

Work Plan

Introduction:

The original construction of Santa Rosa's City Hall was done in an era when storm water was collected and conveyed as quickly as possible, where water intensive lawns were the norm, and the impacts of adding pavement with its associated polluted runoff were not considered.

City Hall is the ideal location to demonstrate successful Low Impact Development (LID) implementation and sustainable, water efficient landscape practices. As the largest California city north of San Francisco, Santa Rosa can be the center to demonstrate and promote pivotal change in the North Coast Region. City Hall is located directly across from Prince Gateway Park, the gateway to Prince Greenway, a creek restoration running through the heart of Santa Rosa. Beginning at the Prince Greenway and continuing for six miles, the Santa Rosa Creek Trail acts as both a figurative and literal connection to the Laguna de Santa Rosa, a Wetland of International Significance.

The project site discharges to Santa Rosa Creek, which is a 303(d) listed impacted water body for indicator bacteria and sediment/siltation. Santa Rosa Creek then flows into the Laguna de Santa Rosa which is a 303(d) listed for mercury, indicator bacteria, dissolved oxygen, nitrogen, phosphorous, sediment/siltation and temperature. Development of a Total Maximum Daily Load for the Laguna de Santa Rosa is currently underway. The anticipated pollutant removal due to this project's completion will result in a load reduction of these constituents to benefit these receiving waters.

Sustainable Best Management Practices installed at City Hall would be seen by the general public, site designers, engineers, architects, planners, developers, and contractors as they come for permits, and to conduct project business. The proposed demonstration garden offers an ideal opportunity to show LID features and sustainable landscaping in an urban retrofit setting, influencing design and environmental stewardship throughout the region.

The overall goals of demonstrating storm water low impact development and sustainable, water efficient landscapes at Santa Rosa's City Hall are to:

- 1) Demonstrate successful implementation of the Storm Water Low Impact Development Technical Design Manual (LID Manual) practices, Russian River-Friendly Landscape Guidelines (RRFLG) principles and practices, and Water Efficient Landscape Ordinance (WELO) compliance.
- 2) Improve water quality in Santa Rosa Creek, the Laguna de Santa Rosa, and the Russian River, which are all 303(d) listed as impaired water bodies.
- 3) Reduce landscape water needs by reducing plant water requirements, improving irrigation efficiency, and optimizing landscape water management.
- 4) Educate the public and professional design community in the North Coast Region through the design and construction of a demonstration landscape, workshops, tours, signs and online tools and resources.

The implementation of storm water quality Best Management Practices (BMPs) is a central element of this project, not only because of the quantifiable water quality benefits that will be realized, but also because these elements will be demonstrating a real world implementation of the LID Manual. This manual was created to meet the City of Santa Rosa (City) MS4 NPDES Permit requirements. Since its adoption in 2012, the LID Manual has become the design standard for managing storm water quality throughout the North Coast Region.

The LID design method used for the project's proposed landscape based features is based on volume capture and infiltration. Perforated pipe is installed high in the soil section as an overflow only and the amount of storage is calculated based on the void space available below the perforated pipe. This method of design removes the variable of native soil infiltration rate and allows for these LID features to be installed even in areas with low infiltration clays. The specific BMPs demonstrated in this project are:

- Two parking lot bioretention areas will be installed in the main east parking lot and will meet the highest design goal set forth by the LID Manual by capturing 100% of the 85th percentile 24 hour rain event (0.92 inches of rain). These features will capture storm water runoff from 36,650 square feet of parking lot that currently discharges directly into Santa Rosa Creek. The runoff will be collected, treated, and allowed to infiltrate into the soil. By capturing 100% of this volume, all of the associated pollutants will be eliminated from the storm water flow.
- Two vegetated swales will collect roof water that would have otherwise been piped directly into the storm drain system. The swales will provide treatment and allow for infiltration. The swales will also act as a strong teaching tool by highlighting storm water as a visually important element in the demonstration garden.

The non-landscape based BMPs include:

- A rainwater harvesting system will be installed to collect water from a portion of the building roof, and store 1,500 gallons in a cistern which will be used to irrigate the surrounding low water use landscape. Not only will this minimize the amount of potable water needed for landscape irrigation, it will also attenuate the peak flows from the roof and minimize runoff rates.
- The new walkways and gathering areas will demonstrate the use of pervious concrete. This will allow for demonstrated use of this alternative paving material and also ensure that the project does not result in an increase in runoff due to additional pavement.

All BMP sizing calculations for this project have been completed using the online excel based "Storm Water Calculator" that was created to accompany the LID Manual. Using the same tools available to the design community ensures that project is designed to the same standard and builds familiarity and confidence with the tools provided.

The LID Manual is based on numerous studies, resources and technical papers that support the effectiveness of permanent landscape based infiltration LID type BMPs at removing pollutants. Natural processes are utilized within the soil to break down pollutants and allow plants to uptake and use the nutrients. The various supporting technical data and resources are listed in the LID Manual.

The sustainable landscape approach utilized in this project will demonstrate the type of practices and principles as outlined in the recently adopted Russian River-Friendly Landscape Guidelines. The overarching principles promoted in the Guidebook include: Landscape Locally, Landscape for Less to the Landfill, Nurture the Soil, Conserve Water, Conserve Energy, Protect Water & Air Quality, and Create & Protect Wildlife Habitat. The Guidebook includes a wealth of information and resources that aid in the implementation of Russian River-Friendly practices in the North Coast region. Elements of these overarching principles will be exemplified in all aspects of the completion of this project.

- Design and Construction
The design and construction will follow RRFLG recommendations for plant selection, irrigation type, use of permeable materials, sheet mulching and downspout disconnection.
- Permanent Features
Russian River-Friendly best practice signs will be placed throughout the demonstration garden to provide information on the benefits of sustainable landscaping. Highlighting the practices and principles used in this demonstration garden will also illustrate what Russian River-Friendly landscaping looks like in practice. Signage developed as part of this project will serve as a template for regional use.

The understanding gained through the completion of this project will aid landscape professionals and the general public in the implementation of RRFLG in their own projects and advance the protection and conservation of the Russian River waterways, including Santa Rosa Creek and the Laguna de Santa Rosa, the reuse and reduce of plant debris and an integrated approach to sustainable landscaping in the North Coast region.

In addition to these voluntary landscape principles and practices, this project will comply with the state of California minimum requirements for landscape water-use efficiency as defined in the Model Water Efficient Landscape Ordinance. A more stringent version of the ordinance was adopted throughout the North Coast region and is required for new and redevelopment projects.

- The demonstration landscape at City Hall will be compliant with the regionally adopted ordinance through plant selection, soil management, irrigation design and weather-based irrigation controller technology.

This demonstration project at City Hall will also provide a WELO education and outreach component by offering a workshop targeted to municipal staff who are tasked with reviewing development plans for WELO compliance. The technical challenge of reviewing WELO submittals creates an ongoing need for training to insure proper implementation.

- Water-Use Efficiency City staff will utilize their expertise to offer training to Plan Review staff within the City as well as other agency staff throughout the North Coast region.

Education and Outreach

The education and outreach goals for the project are the primary drivers of the project's design. While measurable landscape water-use efficiency and storm water quality benefits will occur in both the built landscape and LID features, the demonstration on *how* to design and install these features, *why* specific best practices are important to adhere to, and the opportunity to *see* what they look like in the ground will result in far greater and lasting impacts. City Hall's central location and a comprehensive education and outreach approach will provide learning opportunities to targeted audiences throughout the entire North Coast region. This approach will be a cornerstone of creating the needed paradigm shift in California urban landscapes.

- Tours
Through strategically placed signage, visitors are guided into garden and invited to learn about the benefits of LID and sustainable, water efficient landscape practices. The primary targeted audience for these demonstration elements are people who will benefit the most from the educational opportunity including developers, architects, landscape professionals and contractors who already frequent City Hall for building permits, design review, etc. Different sign types will be placed at interaction points to attract and educate the professional audience as well as the general public who may also be inspired to modify their residential landscapes (for preliminary sign locations see plans).
- Gathering Area
The project's central gathering area will provide the space to conduct workshops, attract visitors to the educational kiosks and provide a place for City staff to gather for meetings and work breaks. Four workshops will be offered in the gathering area as part of this grant project:
 1. LID Manual implementation for implementing agencies;
 2. LID Manual implementation for designers and developers;
 3. The Low Water-use Landscape series for homeowners;
 4. WELO for implementing agencies.
- Website and Online Tools
The City will develop a dedicated website that will be a clearing house of highly technical to generic information for people to understand all concepts demonstrated in the project. The website will include providing free access to download the LID Manual, Water Efficient Landscape Ordinance and their corresponding calculators, the Russian River-Friendly Landscape Guidelines, and examples of other built projects that exemplify Russian River-Friendly Landscaping or LID features. Onsite signage will include links to the website.

- “How To” Video
In addition, one educational ‘how to’ video will be made during the construction phase of this project. The video will be hosted on the website allowing people to visualize all steps during the process of constructing the demonstration areas and features.
- Conference Presentations
In an effort to increase the project’s influence beyond the North Coast region, the team will present the project at two nationally recognized professional conferences.

Storm Water Quality

The receiving waters downstream of the project site include Santa Rosa Creek, the Laguna de Santa Rosa, and the Russian River, all of which have historic sampling results which show high levels the pollutants generated from parking lots and hardscapes.

Runoff samples will be collected and analyzed pre and post project to quantify the pollutant removal realized. This data will provide the local real world information so many local professionals including local regulators desire. Please see the “Monitoring and Sampling” work task and deliverables for further detail.

Operations and Maintenance

The City Hall site is owned by the City of Santa Rosa. The landscape, buildings and parking lot are maintained by the City. Long term maintenance and operations will continue to be conducted by the City and it is not anticipated to result in an increase in costs. However, the method of maintenance will change from conventional turf care to sustainable landscape maintenance practices. Internal coordination between City departments has occurred to gain commitment in support of the long term maintenance plan. Additionally, the City will routinely inspect all project features to ensure proper operation and function. Storm water LID features will be inspected per the maintenance checklist in the LID Manual.

Work Tasks and Deliverables:

The project is perfectly situated at City Hall. The City owns the site, which eliminates the need for easements and the completed project will be publicly accessible and located at the heart of downtown. The site is already developed so no negative environmental impacts will be experienced due to the construction of the project.

A number of the tasks needed to successfully complete this project have already been completed. A preliminary design (including a topographical survey, BMP sizing, site layout, feasibility analysis, and CEQA determination) has been completed as well as necessary internal stakeholder outreach to ensure multifaceted support for not only the initial project, but also the ongoing maintenance and ownership of the demonstration garden. The City of Santa Rosa has developed the technical guidance documents (LID Manual and RRFLG) and adopted ordinances (WELO) that meet or exceed storm water and water-use

efficiency requirements. These successful programs include the manuals themselves, online tools, informational websites, and trainings, workshops, and events. The City also has training materials available to the public and offers rebates.

Remaining work tasks and deliverables:

1) Work Task: Direct Project Administration

Upon award of the grant, project management and grant administration will formally begin. Key tasks will include management of the project budget and schedule, as well as completion and submittal of required reports and invoices.

Task 1.1- Project Administration ~Ongoing

Task 1.2-Reporting

Deliverables:

- a. Progress reports
- b. Final project summary
- c. Draft Final Project Report
- d. Natural Resource Projects Inventory (NRPI) Survey Form
- e. Final Invoice

2) Work Task: Planning/Design/Engineering/Environmental

Plans need to be brought from the 40% level to 100% completion. The specific items to complete include: finalizing the site layout, completing the grading and drainage plans, retaining a landscape architect to create landscape and irrigation plans, and creating project specifications.

The completed design will need to go through the City's review and approval process with the Design Review Board and the Waterways Advisory Committee. Building, grading, and signage permits will need to be obtained. The formal CEQA exemption will need to be filed and the project will need to conform with all WELO requirements. Due to the nature and location of this project, significant stakeholder involvement is anticipated. A Stakeholder Involvement Plan will be created and implemented as part of the project approval.

Task 2.1- Design

Deliverables:

- a. Select landscape architect
- b. Construction plans
- c. Planting and irrigation plans
- d. Project specifications
- e. Engineers estimate of cost

Task 2.2 Project Approval Process*Deliverables:*

- a. Creation and implementation of the Stakeholder Involvement Plan
- b. Approval from the Design Review Board
- c. Building permit
- d. Certificate of WELO Conformance
- e. Grading permit (if needed)
- f. Sign Permit

Task 2.3- Environmental Clearance and Permits*Deliverables:*

- a. Formal CEQA determination letter

3) Work Task: Construction /Implementation

The City will use a competitive bid process to select a contractor to construct the project. Construction will include site clearing, tree removal, grading, drainage installation, hardscape installation, irrigation installation, planting, and signage.

Task 3.1- Construction Contracting*Deliverables:*

- a. Bid advertisement
- b. Contractor selected

Task 3.2- Construction*Deliverables:*

- a. Construction of two parking lot bioretention areas
- b. Construction of two vegetated swales
- c. Construction of rainwater harvesting system and cistern area
- d. Construction of central gathering area and permeable walkways
- e. Construction of irrigation system retrofit (including weather-based irrigation controller technology)
- f. Conversion of existing turf and ivy areas to drought tolerant, low water-use landscape (including many native species)
- g. Installation of signs and kiosks

4) Work Task: Education/Outreach.

The education and outreach will include permanent features, such as signs and kiosks, ongoing efforts, such as the website and online tools, and one-time events, such workshops and presentations.

Task 4.1- Design website, educational kiosks, and signs*Deliverables:*

- a. Design signs and kiosks
- b. Completion of "how to" video
- c. Completion of dedicated website and online tools

Task 4.2- Create Russian River Friendly Guidelines ~Complete

Task 4.3- Create LID Manual and online sizing tools ~Complete

Task 4.4- Create and deliver workshops

Deliverables:

- a. Workshops conducted

Task 4.5- Create and present at technical conference

Deliverables:

- a. Presentations at two professional conferences completed

5) Monitoring/Performance.

Storm water samples will be collected from the parking lot storm drain both before and after the project is completed in order to quantify the pollutant removal. See sampling location map for specific sampling location. Grab samples will be analyzed for Chromium, Copper, Lead, Zinc, Total Organic Carbon, Oil and Grease, Hardness, Conductivity, Total Suspended Solids, Ammonia as Nitrogen, Nitrate as N, Nitrite as N, Orthophosphate, Total Phosphorous, and Total Kjeldahl Nitrogen. Additionally pH, Temperature, Conductivity, Dissolved Oxygen, and Turbidity will be measured in the field. This list of constituents represents typical pollutants generated from parking lots.

The rainwater harvesting system will be monitored and measured using flow meters to quantify the amount of rainwater collected that offsets potable water demand. The pre-construction landscape site water requirement will be compared to the post-construction landscape site water requirement.

Task 5.1- Storm water runoff

Deliverables:

- a. Collection and analysis of storm water grab samples prior to project
- b. Collection and analysis of storm water grab samples after project completion
- c. Comparison and quantification of pollutant removal
- d. Provision of results available to the public via the website

Task 5.2- Water conservation report

Deliverables:

- a. Measurement of rainwater collected in rainwater harvesting system and analysis of the amount of potable offset
- b. Summary of landscape water-use reduction

Project Proponent Qualifications

The City of Santa Rosa has successfully implemented many grants on projects including water use-efficiency and creek restoration. Members of this project team are comprised of the primary authors of the LID Manual, the Russian River-Friendly Landscape Guidelines and are experts in the implementation of these technical guides as well as the Water Efficient Landscape Ordinance.

In addition, two similar demonstration garden projects have been successfully completed by this team. The City has consistently been a leader in water-use efficiency and storm water LID and has award winning water-use efficiency and storm water programs.