



Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: Barry Ng

SUBJECT: BIORETENTION AND SWALE

DATE: May 18, 2015

Approved

Date

5-21-15

This memorandum provides additional information requested during the 2015-2016 Proposed Operating Budget Study Session on the Environmental and Utility Services City Services Area (EUS CSA). In particular, the City Council inquired about (1) the differences between bioretention and swale stormwater treatment control devices and (2) current locations of these types of green infrastructure in the City.

BACKGROUND

The Federal Clean Water Act was amended in 1987 to address urban stormwater runoff pollution. As a result, in 1990, the US EPA established the National Pollutant Discharge Elimination System (NPDES) stormwater program. This program requires municipalities to obtain a stormwater NPDES permit for the discharge of stormwater runoff from municipal separate storm sewer systems (MS4s) to surface waters.

The San Francisco Bay Regional Water Quality Control Board (Water Board) is responsible for the regional implementation of the federal NPDES program. In 1990, the Water Board issued the first county-wide stormwater NPDES permit known as the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). SCVURPPP is an association of thirteen cities in the Santa Clara Valley including the City of San Jose, the County of Santa Clara, and the Santa Clara Valley Water District that discharge to the South San Francisco Bay.

The five-year stormwater NPDES permit was reissued in 1995, 2001, and 2009. The current stormwater NPDES permit, also known as the Municipal Regional Stormwater Permit (MRP), is a regional permit regulating 76 Bay Area municipalities, counties, and flood control agencies discharging to the San Francisco Bay. The permit specifies actions to reduce the discharge of pollutants in stormwater and prohibits non-stormwater discharges into the MS4 to protect local waterways and the San Francisco Bay.

In addition, City Council Policy 6-29, titled "Post-Construction Urban Runoff Management", adopted in 1998 and amended in 2011, establishes the City's specific requirements to minimize and treat stormwater runoff from new development and redevelopment projects in alignment

with the MRP. It is important to note that the MRP and Council Policy 6-29 apply to both publicly funded and privately funded projects yet there is a distinction between publicly maintained and privately maintained post construction stormwater controls. The EUS CSA 2015-2016 Proposed Budget includes funding for maintenance needs of these post construction stormwater treatment control devices in the public right of way only.

Low Impact Development

One of the current requirements within the MRP is implementation of Low Impact Development (LID) for new development and redevelopment projects to maintain post construction stormwater controls. LID is a method of building design and community development with the goal of reducing stormwater runoff and replicating a site's predevelopment hydrology. LID is accomplished by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source.

Green infrastructure (GI) is a method of implementing LID that is as sustainable, environmentally friendly, and cost-effective as possible. GI focuses on creating ecosystems to treat polluted stormwater runoff before it enters waterways.

ANALYSIS

Bioretention and swale facilities are examples of green infrastructure. However, with the 2009 issuance of the MRP, the Water Board replaced swales with bioretention as the approved method of LID treatment because the bioretention design provides a higher level of infiltration and treatment. Common differences between bioretention and swales are stated below:

Bioretention:

- Receives and retains runoff in a vegetated area which typically consists of California native and drought tolerant plants.
- Contains special biotreatment soil mix of sand and compost designed to treat runoff before soaking into the surrounding soil or draining to the municipal storm sewer system.
- Designed to infiltrate/absorb and treat small frequent rains.
- Typically level from side to side and end to end.
- Often incorporates underneath drainage where stormwater is conveyed through a perforated pipe to the municipal storm sewer system.

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Swale:

Swales look and function similar to bioretention except the following as shown below:

- Swales are sloped and do not pond or hold water as much as bioretention.
- Swales are designed primarily to reduce flow rates and only provide limited, above-ground treatment as water flows through rock or vegetation.
- Swales typically are constructed out of native soils which do not filtrate or treat stormwater as a biotreatment soil mix.
- Swales can infiltrate/absorb runoff from small rains but primarily convey stormwater runoff to a storm drain at a downslope location.

Since the adoption of the amended Council Policy 6-29 in 2011, the technical standards for post-construction urban runoff management have evolved, and as such, certain stormwater treatment control devices installed in previous years are no longer allowed with new projects.

Photographs of various types of bioretention and swales incorporated into local private and public developments are included in Attachment A. For a list of completed project locations throughout the City where bioretention and/or swales have been installed, please see Attachment B.

COORDINATION

This memorandum was coordinated with the Environmental Services Department, the City Attorney's Office, and the City Manager's Budget Office

/s/

Barry Ng
Interim Director, Public Works

For questions, please contact Michael O'Connell, Deputy Director, at (408) 535-8300.

ATTACHMENT A

BIORETENTION EXAMPLES



PD10-024 - Brookside Estates (Public Streets)



CP08-023 - Monterey Retail (Grocery Outlet/Chic Filet)



CIP 6406 - Misc Park



Public Project # PP07-278 - Stephen's Meats Parking Lot

ATTACHMENT A

SWALE EXAMPLES



PD06-058 – Kentfield Homes



H05-053 - Cadence Seely Campus (Building 10)



PDA05-058-01 - The Plant Shopping Center



CIP 4949 - Watson Remediation and Ph. I Improvements

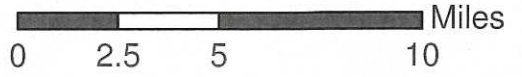
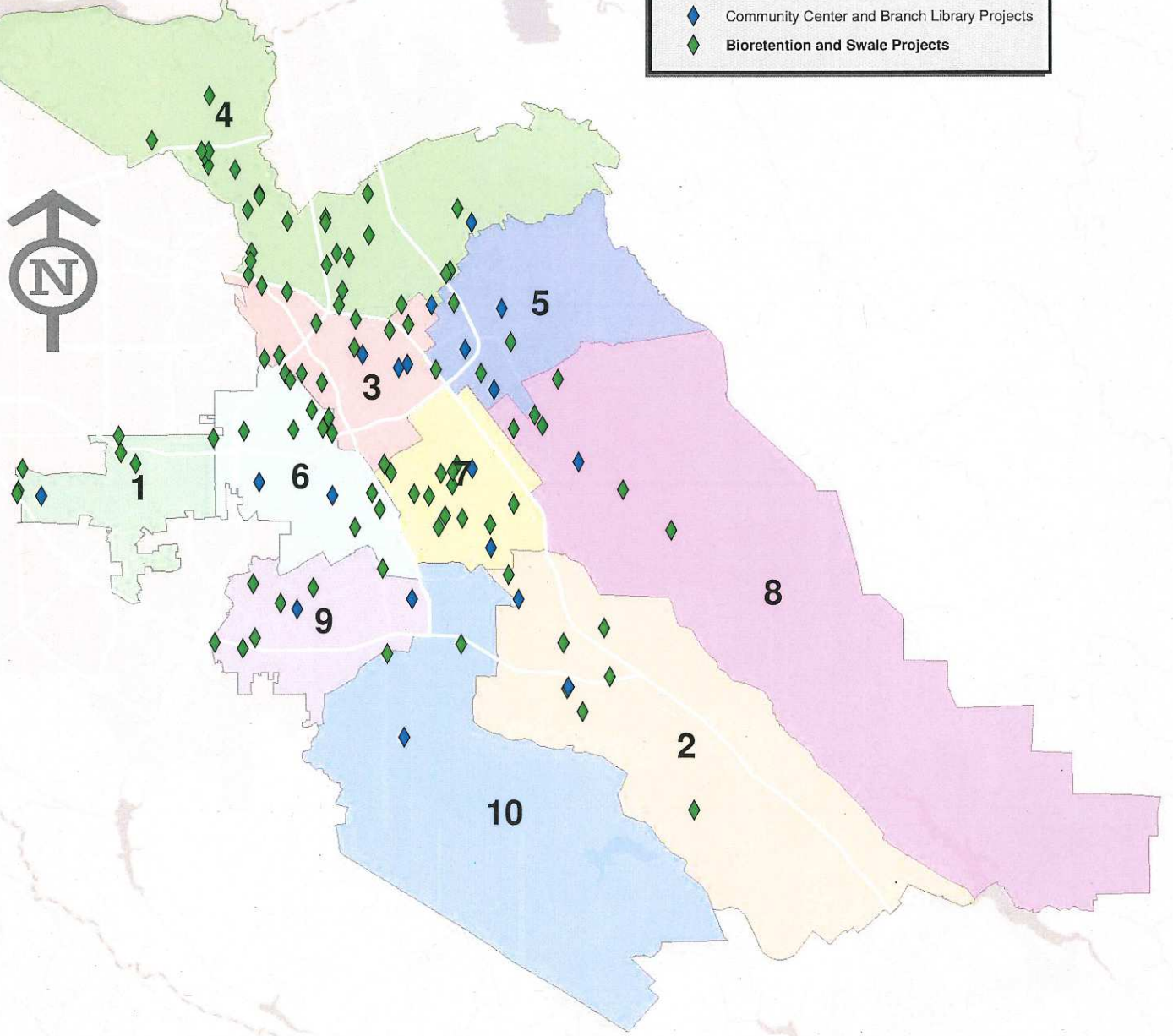
City of San José

Completed Bioretention and Swale Projects



Legend

- ◆ Community Center and Branch Library Projects
- ◆ Bioretention and Swale Projects



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ATTACHMENT B

Completed Public and Private Projects with Bioretention Cells and/or Vegetated Swales					
Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
1	Private	HA78-054-01	3-00284	Huntington Village Shopping Center	1179 South De Anza Boulevard (Northwest corner of De Anza Blvd, and Kentwood Ave.)
1	Private	PD12-018	3-03566	Mercedes-Benz of Stevens Creek	4500 Stevens Creek Boulevard
1	Private	CP09-040	3-11329	Challenger Elementary School	730 Camino Escuela
1	Private	PD07-042	3-16932	Kentwood Townhomes	1165 Kentwood Avenue (Area generally bounded by Kentwood Avenue, Highway 85 and S. De Anza Blvd.)
1	Private	PD05-045	3-01262	Oakwood Apartment Expansion	762 Saratoga Avenue (Southeast corner of Blackford Avenue and Saratoga Avenue)
1	Private	H06-077	3-12797	Bonsai Nursery/Bollinger Retail	966 S. De Anza Blvd. (Southeast corner of South De Anza Boulevard and Bollinger Road.)
1	Private	PD09-036/AD10-207	3-16934	Chipotle Grill	369 S. Winchester Blvd. (West side of South Winchester Boulevard, approx. 550 feet southerly of Stevens Creek Boulevard)
1	Private	CP08-011	3-18346	British Motors	5000 Stevens Creek Boulevard (South side of Stevens Creek Boulevard, approximately 300 feet easterly of Loma Linda Drive)
1	Public	CIP 6406		Mise Park	Northeast corner of Moorpark Avenue and John Mise Court
1	Public	CIP 1321		Calabazas Branch Library	1230 S Blaney Ave *
2	Private	SP08-046/AD10-117	3-05398	Equinix Silicon Valley 5	11 Great Oaks Blvd. (Northwesterly corner of Great Oaks Boulevard and Highway 85)
2	Private	PD07-063	3-00640	Lowe's on Cottle	5550 Cottle Road (Northeast corner of Cottle Road and Poughkeepsie Road)

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
2	Private	PD06-066	3-02163	Bailey Avenue (IBM)	Northerly side of Bailey Avenue approximately 5,000 feet westerly of Santa Teresa Boulevard.
2	Private	PDA93-030-02	3-07311	Kaiser Medical Center Library Parking Lot Improvement	250 Hospital Parkway (Northeast corner of Santa Teresa Boulevard and Camino Verde Drive)
2	Private	PD09-040	3-08375	Valley Christian School - Arts Conservatory	100 Skyway Drive
2	Private	PD06-060	3-16982	Silver Creek Valley Road Retail Center	Southeasterly side of Silver Creek Valley Road, and at the south terminus of Fontanosos Way.
2	Public	CIP 3762		Albertson Parkway Trail	Trail is located between Curie Drive and Dondero Way.
2	Public	CIP 1312		Edenvale Branch Library	101 Branham Lane East *
2	Public	CIP 1317		Santa Teresa Branch Library	290 International Circle *
3	Private	PD10-025	3-03564	Garden City Casino	44 Airport Parkway
3	Private	PD08-063/AD09-1092	3-18322	Oyama Family Townhome Development	1254 Murphy Avenue (Southwest corner of Murphy Avenue & Oyama Drive.
3	Private	PD05-032	3-01855	Modern Ice and Luna Park [park is maintained by City]	652 Luna Park Dr. (Northeast corner of Berryessa Road and Oakland Road.)
3	Private	PD07-049 (Phase 1) and PD08-040 (Phase 2)	3-02626	Coleman Retail Center (Phase 1 & Phase 2)	Northwest corner of Coleman Avenue and Newhall Street
3	Private	PD05-015	3-04988	Cherry Acres Homes	1665 Mabury Road

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
3	Private	SP06-092	3-05073	Greenwaste Recovery	565 Charles Street (North side of Charles Street, approximately 300 feet west of 13th Street)
3	Private	CP08-057	3-05560	Brokaw Commons North	Northwest corner of Brokaw Road and Oakland Road
3	Private	PD05-068	3-06100	North 9th Street at Taylor Residential Development	647 N. 9th Street (East side of North Ninth Street between Taylor Street and Jackson Street)
3	Private	PD10-013	3-10059	Challenger School Administration Building & Warehouse	711 E. Gish Road
3	Private	PD07-099	3-18565	Dasco Construction & Drywall	771 Coleman Avenue
3	Public	CIP 4949		Watson Remediatin and Ph. I Improvements	N. 22nd Street and Jackson Street.
3	Public	RDA Project: Public Project # PP07-278		RDA Lot: Stephen's Meats Parking Lot	West side of South Montgomery Street between West San Fernando Street and Otterson Street (105 South Montgomery Street)
3	Public	CIP 4311		San Jose Environmental Innovation Center - Phase I	1608 Las Plumas Avenue
3	Public	CIP 6437		San Jose International Airport Terminal B Parking Lot Improvements	2200 Airport Blvd.
3	Public	CIP 6612		San Jose International Airport Long Term Parking Lot Improvements	2200 Airport Blvd.
3	Private	PD12-041	3-12873	BJ's Restaurant	511 Coleman Road
3	Public	CIP 1313		Joyce Ellington Branch Library	491 E Empire St *

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
3	Public	CIP 1316		East San Jose Carnegie Branch Library	1102 E Santa Clara St *
4	Private	H12-021	3-03492	Trimble Research Park (Bixby Land Company R&D/Office Campus)	399 W. Trimble Road
4	Private	PDA94-016-04	3-03628	Philips Lumileds	370 W. Trimble Road
4	Private	PD05-089	3-05843	Hampton Park Phase II	West side of Oakland Road, approximately 550 feet north of Rock Avenue.
4	Private	SP09-057	3-06704	Zero Waste Anaerobic Digestion Facility	2100 Los Esteros Road
4	Private	H08-031	3-00568	ABC Animal Clinic	1265 Piedmont Road
4	Private	PD05-084	3-04766	Autumnvale Townhomes	Northeast corner of Autumnvale Drive and Trade Zone Boulevard.
4	Private	PD05-024	3-04853	Gold Street Office Building	2077 Gold Street
4	Private	AD11-660	3-05512	Second Harvest Food Bank	4001 N. 1st St.
4	Private	CP05-046	3-06557	Costco on Hostetter	1705 Automation Parkway
4	Private	H07-012	3-07072	SJC Fuel Storage & Distribution	2500 Seaboard Avenue (Westerly of the Guadalupe River, at the northerly terminus of Airport Boulevard alongside Highway 101)
4	Private	H05-053	3-08243	Cadence Seely Campus (Building 10)	Northerly corner of Montague Expressway and Trimble Road (2655 Seely)

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
4	Private	HA91-046-01	3-09906	Hitachi- 3100 North First Street	Northeast corner Montague Expressway and North 1st Street
4	Private	CP07-070/AD09-695/AD10-124	3-11445	Target @ First	55 Holger Way (Northeast corner of Holger Way and N. 1st Street)
4	Private	H07-053	3-11445	CIC Retail @ First Street	4180 N. 1st Street
4	Private	H07-018/AD09-563	3-11445	The Offices @ First Street	101 Holger Way (Southeast corner of State Route 237 and North First Street)
4	Private	PD05-044	3-13645	Pestana Homes/Hampton I	Northwest corner of Old Oakland Road and Rock Avenue.
4	Private	PD05-074	3-16901	"Grandview Terrace"	Northeast corner of North Capitol Avenue and Grandview Drive
4	Private	H07-025	3-00743	Lowe's - Ridder Park Drive	Southeast corner between Interstate 880 and Brokaw Road
4	Private	PD11-023	3-18562	Lands of Trumark	1328 N. Capitol Avenue. Northeast corner of North Capitol Avenue and Sierra Road
4	Private	PD07-036	3-05883	Fairfield Baypointe North	175 Baypointe Parkway (West side of Baypointe Parkway, approximately 370 feet northerly of Tasman Drive)
4	Public	PD08-001	3-12552	Pepper Lane	13060 Berryessa Road (East corner of Berryessa and Jackson Avenue)
4	Public	PD07-006	3-05723	Crescent Village - Turnkey Public Project	3300 Zanker Road
4	Public	PD11-023	3-18562	Lands of Trumark (Public Streets)	1328 North Capitol Avenue. Northeast Corner of North Capitol Avenue and Sierra Road

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
4	Public	CIP 1275		Berryessa Branch Library	3355 Noble Ave *
4	Public	CIP 1319		Educational Park Branch Library	1772 Educational Park Dr *
5	Private	H07-021	3-00173	Morgan Plaza Remodel & Expansion	2010 Story Road (Southeast corner of Story Road and Hopkins Drive)
5	Private	CP08-014	3-01340	McDonald's on McKee	Northwest corner of McKee Road and Highway 680
5	Private	CP07-051	3-03940	Rite Aid on McLaughlin	1025 E. Capitol Expwy. (Northwest corner of E. Capitol Expressway and McLaughlin Avenue)
5	Private	CP05-034	3-06485	Story Road Home Depot	2855 Story Road
5	Private	PD05-078	3-15704	The Fairways	305 San Antonio Court (East side of Highway 101, at the western terminus of San Antonio Court)
5	Public	CIP 1709		Dr. Roberto Cruz Alum Rock Branch Library	3090 Alum Rock Ave *
5	Public	CIP 1310		Hillview Branch Library	1600 Hopkins Dr *
6	Private	PD12-047	3-04527	Bellarmino Wrestling Building	960 W. Hedding St. (Northeast corner of Emory Street and Elm Street)
6	Private	H12-004	3-18644	Medical Office	100 O'Connor Drive (Northwest corner of Stevens Creek and Di Salvo Avenue)
6	Private	PD08-043/CP07-095	3-04527	Bellarmino Parking Lot	960 W. Hedding St. (Northeast corner of Emory Street and Elm Street)

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6	Private	PD09-021	3-04527	Bellarmine Academic Building	960 W. Hedding St. (Northeast corner of Emory Street and Elm Street)
6	Private	PD06-042	3-04718	Village Square Homes	1465 W. San Carlos St. (North side of West San Carlos Street, 650 feet westerly of Meridian Avenue)
6	Private	PD05-013	3-09742	Campbell Avenue Residential Development-"Encanto"	Campbell Avenue/Dahlia Loop (North side of Campbell Avenue approximately 1,000 feet east of Newhall Street.)
6	Private	PD09-020	3-15696	Chevron on Bird	395 Bird Avenue
6	Private	PD05-094	3-16828	Almaden Walk	1992 Almaden Road (East side of Almaden Road, approximately 150 feet north of Canoas Garden Avenue)
6	Private	PD07-023	3-16987	Willow Glen Square	2102 Radio Avenue (East side of Radio Avenue, approximately 160 feet north of Lincoln Court)
6	Private	H07-015	3-18139	United Rentals	240 McEvoy St. (Southeast corner of McEvoy Street and Park Avenue)
6	Private	H07-040	3-18316	956 The Alameda	956 The Alameda (Southwest corner of The Alameda and Morrison Avenue)
6	Private	SP08-006	3-18344	Willow Glen Residential	660 Willow Glen Way (Southwest corner of Willow Glen Way and Creek Drive)
6	Public	CIP 1320		Willow Glen Branch Library	1157 Minnesota Ave *
6	Public	CIP 1439		Bascom Branch Library and Community Center	1000 S Bascom Ave. *
7	Private	PDA05-058-01	3-02172	The Plant	Northwest corner of the intersection of Monterey Road and Curtner Avenue.

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
7	Private	CP08-023	3-07005	Monterey Retail (Phase 1 - Grocery Outlet)	East side of Monterey Road, approximately 500 feet southerly of Tully Road
7	Private	PD05-065	3-07714	Quinn Retail Center	2266 Senter Road
7	Private	PD06-065	3-12558	San Jose Water Company New Storage Building	2268 Will Wool Drive (East side of Will Wool Drive approximately 400 feet north of Quinn Avenue.)
7	Private	PD05-056	3-13012	Lavender Terrace/Crimson Townhomes	265 Lewis Road
7	Private	PDA03-006-01	3-15362	Corde Terra Apartments	2555 Corde Terra Circle (South side of Tully Road, approximately 400 feet easterly of South 10th Street)
7	Private	PD06-062	3-16147	Montecito Vista Urban Village Siena	80 Montecito Vista Drive
7	Private	H09-009	3-18092	Stucco Supply	1601 Little Orchard Street (West side of Little Orchard Street, approximately 300 feet northerly of San Jose Avenue)
7	Private	H06-036	3-18113	Alma-Almaden Retail Center	Southeast corner of West Alma Avenue and Almaden Expressway.(226 W. Alma)
7	Private	H07-045/AD08-1318	3-18253	Umbarger Square Monterey Road Retail	Northeast corner of Monterey Road and Umbarger Road
7	Private	H08-047	3-18277	Capitol-Senter Plaza	3151 Senter Road
7	Public	CIP 2919		Happy Hollow Park & Zoo Parking Lot	Intersection of Story and Senter Road
7	Public	CIP 5834		Happy Hollow Park & Zoo Pedestrian Bridge Project	Happy Hollow Park and Zoo at Kelly Park off of Senter Road

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
7	Public	CIP 5065		West Evergreen Park	Corner of Towers Lane and Aborn Ave
7	Public	CIP 1711		Tully Community Branch Library	880 Tully Rd, *
7	Public	CIP 1443		Seven Trees Branch Library and Community Center	3590 Cas Dr. *
8	Private	CP12-045	3-02202	Olive Garden	2226 Eastridge Loop
8	Private	PD08-047	3-06839	Beshoff Motors Infiniti Parking Lot	South side of Tully Road, approximately 700 feet west of Capitol Expressway (2198 Tully Road)
8	Private	PD09-025	3-18437	White Road Single-Family Homes	S. White Road (East side of S. White Road, approx. 400 feet southerly of Cunningham Avenue)
8	Private	CP07-100/AD09-992	3-02249	McDonald's Restaurant	1935 Tully Road (Northwest corner of Tully Road and Kenesta Way)
8	Private	PD09-019 AO10-508	3-16229	San Felipe Rd Mixed Use	4203 San Felipe Rd. (West side of San Felipe Road, approx. 600 feet south of Delta Road)
8	Public	CIP 1309		Evergreen Branch Library	2635 Aborn Rd. *
9	Private	PD08-054/AD09-807	3-02093	Samaritan Medical Center Office Building & Parking Structure	2581 Samaritan Drive (Northeast corner of Samaritan Drive, South Bascom Avenue and State Route 85)
9	Private	PD12-027	3-10274	The Harker School	4525 Union Avenue
9	Private	PD09-019 AO10-508	3-12531	Curtner/Union Retail Center	2699 Union Avenue

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Council District	Project Type	Planning Project File Number	PW Project File Number	Project Name	Location
9	Private	PD06-058	3-03364	Kentfield Homes	3002 Leigh Avenue (Southeast corner of Foxworthy and Leigh Avenues)
9	Private	PD09-023	3-05731	Rite Aid Hacienda Gardens	Tract 9647 (Northwest corner of Meridian Avenue and Hillsdale Avenue)
9	Private	PD05-082	3-06269	Parkwood	2033 Samaritan Drive (Northeast corner of Samaritan Drive and Clydelle Avenue)
9	Private	H06-018	3-13486	IDeAS Design Center	Southwest corner of Old Almaden Road and Foxworthy Avenue. (1084 Foxworthy Avenue)
9	Private	PD05-041	3-16889	Willow Glen Place	2825 Meridian Avenue (Westerly side of Meridian Avenue, northerly of Foxworthy Avenue)
9	Public	CIP 1311		Cambrian Branch Library	1780 Hillsdale Ave *
9	Public	CIP 1314		Pearl Ave Branch Library	4270 Pearl Ave *
10	Private	PD11-008	3-18525	Lands of Lester Summerhill Homes	Northwest corner of Blossom Hill Road and Southcrest Way
10	Public	PD10-024	3-05967	Brookside Estates (Public Streets)	6411 Guadalupe Mines Road
10	Private	CP07-072	3-00952	Whole Foods - Blossom Hill	1146 Blossom Hill Rd.
10	Public	CIP 1308		Almaden Branch Library and Community Center	6445 Camden Ave. *

* Note: These projects were exempt from the requirements of the MRP because funding was received prior to 10/15/03. However, stormwater treatment control devices were installed regardless of exemption status.