionality feature, an adaptive algorithm could aide in updating programs and summaries. Project data management could also include the linkage to corresponding spatial data like footprints and drainage areas. Table 2-4 below outlines potential functionalities and costs.

Table 2-4. Functionality Levels, Programs.

Functionality Level	Defining Functions	Cost Range
Low	• View and search for Watershed Programs • Brief description on a Watershed Program • Link to Watershed Program website • Popup program summaries • Downloadable data table containing all programs and their summary attributes	$20k - $40k
Medium	Build upon "Low" functions plus the following: • Include a link to the Map page in a Program's description so that a user can conveniently navigate to the Map page to geolocate, and view a given Watershed Program's projects	$35k - $45k
High	Build upon "Low" and "Medium" functions plus the following: • Include an adaptive algorithm to update project completion estimates • Add additional Program filters e.g. Benefits, Status, Funding Amount, Location, Key Words	$45k - $50k

Note that all levels include admin functionality to allow staff to update the program information over time. Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

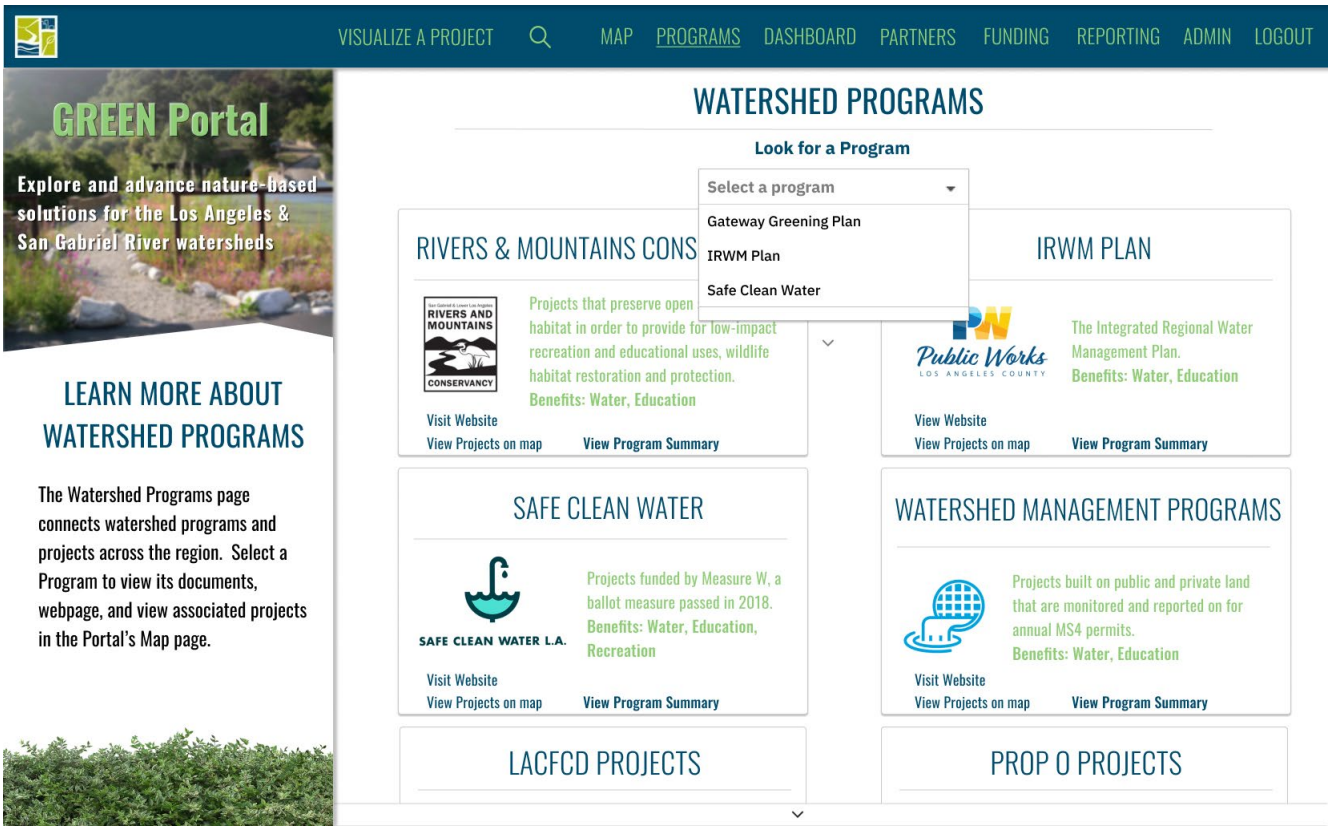


Figure 2-9. GREEN Portal, Watershed Programs.

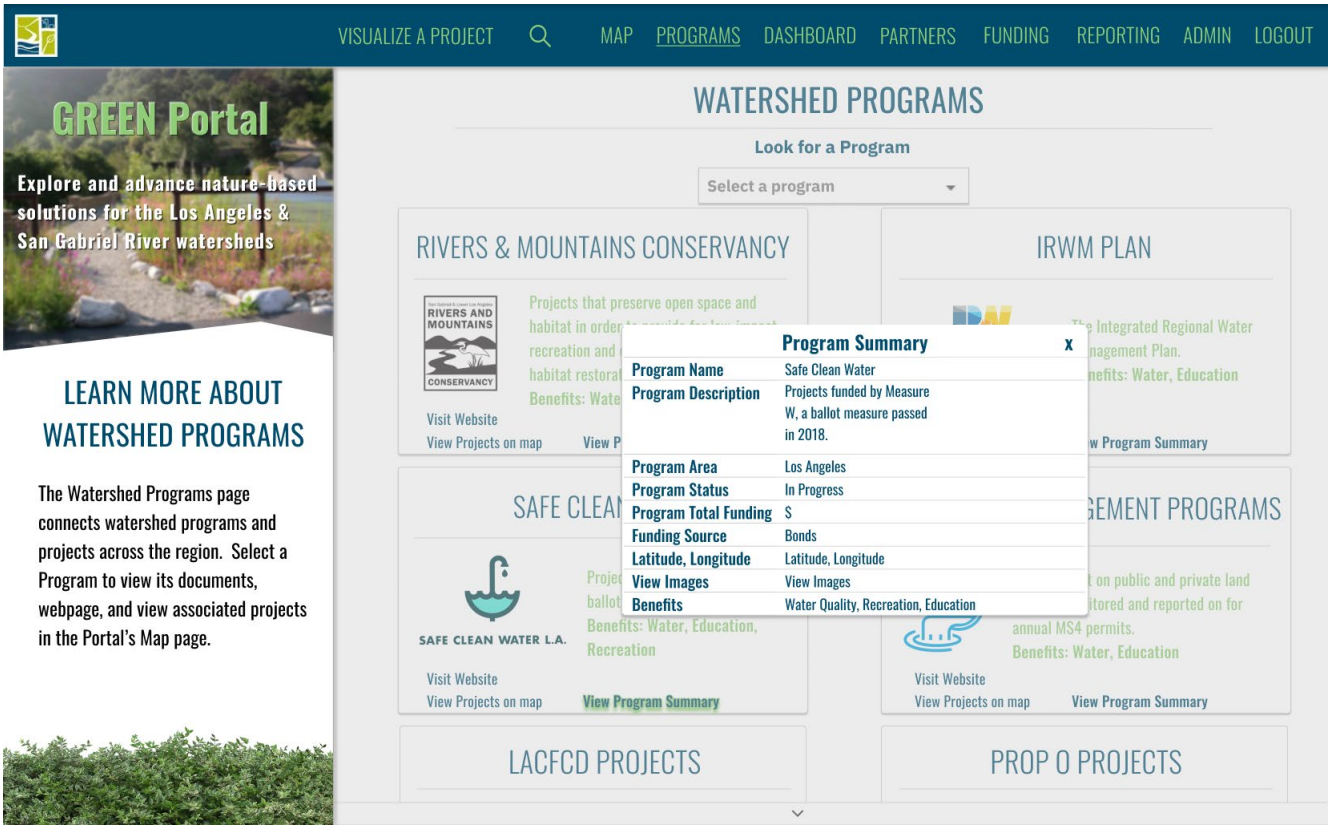


Figure 2-10. GREEN Portal, Watershed Program Summary Example.

2.5 Dashboard

Understanding current watershed benefits and impacts can help to inform future planning. The Dashboard section will conveniently track and project analytical estimates of project impacts and benefits. This section will also host descriptions of analyses and methods used for tracking and projecting these statistical estimates of project impacts and outcomes. Benefit summaries will populate primarily using the program inventory and inventory of existing conditions. There are twelve major benefit categories of interest to the Portal which would inform Dashboard metrics: water, air, climate, ecology, health, safety, education, equity, economy, recreation, connectivity, and aesthetics. Ideally, each benefit category will eventually have its own set of metrics. Based on currently available data, example metrics include acres greened, stormwater volume captured, carbon captured, trail length created, and population within 1/4-Mile of the project. Section 3.3 Multiple Benefits Quantification and Section 6 Data Inventory list several benefit quantification tools, references, and methods that could potentially inform the Dashboard and its metrics. Table 2-5 below outlines potential functionalities and associated costs.

Table 2-5. Functionality Levels, Projects.

Functionality Level	Defining Functions	Cost Range
Low	• Graphical, interactive summaries • Linkage to program inventory to generate summaries • List programs and their details in a convenient table format • Mostly default labeling of axes and figure elements	$30k - $40k
Medium	Build upon “Low” functions plus the following: • Downloadable program list • Downloadable results • Custom labeling of figure elements • Stormwater capture benefits are estimated for projects in the system with automated routines	$60k - $100k
High	Build upon “Low” and “Medium” functions plus the following: • Additional multiple benefits are estimated for projects in the system including community benefits, climate resiliency, connectivity and more	$100k - $150k

Note that all levels include admin functionality to allow staff to update the program information over time. Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

Figure 2-11. GREEN Portal, Dashboard.

2.6 Partners

The Partners page directly links users to relevant agencies, organizations, and resources. This section has potential to link Partner information to other sections of the Portal as well. The wireframe below shows a non-comprehensive list of potential Partners to include in this section. Partners can include agencies, non-profits, other platforms, data inventories, tools, and more. Each Partner listing includes a description with a short summary about the Partner, region served, a link to their website, and a link to view the Partner's area served via the Map page. The Partners wireframe in Figure 2-12 shows a few example partners, a working list of all potential partners to add to the Portal is in Section 6.3. Table 2-6 below outlines potential functionalities and associated costs.

Table 2-6. Functionality Levels, Partners.

Functionality Level	Defining Functions	Cost Range
Low	• List relevant agencies, organizations, and resources • Link users to Partner websites	$15k - $20k
Medium	Build upon “Low” functions plus the following: • Link to Map to view Partner extents spatially • Geospatially reference Partners by municipality • Geospatially reference Partners to determine which are relevant to a given study area	$25k - $35k
High	Build upon “Low” and “Medium” functions plus the following: • Add a “Request to add Resource” feature • Add additional Program filters e.g. Benefits, Status, Funding Amount, Location, Key Words	$35k - $45k

Note that all levels include admin functionality to allow staff to update the program information over time. Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

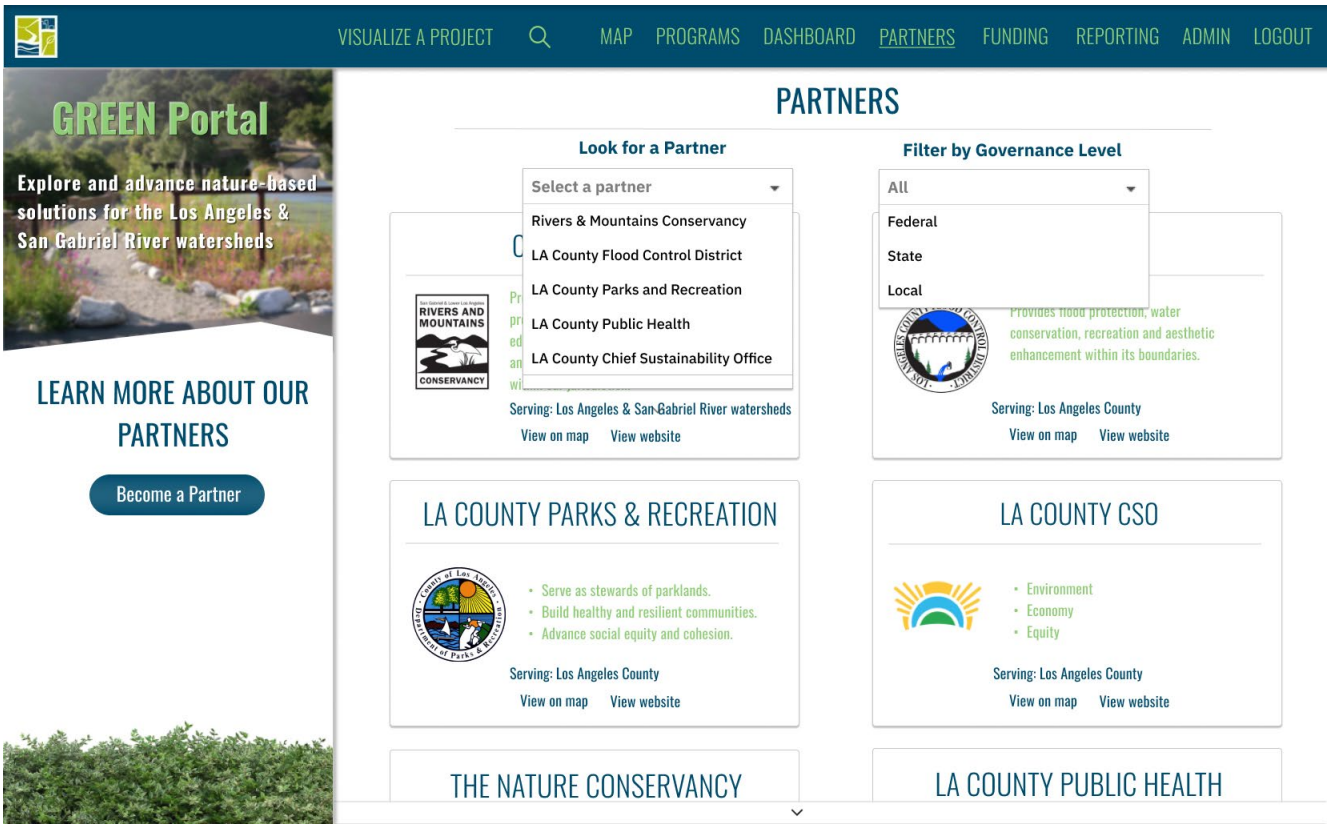


Figure 2-12. GREEN Portal, Partners.

2.7 Funding

Funding is critical to the implementation of any program and the Portal aims to make finding appropriate funding opportunities more transparent and easily navigated. Funding opportunities can be from both state and regional funding sources and other cycles known to the site host and partners. Key funding information includes the granting entity, the proposed funding amount available, eligible areas and entities, eligible applicants, and the link to the funding source. Additionally, benefit category tags could be added to each listing to help users quickly understand the goals of a given granting entity or funding source. This inventory will require regular updates and the method by which it is updated needs selecting. Funding opportunities could be manually updated or, on a high functionality level, updated via connecting this page to the CA State Library Grants Portal Application (API) to allow for automatic updates. The Funding page will also provide direct links to RMC funding opportunities and allow potential applicants to submit applications for funding. The Funding wireframe in Figure 2-13 shows a few example opportunities, a working list of all potential opportunities to add to the Portal is in Section 6.6. Table 2-7 below outlines potential functionalities and associated costs.

Table 2-7. Functionality Levels, Funding.

Functionality Level	Defining Functions	Cost Range
Low	• Table of Funding opportunities and key details • RMC funding opportunities and direct linkage to apply • Opportunity database manually updated	$15k - $20k
Medium	Build upon “Low” functions plus the following: • Added details on funding opportunities like targeted benefit categories • Funding matching through the Portal, this would be an additional feature through which users can match with opportunities by applying various filters like targeted benefits, funding amount, or key words	$25k - $35k
High	Build upon “Low” and “Medium” functions plus the following: • Opportunity database automatically updated via connection to the CA State Library Grants Portal Application (API)	$45k - $55k

Note that all levels include admin functionality to allow staff to update the program information over time. Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

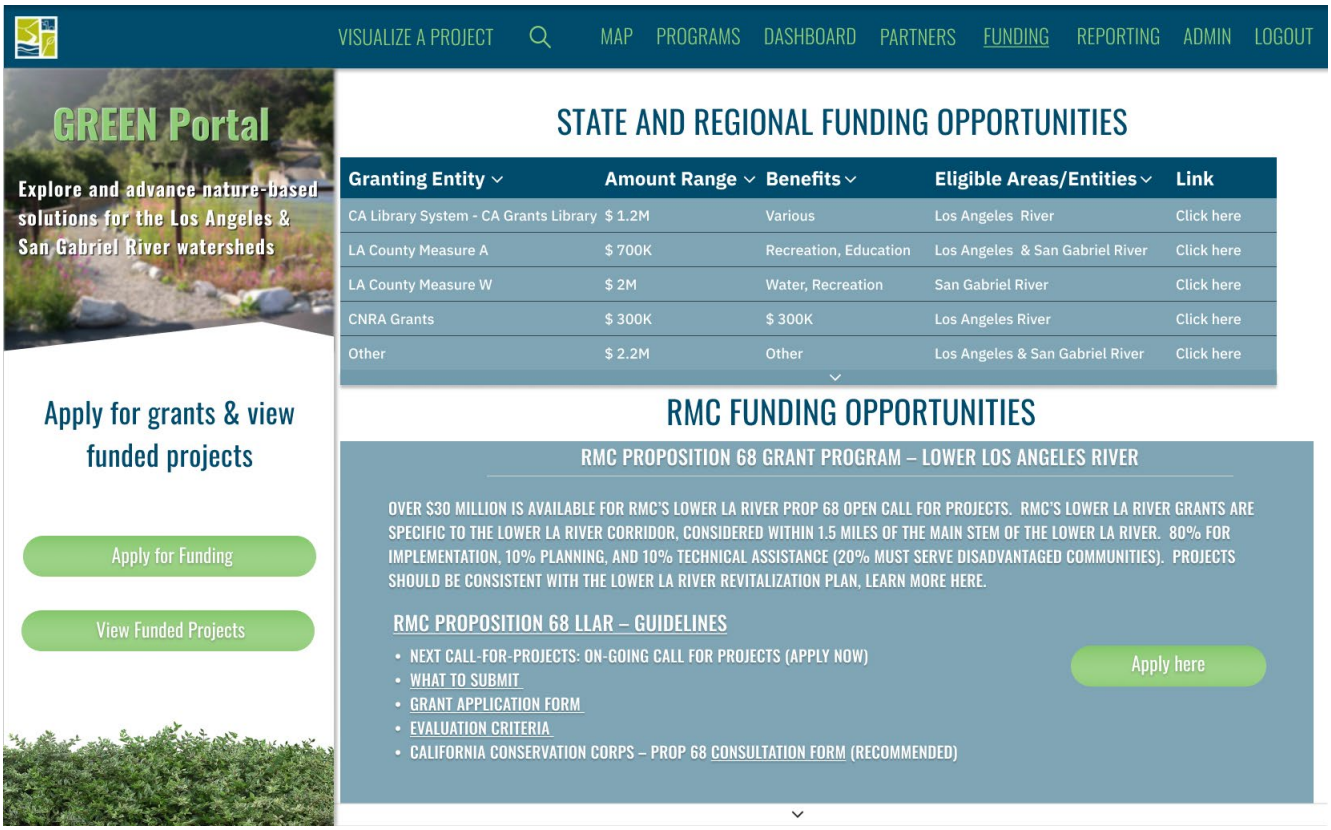


Figure 2-13. GREEN Portal, Funding.

2.8 Reporting

Reporting is a critical aspect of many funding opportunities; the Portal may be structured to streamline reporting on projects directly by including a Reporting page where users can address reporting requirements, e.g. for RMC grants. Functionality here can range from a simple template download and upload to individualized reporting modules through which a user can enter required information and generate a PDF for submittal. Table 2-8 below outlines potential functionalities and associated costs.

Table 2-8. Functionality Levels, Reporting.

Functionality Level	Defining Functions	Cost Range
Low	• Download and upload report template • Template is filled out separately in Microsoft word	$15k - $20k
Medium	Build upon “Low” functions plus the following: • Forms are created in and filled out through the web browser and the system handles attachments and report compilation	$45k - $60k
High	Build upon “Low” and “Medium” functions plus the following: • Reporting portal buttons bring the user to individual modules specific to the given report. A user can fill in required fields and generate a PDF • System has administrator functionality for RMC to track submitted reports and provide comments directly to submitters	$60k - $75k

Note that all levels include admin functionality to allow staff to update the program information over time. Costs include technical documentation and progress meetings. Note that costs do not necessarily account for the efficiencies that could be achieve when numerous components were developed simultaneously (i.e., the cost estimate for the overall system with multiple components would likely be lower than the sum of the individual costs of the components).

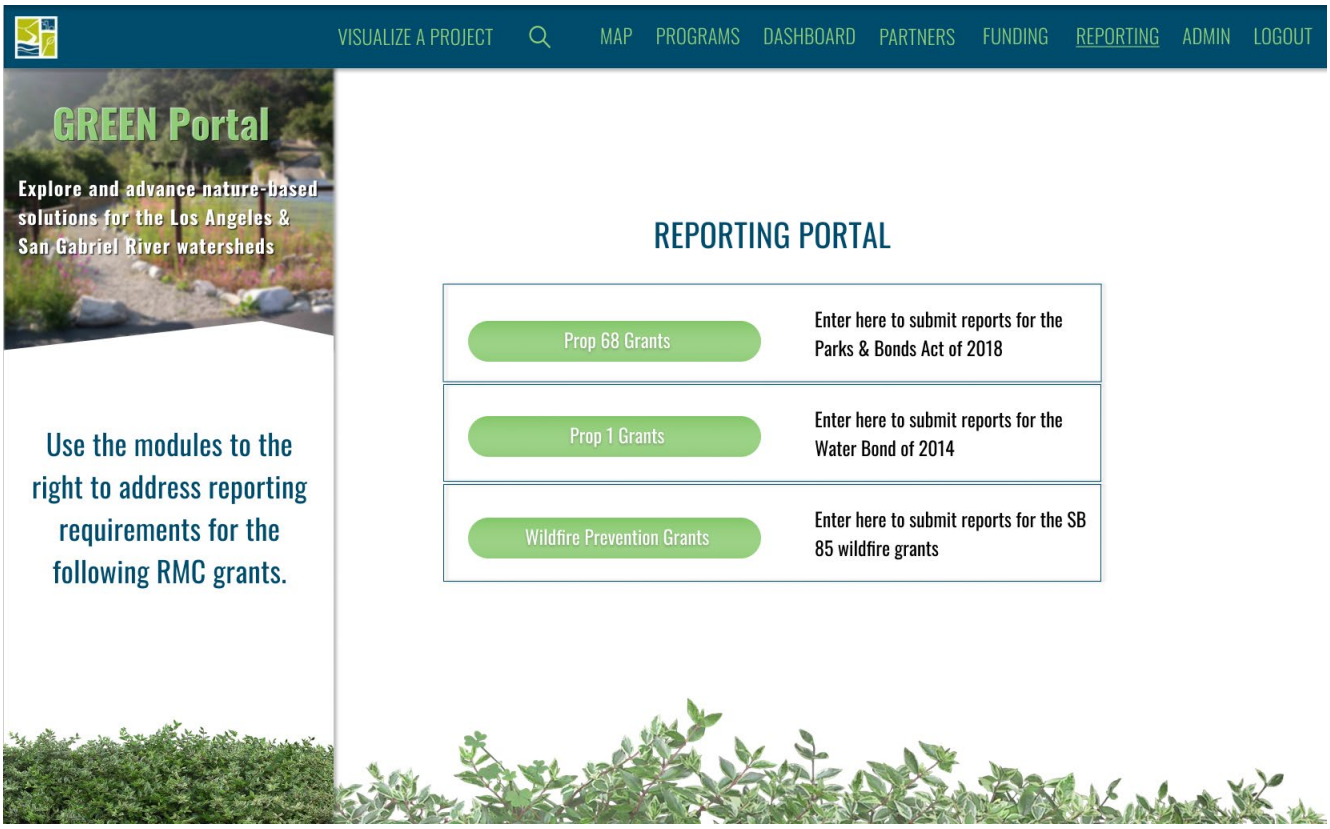


Figure 2-14. GREEN Portal, Reporting.

2.9 Admin

Admin will allow site host staff to update and add information and data as needed to maintain the Portal and keep the system functional and current. Registered users will be able to make updates like editing spatial datasets or uploading updated resources. As there are several tools and pages in the Portal, there are varying functionality levels for the Admin page and how information may be updated.

The system will at a minimum require table and data layer download/upload for manual data entry and editing. There is potential to incorporate functionality for Application Programming Interface (API) referencing, particularly the CA Library System Grants Database with existing extensive updates and API resources. On the back end this section would provide access to the most recent update history in addition to unpublished funding listings recommended through submissions by partners and users through the Portal. Table 2-9 below outlines potential functionalities and associated costs.

Table 2-9. Functionality Levels, Admin.

Functionality Level	Defining Functions	Cost Range
Low	• Web developer required to make any changes	Admin functions are generally included in costs above
Medium	Build upon "Low" functions plus the following: • Page data such as text or images could be edited via web browser • Ability for site host staff to directly update baselayers	
High	Build upon "Low" and "Medium" functions plus the following: • Page data such as text or images and text could be edited via web browser	

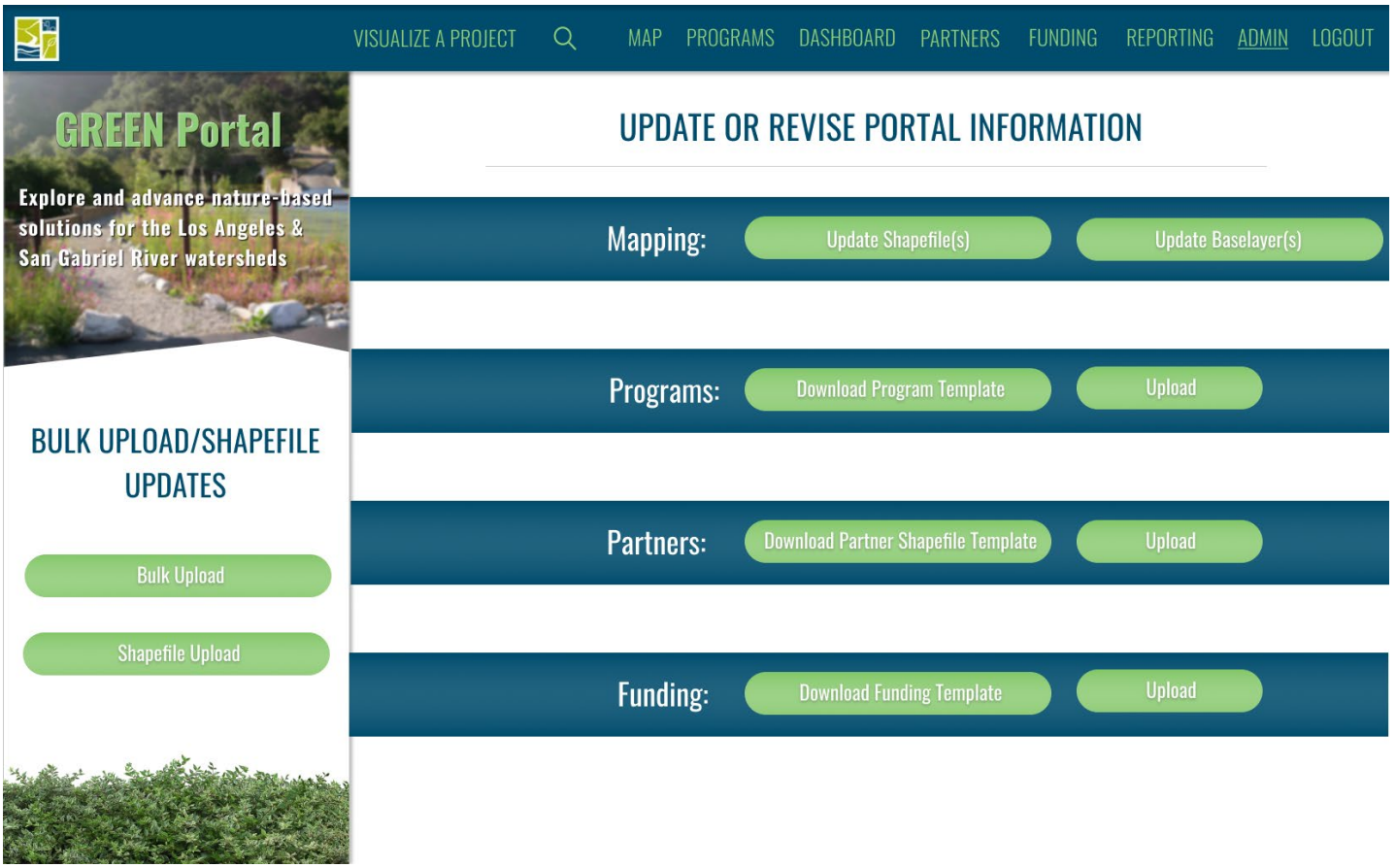


Figure 2-15. GREEN Portal, Admin.

3 ANALYSIS METHODS

3.1 Stormwater Capture Estimation.

Potential options available for stormwater capture estimation include:

- ***Simple regressions:*** for example, relationships between storage capacity and annual average capture can be developed by rain gage or region
- ***Curve-based approaches:*** curve interpolation methods can vary multiple variables such as storage volume, soil type and percent imperviousness of the upstream drainage area. The LA County Watershed Reporting & Adaptive Management System (WRAMPS) currently uses curve interpolation.
- ***On-the-fly modeling:*** a recent innovation by Paradigm is leveraging open-source simulation platforms to conduct capture estimates. The on-the-fly approach avoids the need to anticipate all BMP configuration-rainfall combinations in advance; instead user information can be used to simulate the BMP as prescribed. The capture estimates in LA County's Stormwater Capture Dashboard (https://wramps.org/dashboard) and the San Mateo County GI Tracking Tool leverage on-the-fly approaches where the simulation engine is linked to the backend of the tool through an API and the engine is called for certain events (either a new project being added or a new storm). The on-the-fly approach also simplifies updates over time as rainfall or GIS data or BMP assumptions evolve.

3.2 Spatial Analysis

Geographic Informational Systems (GIS) will support key geoprocessing functions associated with identifying project locations, uploading spatial layers, and spatial processing data based on project boundaries and drainage areas. The functions implemented in the Portal will rely on GIS libraries to handle data processing based on project locations and boundaries. GIS will also serve as the underlying engine of the Map, displaying data layers and boundaries.

External application programming interfaces (API) would support access to the most up-to-date data available. APIs could aide in updating pages with the recent data, however they would reside outside of the proposed system and would require maintenance when third-party system updates break communications and render the tool unfunctional. The resulting design will need to account for such challenges, minimize user impacts, and be easily maintainable as external API requirements can change.

3.3 Multiple Benefits Quantification

The quantification of multiple benefits will be a challenge for developing the Visualize Project and Dashboard pages. Currently, the Los Angeles Flood Control District (LAFCD) is leading a study focused on metrics and modeling. The results of this study could support benefit quantification in the Portal, but in the meantime, we have identified the following alternative methods and tools in Table 4-1.

4 TECHNOLOGY, STACK, AND FRAMEWORK

The platform must be able to process many layers and features. Some layers, like parcel data, include millions of features and functionality will be dependent on processing abilities. The system will be built upon a modern technology stack that will support a flexible, long-lasting application. As shown in **Figure 4-1**, the following major components will compose the Portal. The technology stack selected for the Portal is flexible and many options are available, this section simply lays out a tangible vision using components successfully incorporated into other web systems.

4.1 User Interface

The user interface (UI) could built using React (www.reactjs.org), which is a modern open-source JavaScript framework originally developed by Facebook. React libraries receive contributions from hundreds of thousands of developers across the world and React has quickly become the leading modern open source framework for UI development.

4.2 Visualization

The dashboard components of the Portal could leverage the open-source visualization library Data-Driven Documents (D3) (https://github.com/d3/d3/wiki/Gallery), which includes thousands of open-source templates for creating dynamic charts. The D3 gallery receives contributions daily and is the leading data visualization framework for modern web applications.

4.3 Mapping

The mapping component of the Portal could leverage the free Application Programming Interface (API) provided by Esri (https://developers.arcgis.com/) in combination with an affordable non-governmental organization (NGO) Esri license for ArcGIS Portal / ArcGIS Online. Alternatively a free open source QGIS server (https://qgis.org) could be used.

4.4 Reporting Output

The Portal could include libraries with functionality to output simple Word, Excel, or PDF tables that summarize the project inventory and performance metrics. These tables could be used in external reports. This function will support pages like ‘Visualize Project’ and ‘Reporting’.

4.5 Backend

The backend of the Portal could be developed in a Microsoft .NET framework (https://dotnet.microsoft.com/), including C-sharp (C#) as the coding language and SQL Server as the database. The .NET framework is cross-platform and open source. C# is an open-source language with a community of millions of developers. The .NET framework provides standardized reliable off-the-shelf frameworks for security including authentication (user login), encryption and more.

4.6 Cloud-Hosting

The Portal could be hosted on Amazon Web Services (AWS; https://aws.amazon.com/), which is the world’s largest cloud framework. AWS includes a number of utilities and services that make hosting simpler and more reliable. The tool will be hosted on a Microsoft server. In the long-term, the site host could elect to migrate the Portal to a local server.

4.7 Administration and Authentication

Although all pages will be public facing the Portal would likely include authentication/user accounts for each user to view, save, and edit their individual information and progress in modules like reporting, funding applications, and visualize projects. An administrator account would likely be developed for the site host that will have access to all the data in the system, allow access to the Admin page, and support data upload and download as required to maintain the system.

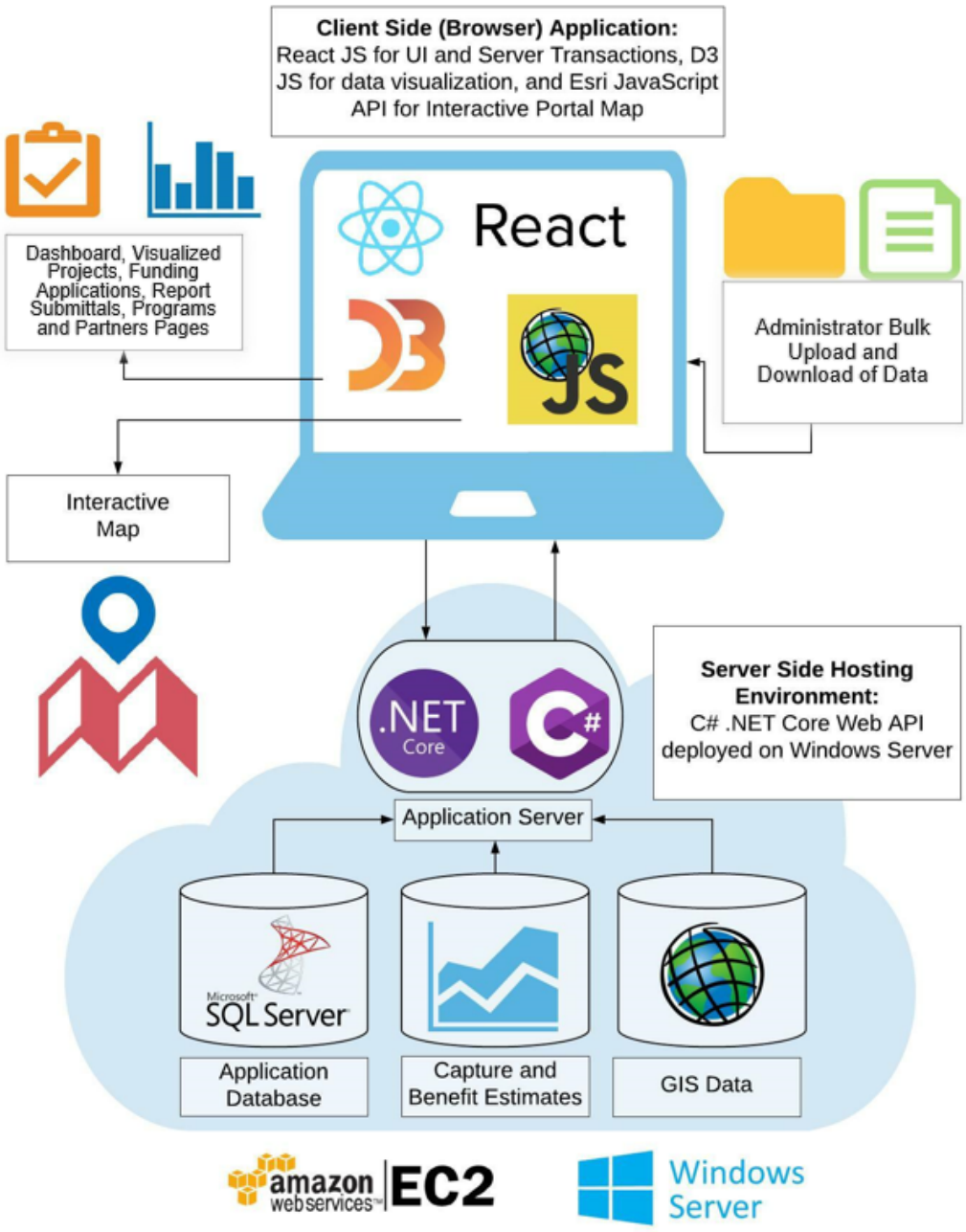


Figure 4-1 Diagram of example GREEN Portal architecture and components

Table 4-1. Benefit Quantification Methods.

Tool/Method	Source	Description	Applicable Benefit Categories	Pros	Cons
LAFCD Metrics and Monitoring Study	Los Angeles Flood Control District (LAFCD)	The LAFCD is currently executing a Metrics and Monitoring Study whose results may be able to inform Portal benefit quantification.	All	Specific to Los Angeles	Not yet released
Literature Review	Academic Libraries	The Portal could utilize literature to develop and cite quantification methods.	All	Defensible, comprehensive	Labor Intensive, not necessarily specific to LA
Autocase	https://autocase.com/	Autocase uses cost benefit analysis for translating impacts into triple bottom line metrics.	All	Convenient	Expensive, algorithms unknown.
WRAMPS	https://wramps.org/app/	Watershed Reporting Adaptive Management & Planning System, Tracking stormwater capture and supporting watershed-based MS4 annual reporting in LA County.	Water, Climate	Specific to Los Angeles	
i-Tree Tools	USDA Forest Service link	i-Tree is a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban and rural forestry analysis and benefits assessment tools. i-Tree is a combination of science and free tools that: Quantifies the benefits and values of trees around the world. Aids in tree and forest management and advocacy. Shows potential risks to tree and forest health. Is based on peer-reviewed, USDA Forest Service Research.	Climate, Air, Water, Recreation	Research based, site hosts several available tools and resources, free	
Virtual-STEPS	link	Assessing the micro-scale environment using Google Street View: the Virtual Systematic Tool for Evaluating Pedestrian Streetscapes (Virtual-STEPS). (leverages google street view to develop benefits)	Recreation, Equity, Health, Connectivity, Aesthetics	Leverages Google street view	

Tool/Method	Source	Description	Applicable Benefit Categories	Pros	Cons
CA Air Resources Board CCI Quantification, Benefits, and Reporting Materials	link	The California Air Resources Board's California Climate Investment (CCI) Quantification, Benefits, and Reporting Materials contains a list of quantification methodologies for estimating greenhouse gas (GHG) emissions reductions and co-benefits; benefit criteria tables for determining benefits to priority populations; and reporting templates for reporting outcomes.	Climate, Air	Supports several project types	Manual

5 ITEMS FOR ONGOING CONSIDERATION

The following are notable items for consideration as the application is under development.

5.1 Application Name

The Green Regional Environmental Enhancement Network (GREEN) Project Portal is a working name derived from the associated grant-funded initiative and may change. Given the potentially broad impacts of the Portal, following up with partners and leading agencies in the region will be essential. Building consensus on a formal name may be instrumental in establishing buy-in for use and applications.

5.2 Hosting

Ongoing use and alternate hosts for the Portal are major considerations. Support directly through a State conservancy has the benefit of ensuring relevant datasets and project listings are included in tandem with potential funding sources. Further, as a state agency hosting through a State conservancy would be cross jurisdictional and could be more impartial than other, local alternatives.

However, territory boundaries vary. RMC territory includes only part of LA County and may not be evenly weighted with other conservancies and local agencies. RMC territory also includes parts of Orange County. A complete list of RMC work would require the inclusion of at least parts of Orange County, which could complicate consistent data collection and projections. Other considerations for hosting include cost: most of the funding available to State conservancies are sourced through bonds which have set timelines. However, costs will be ongoing with operational funds required in perpetuity.

5.3 Data Sharing

The outline and wireframes assume public availability of content either, or both, manually input by site host staff or connected through Application Program Interface (API) functions. Data sharing agreements may be needed to streamline services and availability of current and relevant content. Algorithms could be produced through shared spreadsheet databases, e.g. for funding sources, to upload directly. However, securing such agreements is anticipated to be an ongoing/long-term initiative.

5.4 Terms of Use and Disclaimers

The Portal might consider adding an application use and data disclaimers upon entering the site as seen in other systems. A sample disclaimer from the Department of Water Resources DAC Tool is below.

> Application Use Disclaimer: This application provides a graphic representation of water management boundary data for informational purposes only. These boundaries are not definitive and do not establish legal rights or define legal boundaries.
>
> Data Disclaimer: All information provided by the Watershed Conservation Authority through the GREEN Portal is made available to provide immediate access for the convenience of interested persons. While the [site host] believes the information to be reliable, human or mechanical errors remain a possibility. Thus, the [site host] does not guarantee the accuracy, completeness, timeliness, or correct sequencing of this information. Neither the [site host] or

sources of information shall be responsible for any errors or omissions, or for the use or results obtained from the use of this information.

6 DATA INVENTORY

The above features will rely on various data, layers, and organization sources to perform their assigned functions. This section elaborates on previously mentioned example sources to create a more comprehensive list. This is a working list and will likely evolve as the Portal does, sources listed here may be added, removed, or revised. To populate Map layers, general outlines or spatial points will need to be pulled or digitized from these sources.

6.1 Regional Data Portals

Table 6-1 below outlines the current working list of Data Portals that are being considered for use within the Portal. This table include the Data Portal name, a short description, and a link to the site.

Table 6-1. Inventory of Relevant Data Portals.

Data Portal	Notes	Resource Link
CA Library System - CA Grants Library	• Strong inventory of CA State-administered grants and loans • Need to share and connect to local initiatives • Does not include potential foundation, local, or federal funding sources	link
CalEnviroScreen	• Increasingly a standard in understanding locations and extent of underserved communities and environmental justice concerns • Strong, transparent methods for analysis • Optimal data to be included with additional layers, such as jurisdictions and land use, to better understand priority communities and project locations	link
Calflora	• Outstanding technical inventory of native and invasive plant material throughout California searchable by characteristics as determined through the California Jepson manual and documented by leaders in the field. • A cross-reference for Calscape content. However, inventory of documented species presence is shared with Calscape and may not be representative of historic populations with similar potential challenges.	link
Calscape	• Outstanding inventory of native plants searchable by characteristics and proximity to identified populations • Excellent source of plant information • Inventory of species documented presence may not correlate with historic presence, and in some instance native plants may be invasive in areas highlighted • Much of the plant and associated species information and photos are publicly sourced and vetted either directly by users or through reference to such sites as Wikipedia. Errors may be observed.	link
City of LA Open Data	• Geospatial data inventories available • Specific to City of LA • Not specific to environmental work	link

Data Portal	Notes	Resource Link
County of Los Angeles GIS Data Portal	• Comprehensive inventory of available geospatial data with thorough metadata • Includes a public map data viewer, but viewer does not include native layering functionality with other datasets • Shapefiles are available for download, but software and skills to process this data is specialized, requiring external platforms to use data which may limit accessibility for users, especially for particular information included in datasets which may not be available on the included map data viewer • Context would be instrumental to frame portions of extensive inventory and direction specific to environmental work and project development	link
County Park Needs Assessment (Measure A)	• Inventory of parks, primarily in report format • Significant for identifying extent of existing park resources, park poverty, urban projects	link
Disadvantaged Communities (DACs) Mapping Tool	• The Disadvantage Communities Mapping Tool is an interactive map application that allows users to overlay census place, tracts, and block groups as separate data layers. Only those census geographies that meet the DAC definition are shown.	link
Economically Distressed Areas (EDAs) Mapping Tool	• The Economically Distressed Area Mapping Tool is an interactive map that allows users to overlay several layers to determine EDA status. The specific datasets used are the US Census American Community Survey 5-year Data (2012-2016) and the Employment Development Department (EDD) of CA (2017).	link
Gateway Greening Plan (GGP)	• Specific to Gateway Cities Study Area in southeast LA County • Currently does not include project, jurisdiction, and funding inventories relevant for wider region • Does not include aggregate analysis that may be considerations for future iterations of the proposed Portal • Focus on distributed Best Management Practices, which is less location-specific and more land use specific project designs. This platform is more of a Greening toolkit • Opportunity to incorporate GGP into Portal.	In Development
LA County Assessor Portal	• Reliable, easy to use and access parcel maps searchable by address, Assessor ID (AIN), etc. • Dedicated to parcel data	link

LA River Plans	• River Revitalization
	  • Project viewer and platform: specific to City of LA
	  • Portions outside RMC/WCA territory
	• River LA, LA River Index
	  • Data viewer
	  • San Gabriel River, other rivers and areas not included
	• LA River Master Plan update (2020). Much of this data will be available through the County GIS Portal
		Revitalization link
		River Index link

OPTI Databases	• County water resources project tracking, Integrated Regional Water Management, City of LA project tracking • Not public	link

Data Portal	Notes	Resource Link
Safe Clean Water Program (SCW) Spatial Data Library	• Public • Resources are relevant to SCW • Data is clipped to SCWP boundaries	link
Southern California Association of Government (SCAG) Green prints	• Scale extends across majority of Southern California • LA County datasets may offer more detail based on challenges to ensure consistent datasets across large scale study area	In Development
The Nature Conservancy's Los Angeles County Biodiversity Atlas (BAILA)	• Report and data available as downloads • Does not include geospatial data viewer	Report link Data link
The Urban Displacement Project	• Hosts tools and data to identify and understand gentrification, and displacement, and exclusion in Los Angeles • Focused on equity • Includes information like displacement typology maps, risk models, and policy tools maps • Open-Source with downloadable data and code	link
Trust for Public Land - Climate Smart Cities	• Climate-related information, geospatial analyses, and data layers • Data is organized into themes and user can display weighted priorities between themes • Requires username and password for access • Content is specific and may not apply to broader applications	link
University of Southern California's Green Visions	• Strong reports, most recent dated 2009 • Online geospatial tools unavailable, no data layers hosted • Links broken, may not be hosted indefinitely	link
Watershed Reporting Adaptive Management & Planning System (WRAMPS)	• Tool for updating water quality compliance measures for Clean Water Act compliance through State Water Resources Control Board, LA Water Quality Control Board • Specific to water quality • Not public	link

6.2 Program Data Sources

Table 6-2 below outlines programs whose mission, data, and information are relevant to the Portal. The table includes the program name, their governing partner, and a link to their webpage.

Table 6-2. Inventory of Relevant Programs.

Program	Partner	Resource Link
California State Wildlife Action Plan	Department of Fish and Wildlife	link
Compton Creek Master Plan	City of Compton and Compton Creek Task Force	link
Emerald Necklace Vision Plan	Amigos De Los Rios	link

Program	Partner	Resource Link
Enhanced Watershed Management Programs (EWMPs)	LA County Department of Public Works	link
Gateway Greening Plan (GGP)	Watershed Conservation Authority	In Development
Greater Los Angeles County (GLAC) Integrated Regional Water Management (IRWM) OPTI Webpage (project tracker)	LA Water Plan	link
Integrated Regional Water Management Plans (IRWMPs)	Department of Water Resources, Plans specific to Permittees	link
LA County Bike Master Plan	LA County Department of Public Works	link
LA River Master Plan	LA County Department of Public Works	link
Partners in Flight Bird Conservation Plans	Partners in Flight	link
Rim of the Valley Corridor Preservation Act and Expansion	National Park Service	Map link Legislation link
Safe Clean Water Program	LA County Department of Public Works	link
San Gabriel Mountains National Monument	US Forest Service, US Department of Agriculture	link
San Gabriel River Master Plan	LA County Department of Public Works	link
San Gabriel Valley (SGV) Greenway Network	LA County Department of Public Works	link
Water Resources Plan Functional Equivalents, SB-985	Senate Bill	link
Watershed Management Programs (WMPs)	California State Water Resources Control Board, Programs specific to Permittees	link

6.3 Partner Data Sources

Table 6-3 below is the current working list of a Partners of interest to the Portal. Below are the names of the Partners and links to their web page. Partners are agencies or organizations whose missions align with those of the Portal and whose information would be useful for development.

Table 6-3. Inventory of Relevant Partners.

Partner	Site Link
Baldwin Hills Conservancy	link
CA Invasive Plant Council (Cal-IPC)	link
LA County Chief Sustainability Office	link
LA County Department of Parks and Recreation	link
LA County Department of Public Health	link
LA County Flood Control District (LAFCD)	link
Mountains Recreation and Conservation Authority (MRCA)	link
Rivers & Mountains Conservancy (RMC)	link
Safe, Clean Water, Watershed Area Steering Committees (WASCs)	link
Santa Monica Mountains Conservancy (SMMC)	link
The Nature Conservancy	link

The Trust for Public Land	link

6.4 Jurisdictions

The following jurisdictions are to be included in the Map and will inform other aspects of the Portal.

- Cities, Municipalities, Counties, Unincorporated County
- County Supervisor Districts
- State Conservancy Areas of Service
    - Rivers and Mountains Conservancy (RMC)
    - Santa Monica Mountains Conservancy (SMMC)
    - Baldwin Hills Conservancy
    - Coastal Conservancy
- United States House of Representatives Districts
- California State Senate Districts
- California State Assembly Districts

6.5 Resources and Tools

Table 6-4 summarizes data resources and tools that could be of use to the Portal and its functions.

Table 6-4. Inventory of Relevant Resources and Tools.

Resource	Partner	Resource Link
A Manual of California Vegetation (Sawyer, Keeler-Wolf, and Evans)	CA Native Plant Society (CNPS)	link
CA Climate Investment (CCI) Quantification, Benefits, and Reporting Materials	CA Air Resources Board	link
Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG)	United States Department of Agriculture (USDA)	link
Community FactFinder	CA Department of Parks and Recreation	link
Disadvantaged Communities Mapping Tool	Department of Water Resources (DWR)	link
Economically Distressed Areas Mapping Tool	Department of Water Resources (DWR)	link
Historical Ecology of LA River	Regional HE Studies App	link
Historical Ecology of San Gabriel River	San Francisco Estuary Institute & The Aquatic Science Center, and the Southern California Coastal Water Research Project (SCCWRP)	link
iNaturalist	iNaturalist	link
i-Tree Tools	i-Tree Tools	link
LA Basin Study	US Bureau of Land Management (BLM) and LA DPW	link
LA County Hydrology Manual B USGS Rainfall Maps	LA County Department of Public Works	link

Resource	Partner	Resource Link
LA County Trails Manual	LA County, Department of Parks and Recreation	link
Model Design Manual for Living Streets	LA County Department of Public Health and UCLA Luskin Center	link
San Gabriel River Plant Lists	Rivers and Mountains Conservancy	link

6.6 Funding Opportunity Sources

Table 6-5 below outlines the current working list of funding opportunities that are related to Portal goals and may be of interest to Portal users.

Table 6-5. Inventory of Relevant Funding Opportunities.

Funding Opportunity Source	Site Link
CA Library System - CA Grants Library	link
CA Library System - CA Grants Portal	link
LA County Measure A, Regional Park and Open Space District (RPOSD), Safe, Clean Neighborhood Parks and Beaches	link
LA County Measure W, Safe, Clean Water Program	link
California Natural Resources Agency (CNRA) Grants (all departments)	Grants link Funding PDFs
RMC Prop 68 Grants, Parks & Bonds Act of 2018	link
RMC Prop 1 Grants, Water bond of 2014	link
RMC Wildfire Prevention Grants, SB-85 wildfire grants	In Development

6.7 Additional Map Layers

- United States Census Data and tracts
- Rivers and River Watersheds (Combined)
- Groundwater Aquifers/Unconfined Groundwater Aquifers
- Land Use (simplified)
- Precipitation
- Soils
- Land Slope
- Geology
- Tree Canopy
- LA County Significant Ecological Areas
- Los Angeles County Trails
- Los Angeles County Bike Trails (Class I–II)
- CA Department of Forestry and Fire Protection (Calfire) Sedimentation
- CA Department of Forestry and Fire Protection (Calfire) Fire Risk

7 CONCLUSIONS

The vision for the Portal is not just another web platform but a critical, equitable, resilient, and adaptable resource to link information and people across watersheds and provide quantitative robust tools to support multi-benefit planning and visioning. The Portal be a navigable and dynamic space to share resources and geospatial data to inspire long-term visions and on-going environmental efforts. By linking across programs and providing the public with tools to vision projects, the Portal would provide functionality and connections not currently available in LA County.

The Portal has potential for varying levels of functionality which will need to be evaluated based on its goals, budget, and accepted level of effort and may warrant an iterative development approach. The next phase will require a defined vision for the Portal, define the highest priority capabilities, and to initiate Portal development. It is likely that the Portal would be developed in phases, with core and highest priority functions being developed first.

8 REFERENCES

https://developers.arcgis.com/javascript/latest/sample-code/widgets-editor-3d/

June 1, 2023 – Item 14

RESOLUTION 2023-17

RESOLUTION OF THE WATERSHED CONSERVATION AUTHORITY TO CERTIFY COMPLETION OF THE GREEN REGIONAL ENVIRONMENTAL ENHANCEMENT NETWORK PROJECT (RMC15112).

WHEREAS, the Watershed Conservation Authority (WCA) has been established to facilitate joint projects between the Rivers and Mountains Conservancy and Los Angeles County Flood Control District; and

WHEREAS, The Watershed Conservation Authority has been established to focus on projects which will provide open space, habitat restoration, and watershed improvement projects in both the San Gabriel and Lower Los Angeles Rivers watershed; and

WHEREAS, this action will certify completion of the GREEN Regional Environmental Enhancement Network (GREEN) Project (RMC15112); and

WHEREAS, this action is exempt from the environmental impact report requirements of the California Environmental Quality Act (CEQA); NOW

Therefore be it resolved that the WCA hereby:

1. **FIND**S that this action is consistent with the purposes and objectives of the WCA.
2. **FINDS** that the actions contemplated by this resolution are exempt from the environmental impact report requirements of the California Environmental Quality Act.
3. **ADOPTS** the staff report dated June 1, 2023.
4. **CERTIFIES** completion of the Green Regional Environmental Enhancement Network (GREEN) Project (RMC15112).

~ End of Resolution ~

//

Motion: _____ Second: _____

Ayes: _____ Nays: _____ Abstentions: _____

Passed and Adopted by the Board of the
WATERSHED CONSERVATION AUTHORITY
On June 1, 2023

_____
Victoria Paul
Governing Board Vice Chair

ATTEST:_____
Elizabeth St. John
Deputy Attorney General