

21st Century Stormwater Resource Management

October 14, 2014

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Chief of Watershed Protection

Riverside County Flood Control and Water Conservation District

1945 - District Formed

- ▶ Protect people and property from flood hazard
- ▶ Conserve and reclaim stormwater for beneficial use



Early Years - Managing Flood Risk

- ▶ Residents: 1.6 million
- ▶ Watershed: 1,240 sq. mi.
- ▶ Storm drains: ~700 miles
- ▶ Channels & levees: ~250 miles
- ▶ Dams: 7



Late 20th Century – Recognizing the need to adapt

- ▶ Endangered Species
- ▶ Stormwater Quality
- ▶ Climate Change
- ▶ Drought
- ▶ Funding Challenges



Today - Riverside County Flood Control and Water Conservation District



- ▶ Flood Hazard Reduction
- ▶ Water Quality
- ▶ Habitat Conservation
- ▶ Water Conservation
- ▶ Livable Communities

Multi-purpose, Multi-agency Projects

Lake Mathews Water Quality Master Drainage Plan

- **Purpose:**

“...support watershed management, source water protection, and long-term land use planning....”

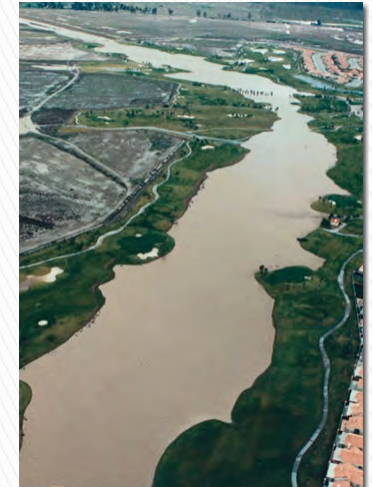
- **Partner Agencies:**



Benefit	Included?
TMDL	
Stormwater Capture	✓
Water Supply	✓
Habitat	✓
Recreation	
Water Quality	✓
Dry Flow Diversion	

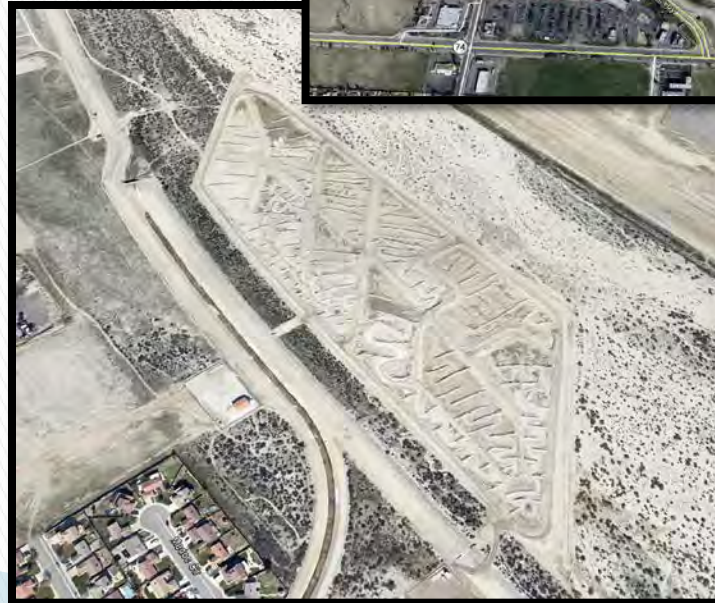
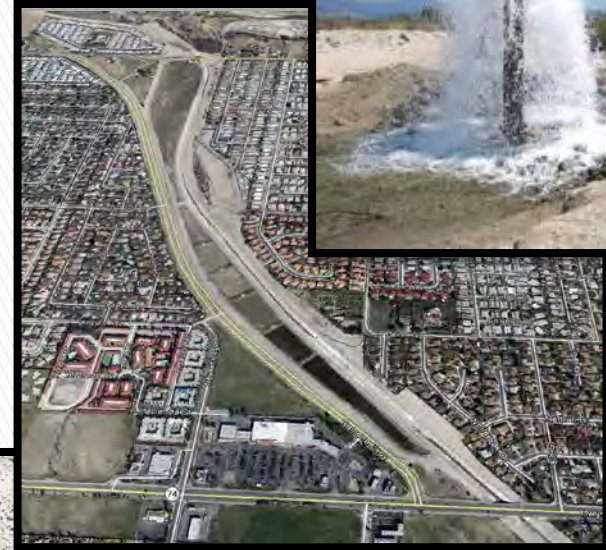


~~Flood Control Master Drainage Plans~~ Stormwater Management Plans



Partnerships to Repurpose Existing Flood Control Infrastructure

- ▶ Arlington Desalter Expansion
- ▶ Temescal Groundwater Basin Study
- ▶ Little Lake Basin Recharge Modification
- ▶ San Jacinto River Recharge Basins
- ▶ Santa Ana River Water Quality Treatment Alternatives Study



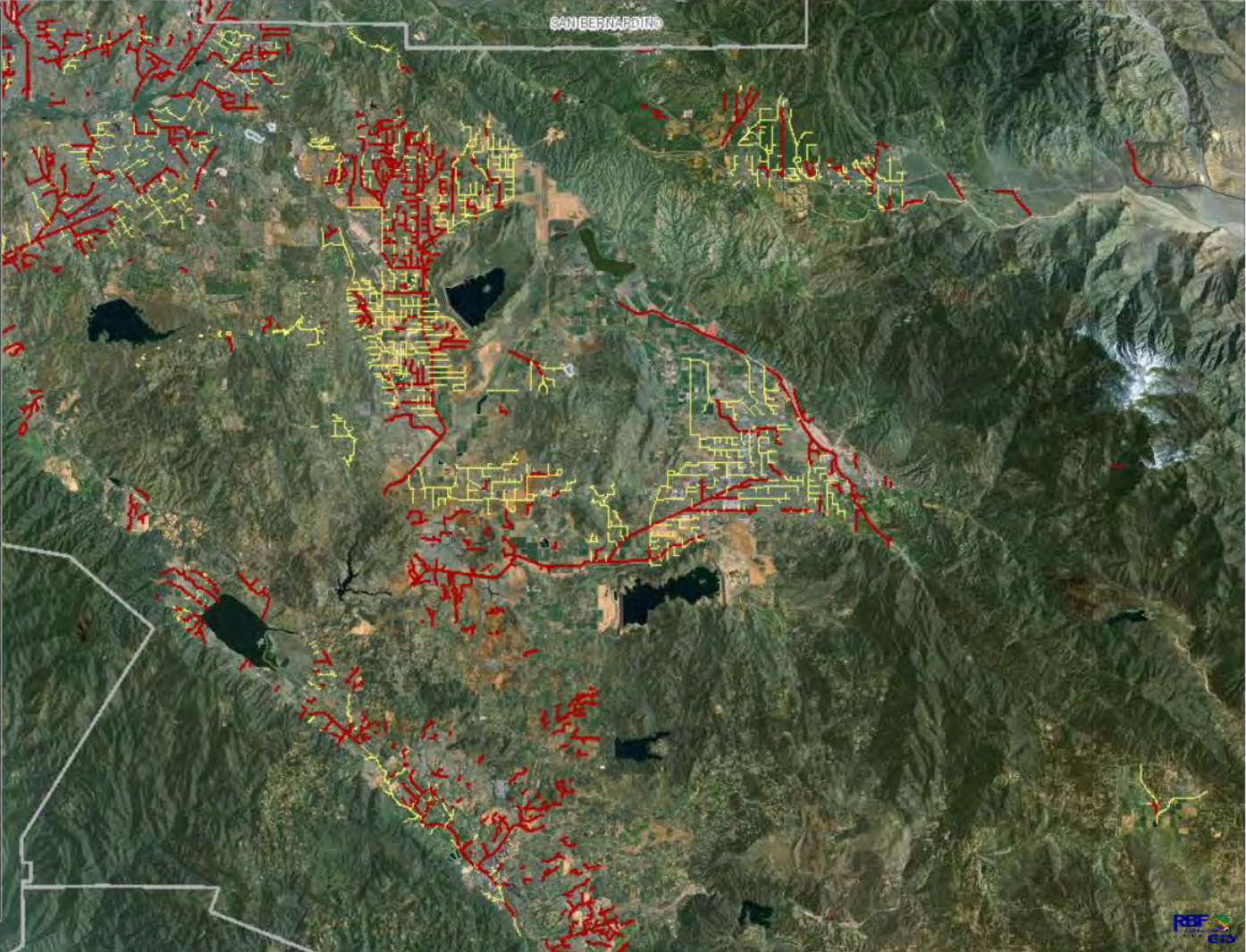
Promoting early and effective stormwater management planning





TOC Choose search item from list Enter Value Locate Clear

- Clear All Metadata
- 2010 - 303d/TMDL
 - Hydromodification Exemption Areas
 - District Facilities
 - District Facilities
 - Proposed District Facilities
 - Basin
 - Detention Basin
 - Retention Basin
 - Debris Basin
 - Dam
 - Levee
 - Spreading Grounds
 - Other
 - Permit Areas
 - Hydrologic Unit Codes (HUC)
 - Drainage Area Boundaries
 - City Storm Drains
 - WQMP 85% Design Isohyetal Map
 - CRP (Contol Release Point)
 - FEMA Flood Plain
 - Flood Plain - Other Special Studies
 - As-Built Plans

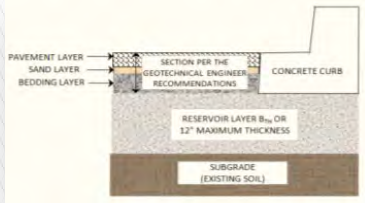


Promoting Innovation and Experimentation

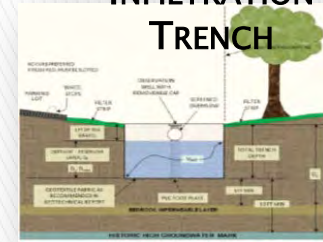
Low Impact Development Design Handbook

- 7 BMPs
- 150 pages (incl. Appendices)

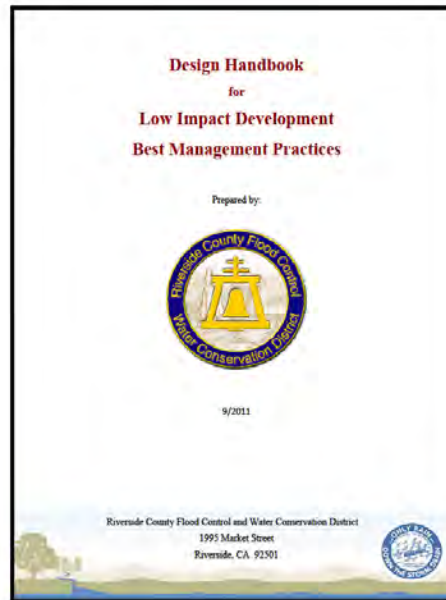
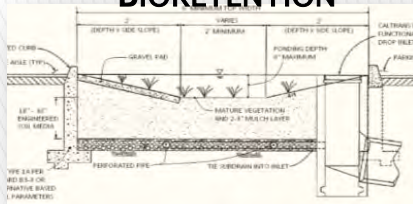
PERMEABLE PAVEMENT



INFILTRATION TRENCH



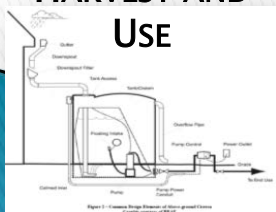
BIORETENTION



INFILTRATION BASIN



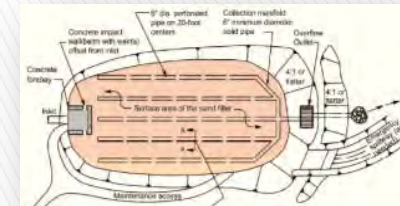
HARVEST AND USE



EXTENDED DETENTION (ENHANCED)



SAND FILTER BASIN



Low Impact Development Testing and Demonstration Facility



RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Low Impact Development Testing and Demonstration Facility – Post-Project



Goal: Balanced, Effective Stormwater Resource Protection



Thank You!



Integrated Water Resource Planning

- ▶ Capture and recharge stormwater
- ▶ Conjunctive use of other supplies
- ▶ Multi-use, multi-benefit projects



Floods of 1938



Automated Data Mining

- Site Specific
- Interactive
- Easy to Use
- Concise Results



VQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Wednesday, September 03, 2014

The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	496260002; 496260007; 496260011; 496260010
Latitude/Longitude:	33.9158; -117.1895
Thomas Brothers Page:	718
Project Site Acreage:	15.57
Watershed(s):	SANTA ANA
Does Project Site Reside in the following Hydrologic Unit(s) (HUC):	HUC Name - HUC Number Moreno Valley - 180702020304
Do the HUCs contribute stormwater to the following 203d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	WBID Name - WBID Number Canyon Lake (Railroad Canyon Reservoir) - CAL821100019992026151525 Elsinore Lake - CAL8025100019990206151100
Do these 203d listed water bodies and TMDLs have the following Pollutants of Concern (POC):	Bacterial Indicators - Pathogens Nutrients - Nutrients: Organic Enrichment/Low Dissolved Oxygen Other Organics - PCBs (Polychlorinated biphenyls) Toxicity - Sediment Toxicity, Unknown Toxicity
Is the Site subject to Hydromodification:	Yes
Restrictions on Infiltration:	Project Site Onsite Soils Group(s) - B Known Groundwater Contamination Plumes within 1000' - No Adjacent Water Supply Well(s) - No information available please contact your local water agency for more information. Your local contact agency is EASTERN MUNICIPAL W.D. Your local wholesaler contact agency is METROPOLITAN WATER DISTRICT.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Swimming Owl Survey Required Area
Groundwater elevation from Mean Sea Level:	1496
5th Percentile Design Storm Depth (in):	0.656
Groundwater Basin:	Pennis-North
ISHCP/CVMSHCP Criteria Cell(s):	No Data
Intention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	Comprehensive Nutrient Reduction Plan 191 Scores - Southern Cal bulletin118_4-sc water_fact_3_7_11 1029-SAR-Hydromodification Moreno MDP West San Jacinto GSW Basin Management Plan



Santa Ana River

- ▶ **Biking/Hiking**
- ▶ **Wading/Swimming**
- ▶ **Water Supply Source**
- ▶ **Critical Habitat**



Reorganization

- ▶ Watershed Protection Division created 2010
 - ▶ Environmental Regulatory Services Division created 1995
- 

Water Quality Management Planning for Development



Maintain or enhance floodplain function, riparian habitat and groundwater recharge



LID BMP Testing & Demonstration Facility



Riverside County Flood Control & Water Conservation District

Moving towards Resilience



Mississippi River at St. Louis



1945 - District Formed



Resiliency – What happens when the assumptions change

Resiliency

