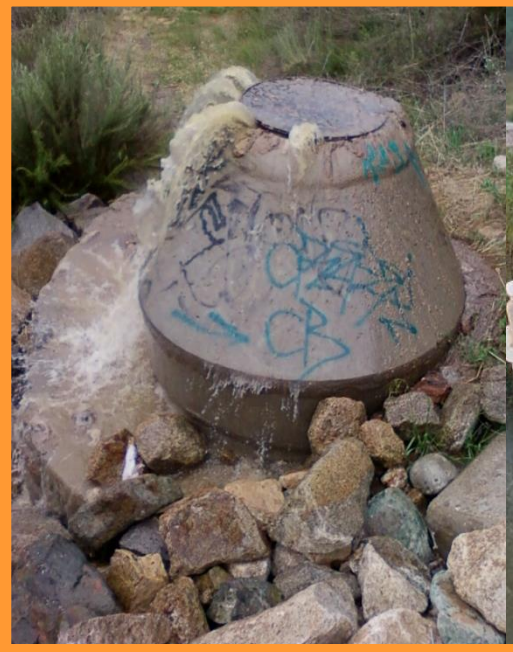
Sanitary Sewer Overflow

Water Quality Monitoring Program



Southern California Association
of
Publicly Owned Treatment Works

Presented by DUDEK

Outline

- **Regulatory Framework**
- **Monitoring Program Needs Overview**
- **Cross-discipline Monitoring Connections**
- **Applied Case Study**
  - "Local" municipality
- **Implementation Preparation Next Steps**

Regulatory Framework

- **Sanitary Sewer System Waste Discharge Requirements (WDRs)**
  - SWRCB Order 2006-0003-DWQ
- **Applies to publicly owned sanitary sewer systems**
- **Enrollees include sanitary sewer owner/operators**
  - Federal and State agencies
  - Municipalities
  - Counties
  - Districts
  - Other public entities

WDR Key Findings

- **Sanitary sewer systems experience failures**

- Capacity
- Construction methods/materials
- Geology
- Design
- Age
- Operation and maintenance

WDR Key Findings

- **Sanitary sewer overflows (SSOs) contain pollutants**
  - Suspended solids
  - Pathogenic organisms
  - Toxic pollutants
  - Nutrients
  - Oil and grease

- **SSOs create a 'public nuisance'**
  - Ground and surface water pollution
  - Threaten public health
  - Adversely affect aquatic life
  - Impair recreational use(s) and aesthetic enjoyment

WDR Requirements

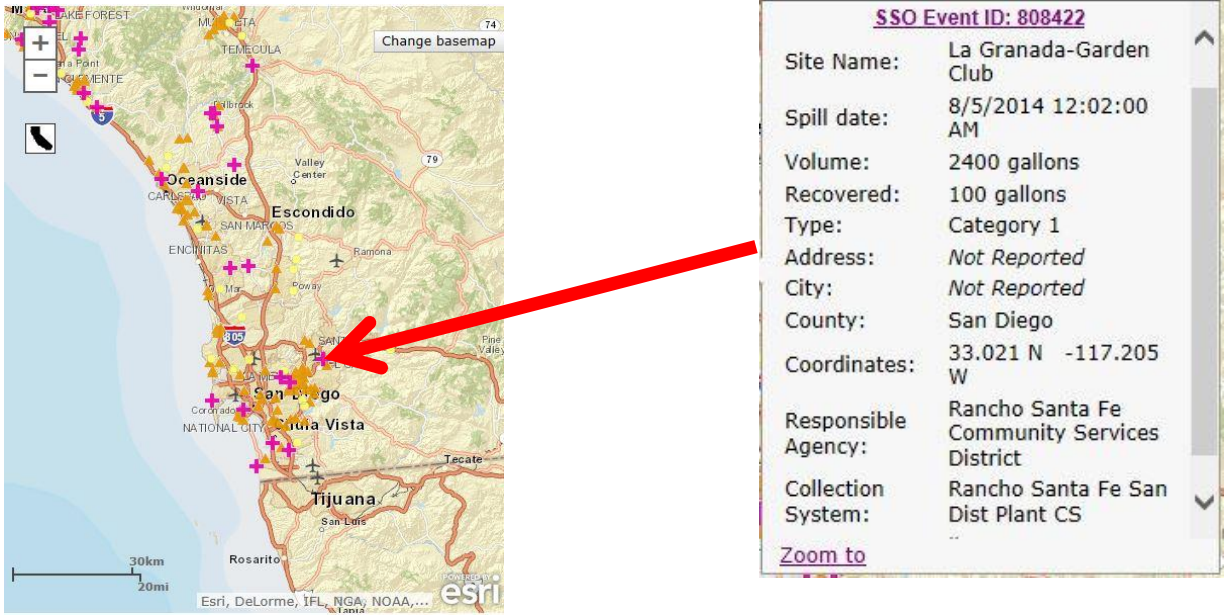
- **Sewer System Management Plan (SSMP)**
  - Goal to prevent SSOs
  - Establishes O&M requirements
  - Includes plans and schedules
  - Overflow emergency response plans
  - Reporting procedures for spills

WDR Requirements

- **Overflow Emergency Response Plan**
  - Establishes measures to protect health and environment
  - Includes notification procedures
  - Traffic and "crowd" control
  - Containment and cleanup procedures

WDR Requirements

- **Monitoring and Reporting Program (MRP)**
  - Establishes SSO monitoring, record keeping, reporting requirements
  - Generally the "where, when, how much" information
  - Electronic reporting- CIWQS database
  - Information feeds into "civil monetary remedy" for SSO



MRP 2013 Update

- **Categorizes SSOs**
  - Category 1- Any volume reaching surface water or MS4
  - Category 2- Spill >1,000 gal that does not reach surface H_2O/MS4
  - Category 3- Private lateral spill- connected to owner/operator system
- **Provides for differential reporting for categories**
  - Timeframes
  - Technical reports
- **Enhanced water quality monitoring requirements**
  - Category 1 SSOs >50,000 gallons

WDR Monitoring Requirements

- **Requires protocols for WQ monitoring**
- **Sample design approach**
  - Accounts for spill time
  - Monitoring feasibility
    - Safety
    - Access
    - Existing data
- **Quality assurance/quality control (QA/QC)**
  - Field
  - Laboratory
- **Spill response monitoring within 48 hrs**

Municipal Separate Storm Sewer System

Gutters/inlets

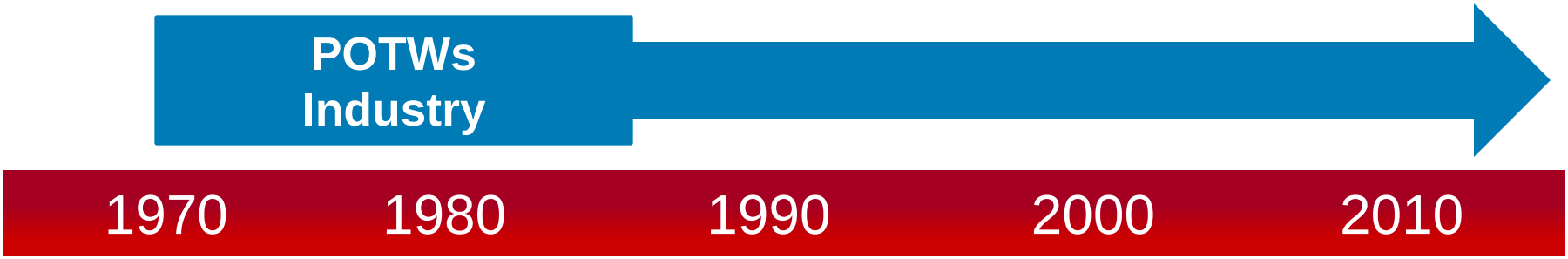
Pipes

Outfalls

Channels

Clean Water Act Regulatory Timeline

Point Sources



Stormwater

CWA amended (1987)

Municipal Stormwater Timeline

1990 2000 2010 2020

Monitoring, Program Development

Monitoring, Pilots, Program Enhancement

Monitoring, Pilots, Enhancement, Implementation

MS4 Program Monitoring

Receiving Water

BMP Performance

Special Studies

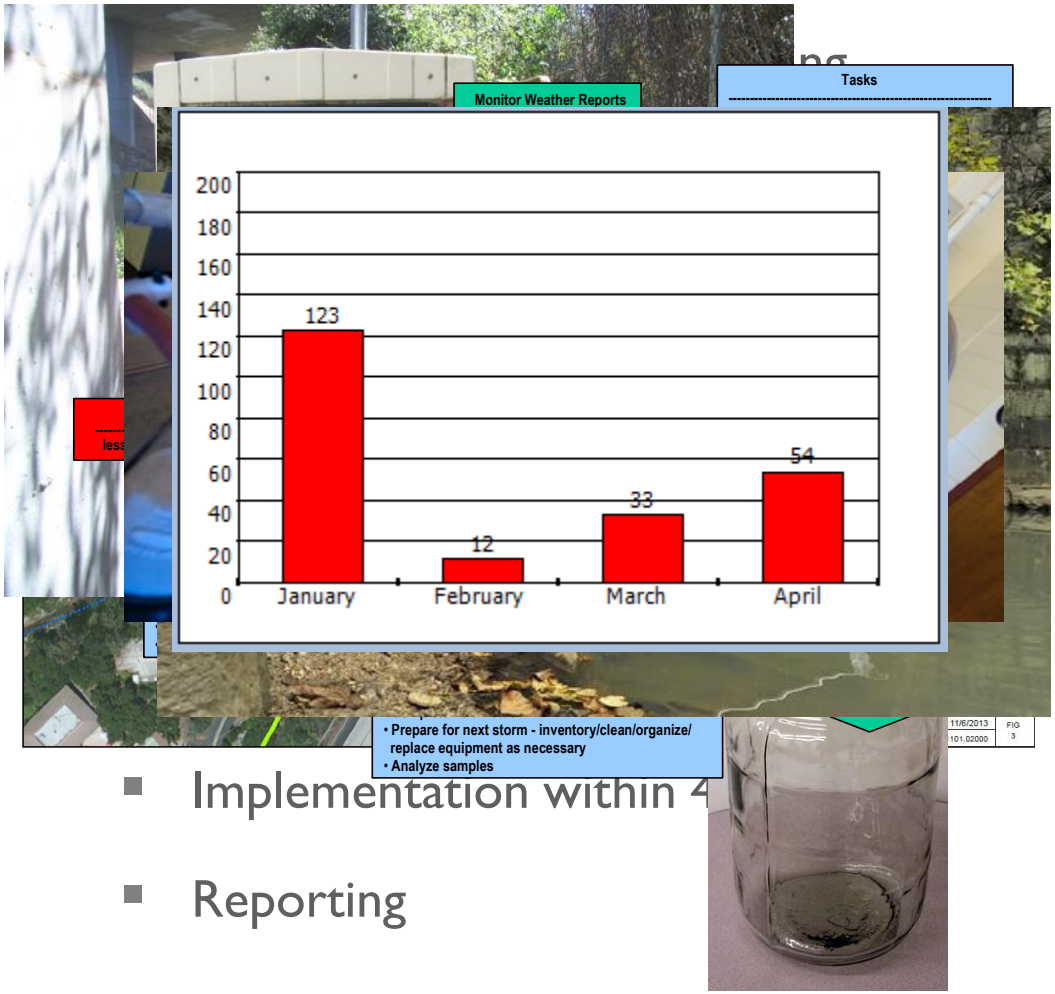
Biological Assessments

Monitoring Program Components

MS4 Monitoring

- Monitoring site descriptions
- Equipment
- Preparation and logistics
- Sample collection & handling procedures
- QA/QC
- Data management & reporting

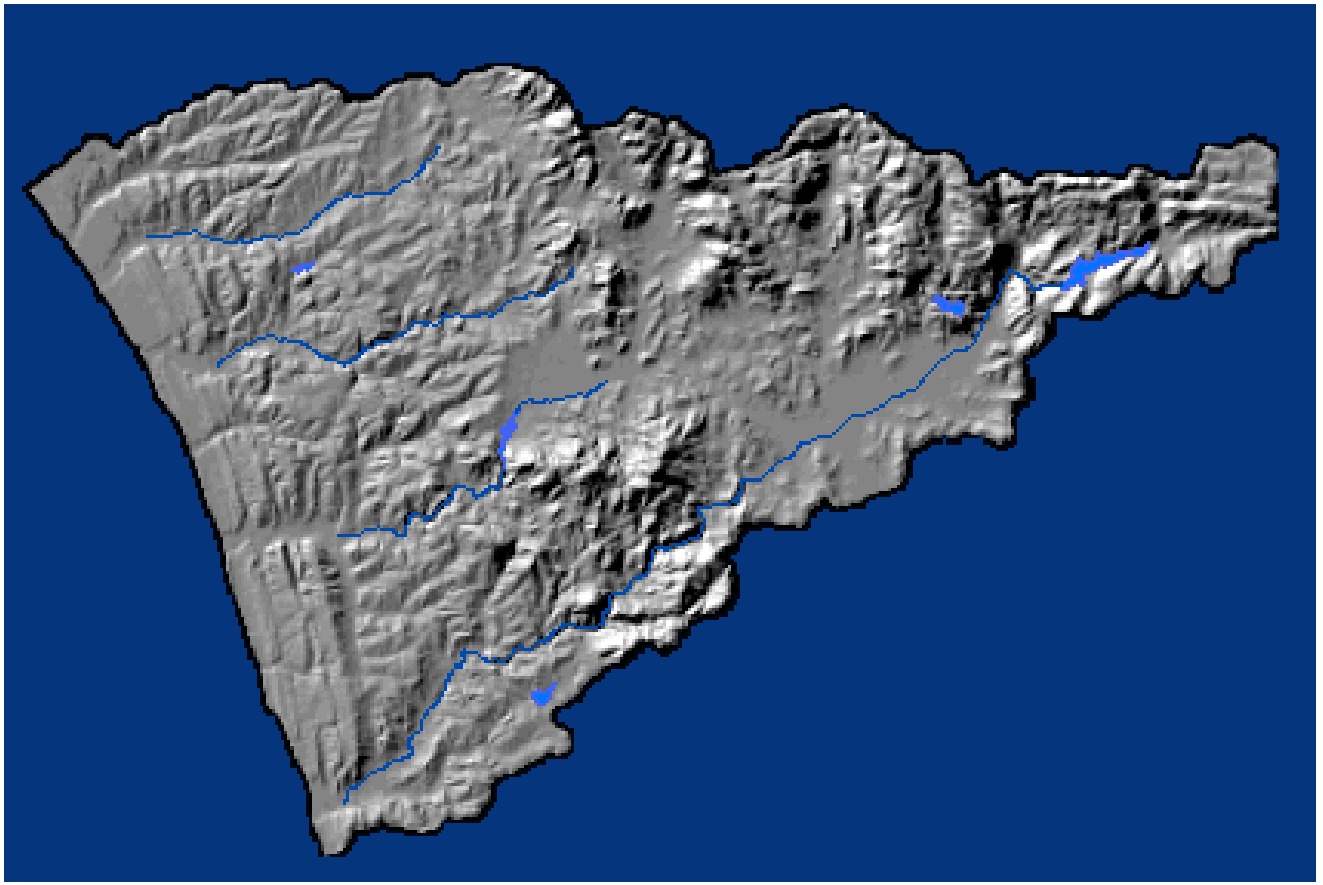
SSO Monitoring



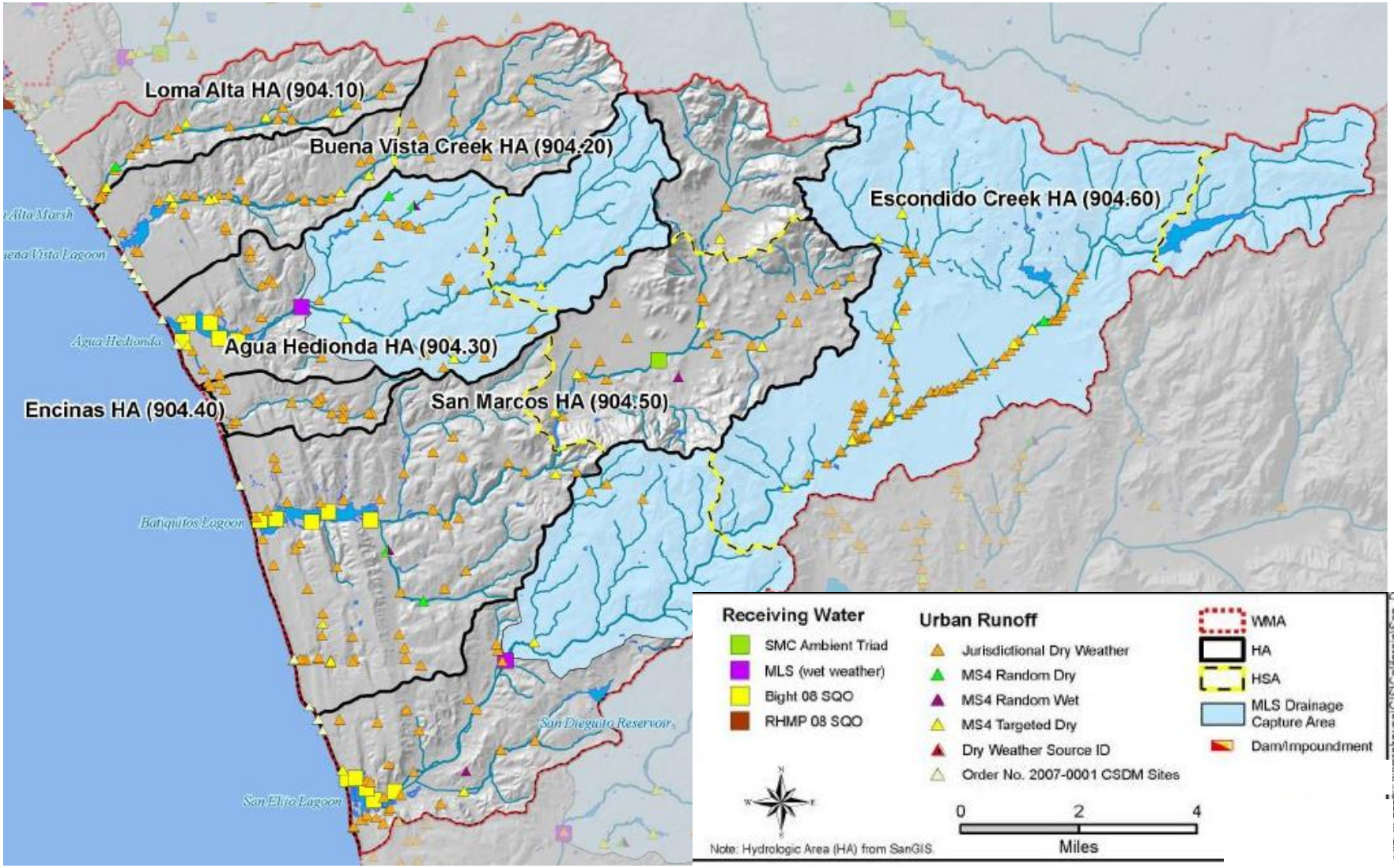
- Implementation within 4
- Reporting

Case Study- City of Shangri-La

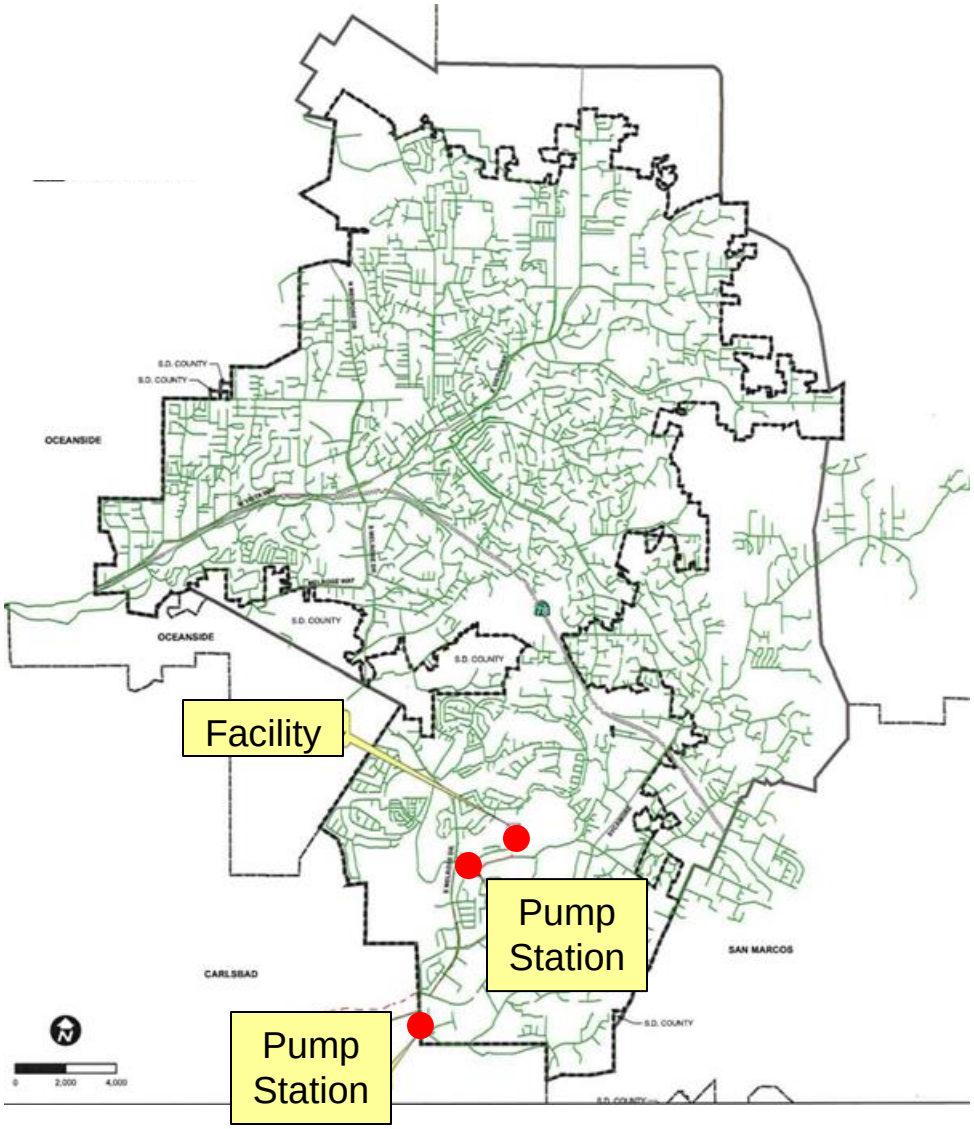
Shangri-La- Watershed Overview



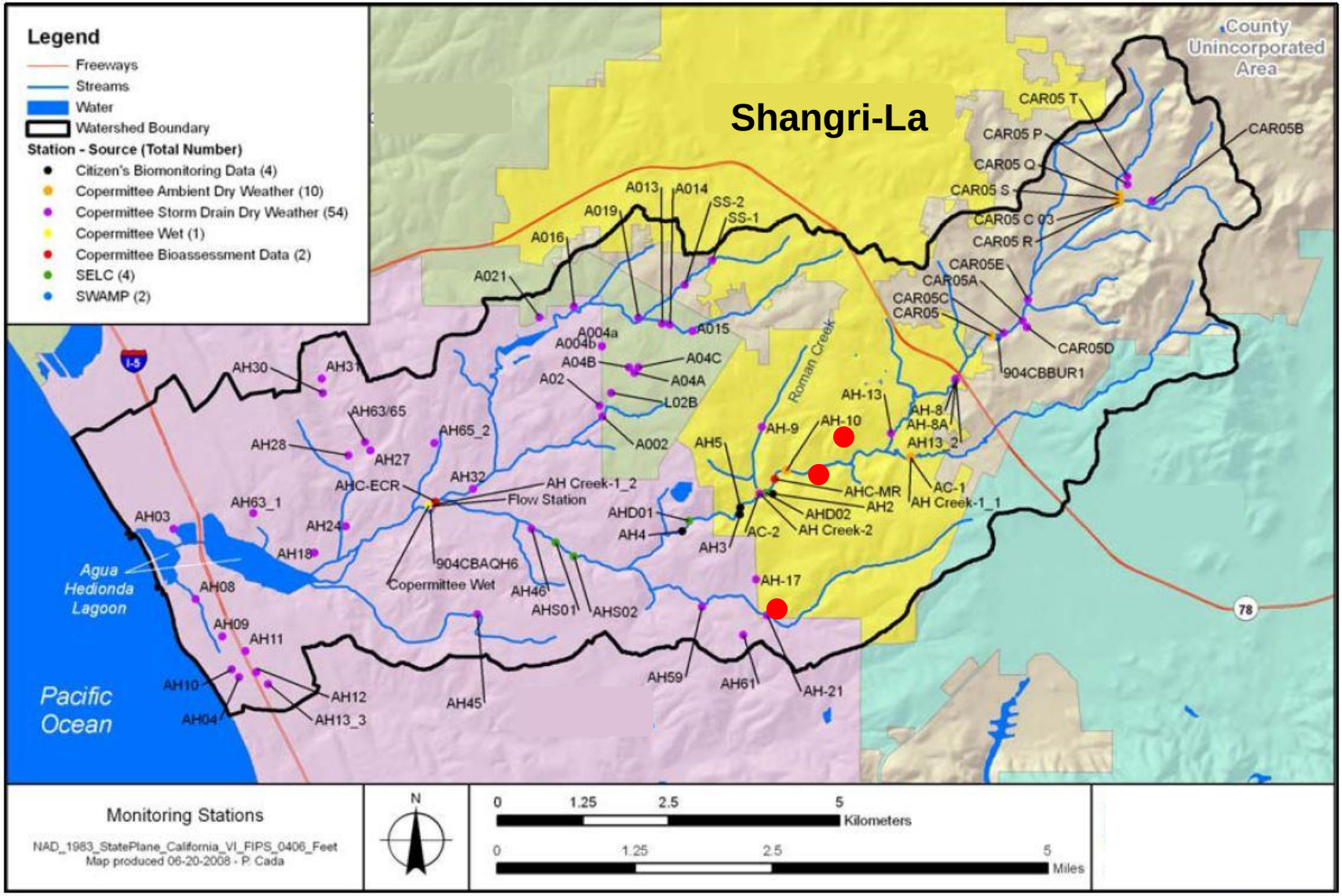
MS4 Watershed Monitoring



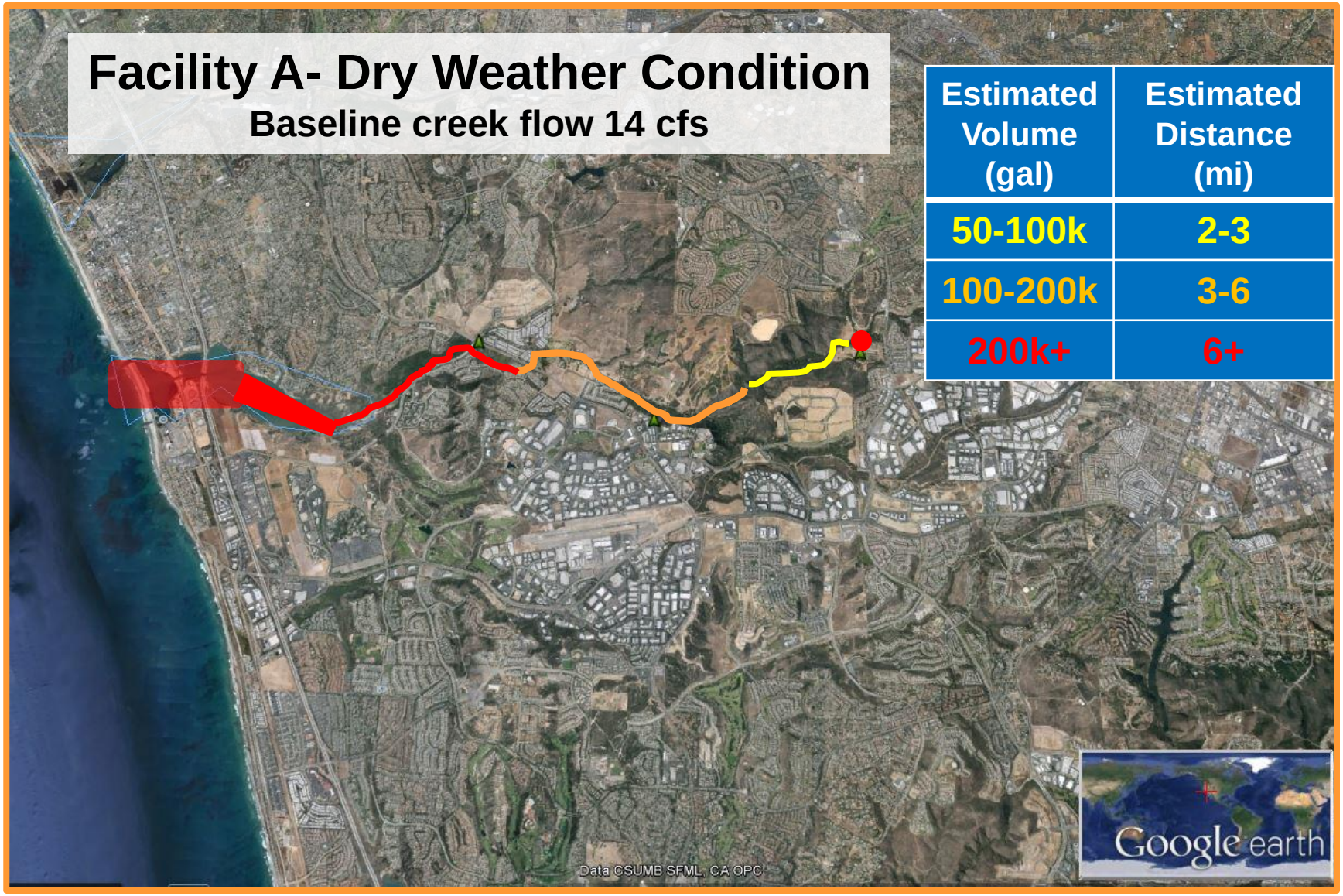
Shangri-La- Collection System Overview



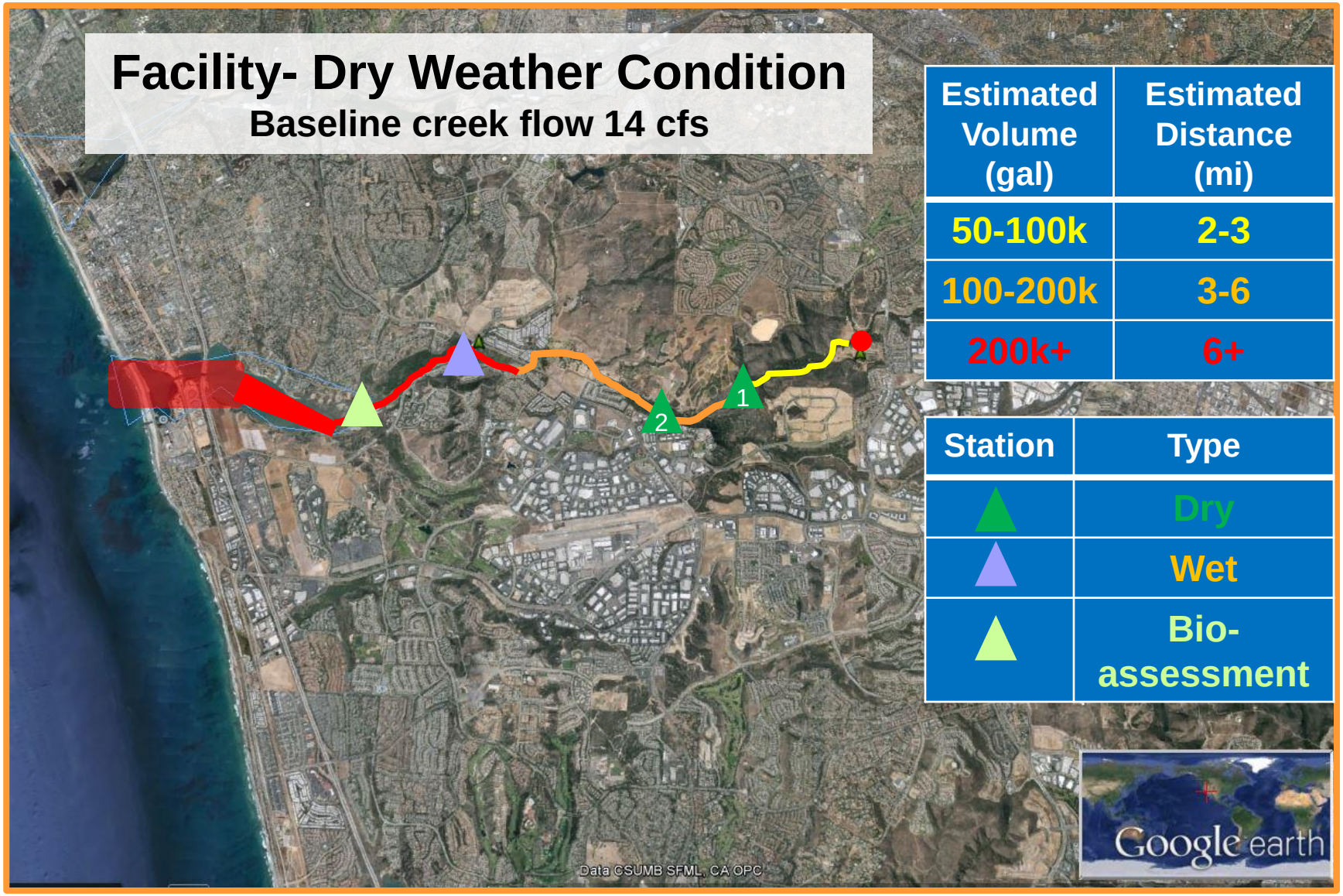
Infrastructure/Monitoring Connection



Case Study- City of Shangri-La



Case Study- City of Shangri-La



Estimated Volume (gal)	Estimated Distance (mi)
50-100k	2-3
100-200k	3-6
200k+	6+

Station	Type
▲	Dry
▲	Wet
▲	Bio-assessment

Case Study- City of Shangri-La

StationID	StationType	StationDesignation	Location	Latitude	Longitude	TBPage	TBGrid	LandUse_1	LandUse_2	Convey_Type
AH-17	DWM/MS4	Storm Drain	Southeast of the Faraday Stre	33.14003	-117.24637	1127	H1	Residential	Commercial	Outlet
AH-21	DWM/MS4	Storm Drain	2687 South Melrose Drive (so	33.13534	-117.24466	1127	H1	Industrial	None	Outlet
AH-30	DWM	Storm Drain	Southwestern corner of Chapa	33.17023	-117.22548	1108	A3	Residential	None	Earthen Channel
AH-30A	DWM	Storm Drain	South side of Shadowridge Dr	33.16661	-117.224128	1108	A4	Residential	None	Earthen Channel
AH-31	DWM	Storm Drain	Live Oak Road near southern	33.16715	-117.23827	1107	J4	Residential	None	Manhole
AH-32	DWM	Storm Drain	Southwest corner of the La Mi	33.15156	-117.2263	1108	A6	Industrial	None	Manhole
AH-33	DWM	Storm Drain	East end of La Mirada Drive of	33.15225	-117.23074	1107	J6	Industrial	None	Outlet
AH-34	DWM	Storm Drain	West end of Keystone Way, r	33.13576	-117.23425	1127	J1	Industrial	None	Manhole
AH-35	DWM	Storm Drain	Across from 1210 Activity Roa	33.14406	-117.218	1108	B7	Industrial	Agricultural	Manhole
AH-36	DWM	Storm Drain	West side of Cottontail Road,	33.15912	-117.22548	1108	A5	Residential	Parks	Outlet
AH-37	DWM	Storm Drain	Southeast corner of the Green	33.15503	-117.24137	1107	H6	Residential	None	Manhole
AH-38	DWM	Storm Drain	South side of Shadowridge Dr	33.15786	-117.24758	1107	G5	Residential	None	Manhole
AH-40	DWM	Storm Drain	Outfall north of Buena Creek F	33.15409	-117.2386	1107	J6	Industrial	None	Outlet
AH-8A	DWM	Storm Drain	Between 632 and 636 Sycam	33.16641	-117.21544	1108	B4	Commercial	None	Outlet
AH-9	DWM	Storm Drain	Shadowridge and Antigua Driv	33.15865	-117.24642	1107	H5	Residential	Parks	Outlet
BV-1	DWM/MS4	Storm Drain	Behind 4241 Tiberon Drive	33.18271	-117.28387	1107	C2	Residential	None	Outlet
BV-10	DWM	Storm Drain	Northwest corner of Eucalyptu	33.20242	-117.23605	1087	J6	Residential	Commercial	Concrete Channel
BV-12	DWM	Storm Drain	Brengle Terrace Park, across	33.20639	-117.21933	1088	A5	Residential	Parks	Earthen Channel
BV-14	DWM	Storm Drain	North Santa Fe Avenue and W	33.22313	-117.24597	1087	G3	Residential	None	Catch Basin
BV-15	DWM	Storm Drain	Northwest of the Canenea Ave	33.2177	-117.2434	1087	H4	Residential	Commercial	Outlet
BV-19	DWM	Storm Drain	Behind 1040 East Vista Way	33.2132	-117.22943	1087	J4	Residential	None	Earthen Channel
BV-24	DWM	Storm Drain	1427 Foothill Drive	33.21571	-117.21909	1088	B4	Residential	None	Outlet
BV-30	DWM	Storm Drain	Parking lot (business: Boome	33.19243	-117.27395	1087	D7	Residential	None	Manhole
BV-31	DWM	Storm Drain	Southwest corner of the North	33.1991	-117.25601	1087	F7	Residential	Commercial	Manhole
BV-32	DWM	Storm Drain	Olive Avenue and Maryland Dr	33.20272	-117.25966	1087	F6	Residential	None	Outlet
BV-33	DWM	Storm Drain	North side of West Los Angel	33.21198	-117.24572	1087	G5	Residential	Commercial	Manhole
BV-35	DWM	Storm Drain	Northeast corner of the Palom	33.22333	-117.226	1088	A3	Residential	None	Manhole
BV-36	DWM	Storm Drain	In front of 128 Townsite Drive,	33.21144	-117.24394	1087	H5	Residential	Parks	Manhole
BV-4	DWM/MS4	Storm Drain	Across the street from 1725 H	33.1878	-117.27434	1087	E7	Commercial	Residential	Outlet
BV-7A	DWM	Storm Drain	West sidewalk of South Melro	33.193	-117.25372	1087	G7	Commercial	None	Manhole
BV-8	DWM	Storm Drain	Olive Avenue and Goetting Wa	33.2035	-117.24564	1087	G6	Residential	Commercial	Concrete Channel
G-3	DWM	Storm Drain	North end of Calle Jules	33.22679	-117.22972	1087	J3	Residential	None	Outlet
G-4	DWM	Storm Drain	Northwest corner of the Warm	33.23335	-117.2242	1088	A2	Residential	None	Outlet
G-7	DWM	Storm Drain	Border of Oceanside and Vista	33.23416	-117.25789	1087	F2	Residential	None	Natural Creek
MV-3A	DWM	Storm Drain	Within property of Geib Lumbe	33.197599	-117.240711	1087	H7	Residential	Commercial	Concrete Channel
SS-1	DWM	Storm Drain	South side of Branding Iron Ci	33.18235	-117.25365	1107	G2	Residential	None	Outlet

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Case Study- City of Shangri-La

Carlsbad WMA 2011-2012 Dry Weather MS4 Summary

WMA	Carlsbad Watershed Management Area								
HA	Buena Vista Creek (904.20)			BVC-TWAS-1 Summary		Agua Hedionda (904.30)			
Subwatershed	El Salto (904.21)		Vista (904.22)			Los Monos (904.31)		Buena (904.32)	
Analyte	n	% > Criteria	NA	n	% > Criteria	n	% > Criteria	n	% > Criteria
pH	0	NA	NA	0	NA	0	NA	1*	0%
Nitrate as N	0	NA	NA	0	NA	0	NA	1*	100%
Nitrate/Nitrite as N	5	0%	NA	3	0%	3	0%	1*	100%
Nitrite as N	0	NA	NA	0	NA	0	NA	1*	0%
Total Nitrogen (cal	5	80%	NA	3	67%	3	67%	1*	100%
Total Phosphorus	5	100%	NA	3	100%	3	100%	1*	100%
Dissolved Phospho	0	NA	NA	0	NA	0	NA	0	NA
Total Suspended So	5	0%	NA	3	0%	5	20%	1*	0%
Total Dissolved So	2	100%	NA	2	100%	[illegible]	[illegible]	1*	100%
Fecal Coliform	5	60%	NA	3	100%	5	80%	1*	100%
Enterococcus	5	100%	NA	3	100%	5	60%	1*	100%
Ammonia as N	0	NA	NA	0	NA	0	NA	0	NA

Implementation Preparation

- **Review Sewer System Monitoring Plan**
  - Identify potential key locations SSO
- **Overlay MS4/other monitoring sites and data**
- **Develop defensible SSO sample design**
  - Spill/travel time
  - Feasibility

Implementation Preparation

- **Outline sampling logistics**
  - Clear protocols
  - Readily-available sample kits
  - Field and lab QA/QC
- **Develop preliminary reporting strategy**
  - Field data collection documentation
  - Analytical results evaluation processes
  - CIWQS timelines

Summary

- SSOs can and will occur
- Monitoring and Reporting Program updates needed
- MS4s can provide valuable monitoring resources
- Effective planning may assist in both characterizing SSO impacts and negotiating with regulators

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Photo: Affordable Drain Service, Inc.