GLAC-IRWMP
Flood Management Objectives & Targets

Introduction

For the Flood Management portion of the GLAC-IRWMP, the goals are to reduce the risk of flooding and to manage sediment using integrated flood management approaches. To identify a community's flood risk, FEMA conducts a Flood Insurance Study. The study includes statistical data for river flow, storm tides, hydrologic/hydraulic analyses, and rainfall and topographic surveys. FEMA uses this data to create the flood hazard maps that outline different flood risk areas. Land areas that are at high risk for flooding are called Special Flood Hazard Areas (SFHAs), or floodplains. These areas are indicated on Flood Insurance Rate Maps (FIRMs).

Many private and public parcels as well as buildings on these parcels are within the SFHAs. This technical memorandum provides a breakdown of where and what land uses are within the SFHA for the GLAC Area. These are considered unmet drainage needs that may be addressed as part of the IRWMP. In addition, many locations within the GLAC area have significant sediment accumulation putting the Subregions at risk of future flooding and/or reduced water conservation benefits.

By identifying both of these needs, unmet drainage needs and sediment management, flood management objectives and targets can be established to define the issue and provide a baseline for moving forward and from which to measure progress.

It is important to properly manage sediment deposition in order to adequately protect public safety, property, and the quality of life in local communities. Many factors must be accounted for to ensure the flood control system remains operational well into the future. The accumulation of sediment within reservoirs, debris basins, streams, and coastal areas must be considered in this process. Accumulation of sediment in these areas can reduce the capacity for flood management (in reservoirs and basins) and increases the risk of flooding. When accumulation occurs within the stream channel, localized street flooding or inundation of public and private property may occur. Recent wildfires have led to an increased inflow of sediment and debris within the Los Angeles County Flood Control District facilities. This has put additional pressure on the remaining capacity of existing sediment placement sites, where the Flood Control District traditionally placed sediment. Proper management of this sediment is necessary to protect public safety, public and private property, and ensure adequate quality of life.

Within the coastal environment, watershed planning is critical for sediment management especially around river mouths and other near shore coastal areas. As such, it is important to consider multi-purpose integrated planning such as the Coastal Regional Sediment Management Plan – Los Angeles County which is in draft form and is being authored by the Coastal Sediment Management Workgroup, the Army Corps of Engineers, and several other regional partners. In addition to this, several other planning documents should be considered, including: the Army Corps of Engineers

Multipurpose Planning (ACOE, 2012); and the Los Angeles County Sediment Management Plans (LACDPW and LACFCD, 2012). By considering these plans when developing integrated flood and sediment management targets, comprehensive and integrated goals can be met at a local and regional level.

The following sections provide the overall goal as well as objectives and discussion of target development and established targets for unmet drainage needs and sediment management requirements.

Goal:

Reduce flood risk to protect life and property using an integrated flood management approach.

Unmet Drainage Needs

Objective

Reduce flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches.

Targets

The targets were developed through a process using geospatial data that included current defined SFHAs (processed from FEMA FIRM maps), parcel ownership, parcel land use categories, and whether buildings or structures are present. Because the supplied SFHA layer did not, in all instances, match up with aerial photography, some adjustments were necessary to determine channel, creak, lake, reservoir, dam, and ocean boundaries. Land use data were compiled from 2008 surveys for the Counties of Ventura, Los Angeles, and Orange. These geospatial coverages were clipped to the defined IWRMP drainage areas by Subregion. Parcels that intersected the 2011 defined SFHA were selected to determine parcel area that is partially or wholly within the SFHA. The presence of structures was determined through development records and was defined as presence or absence of a structure. Because development records were not available for the counties of Ventura and Orange, the qualifying parcels that were at least partially within the SFHA , within the IRWMP boundaries, and had structures were identified using aerial imagery. These were converted into point files. Land use categories from the 2008 effort were used as the defined land uses. However, in some cases the 2008 land uses were further refined by using 2005 land use categories (e.g., single family residential to include high density and low density single family residential; agriculture to include animal husbandry and nurseries and vineyards; and open space and recreation to include golf courses). Land uses that were excluded in the analysis included floodways and floodway structures, reservoirs, and water as parcel ownership for these is assumed to be in the public domain.

Tables 2-6 provide the number of parcels, the percent of parcels with buildings or structures, and the associated land use of parcels that are partially or wholly within the SFHA. These are reported

by Subregions within the IWRMP. Associated maps showing these land uses and parcels are contained in Appendix A.

Table 1. Unmet Drainage Needs Targets Reported by Subregion*.

Unmet Drainage Needs (Acres)	North Santa Monica Bay	Upper Los Angeles River	Upper San Gabriel and Rio Hondo Rivers	Lower San Gabriel and Los Angeles Rivers	South Bay	GLAC Region
Subregion Total	**1900**	**3800**	**1200**	**3200**	**9000**	**19100**

*Includes areas within the SFHA that are not categorized as standing water such as lakes, reservoirs, bays, or marinas.

Table 2. NORTH SANTA MONICA BAY - Land Use Based Management Opportunities

Land Use Category	Number of Parcels	Percent of Parcels with Structures	Parcel Area (Acres)
Agriculture	13	31%	275.3
Animal Husbandry	38	13%	304.2
Commercial	65	32%	149.8
Education	6	50%	165.6
General Office	41	10%	902.0
Golf Courses	10	20%	173.7
Heavy Industrial	6	33%	11.1
High Density Single Family Residential	784	35%	186.5
Institutional	13	38%	51.8
Light Industrial	18	33%	169.9
Low Density Single Family Residential	495	15%	521.0
Single Family Residential	236	12%	171.1
Maintenance Yards	2	100%	2.2
Mixed Transportation and Utility	1	100%	11.4
Mobile Homes/Trailer Park	103	70%	134.0
Multi-Family Residential	335	39%	219.3
Nurseries and Vineyards	7	43%	57.5
Open Space/Recreation	109	6%	2834.3
Rural Residential	499	21%	431.5
Under Construction	12	0%	49.7
Undevelopable	25	0%	522.4
Unknown*	11	0%	7.4
Utility Facilities	6	17%	6.3
Vacant	726	22%	1430.3
TOTAL	**3325**		**8617.1**

*Table includes total area of parcels that are partially or completely within the SFHA..

Table 3. UPPER LOS ANGELES RIVER - Land Use Based Management Opportunities

Land Use Category	Number of Parcels	Percent of Parcels with Structures	Parcel Area (Acres)
Agriculture	47	9%	333.5
Animal Husbandry	9	22%	25.3
Commercial	142	33%	2135.9
Education	20	25%	93.1
General Office	60	13%	579.5
Golf Courses	21	10%	1423.3
Heavy Industrial	36	14%	332.5
High Density Single Family Residential	101	22%	14.4
Institutional	34	24%	238.3
Light Industrial	257	7%	493.1
Low Density Single Family Residential	1437	31%	600.4
Mobile Homes/Trailer Park	20	75%	50.8
Multi-Family Residential	80	53%	108.3
Nurseries and Vineyards	1	0%	2.6
Open Space/Recreation	39	8%	2380.2
Retail/Commercial	10	20%	5.8
Rural Residential	2	50%	22
Transportation	80	33%	810.7
Under Construction	9	0%	53.1
Unknown*	2	0%	1.1
Utility Facilities	92	4%	807.9
Vacant	229	22%	5367
TOTAL	**2728**		**15878.8**

*Table includes total area of parcels that are partially or completely within the SFHA.

Table 4. UPPER SAN GABRIEL AND RIO HONDO RIVERS - Land Use Based Management Opportunities

Land Use Category	Number of Parcels	Percent of Parcels with Structures	Parcel Area (Acres)
Animal Husbandry	2	0%	12.9
Commercial	14	14%	18.5
General Office	7	0%	49.8
Golf Courses	3	0%	99.3
Heavy Industrial	2	0%	5.8
Institutional	1	0%	4.9
Light Industrial	1	0%	0.2
Low Density Single Family Residential	105	13%	33.2
Military Installation	1	100%	8.1
Multi-Family Residential	4	75%	22.9
Nurseries and Vineyards	1	0%	13.4
Open Space/Recreation	3	0%	177.0
Retail/Commercial	4	25%	2.4
Utility Facilities	1	0%	1.3
Vacant	55	7%	3797.4
TOTAL	**204**		**4247.1**

*Table includes total area of parcels that are partially or completely within the SFHA.

Table 5. LOWER SAN GABRIEL AND LOS ANGELES RIVERS - Land Use Based Management Opportunities

Land Use Category	Number of Parcels	Percent of Parcels with Structures	Parcel Area (Acres)
Agriculture	1	0%	0.4
Animal Husbandry	1	0%	0.9
Commercial	391	12%	266.3
Education	31	26%	345.6
General Office	99	31%	236.8
Golf Courses	26	42%	662.4
Heavy Industrial	129	24%	294.6
High Density Single Family Residential	2496	81%	270.6
Institutional	57	30%	117.3
Light Industrial	1080	61%	637.4
Low Density Single Family Residential	936	71%	226.9
Maintenance Yards	5	80%	12.9
Military Installation	1	0%	10.8
Mixed Commercial and Industrial	1	0%	0.2
Mixed Residential	388	88%	26.7
Mixed Transportation and Utility	8	25%	26.9
Mobile Homes/Trailor Park	86	57%	66.7
Multi-Family Residential	1962	50%	395.1
Nurseries and Vineyards	14	7%	70.9
Open Space/Recreation	98	17%	1013.8
Rural Residential	1	0%	7.0
Transportation	86	26%	327.7
Under Construction	13	23%	24.1
Unknown*	2	0%	0.3
Utility Facilities	40	15%	450.1
Vacant	28	29%	1073.5
TOTAL	**7980**		**6566.0**

*Table includes total area of parcels that are partially or completely within the SFHA.

Table 6. SOUTH BAY - Land Use Based Management Opportunities

Land Use Category	Number of Parcels	Percent of Parcels with Structures	Parcel Area (Acres)
Commercial	375	77%	781.6
Education	40	65%	518.9
General Office	96	32%	1415.5
Golf Courses	13	23%	843.9
Heavy Industrial	63	35%	1087.9
High Density Single Family Residential	3131	78%	645.0
Institutional	77	55%	284.0
Light Industrial	262	70%	241.3
Low Density Single Family Residential	142	43%	26.1
Military Installations	1	0%	2
Mixed Commercial and Industrial	4	75%	1.5
Mixed Transportation and Utility	3	0%	2.8
Mobile Homes/Trailer Park	1829	85%	318.1
Multi-Family Residential	565	84%	118.3
Nurseries and Vineyards	8	50%	26.7
Open Space/Recreation	150	35%	1052.8
Retail/Commercial	3	33%	0.8
Transportation	66	62%	1318.6
Under Construction	2	50%	10.4
Unknown*	8	63%	1766.8
Utility Facilities	19	37%	493.6
Vacant	172	33%	3026.3
TOTAL	**428**		**7695.9**

*Table includes entire area of parcels that are partially or completely within the SFHA.Total Regional acreage targeted as Unmet Drainage needs is about 19,000 acres and 14,665 estimated parcels. The area within each parcel provides a management opportunity in which drainage needs can be mitigated to reduce high flooding risk. For integrated planning purposes, these areas could be considered as properties that may have risk for human safety or property damage. Properties with structures may have an increase in safety and property damage risk. By identifying these properties as targets within the plan, especially those with structures, a longer term solution can be developed to reduce this risk.

Sediment Management

Objective

Manage sediment through removal and/or other techniques using integrated flood management approaches.

Targets

Targets for sediment removal were provided by the Los Angeles County Flood Control District, based on 20-year projections presented in the agency's Sediment Management Plan for maintenance of regional reservoirs and debris basins. For reservoirs, planning quantities were based on a goal of no net increase in the amount of accumulated sediment in the reservoirs, which was determined based on historical records. For debris basins, historical records were used to estimate sediment inflow volumes over 20-year rolling periods. The planning quantity was the 80th percentile of these datasets, split up among the Flood Maintenance Areas (South, West and East).

The reservoirs and debris basins were mapped and the projections were summed according to the Subregion the reservoir or debris basin facility was located in to produce the targets presented below.

The following table provides the sediment targets determined in the by LA County Public Works Sediment Management Plan. Values include combined volumes of reservoirs and debris basins by Subregion.

Table 7. Sediment Management Targets Reported by Subregion

Sediment Management Needs (Million Cubic Y)	North Santa Monica Bay	Upper Los Angeles River	Upper San Gabriel and Rio Hondo Rivers	Lower San Gabriel and Los Angeles Rivers	South Bay	GLAC Region
Subregion Total	0.23	27.6	39.7	-	-	67.53

The total 20-year planning quantity for the target sediment management reduction is 67.5 MCY, with approximately 57.9 MCY resulting from the reservoirs and 9.6 MCY from the debris basins.

The Sediment Management strategic plan outlines potential alternatives to achieve these targets. The alternatives will be explored in the future.

References

Coastal Regional Sediment Management Plan – Los Angeles County. Draft Version. Excerpt provided by Heather Schlosser, May 15, 2012.

Los Angeles County Sediment Management Strategic Plan 2012-2032. County of Los Angeles Department of Public Works and the Los Angeles County Flood Control District. Draft April 23, 2012. http://dpw.lacounty.gov/lacfcd/sediment/stplan.aspx. Accessed May 9, 2012.

U.S. Army Corps of Engineers Planning - Planning Guidance Notebook. 22 April 2000. http://publications.usace.army.mil/publications/eng-regs/ER_1105-2-100/a-e.pdf. Accessed May 18, 2012.

GIS and land use data provided by County of Los Angeles and the Southern California Association of Governments.

Appendix A – Maps of Unmet Drainage Need Targets by IRWMP Subregion

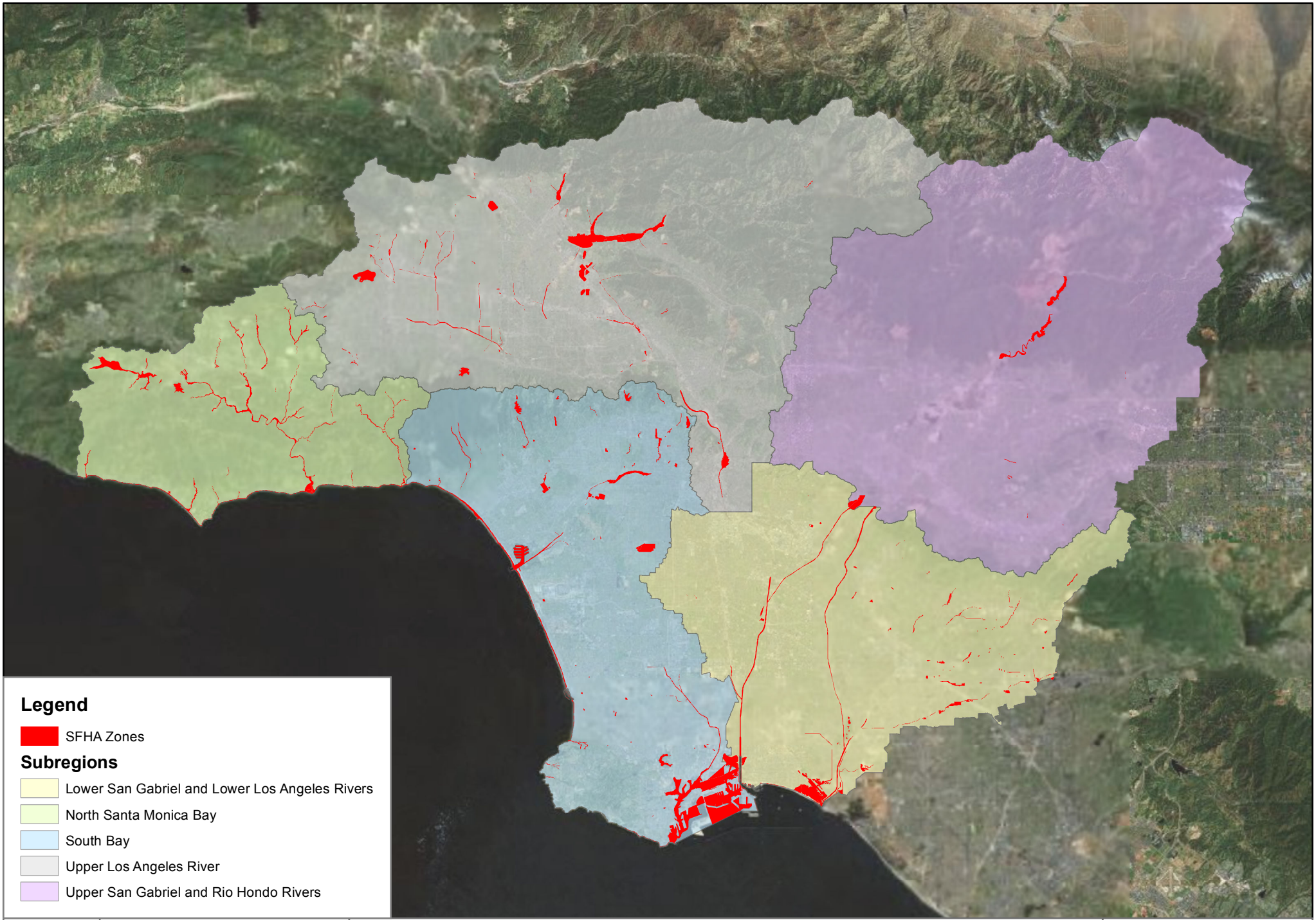


Figure 1

IRWMP Flood Targets Regional Map

Geosyntec consultants

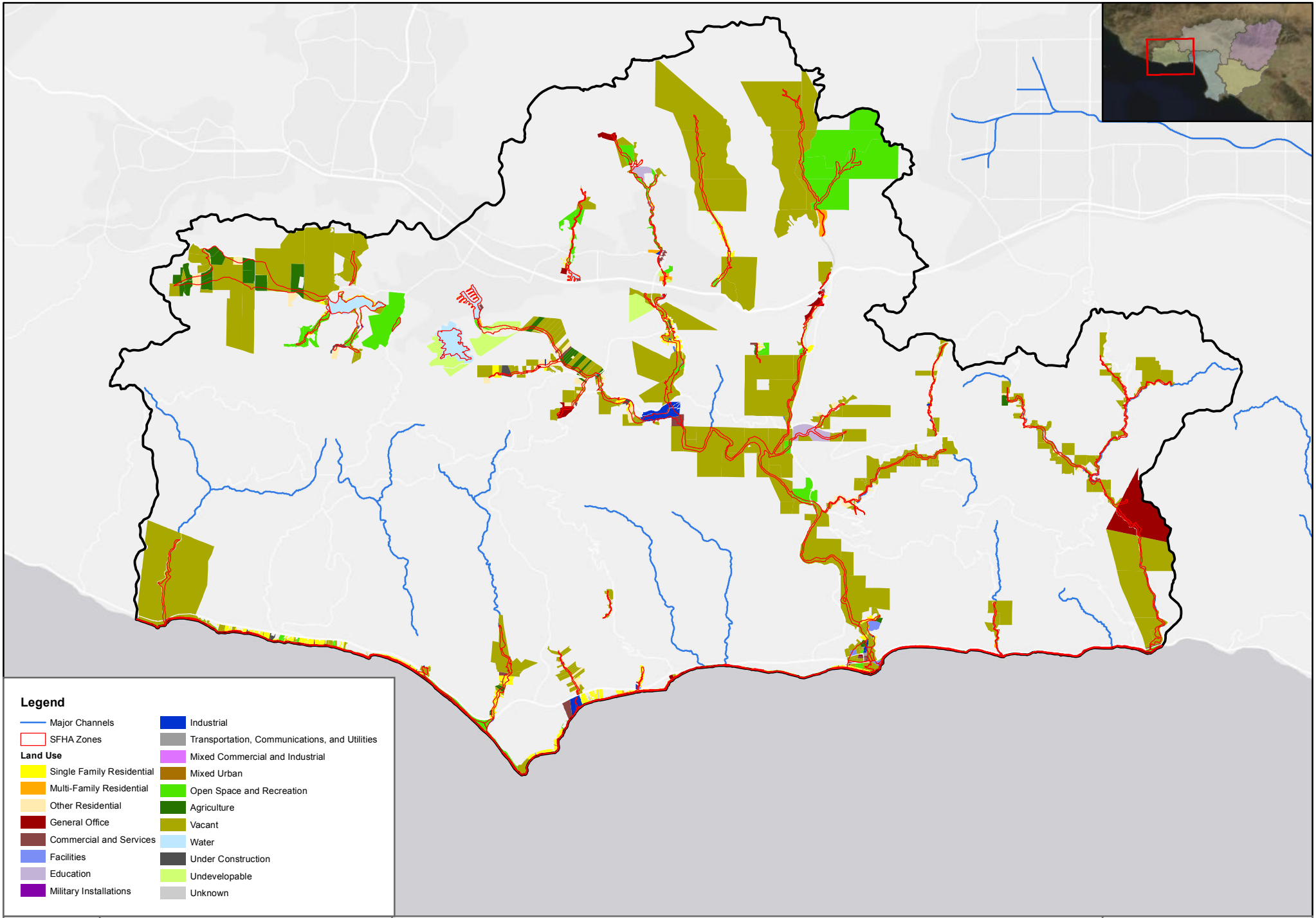


Figure 2

IRWMP Flood Targets

North Santa Monica Bay Subregion

Geosyntec consultants

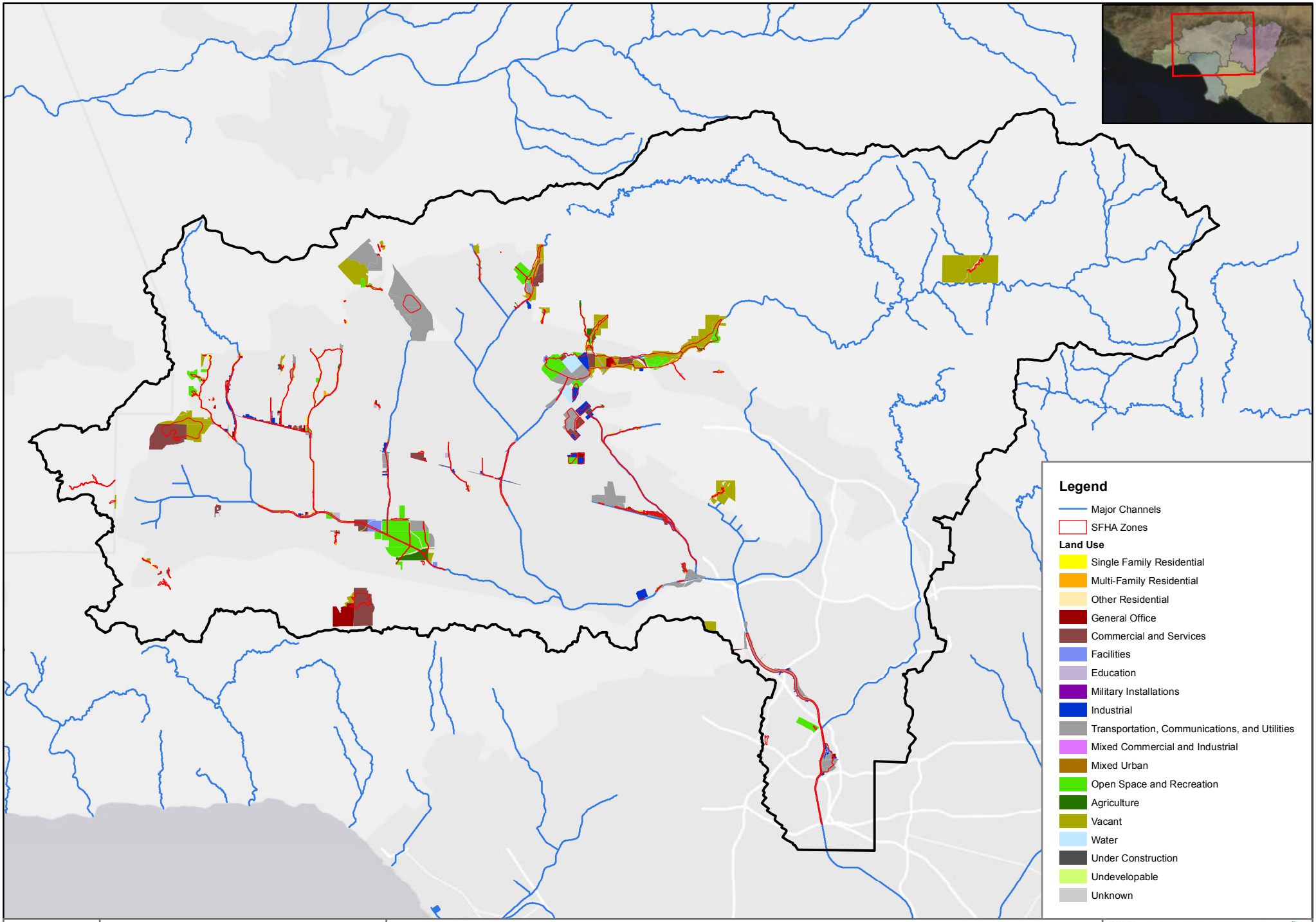


Figure 3

IRWMP Flood Targets
Upper Los Angeles River Subregion

Geosyntec consultants

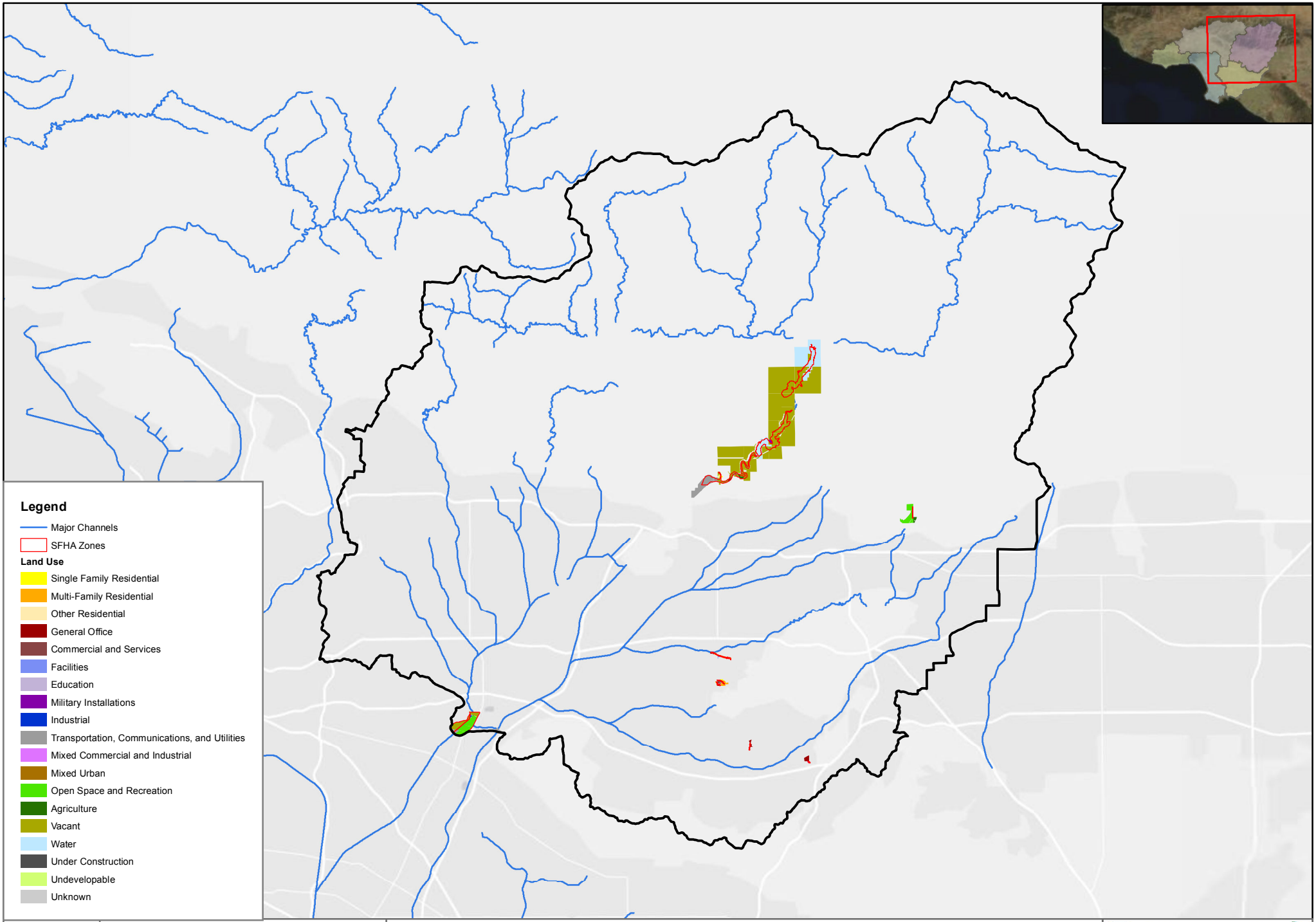


Figure 4

IRWMP Flood Targets
Upper San Gabriel and
Rio Hondo Rivers Subregion

Geosyntec consultants

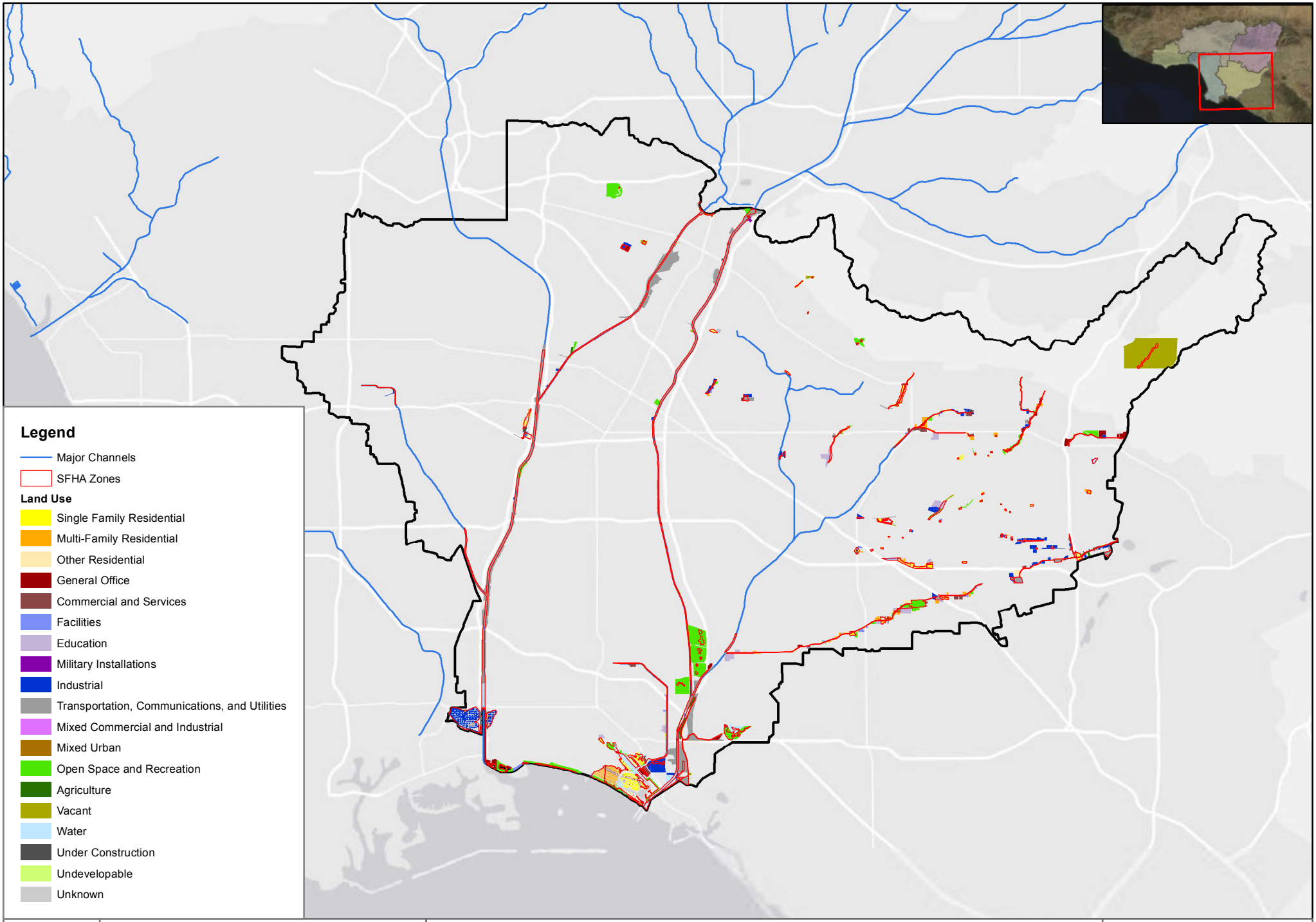


Figure 5

IRWMP Flood Targets
Lower San Gabriel and
Lower Los Angeles Rivers Subregion

Geosyntec consultants

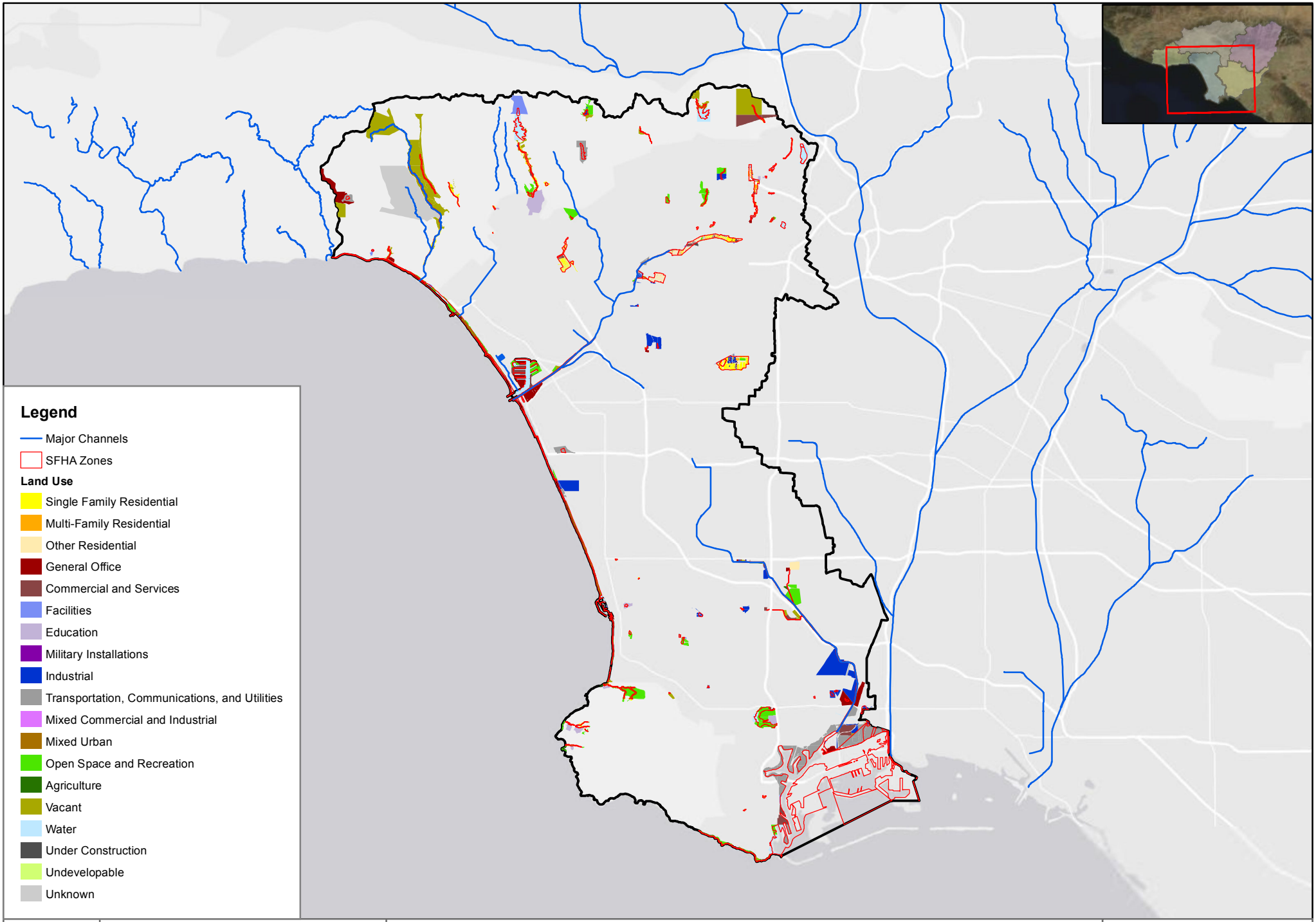


Figure 6

IRWMP Flood Targets
South Bay Subregion

Geosyntec consultants

Appendix B – Maps of Sediment Management Targets by IRWMP Subregion

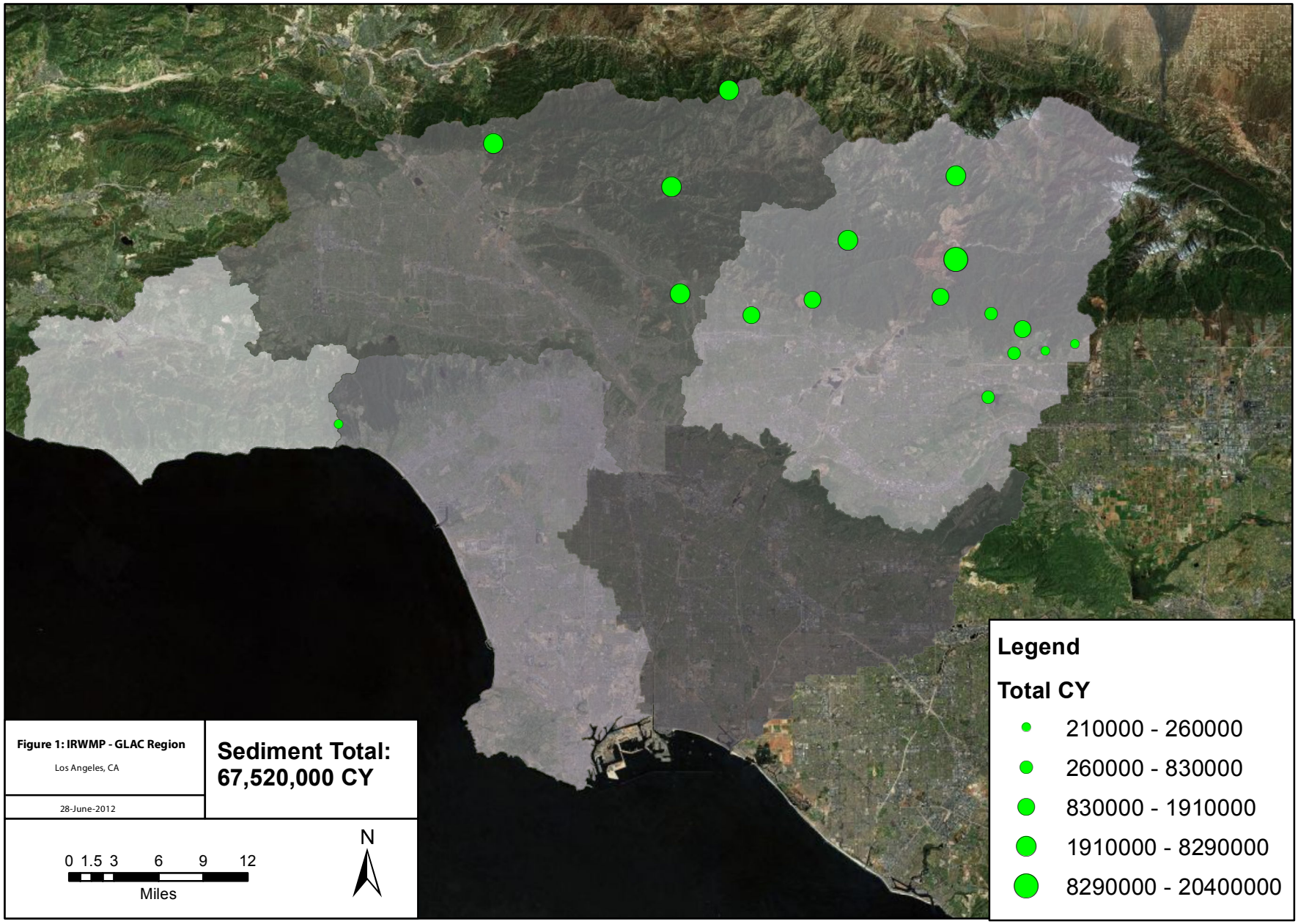
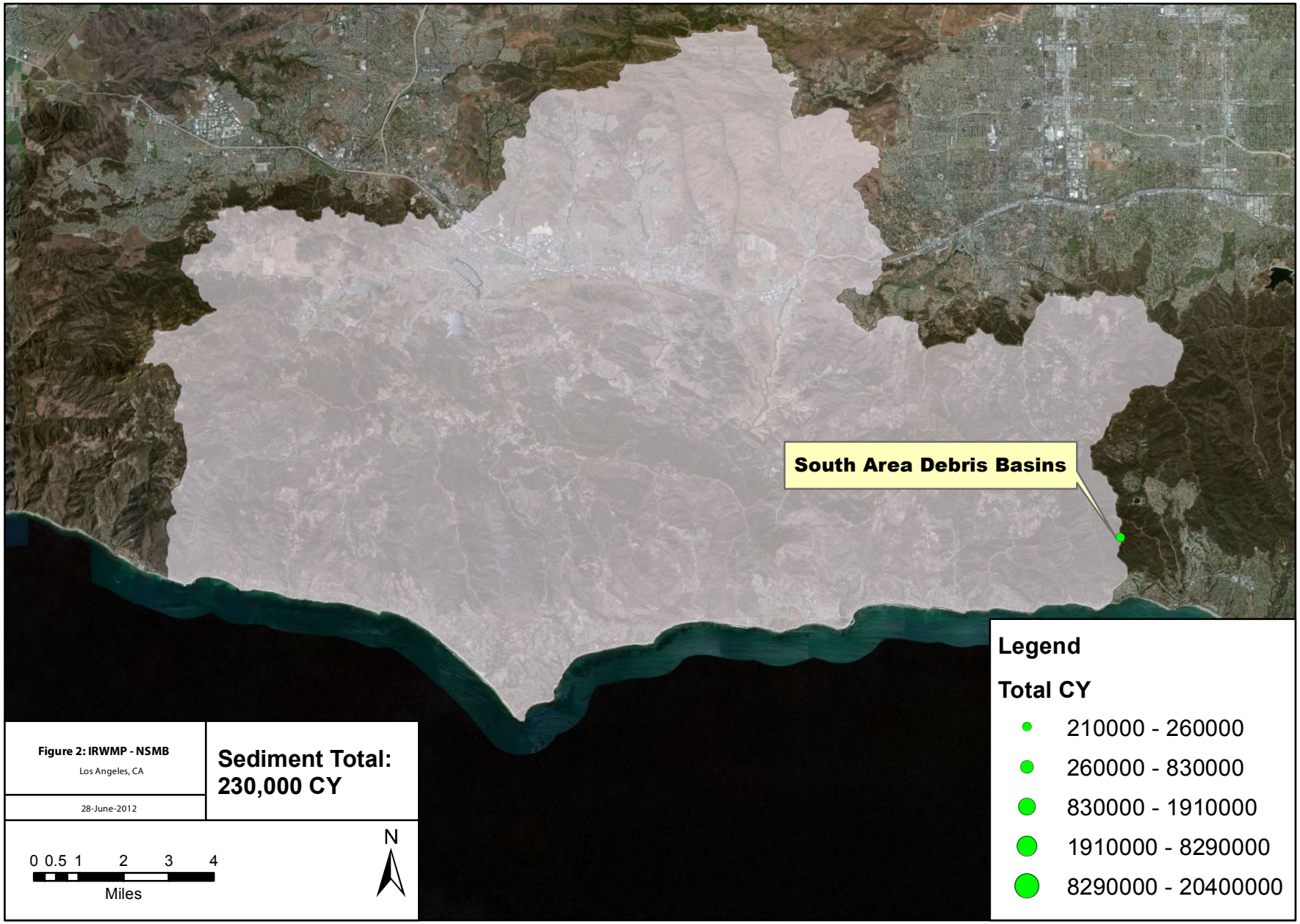
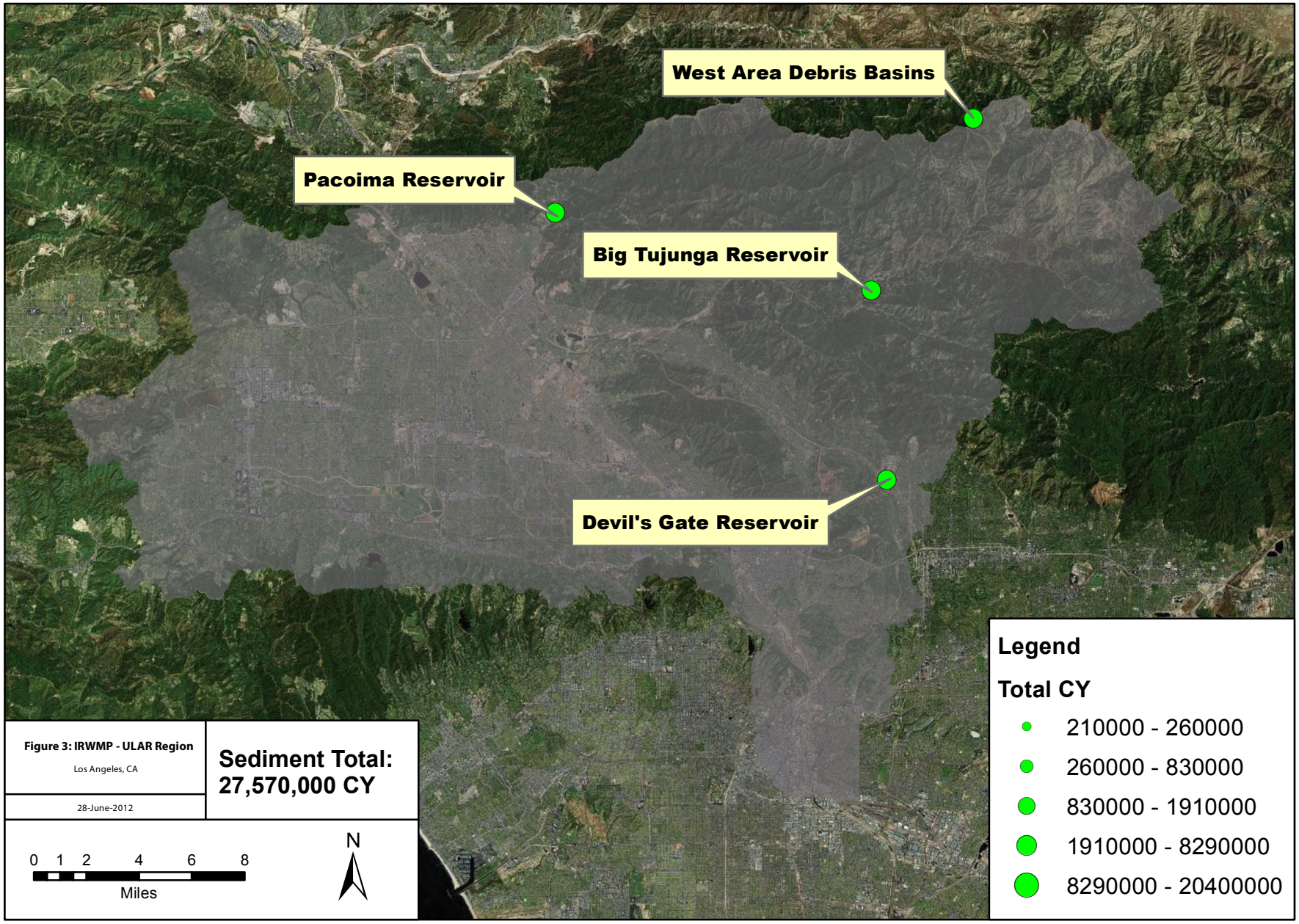
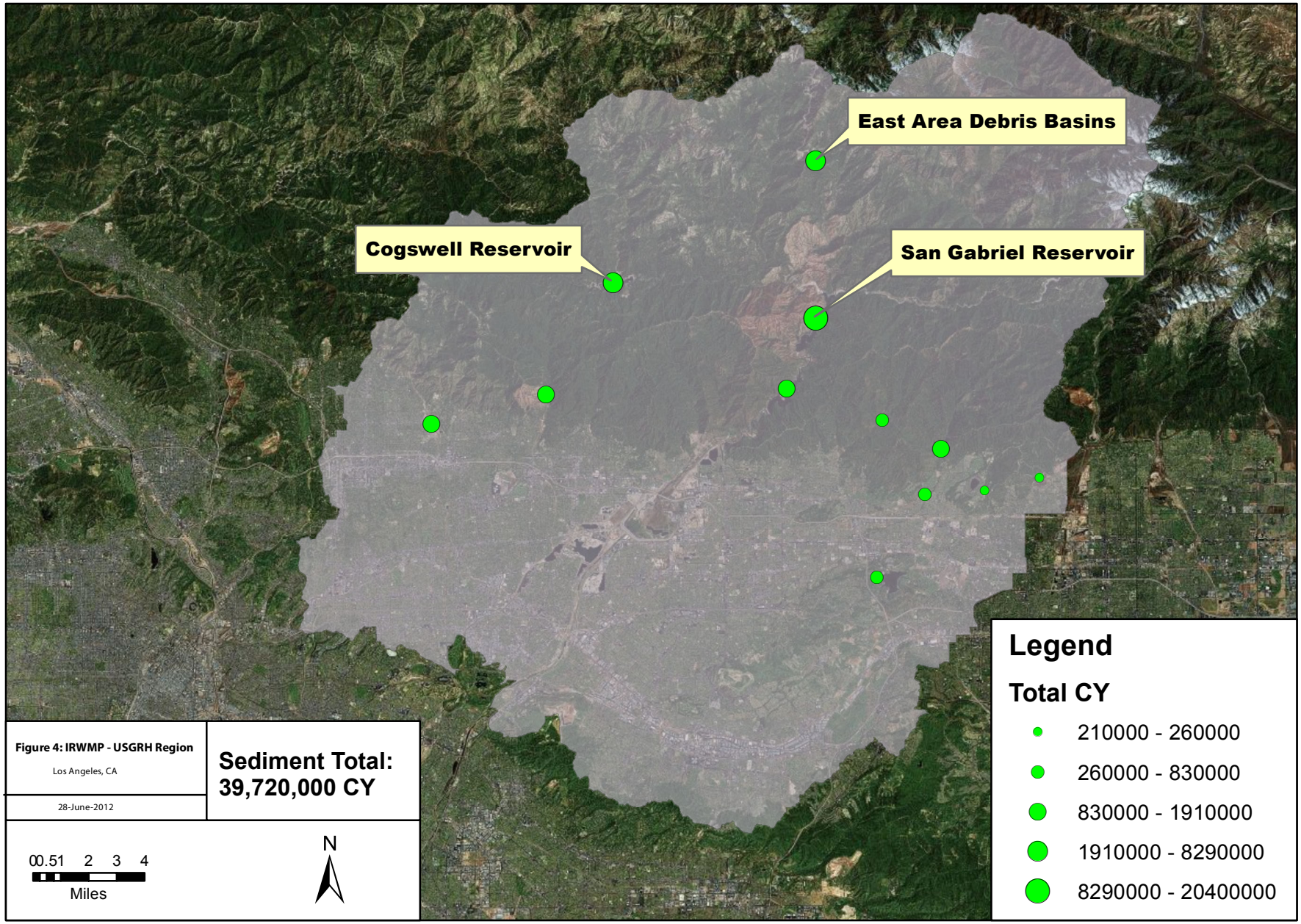


Figure 1: IRWMP - GLAC Region
Los Angeles, CA
28-June-2012
Sediment Total:
67,520,000 CY
0 1.5 3 6 9 12
Miles
N
Legend
Total CY
210000 - 260000
260000 - 830000
830000 - 1910000
1910000 - 8290000
8290000 - 20400000


South Area Debris Basins
Legend
Total CY
210000 - 260000
260000 - 830000
830000 - 1910000
1910000 - 8290000
8290000 - 20400000
Figure 2: IRWMP - NSMB
Los Angeles, CA
28-June-2012
Sediment Total:
230,000 CY
0 0.5 1 2 3 4
Miles
N


West Area Debris Basins
Pacoima Reservoir
Big Tujunga Reservoir
Devil's Gate Reservoir
Legend
Total CY
210000 - 260000
260000 - 830000
830000 - 1910000
1910000 - 8290000
8290000 - 20400000
Figure 3: IRWMP - ULAR Region
Los Angeles, CA
28-June-2012
Sediment Total:
27,570,000 CY
0 1 2 4 6 8
Miles
N


East Area Debris Basins
Cogswell Reservoir
San Gabriel Reservoir
Legend
Total CY
210000 - 260000
260000 - 830000
830000 - 1910000
1910000 - 8290000
8290000 - 20400000
Figure 4: IRWMP - USGRH Region
Los Angeles, CA
28-June-2012
Sediment Total:
39,720,000 CY
0 0.5 1 2 3 4
Miles
N