

Chapter 6

Project Concepts and Benefits

6.1 Development of Project Concepts

This section describes the concept development process for the 11 project opportunities that were identified through the prioritization and selection processes described in Chapter 5 and their associated benefits, and then references a series of concept “packets” in Appendix 6-1 that provide information on the location, description, size, planning-level cost estimates, benefits, and design considerations for the 11 project concepts.

The concepts present potential locations and designs of green infrastructure and stormwater capture projects. The concept packets were developed as a tool for applying for grant funding, facilitating intra-agency and interagency communication, and engaging stakeholder support for implementation. The concepts represent preliminary designs and locations for consideration by participating agencies and may not be implemented in the form or location depicted in this SWRP¹⁹.

SCVURPPP agencies were involved throughout the concept development, participating in conference calls and meetings, attending site visits, and providing the design team with relevant information such as previous site studies and planning efforts, agency priorities and objectives, infrastructure data, and names of public and private stakeholder groups with an interest in the potential project(s).

The process of developing the concepts began with input from the sponsor agencies on what they believed to be the most feasible GSI opportunities with the greatest likelihood of implementation. Site visits were then conducted by the SWRP project team and agency representatives at each of the high priority project sites evaluated in the quantitative analysis. Field reconnaissance yielded information about site hydrology, constraints, and opportunities that was used to advance and validate the basis of the concepts at specific feasible locations.

Infiltrative BMPs were prioritized for concepts where the NRCS SSURGO soil database²⁰ indicated that native soils have saturated hydraulic conductivity (Ksat) rates conducive to infiltration; i.e., surface bioretention can be designed to draw down within 48 hours, and subsurface infiltration chambers within 72 hours. For concepts located within a Designated

¹⁹ Refer to the List of Abbreviations on page v for all abbreviations.

²⁰ Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <https://websoilsurvey.nrcs.usda.gov/>. Accessed 06/14/2018.

Recharge Area²¹, infiltrated water is considered to recharge the underlying groundwater aquifer, and those concepts are indicated as providing water supply benefits. For concepts located in areas with shallow groundwater (<20 feet) and nearby structures, the potential impact of raising groundwater levels on those structures will be evaluated during further concept development and appropriate mitigation measures taken.

Rainwater harvesting for onsite irrigation use was prioritized for regional stormwater capture concepts in parks that do not have recycled water available. One concept proposes a subsurface irrigation system for a new sports field in an area that is currently not irrigated; all other concepts propose to treat and disinfect captured water to a higher standard and apply that treated water via surface irrigation. The size of the cistern needed to meet local irrigation demands for concepts that feature capture and use will vary significantly depending on whether perennial dry-weather flows are captured. Additional investigation is recommended for concepts where the availability of dry-weather flows is unknown.

6.2 Concept Benefits

The potential project sites and types selected provide multiple benefits as required by the SWRP Guidelines. These benefits include improving water quality, augmenting water supply, and providing flood management, environmental enhancement, and community enhancement. A table showing the benefits of each potential project is provided below (Table 6-1).

²¹ Designated Recharge Area were identified using the Santa Clara Valley Water District's Santa Clara County Groundwater Subbasins GIS layer. Available online at https://data-valleywater.opendata.arcgis.com/datasets/861757f6ba354c2e9d5d1ffa695b7a2_21. Accessed 03/15/2018.

Table 6-1. Project Concept Benefits

CONCEPT ID	CONCEPT NAME	AGENCY	Water Quality	Water Supply	Flood Management	Environmental Benefits	Community Benefits
G-2	Dell Ave	City of Campbell	X	X		X	X
G-1	Mary Ave	City of Cupertino	X	X		X	X
L-2	Los Altos Community Center	City of Los Altos	X	X		X	X
L-5	Milpitas Fire Station #3	City of Milpitas	X			X	X
G-3	Space Park Way	City of Mountain View	X		X	X	X
R-4	Kelley Park	City of San Jose	X		X	X	X
R-6	River Oaks Pump Station	City of San Jose	X		X	X	X
R-5	Vinci Park	City of San Jose	X		X	X	X
R-11	Fuller Street Park	City of Santa Clara	X		X	X	X
R-1	Upper Penitencia Creek	City of San Jose, Santa Clara County, SCVWD	X	X	X	X	X
G-5	Mathilda Ave & Fair Oaks Ave	City of Sunnyvale	X			X	X

The project concepts and associated planning-level cost estimates presented herein are appropriate to identify potential benefits and a reasonable estimate of expense required to achieve those benefits. If funding is secured to carry these project concepts forward, detailed site studies (e.g., geotechnical investigations, utilities locations, and topographical surveys) and continued stakeholder engagement will inform development of a preferred project alternative. The process of evolving the project concept into a preferred design alternative will provide agencies and other stakeholders the opportunity to revise and refine these project concepts to ensure that the project design incorporates agency and stakeholder values while maintaining water quality benefits and cost effectiveness.

Table 6-2 below shows the benefit quantification and cost estimates for the project opportunities that were developed as concepts. The project concepts are listed in alphabetical order by jurisdictional agency.

Table 6-2. Project concept benefit quantification and costs.

PROJECT ID	PROJECT NAME	AGENCY	PROJECT TYPE	EFFECTIVE IMPERVIOUS AREA (AC)	VOLUME CAPTURED (AC-FT/YR)	BUDGET-LEVEL TOTAL PROJECT COSTS (\$)*	COST EFFECTIVENESS (\$/GAL CAPTURED)
G-2	Dell Ave	City of Campbell	Green Street	1.17	0.71	\$474,000	\$2.05
G-1	Mary Ave	City of Cupertino	Green Street	10.89	6.6	\$5,866,000	\$2.72
L-2	Los Altos Community Center	City of Los Altos	LID Retrofit	1.71	1	\$824,000	\$2.52
L-5	Milpitas Fire Station #3	City of Milpitas	LID Retrofit	0.81	0.49	\$492,000	\$3.08
G-3	Space Park Way	City of Mountain View	Green Street	2.7	1.6	\$746,000	\$1.43
R-4	Kelley Park	City of San Jose	Regional Stormwater Capture	422.09	255	\$16,222,000	\$0.20
R-6	River Oaks Pump Station	City of San Jose	Regional Stormwater Capture	212.15	133	\$7,348,000	\$0.17
R-5	Vinci Park	City of San Jose	Regional Stormwater Capture	37.21	23	\$8,771,000	\$1.17
R-11	Fuller Street Park	City of Santa Clara	Regional Stormwater Capture	102.34	62	\$12,908,000	\$0.64
R-1	Upper Penitencia Creek	City of San Jose, Santa Clara County, Santa Clara Valley Water District	Regional Stormwater Capture	81.88	50	\$13,537,000	\$0.85
G-5	Mathilda Ave & Fair Oaks Ave	City of Sunnyvale	Green Street	6.39	3.9	\$2,759,000	\$2.17

* All planning-level cost estimates are provided in 2018 dollars (\$2018). Actual future costs should be escalated to account for projected inflation. For life cycle cost analysis, the net present value of future costs should be calculated using an appropriate discount rate.

6.3 Description of Project Concepts

The project concepts demonstrate a variety of regional, LID, and green street projects that highlight the benefits of different technologies and serve as examples for the development and implementation of future GSI projects in Santa Clara County. The project concepts are presented in Appendix 6-1, in the order listed in Table 6-2. As stated earlier, the concepts represent preliminary designs and locations for consideration by participating agencies and may not be implemented in the form or location depicted in this SWRP.