

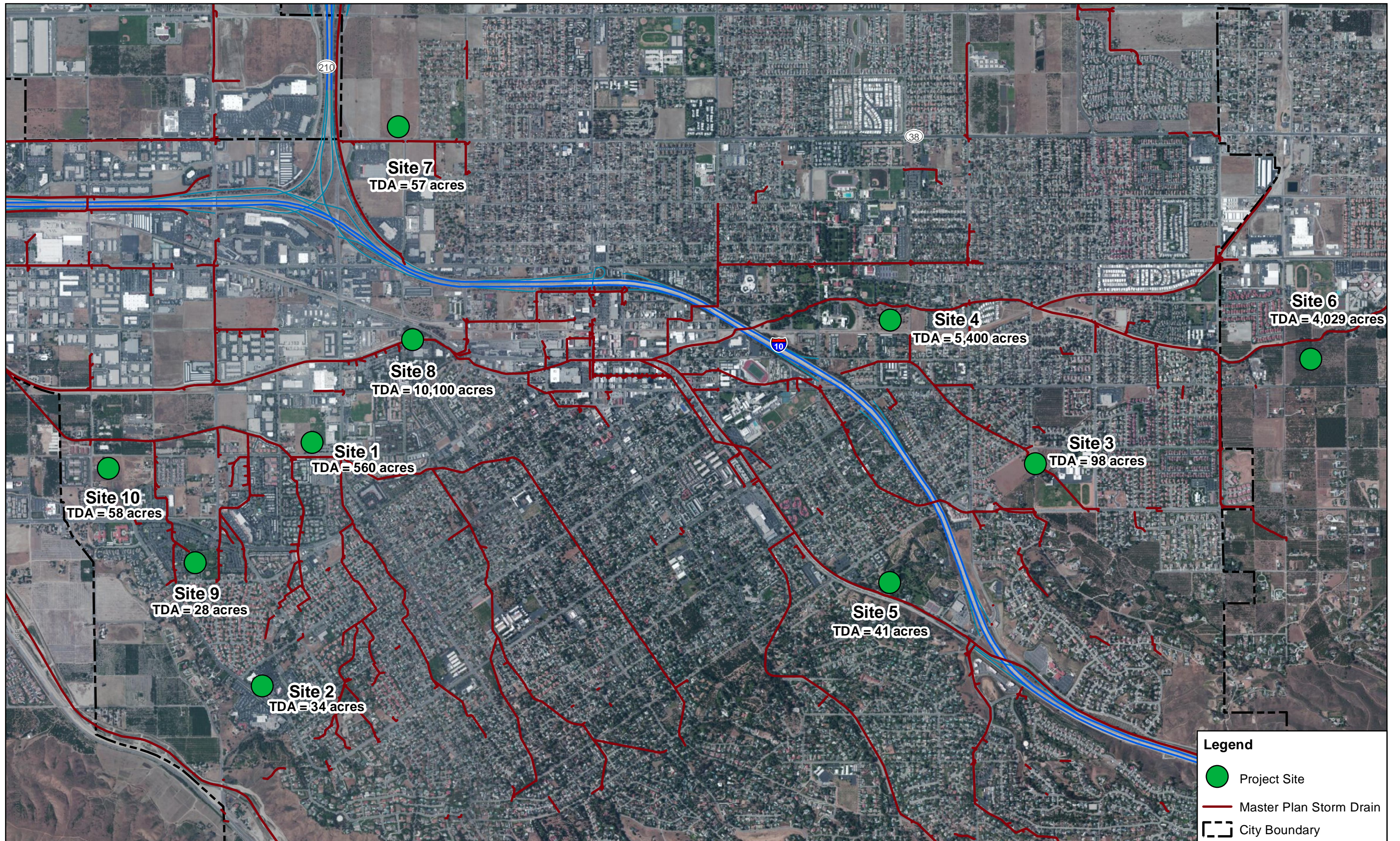
CITY OF REDLANDS  
MASTER PLAN OF DRAINAGE (MPD)



**TECHNICAL APPENDIX E**

**Green Initiatives**





**Legend**

- Project Site
- Master Plan Storm Drain
- City Boundary

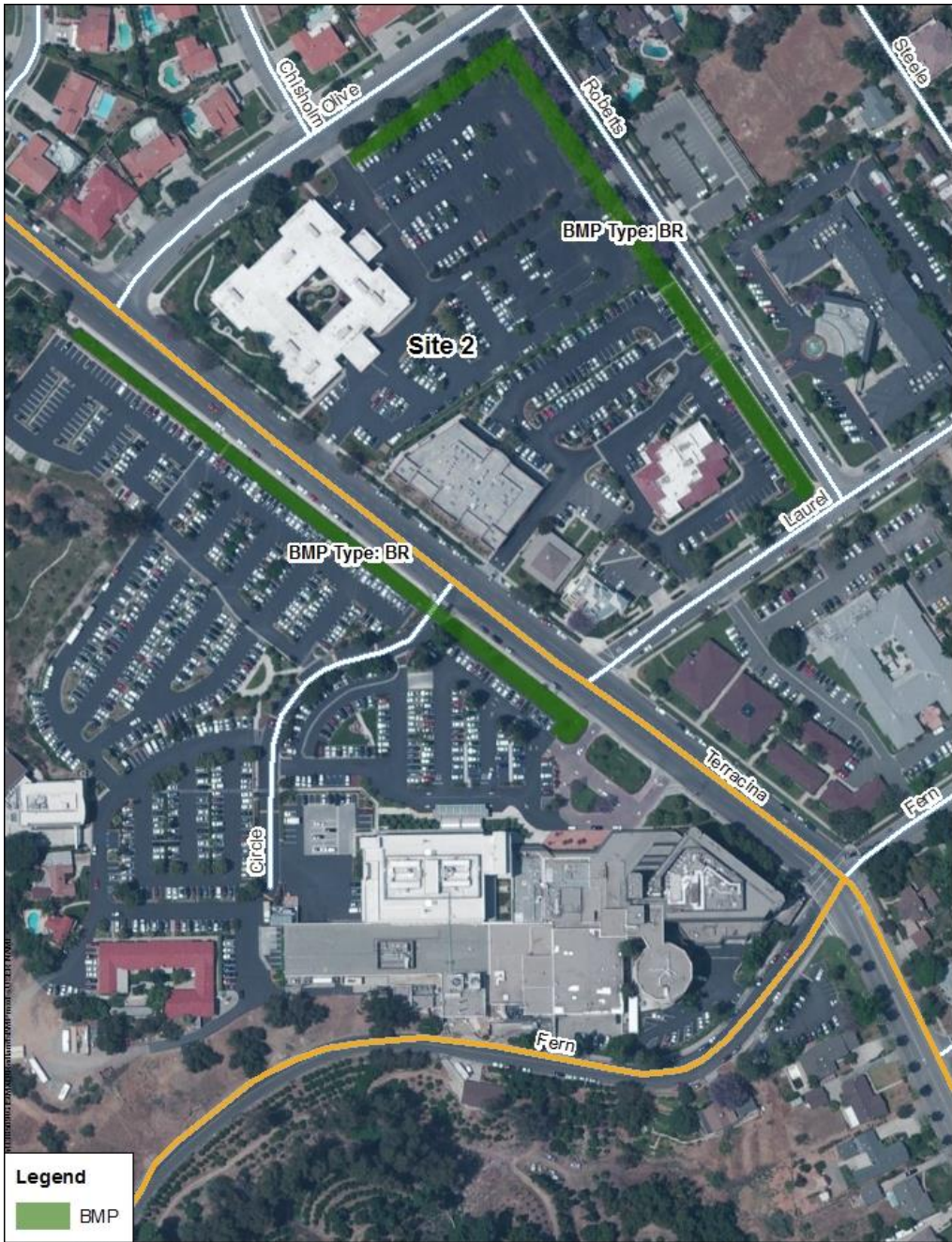




Proposed Infiltration Near Arrowhead Christian Academy (ID 1A & 1B)			
1A		1B	
Proposed Facility	Underground Infiltration (UI)	Proposed Facility	Infiltration Basin (IB)
			Underground Infiltration (UI)
Area (sf)	65,340	Area (sf)	108,900
Area (ac)	1.5	Area (ac)	2.5
Depth (ft)	5	Depth (ft)	5
Soil Type	B	Soil Type	B
Expected Infiltration (in/hr)	0.5	Expected Infiltration (in/hr)	0.5
TDA (ac)	560	TDA (ac)	560
Storage (cf)	310,365	Storage (cf)	517,275
Storage (ac-ft)	7.1	Storage (ac-ft)	11.9

Two proposed infiltration BMP sites are located adjacent to and on the Arrowhead Christian Academy High School property. The sites are located near the cross streets of Orange Avenue and Tennessee Street. The proposed BMP location on the high school property is a large parking lot, and the other is an open space lot just west of the parking lot. These sites are situated adjacent to a main storm drain, providing easy access to the “first flush” storm event. A soil type of B is present on both of these locations, providing good potential for BMPs. A second alternative for BMPs used could be pervious pavement for the parking lot site. However, pervious pavement may not be feasible in the City of Redlands due to the arid climate. Wind blown dust could cause maintenance issues.

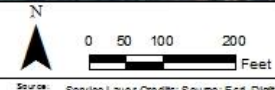




### Proposed Bioretention (ID 2)

Proposed Facility	Bioretention (BR)
Area (sf)	39,204
Area (ac)	0.9
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	34
Storage (cf)	98,990
Storage (ac-ft)	2.3

The large parking area located near the cross streets of Terracina Boulevard and West Fern Avenue present a feasible location for either bioretention or pervious pavement BMPs. It is best suitable and less costly to use bioretention for this site because there are areas along Terracina Boulevard with vegetation already in place that could act as a bioretention BMP. Additionally, this would provide parking during the short term construction of the BMP whereas the pervious pavement would not. Pervious pavement could, however, be used for a small percentage of the parking lot adjacent to the bioretention BMP. A soil type of B was found to be on this site. Because this site is positioned on a hillside, there doesn't present a potential for a large tributary area or a large potential for runoff. The potential available surface area for the BMPs is approximately 0.9 acres.



### Redlands Green Initiative Study

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aergrid, IGN, IGP, swisstopo, and the GIS User Community

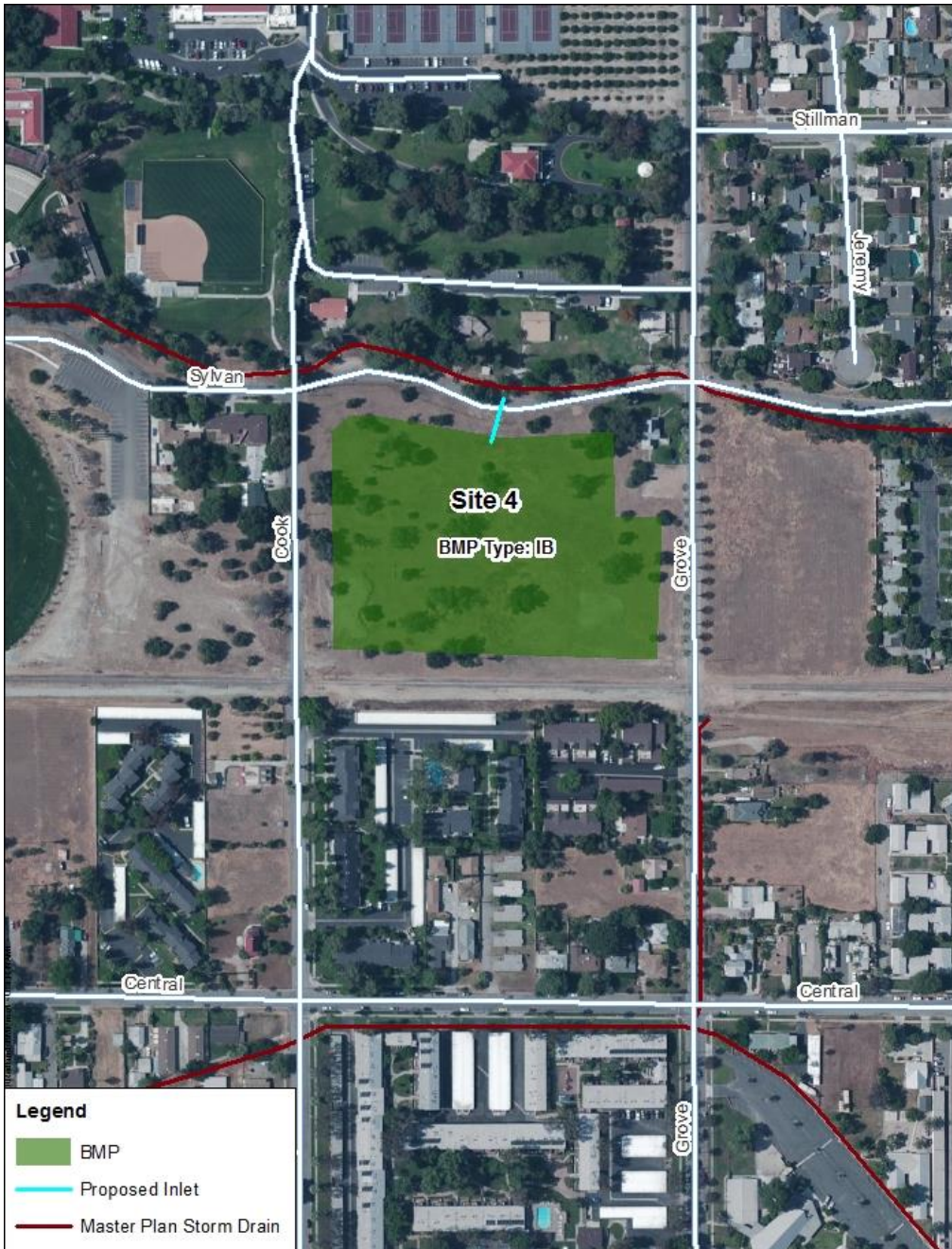




<b>Proposed Infiltration Basin Near Moore Middle School (ID 3)</b>	
Proposed Facility	Infiltration Basin (IB)
Area (sf)	43,560
Area (ac)	1
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	98
Storage (cf)	206,910
Storage (ac-ft)	4.8

An infiltration basin BMP located just downstream of Moore Middle School presents a great location. A storm drain, which is tributary to a large area, runs through the middle of the school and turns into an open channel before crossing East Highland Avenue. This private open area presents an area to retain a large amount of runoff with soil type B. The potential available surface area for the BMP is approximately 1 acre.

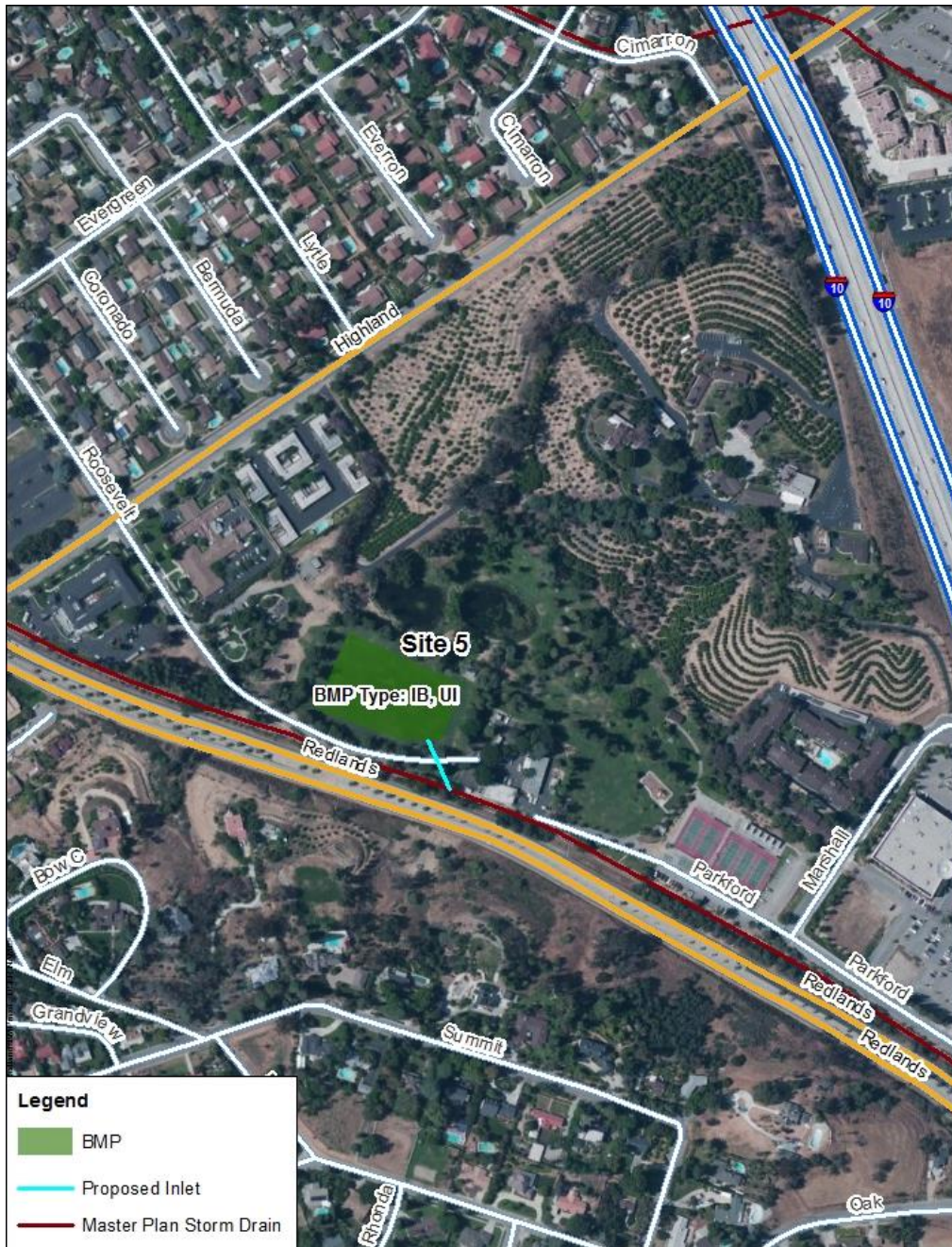




Proposed Infiltration Basin (ID 4)	
Proposed Facility	Infiltration Basin (IB)
Area (sf)	232,175
Area (ac)	5.3
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	5,400
Storage (cf)	1,102,830
Storage (ac-ft)	25.3

This potentially large infiltration basin presents an also large tributary area. A storm drain runs just north of this proposed BMP that collects runoff from the east and southeast. Soil type B is presented on this location. The potential available surface area for the BMP is approximately 5.3 acres.





<b>Proposed Ford Park Infiltration Basin (ID 5)</b>	
Proposed Facility	Infiltration Basin (IB)
	Underground Infiltration (UI)
Area (sf)	69,696
Area (ac)	1.6
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	41
Storage (cf)	331,056
Storage (ac-ft)	7.6

Ford Park brings the potential for an infiltration basin or underground infiltration device. A storm drain runs just south of the park along East Redlands Boulevard that can be diverted to pick up low flows. Currently, a dog park is located in this area and a soil type of B was found on site. The potential available surface area for the BMP is approximately 1.6 acres.





Proposed Opal Infiltration Basin (ID 6)	
Proposed Facility	Infiltration Basin (IB)
Area (sf)	47,916
Area (ac)	1.1
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	4,029
Storage (cf)	227,601
Storage (ac-ft)	5.2

The potential area for opal basin is located just south of Redlands East Valley High School parallel to Opal Avenue. This large potential basin presents approximately 30 acres of footprint on soil type B. A storm drain collects a large amount of tributary runoff to the foothills from the east.



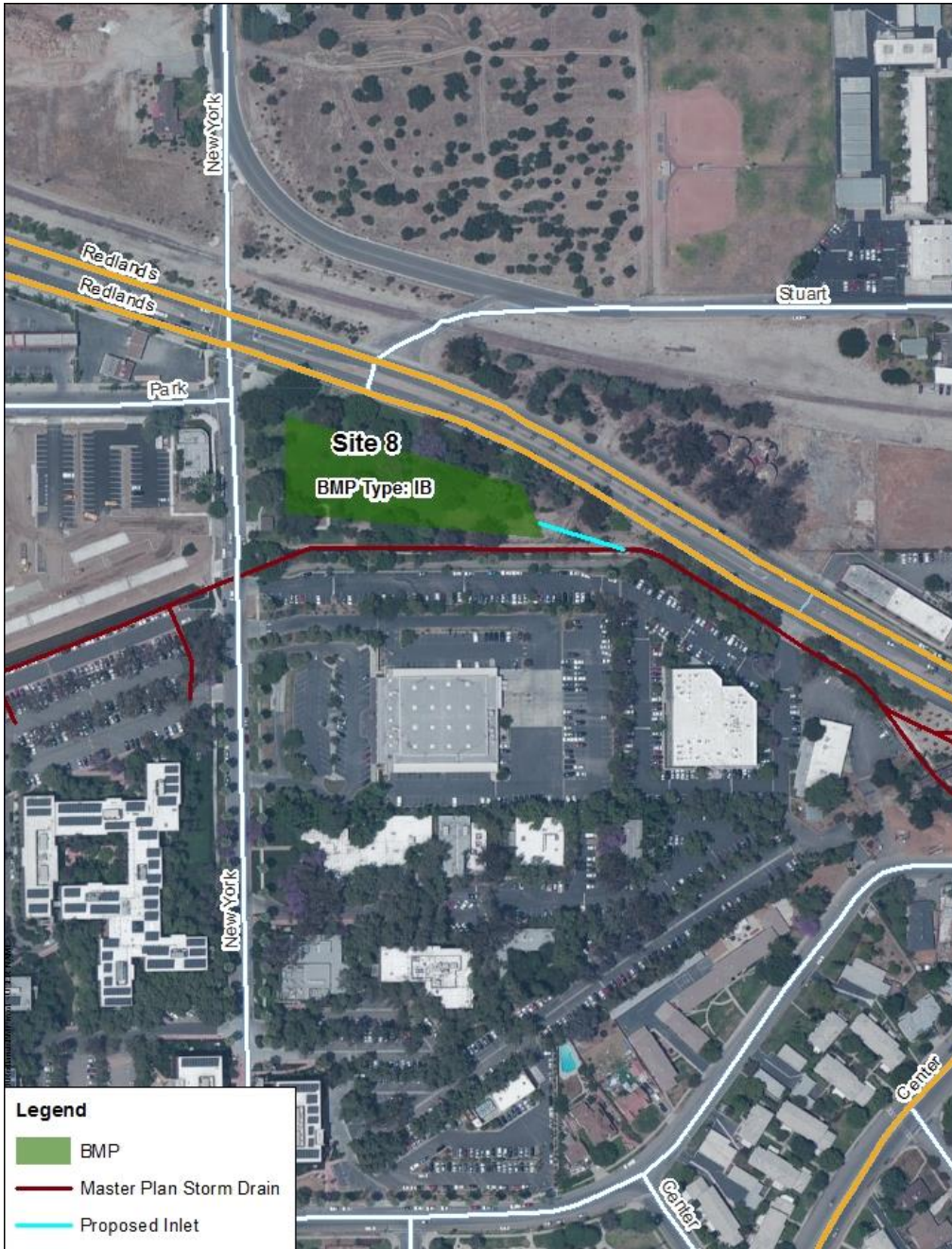


**Proposed Walmart  
Underground Infiltration  
(ID 7)**

Proposed Facility	Underground Infiltration (UI)
	Pervious Pavement (PP)
Area (sf)	47,916
Area (ac)	1.1
Depth (ft)	5
Soil Type	A
Expected Infiltration (in/hr)	2
TDA (ac)	57
Storage (cf)	150,237
Storage (ac-ft)	3.4

The proposed Walmart located north of West Lugonia Avenue and east of Tennessee Street presents the potential for an upsized BMP. The area is located on soil type A for the best potential of infiltration rates. Additionally, an underground infiltration BMP or pervious pavement could be feasible on the proposed parking lot. The potential available surface area for the BMP is estimated to be near 1 acre.

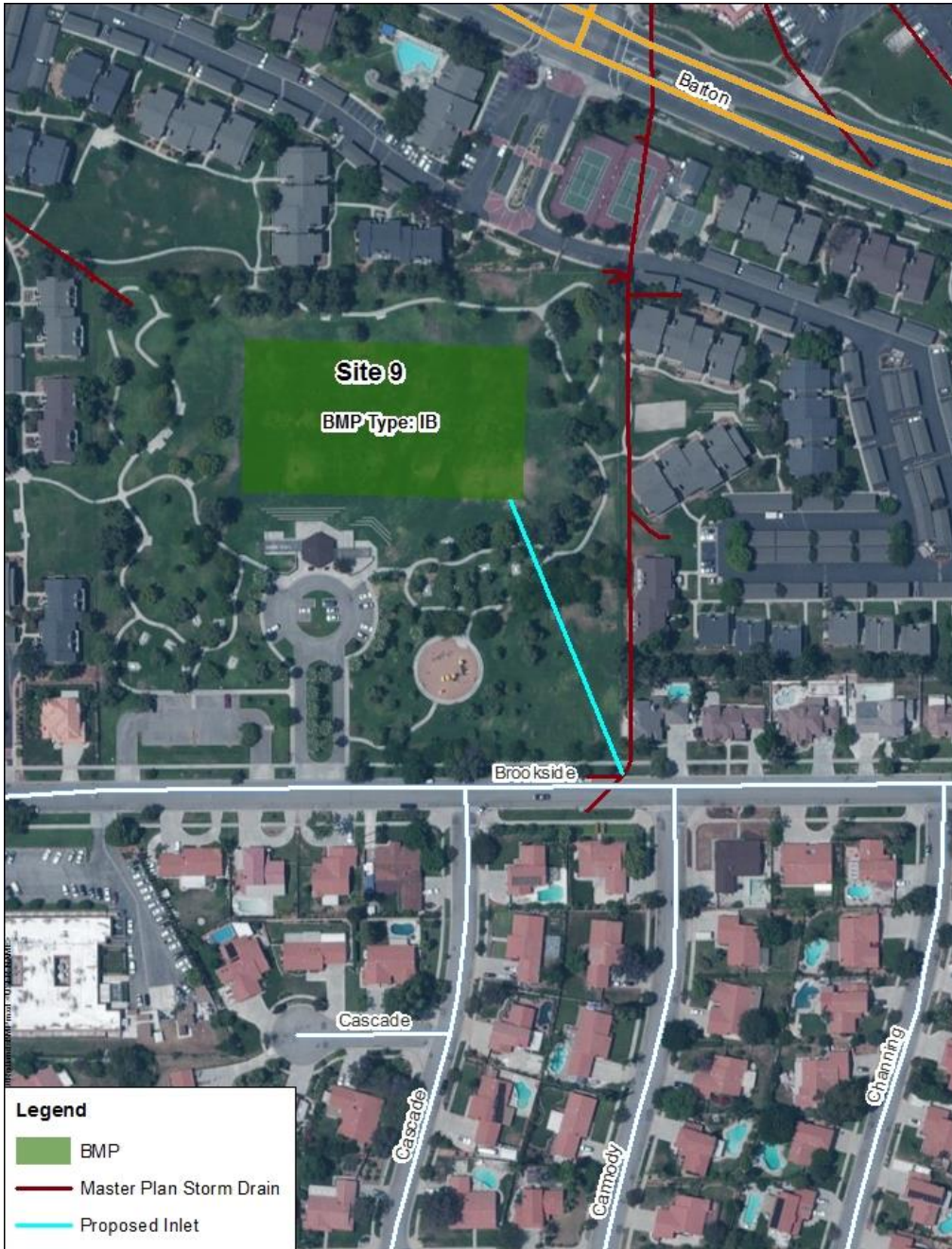




Proposed Jennie Davis Park Infiltration Basin (ID 8)	
Proposed Facility	Infiltration Basin (IB)
Area (sf)	47,916
Area (ac)	1.1
Depth (ft)	5
Soil Type	A
Expected Infiltration (in/hr)	2
TDA (ac)	10,100
Storage (cf)	571,353
Storage (ac-ft)	13.1

Jennie Davis Park located just south of West Redlands Boulevard has an open channel running parallel to the site. This channel can have a low flow diverter act as an inlet to a proposed infiltration basin or underground infiltration BMP. The park is already positioned below the surface elevation, which brings potential for an infiltration basin on a soil type of A. The potential available surface area for the BMP is approximately 1.1 acres.





Proposed Brookside Park Infiltration Basin (ID 9)	
Proposed Facility	Infiltration Basin (IB)
Area (sf)	69,190
Area (ac)	1.6
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	28
Storage (cf)	592,673
Storage (ac-ft)	13.6

Brookside Park located just north of Brookside Avenue gives the potential for an infiltration basin. A storm drain just east of the proposed basin can be used for a diversion pipe to the proposed area. Additionally, the site would need to be graded about seven feet lower than surface elevation for the storm drain to gravity flow to the basin. Anticipated soil type B will be presented on the site. Upstream tributary area potential is not significant but the site does present a large available surface area for the BMP of about 1.6 acres.





<b>Proposed Heritage Park Infiltration Basin (ID 10)</b>	
Proposed Facility	Infiltration Basin (IB)
Area (sf)	193,406
Area (ac)	4.4
Depth (ft)	5
Soil Type	B
Expected Infiltration (in/hr)	0.5
TDA (ac)	58
Storage (cf)	935,079
Storage (ac-ft)	21.5

Heritage Park, located just north of Barton Road and adjacent to Orange Avenue, is currently not developed. This area gives great potential for an infiltration basin as a storm drain directs runoff straight through the middle of the site. Anticipated soil type B will be presented on the site. Upstream tributary area potential is fairly large and the site does present a large available surface area for the BMP of about 4.4 acres.