Appendix O General Plan Update Sewer Study

Appendices

This page intentionally left blank.

PSOMAS

TECHNICAL MEMORANDUM

To: Heather Allen

From: Kim Alexander

Date: June 17, 2024

Subject: General Plan Update Draft Sewer Study

PROJECT SUMMARY

The proposed project involves a focused update to specific elements of the City of Anaheim General Plan, as well as targeted updates to the City's Zoning Code and Zoning Map. The project area encompasses the City of Anaheim, which is approximately 35 miles southeast of downtown Los Angeles and 7 miles north of Santa Ana. Anaheim is surrounded by the cities of Fullerton, Placentia, and Yorba Linda to the north; Riverside County to the east; the cities of Orange, Garden Grove, and Stanton and unincorporated Orange County to the south; and the cities of Cypress and Buena Park to the west. The city encompasses over 32,000 acres of land, stretching nearly 20 miles along State Route 91 (SR-91).

The proposed project involves a focused update of the City of Anaheim General Plan that reflects zoning and land use updates resulting from the 2021-2029 Housing Element to address the City's Regional Housing Needs Assessment (RHNA) growth allocation of 17,453 housing units. The proposed project includes land use, zoning, and policy changes in the Center City Corridors (C3) area, which the City originally intended on addressing in its own specific plan area (and EIR) but has since determined that they can be integrated into the General Plan Update. In addition to updates to the City's Zoning Code and Zoning Map to implement the 2021-2029 Housing Element, the City is updating the Circulation Element to reflect changes in transportation needs, new technologies, and future projects; and has prepared a new Environmental Justice Element, as required by state law (SB 1000).

The purpose of this memorandum is to document a sewer study prepared for the proposed project. The primary objective is to evaluate the capacity of the City's existing sewer collection system and any impacts due to project sewer flows. The analysis will identify potential capacity issues and develop recommended capital improvement projects that would mitigate those issues and provide additional downstream system capacity for the buildout of the General Plan and other approved tributary development. The study area includes the parcels that are changing General Plan Land Use, identified on Figure 1 (attached at the end of the Technical Memorandum). For this sewer analysis, the sewer collection system serving the study area parcels was separated by sewer basin, each tributary to a sewer outfall location discharging to the Orange County Sanitation District (OC San) trunk sewer system.

METHODOLOGY

The study area pipelines in this analysis are evaluated utilizing the East Anaheim and Central Anaheim sewer models developed as part of City sewer master planning efforts. The Central Anaheim model was developed for the Central Anaheim Master Plan of Sanitary Sewers (CAMPSS), dated December 2017, and subsequently updated with new development and as additional system data became available. Updates have included the South Central Anaheim Sewer Study (SCASS) dated May 2020 and the DisneylandForward Sewer Study dated August 2023. The East Anaheim model was developed for the East Anaheim Master Plan of Sanitary Sewers (EAMPSS), dated March 2023. Both models are loaded for residential and non-residential uses, based on dwelling units (DUs) and parcel acreage, respectively. For site specific sewer study areas, non-residential parcels may alternately be loaded based on thousand square feet (ksf) of building area. The existing model scenarios represent sewer flow from existing land uses plus approved and soon to be constructed development. The buildout scenarios include existing sewer flow and flow from buildout land uses including approved specific plan areas and general growth and infill.

For this analysis, study area pipelines are those pipelines that serve parcels with proposed General Plan Land Use changes. The study area sewer collection systems in the Central Anaheim Area generally convey wastewater from the northeast to the southwest by gravity flow to OC San trunk sewers on Euclid Street, State College Boulevard, and Orangewood Avenue. The study area sewer collection systems in the East Anaheim Area generally convey wastewater from east to west to OC San trunk sewers on Miraloma Avenue, Orangethorpe Avenue, La Palma Avenue, and Riverdale Avenue. For this study, area-specific model output and graphics are provided by tributary basin that identify recommended system improvements to meet buildout peak flow capacity requirements. Primary trunk sewer facilities within each basin serve large tributary areas and are sized to serve basin buildout. There are also numerous 6-inch through 10-inch existing sewers within the study area that will require upsizing but specifically which sewers need upsizing will depend on where each future development project is located and to what existing sewer it is loaded. That information is not available at the General Plan level. A preliminary estimate of these smaller diameter sewer improvements has been provided in this analysis based on assumed project loading as described below. When specific development projects are proposed, a detailed, site-specific sewer study will be required, which will build on this more programmatic study.

The initial project buildout analysis consisted of development of average flow estimates for the proposed land uses in the project area and where those flows would logically be loaded to the existing sewer collection facilities. Proposed General Plan Land Use data was provided by the City in GIS and excel formats dated May 2023 and is summarized in Appendix A. Figure 1 illustrates the proposed land use designations.

The General Plan statistical data provided dwelling units and non-residential square footage by project parcel. The mix of non-residential uses (retail, restaurant, office, and hotel) for mixed-use designation flow projections was estimated based on the Center City Corridors (C3) plan area Market Study (2021) which provided a breakdown by square footage for the mixed-use development areas.

Average flow factors were generated in close consultation with City staff and used to calculate project related buildout sewer flows. Table 1 summarizes the flow factors in gallons per day (gpd) per ksf for non-residential; gpd per room for hotel; and gpd per dwelling unit (DU) for residential

land uses. The project parcels have a mix of existing and proposed dwelling units and non-residential square footage. As such, flow factors were applied on a per dwelling unit and per thousand square foot basis to calculate the increase in sewer flows due to project buildout.

Table 1 - Sewer Flow Factors

Land Use Designation	Flow Factor	Units
Non-Residential		
Office	100	gpd/ksf
Restaurant	800	gpd/ksf
Retail	195	gpd/ksf
Hotel	150	gpd/room
General Commercial	195	gpd/ksf
Industrial	195	gpd/ksf
Public/Institutional	100	gpd/ksf
Residential		
Mixed-Use Residential	200	gpd/du
Residential - Mid/Medium	200	gpd/du
Residential - Low Medium	225	gpd/du
Residential - Low	250	gpd/du

gpd = gallons per day; ksf = thousand square feet,
DU = dwelling unit

The assumed percentage breakdown for non-residential land uses from the project area Market Study (2021) was multiplied by the corresponding flow factors in Table 1 to calculate the weighted average non-residential flow for each of the mixed-use designations shown in Table 2. The prorated non-residential factor, in gpd/ksf, was then applied to the square footage provided in the project statistics for each mixed-use parcel. Similarly, the residential factor of 200 gpd/DU was applied to each parcel based on the number of DUs provided in the project statistics. The total number of potential units and potential non-residential square feet were loaded for each of the designated Mixed-Use parcels to simulate the worst-case flow (highest) for evaluating sewer system capacity.

Table 2 - Weighted Factors for Mixed-Use Designation

Proposed Development Areas	Non-Residential (gpd/ksf)
Mixed-Use Low-Medium	329
Mixed-Use Mid	338
Mixed-Use Medium	317
Mixed-Use High	357
Mixed-Use Urban Core	339
Mixed-Use Industrial	237

Sewer flows were calculated for each parcel using the project statistics and flow factors provided in Tables 1 and 2 and were then allocated to the appropriate manhole in the model for the buildout scenario. Non-project parcels maintained the buildout flows utilized in the sewer master plan models.

If flow from a particular parcel enters the system via a lateral between manholes its flow is loaded to the next upstream manhole. For project parcels, the model buildout flows were replaced with project buildout flows, as described above. This was done to avoid double counting development intensification.

The proposed study area flows were analyzed by tributary pipeline system. The project tributary basins within the Central Anaheim model are illustrated on Figure 2. The project tributary basins within the East Anaheim model are illustrated on Figure 3. Table 3 summarizes the existing and proposed average flow in million gallons per day (mgd) to the OC San outfall from each tributary system serving parcels that are changing General Plan Land Use.

Table 3 - Average Flow for Project Tributary Basins

Tributary System	Existing Flow (mgd)	Project Flow (mgd)	Difference (mgd)
Central Anaheim			
Romneya	1.101	1.620	0.519
La Palma	1.549	1.687	0.138
Ball	4.819	6.171	1.352
Katella	5.583	6.298	0.715
Orangewood	5.058	5.352	0.294
Howell	0.197	0.574	0.377
Santa Cruz	0.364	0.404	0.040
Durst	0.052	0.103	0.051
East Anaheim			
Miraloma	0.402	0.530	0.128
La Palma	0.505	0.585	0.080
Etchandy	0.009	0.053	0.044
Orangethorpe	0.108	0.153	0.045
Kraemer	0.821	1.290	0.469
Riverdale	1.284	1.333	0.049
Total	**21.852**	**26.153**	**4.301**

MODELED SEWER CAPACITY

This sewer study provides model output data and sewer capacity analysis for project buildout development flows and also includes sewer flows for existing and reasonably anticipated proposed development from the upstream tributary areas. The existing condition scenario for the Central Anaheim model has been updated in the model to reflect all approved sewer study flows. Included in the anticipated development is DisneylandForward with projected sewer flows included in the existing condition model based on the DisneylandForward Sewer Study (August 2023). The East Anaheim model, developed as part of the March 2023 Master Plan, includes recent and planned development including specific plan areas. Consistent with previous sewer modeling practices, the models generate peak flows using two diurnal curves, residential and non-residential. Likewise, projected sewer flow from the project mixed-use and other parcels were modeled using separate residential and non-residential loading along with corresponding diurnal curves.

The maximum depth-to-diameter (d/D) ratio for the sewer collection system was used to identify pipe segment capacity deficiencies. Current City criteria was used when determining the pipe diameter sizes and flagging pipe segments as deficient. For peak dry weather flow conditions, the maximum d/D ratio for identifying an existing pipeline as deficient is 0.67 for pipelines smaller than 12-inch and 0.75 for pipelines 12-inch and larger. This is referred to as the analysis criteria in this study. For recommended improvement pipelines, a maximum d/D of 0.50 is used for pipelines smaller than 12-inch and 0.60 for pipelines 12-inch and larger. This is referred to as the design criteria in this study.

To establish an updated baseline condition and determine additional available capacity, an existing scenario was modeled excluding additional development intensity proposed in the project. Figure 4 illustrates the existing scenario limiting capacity pipelines with d/D ratios above the analysis criteria shown in red. Corresponding model output for the existing scenario is included in Table 4 (attached at the end of the Technical Memorandum). For comparison, CAMPSS existing condition deficiencies are included in Appendix B and these segments are highlighted in green in Figure 4. None of the project tributary pipelines within the East Anaheim area were identified as deficient under existing conditions.

Limiting capacity pipelines identified for the buildout scenario with additional project flows are illustrated on Figures 5 and 6 with limiting capacity pipelines identified in red, having maximum d/D ratios above the pipeline analysis criteria. A complete list of pipelines exhibiting capacity deficiencies for the buildout scenario is shown in Table 4. For comparison, the existing condition model output for these same pipelines is also included in Table 4. Buildout deficiencies previously identified in the Central and East Anaheim Master Plans are included in Appendix B.

The modeled peak flow at each tributary basin outfall is summarized in Table 5 for both the existing and buildout scenarios.

Table 5 - Modeled Peak Flow at Tributary Outfall

Tributary System	Existing Flow (mgd)	Project Flow (mgd)	Difference (mgd)
Central Anaheim			
Romneya	2.083	3.222	1.139
La Palma	3.454	3.743	0.289
Ball	10.559	13.333	2.774
Katella	9.334	10.234	0.900
Orangewood	8.403	9.005	0.602
Howell	0.387	1.228	0.841
Santa Cruz	0.852	0.944	0.092
Durst	0.083	0.222	0.139
East Anaheim			
Miraloma	0.646	0.855	0.209
La Palma	0.820	1.009	0.189
Etchandy	0.016	0.100	0.084
Orangethorpe	0.200	0.284	0.084
Kraemer	1.395	2.200	0.805
Riverdale	2.137	2.214	0.077
Total (gpm)	**40.368**	**48.593**	**8.224**

Model output for major collection pipelines, 12-inch and larger, within each tributary system illustrated on Figures 2 and 3 (for the Central and Eastern areas, respectively) is provided in Appendix C for both existing and proposed project buildout conditions. The tables include peak flow in mgd, peak d/D ratio, analysis flow equal to the capacity of the pipe with a maximum analysis d/D ratio, analysis excess equal to the difference between the pipeline capacity and peak dry weather flow, additional DUs that would fit in the pipe without exceeding the allowable analysis d/D ratio, and the peak additional project flow into the system. The excess pipeline capacity was converted into gpd and divided by 200 gpd times a peak factor of 2.4 for residential use to calculate the additional amount of DUs that could possibly develop in each tributary pipeline before requiring a capital improvement.

The Capital Improvement Projects (CIP) for deficient pipelines are discussed below, with area-specific graphics and output. Numerous wastewater collection system improvement projects are recommended for implementation to provide sufficient capacity for future development within the study area. These improvement projects address the major trunk mains with smaller diameter improvements included in the CIP tables and figures for completeness. Improvement areas are labeled using letters A through J on Figures 5 and 6 with detailed locations for each presented in Figures A through J and discussed in the following sections. Model output for the improved condition is included in Table 6 for each area.

ROMNEYA SYSTEM ANALYSIS

The Romneya tributary system is located in the northern area of Central Anaheim (Figure 2) and consists of a recently constructed 24-inch trunk pipeline. Model results for the Romneya System major tributary pipelines (12-inch and larger) are included in Appendix C and show sufficient capacity within the existing sewer collection pipelines for the increased sewer flow generated by project development intensities. There is one reach of 8-inch diameter pipeline within the tributary basin along Harbor Boulevard and just north of Romneya (shown on Figure 5) that is modeled as deficient in the buildout condition. The modeled improvement diameter is 10-inch with model output data included in Table 6 (SW070102-SW070301-A), though located outside of the Figure A viewport.

LA PALMA SYSTEM ANALYSIS

The La Palma tributary system is also located in the northern area of Central Anaheim and includes parallel pipelines along La Palma Avenue. The La Palma South System major trunk lines consist of 15-, 18-, 21-, and 24-inch segments with model output provided in Appendix C. The hydraulic analysis identifies six deficient segments along La Palma Avenue under project buildout conditions. Two additional segments that are not identified as deficient along the same reach are included to be upsized to meet City design criteria in the improvement area and to avoid a smaller diameter pipeline downstream of an improved pipeline. This improvement area includes 2,926 LF of proposed 15-inch, 18-inch, and 21-inch pipeline. The improvement pipelines and model output are included in Figure A and Table 6.

There are two additional smaller diameter pipelines that are modeled as deficient under the project buildout condition and are included on Figure A and in Table 6. These include a 6-inch reach in an alleyway parallel to Topeka Street to be upsized to 10-inch pipeline and an 8-inch reach along North Street to be upsized to a 12-inch pipeline.

The La Palma North System consists of 10- and 12-inch major tributary pipelines. Model results included in Appendix C show sufficient capacity within the existing sewer collection pipelines for the increased sewer flow generated by the proposed development intensities under buildout demand conditions.

BALL SYSTEM ANALYSIS

The Ball System pipe network is spread across all areas within Central Anaheim as shown on Figure 2. Model output for major collection pipelines is provided in Appendix C. Significant improvements to the sewer system are necessary to address capacity deficiencies. The deficient pipe segments identified in the hydraulic model within the Ball System are discussed in more detail below.

On Lincoln Avenue there are six deficient segments along with three additional segments added to the improvement area to avoid a smaller diameter downstream from improved pipelines and to meet City design criteria along the entire segment. To be conservative, these pipelines, and associated costs, have been included with the recommended improvements in this analysis. The improved diameter segments are illustrated in Figure B. Project buildout and improved condition model output is included in Table 6 along with proposed pipeline diameters. The improvements

along Lincoln Avenue include 8 reaches of existing 10-inch pipelines to upsize to a 12-inch and one reach of 15-inch pipeline at Lemon Street to upsize to 18-inch to eliminate any deficiencies.

Figure B and Table 6 include two additional large pipeline reaches that are deficient for project buildout and identified for improvement. The first is an 18-inch pipe on Lemon Street to be upsized to 24-inch and the second is a 12-inch pipe on Broadway to be upsized to 15-inch. There are additional smaller diameter pipelines tributary to Lincoln Avenue and near the intersection of Anaheim and Broadway identified as deficient for project buildout conditions as shown on Figure B and included in Table 6.

On Water Street there are 11 continuous deficient segments of 15-inch pipe as illustrated on Figure C. Project buildout and improved condition model output is included in Table 6 along with proposed pipeline diameters. This is considered the worst-case scenario to upsize the 15-inch pipe to an 18-inch and is the assumed required buildout improvement in this analysis. An alternative solution is to adjust the estimated 50/50 pipe flow split in manhole SW084328 at Water Street and Lemon Street to allow more flow down Lemon Street to the south. The feasibility of this alternative may be evaluated as a potential cost saving option in the future prior to pipeline upsizing. All the flow in this system eventually combines before crossing the I-5 Freeway.

Along Ball Road, from the I-5 Freeway and Walnut, there is a modeled deficiency along the 33-inch pipeline segment. Figure D illustrates the deficient segments on Ball Road with model output provided in Table 6. The recommended upsizing consists of 39-inch pipelines. Downstream of this section, the parallel pipelines on Ball Road join on Walnut Street and discharge to the OC San trunk sewer system in Euclid Street.

There are two additional segments of 18-inch pipeline that are modeled as deficient along the northern parallel pipeline in Ball Road at Harbor Boulevard. The improved size of these pipelines is 21-inch. There are alternative improvements identified in the South Central Anaheim Sewer Study that involve diverting flow from the northern to the southern parallel pipeline along Ball Road to avoid upsizing these segments within this major intersection. Upsizing these segments is considered the worst-case scenario and has been included as an improvement in this analysis.

Two 8-inch pipeline reaches along Palm Street were also modeled as deficient as shown in Figure D and Table 6. These segments feed to a siphon prior to connecting to the 24-inch southern pipeline in Ball Road.

KATELLA SYSTEM ANALYSIS

The Katella System is located in the south area of Central Anaheim as shown on Figure 2. Appendix B lists the model output for both existing and buildout conditions along the major collection pipelines. The hydraulic model identified 60 deficient pipe segments within the Katella System.

Flow from a portion of the project development discharges westerly in Midway Drive and across the I-5 Freeway to Manchester Avenue then southerly in the two parallel pipelines in Harbor Boulevard. There are deficient segments within the system tributary to Harbor as shown on Figure E with existing and recommended pipe sizes indicated. Model output, including project buildout and improved scenarios, is provided in Table 6. Flow from Manchester is split into two parallel pipelines along Harbor Boulevard. The two pipelines along Harbor are also interconnected at

Disney Way. The buildout improvement recommends upsizing the eastern parallel pipeline in Harbor Boulevard to provide sufficient combined capacity for buildout flows. There are also two reaches of 10-inch pipeline along Anaheim Boulevard, just north of the I-5 Freeway, that model as deficient as shown on Figure E and in Table 6.

A recently constructed flow diversion is in place at Harbor Boulevard and Katella Avenue that sends all of the flow from for the eastern Harbor pipeline to the southern Katella pipeline. Conversely, all of the flow in the western Harbor pipeline discharges to the northern Katella pipeline. With this Harbor flow diversion and the additional project buildout flows, it is currently recommended to upsize the southern Katella pipeline between Clementine Street and 9th Steet as shown on Figure F with model output for project buildout and the improved conditions provided in Table 6. Additionally, there are two deficient reaches in the northern Katella pipeline between Walnut Street and 9th Street. As discussed previously, flows from DisneylandForward are included in the existing and proposed project buildout scenarios. There are two flow splits that divert a portion of the flow to the south from the southern Katella pipeline, one at West Street and another at 9th Street. In addition, the two parallel pipelines along Katella have several interconnections. A detailed study should be conducted for the parallel pipeline systems along Harbor Boulevard and Katella Avenue to evaluate the combined capacity and potentially revise the design standards to consider the added flexibility and redundancy provided by these parallel systems.

There are additional, smaller diameter pipeline improvements shown on Figures G and H within the Katella tributary system and included in Table 6 along with improved diameters.

EAST ANAHEIM SYSTEM ANALYSIS

The East Anaheim area has been separated into six project tributary basins as illustrated on Figure 3. There are two areas with project related capacity deficiencies in the Eastern Anaheim area, both along East La Palma Avenue, shown on Figure 6. The first area consists of 6 reaches of 8- and 10-inch pipelines within the Kraemer System as illustrated on Figure I. Model output for the project buildout and improved condition is provided in Table 6. The second deficient area consists of 6 reaches of 10-inch pipeline within the La Palma System as illustrated on Figure J. Model output for project buildout and the improved condition is provided in Table 6.

COST ESTIMATE METHODOLOGY

The Engineer's opinion of the probable construction cost is shown in Table 6 for each of the capital improvement projects, based on the April 2024 Los Angeles Engineering News-Record (ENR) Construction Cost Index of 15245. The pipe unit costs from the CAMPSS were used and escalated to April 2024 dollars based on the ratio of the two indices (CAMPSS March 2016 ENR of 11158). The estimated total cost includes the construction costs plus 45% for Professional Services and Contingencies (15% for design and technical services; 10% for administration, construction management, inspection, and project administration; and 20% for contingencies).

Results of the collection system needs for buildout flow conditions are summarized in Table 6, which includes a summary of deficient pipe lengths and cost of improvements. As shown in Table 6, the cost of improvements totals $85,653,000 for buildout sewer needs. The cost for required improvements without the project is $21,671,000, resulting in a project related cost of approximately $63,982,000.

CONCLUSIONS

The total increase (proposed minus existing) in average daily sewer flow from the project is projected to equal 4.4 million gallons per day (mgd). The anticipated CIP costs to accommodate these flows along the major tributary sewer pipeline reaches (existing 12-inch diameter and larger) and the smaller diameter pipelines (existing 10-inch and smaller) totals $85,653,000. As new development occurs within the project area, individual sewer studies will be conducted to evaluate the specific impact on downstream tributary pipelines. When a larger CIP pipeline is identified as capacity deficient, it is recommended to upsize the pipeline to accommodate buildout flows as evaluated in this study. Pipeline improvements along smaller diameter reaches will also be determined by individual sewer studies and improved as needed and as a condition of the specific development project approval by the City. These improvements may require 6-, 8-, and 10-inch diameter pipelines to be increased by one or two diameters and will depend on the specific project land use and location. Modeled deficient pipelines are shown in red on Figures 5 and 6. Modeled pipeline improvements are tabulated in Table 6 along with recommended pipeline diameters. There are pipelines included in the recommended improvements that are not modeled as deficient in the buildout condition scenario using the analysis criteria but are upsized due to their location downstream of an improved segment to provide a consistent diameter and to meet City design criteria.

There are currently approved impact fee schedules for new development within the Central and East Anaheim service areas that fund sewer improvement projects. In addition, the City may require sewer improvements as a condition of a specific development project that has an impact on the downstream sewer system. The large diameter pipeline improvements (existing 12-inch and larger pipelines) are limited to the Central Anaheim area. The City is currently in the process of updating its Central Area Sewer Master Plan and impact fee schedules. These fees will consider buildout capacity needs and associated costs, including this project. Approximately 2,500 LF and $3.3 million of project related improvements are located in the East Anaheim area. As this is a long-term project, with the buildout condition extending out 20 years or more, the East Anaheim area impact fees will also be updated within the planning horizon to ensure sufficient funds are available.

Table 7 provides a summary of the CIP pipeline projects identified in this analysis and the combined length of pipeline improvements based on assumed project loading. Major CIP pipelines are identified by location in Table 7 with smaller diameter improvements included as “Various Other.” Cost estimates for each CIP include construction cost plus an additional 45% to account for engineering and other technical services, contingencies, contract administration, permitting, and construction management. When specific development projects are proposed, a detailed, site-specific sewer study will be required, which will build on this more programmatic study. The sewer impact fees, sewer study, and any additional project related sewer improvements not previously identified will be paid for by the developer prior to the approval of sewer service.

Table 7 - Pipeline CIP Summary

Map ID	Location	Pipeline Replacement	Pipe Length (LF)
A	LA PALMA AVE	15, 18, and 21-inch	2,926
	VARIOUS OTHER	10-inch	876
B	E LINCOLN AVE	12-inch	1,743
	W LINCOLN AVE	18-inch	334
	E BROADWAY	15-inch	316
	LEMON ST	24-inch	207
	VARIOUS OTHER	8, 10, and 12-inch	3,708
C	WATER ST	21-inch	2,520
	VERMONT AVE	21-inch	831
	LEMON ST	27-inch	365
	VARIOUS OTHER	8, 10, and 12-inch	3,692
D	W BALL RD	21 and 39-inch	3,788
	VARIOUS OTHER	10-inch	379
E	MIDWAY DR	15, 18, and 21-inch	1,200
	HARBOR BLVD	18-inch	1,662
	VARIOUS OTHER	12-inch	3,757
F	KATELLA SOUTH	27, 30, and 33-inch	6,903
	KATELLA NORTH	36-inch	1,318
G	VARIOUS OTHER	10, 12-inch	4,205
H	VARIOUS OTHER	12, and 15-inch	1,633
I	VARIOUS OTHER	10, 12, and 15-inch	1,599
J	VARIOUS OTHER	10, 12, and 15-inch	939
Total			44,901

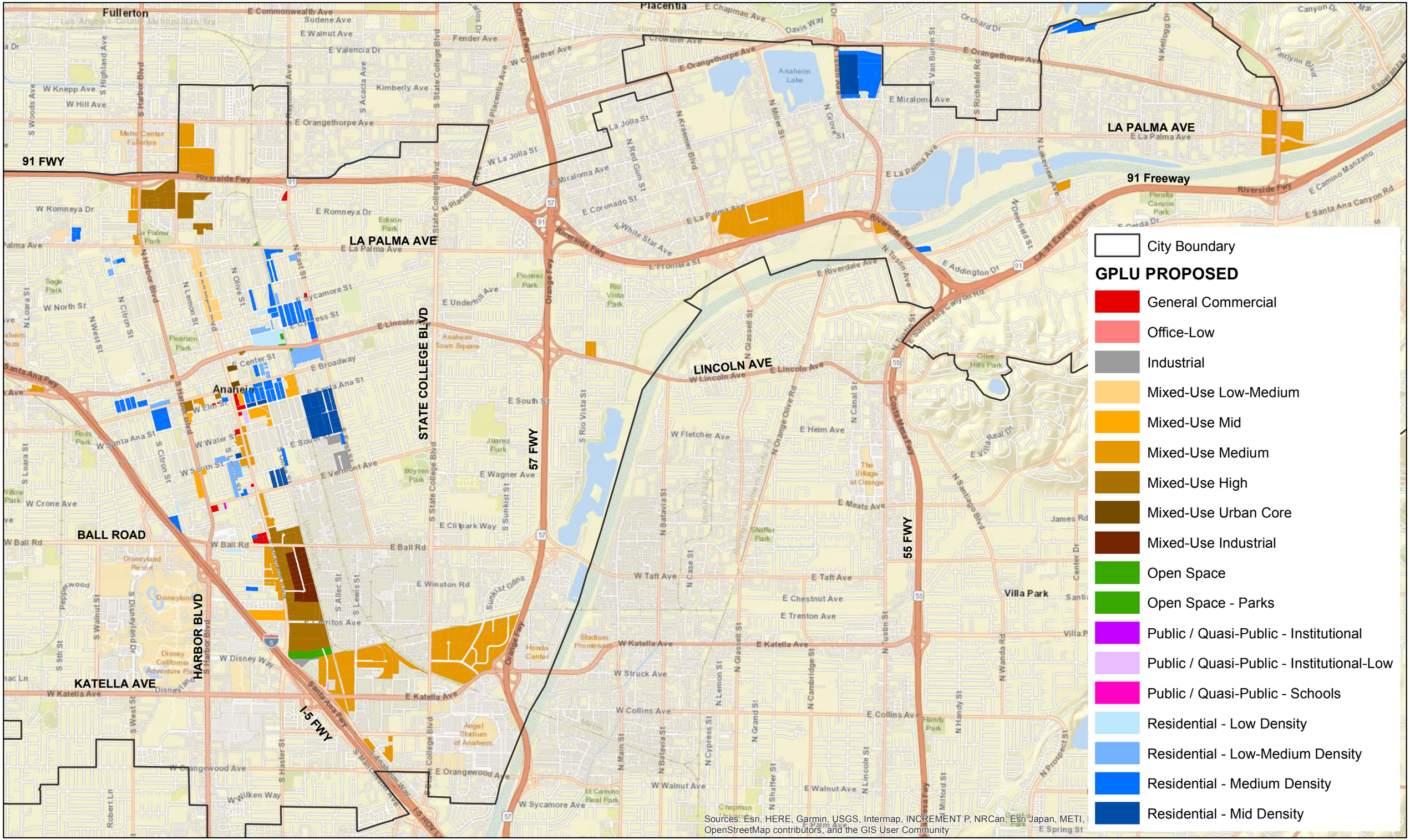
Attachments:

Figures 1 through 6, Figures A through J, and Tables 4 and 6 (large format)

Appendix A: Proposed General Plan Land Use Statistics

Appendix B: Central and East Area Master Plans Identified Deficiencies

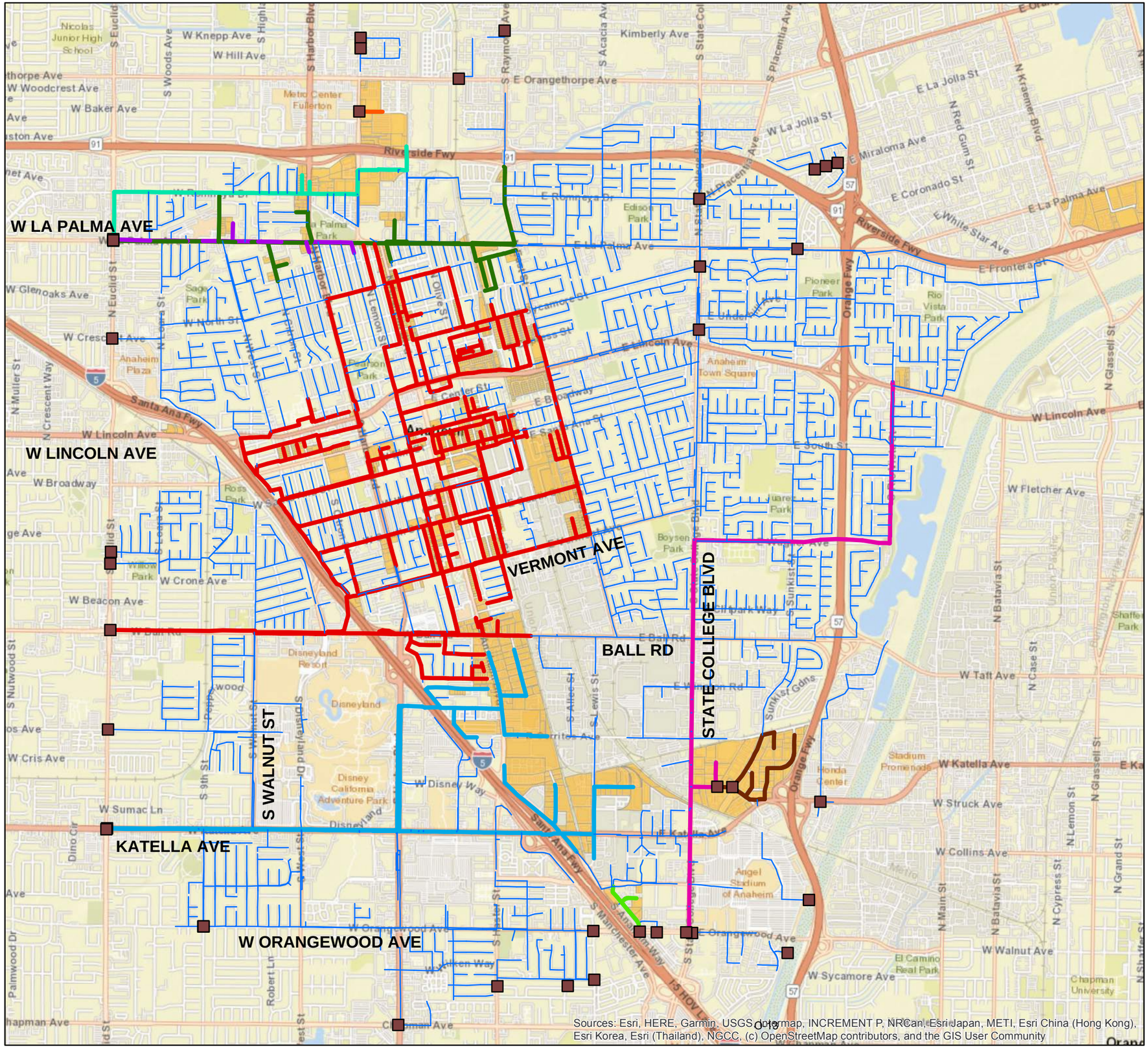
Appendix C: Project Existing and Buildout Condition Model Output



PSOMAS

FIGURE 1
PROPOSED GENERAL PLAN LAND USE

FIGURE 2
CENTRAL ANAHEIM PROJECT
TRIBUTARY PIPELINES



Legend

OUTLET

- Active

BASIN

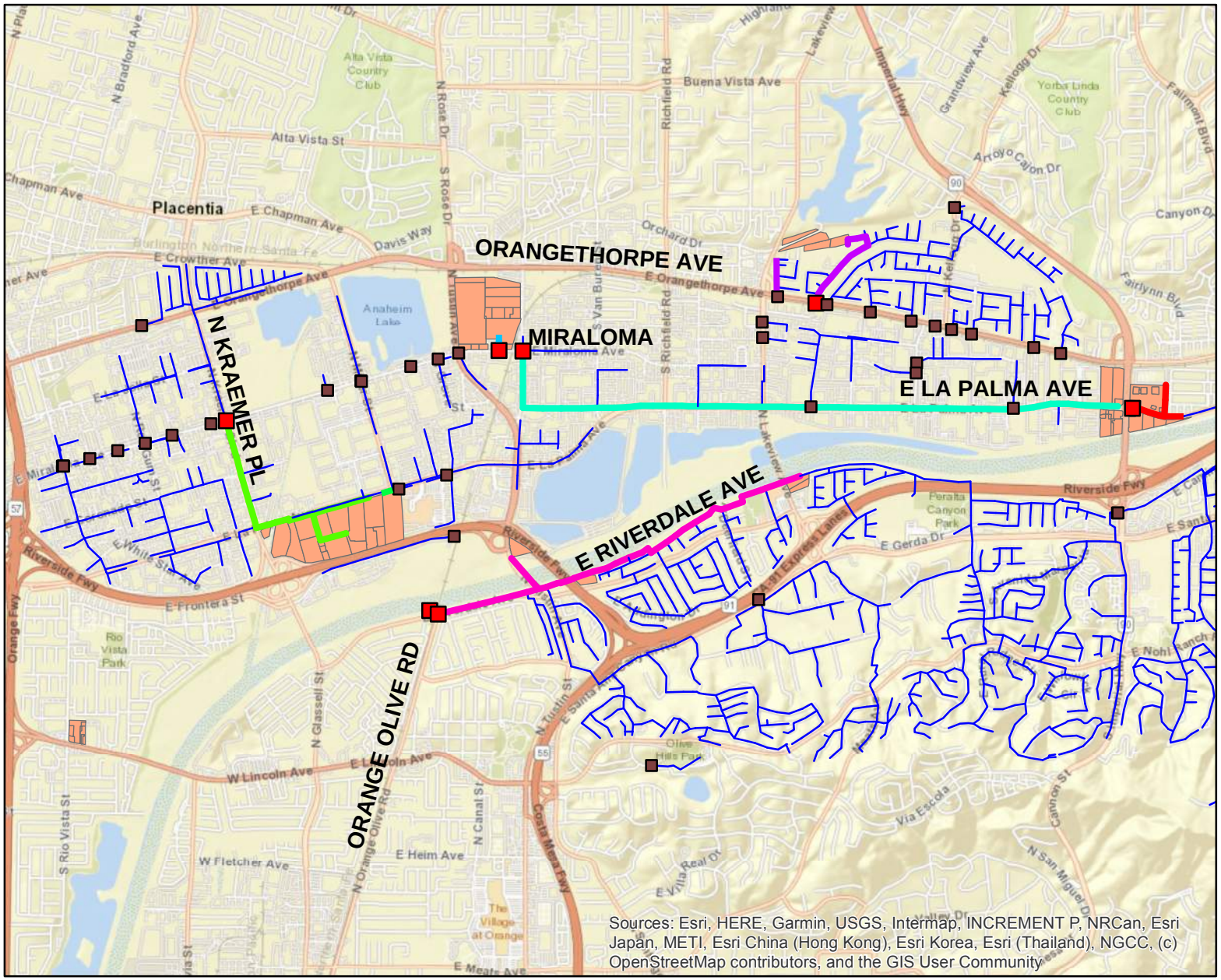
- BALL
- KATELLA
- LA PALMA NORTH
- LA PALMA SOUTH
- ORANGEWOOD
- ROMNEYA
- HOWELL
- DURST
- SANTA CRUZ
- OTHER
- General Plan Land Use Change

N
W E
S

PSOMAS

0 2,650 5,300 10,600
Feet

FIGURE 3
EAST ANAHEIM PROJECT
TRIBUTARY PIPELINES



Legend

Outlet
- OTHER
- TRIBUTARY OUTLET

Gravity Main
- GRAVITY MAIN

ZONE
- E LA PALMA
- ETCHANDY
- ORANGETHORPE
- KRAEMER
- RIVERDALE
- MIRALOMA
- General Plan Land Use Change

N
W E
S

PSOMAS

0 2,200 4,400 8,800
Feet

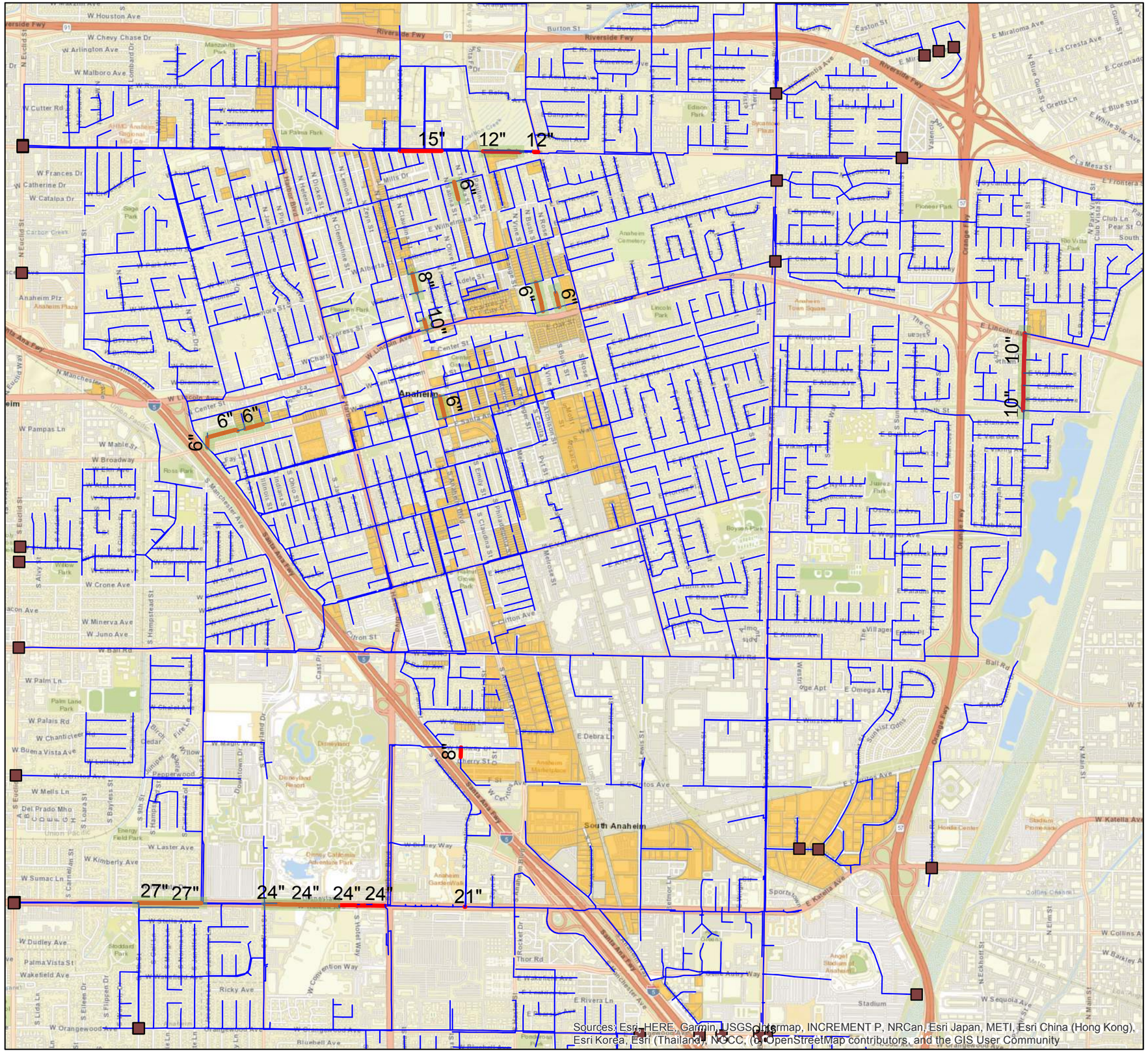


FIGURE 4
CENTRAL ANAHEIM
EXISTING DEFICIENT PIPELINES

Legend

OUTLET

- Active

TYPE

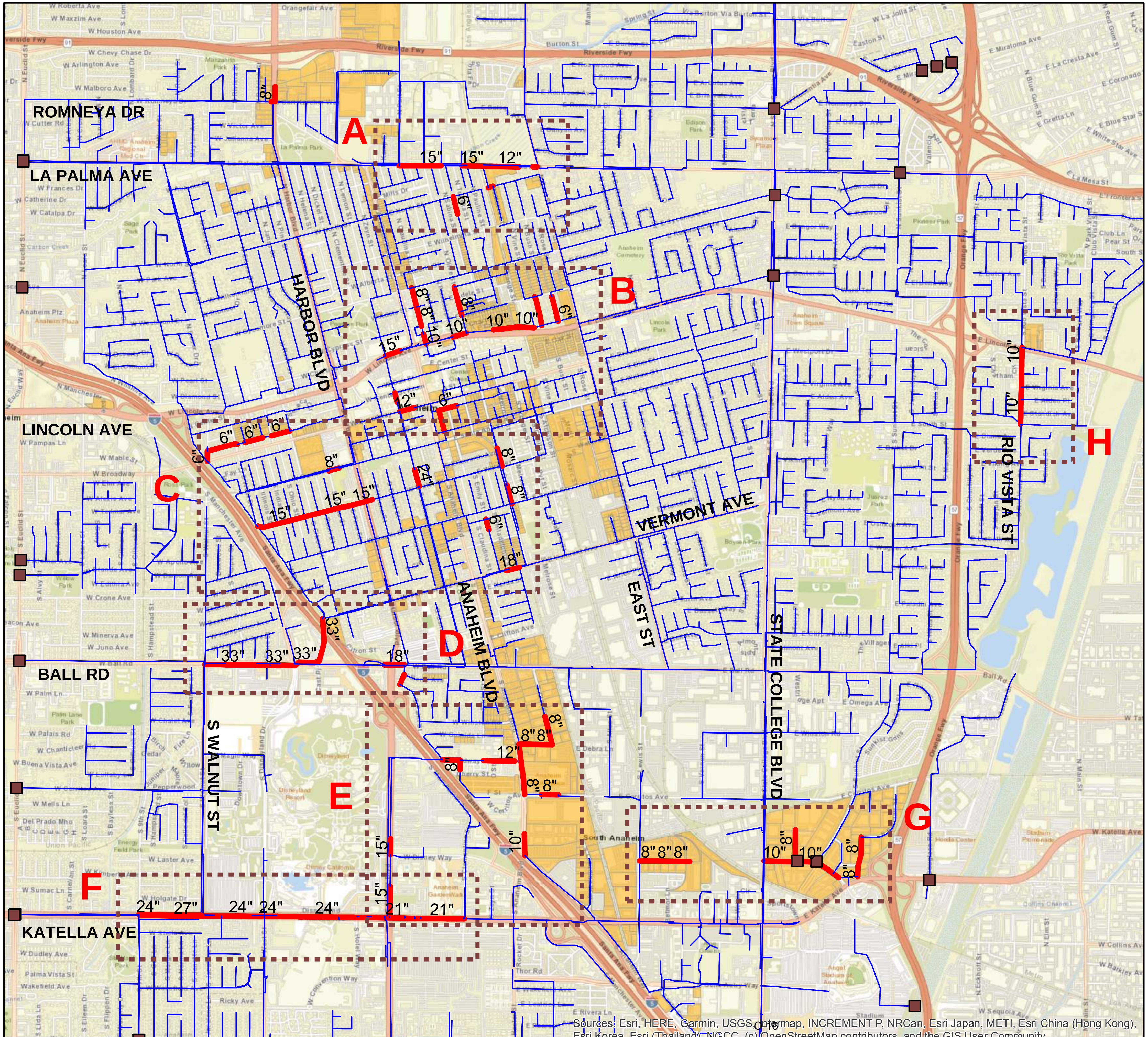
- DEFICIENT
- OTHER
- General Plan Land Use Change

***GREEN HIGHLIGHTED PIPELINES ARE ALSO DEFICIENT IN CAMPSS**

N
W E
S

0 2,050 4,100 8,200
Feet

FIGURE 5
CENTRAL ANAHEIM
PROJECT DEFICIENT PIPELINES



Legend

OUTLET

Active

TYPE

DEFICIENT

OTHER

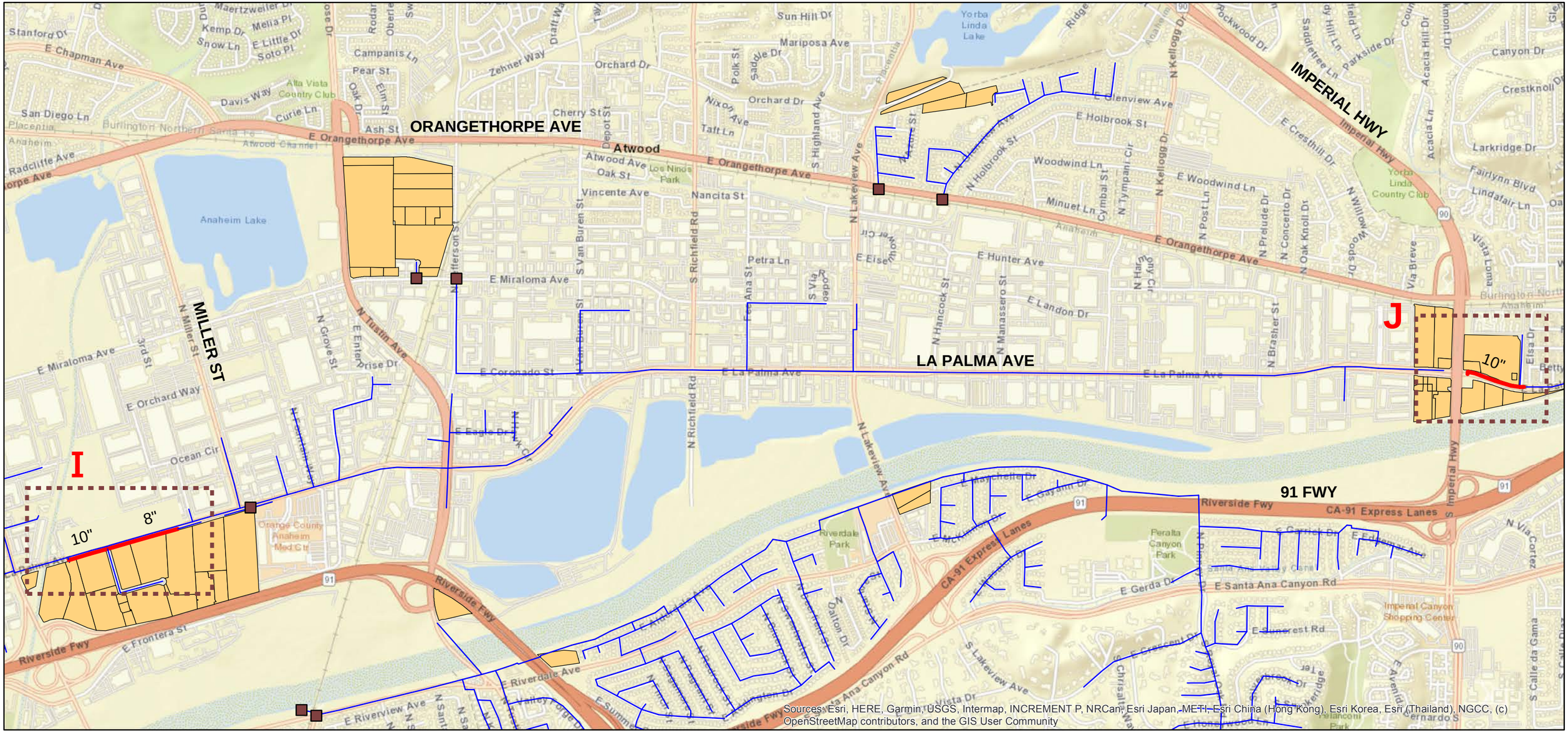
General Plan Land Use Change

A Figure Designation for Details

N
W E
S

0 2,050 4,100 8,200 Feet

PSOMAS



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Legend

Outlet

- Active

TYPE

- OTHER
- DEFICIENT
- General Plan Land Use Change

J Figure Designation for Details

FIGURE 6
EAST ANAHEIM
PROJECT DEFICIENT PIPELINES

N
W E
S

0 1,450 2,900 5,800
Feet

TABLE 4 - PROJECT BUILDOUT CONDITION SEWER WATCHLIST

Basin	Street	Cross Street	Pipe Data				Existing Condition Scenario								Project Buildout Scenario							
			From MH	To MH	Diameter (in)	Length (ft)	Existing Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio	Buildout Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio
Ball Rd	Ball Rd	Harbor Blvd	SW085322	SW074417	18	285.9	1.57	0.68	1.79	0.22	0.75	1.32	-0.25	0.60	1.88	0.79	1.79	-0.10	0.75	1.32	-0.57	0.60
			SW074417	SW074416	18	130.2	1.65	0.70	1.78	0.13	0.75	1.31	-0.34	0.60	1.97	1.00	1.78	-0.18	0.75	1.31	-0.65	0.60
		Ox Rd	SW074329	SW074331	33	99.9	6.14	0.64	7.67	1.53	0.75	5.65	-0.49	0.60	7.86	0.77	7.67	-0.19	0.75	5.65	-2.21	0.60
			SW074331	SW074334	33	75.0	6.14	0.64	7.66	1.52	0.75	5.65	-0.50	0.60	7.86	0.77	7.66	-0.20	0.75	5.65	-2.21	0.60
			SW074334	SW074330	33	263.6	6.14	0.65	7.46	1.32	0.75	5.50	-0.65	0.60	7.86	0.79	7.46	-0.40	0.75	5.50	-2.36	0.60
			SW074330	SW075109	33	100.1	6.14	0.67	7.16	1.02	0.75	5.28	-0.87	0.60	7.86	1.00	7.16	-0.70	0.75	5.28	-2.58	0.60
			SW075109	SW075108	33	263.7	6.16	0.64	7.64	1.48	0.75	5.63	-0.53	0.60	7.88	0.77	7.64	-0.23	0.75	5.63	-2.25	0.60
			SW075108	SW075107	33	268.5	6.16	0.64	7.58	1.41	0.75	5.58	-0.58	0.60	7.88	0.78	7.58	-0.30	0.75	5.58	-2.30	0.60
		West Pl	SW065212	SW065211	33	280.1	6.19	0.64	7.59	1.40	0.75	5.59	-0.60	0.60	7.91	0.78	7.59	-0.32	0.75	5.59	-2.32	0.60
			SW065211	SW065210	33	340.4	6.20	0.66	7.34	1.14	0.75	5.41	-0.79	0.60	7.92	0.81	7.34	-0.58	0.75	5.41	-2.51	0.60
			SW065210	SW065214	33	201.1	6.20	0.63	7.88	1.68	0.75	5.80	-0.40	0.60	7.92	0.75	7.88	-0.04	0.75	5.80	-2.11	0.60
			SW065214	SW065209	33	162.7	6.20	0.62	7.95	1.74	0.75	5.85	-0.35	0.60	7.92	0.75	7.95	0.02	0.75	5.85	-2.07	0.60
		Walnut St	SW065209	SW065138	33	329.9	6.21	0.63	7.89	1.69	0.75	5.81	-0.39	0.60	7.92	0.75	7.89	-0.03	0.75	5.81	-2.11	0.60
	Broadway	Lemon St	SW083316	SW083315	12	315.8	0.57	0.61	0.76	0.19	0.75	0.56	-0.01	0.60	0.78	0.77	0.76	-0.03	0.75	0.56	-0.23	0.60
	Claudina St	Sycamore St	SW082322	SW083104	8	414.2	0.30	0.70	0.28	-0.02	0.67	0.18	-0.12	0.50	0.32	0.74	0.28	-0.04	0.67	0.18	-0.14	0.50
		Adele St	SW083104	SW083112	8	423.8	0.33	0.66	0.33	0.01	0.67	0.21	-0.12	0.50	0.35	0.70	0.33	-0.02	0.67	0.21	-0.14	0.50
		Lincoln Ave	SW083119	SW083123	10	212.8	0.34	0.75	0.29	-0.05	0.67	0.18	-0.15	0.50	0.36	0.81	0.29	-0.07	0.67	0.18	-0.18	0.50
	Lemon St	Center St Prom	SW072420	SW083310	18	207.5	1.81	0.64	2.24	0.43	0.75	1.65	-0.16	0.60	2.35	0.78	2.24	-0.11	0.75	1.65	-0.70	0.60
		Water St	SW084115	SW084303	24	365.5	2.60	0.61	3.43	0.83	0.75	2.53	-0.07	0.60	3.45	0.76	3.43	-0.03	0.75	2.53	-0.93	0.60
	Lincoln Ave	Vintage Ln	SW093111	SW083265	10	350.4	0.32	0.62	0.37	0.04	0.67	0.23	-0.09	0.50	0.47	1.00	0.37	-0.11	0.67	0.23	-0.24	0.50
			SW083265	SW083258	10	89.0	0.32	0.55	0.44	0.11	0.67	0.28	-0.05	0.50	0.48	0.71	0.44	-0.04	0.67	0.28	-0.20	0.50
			SW083258	SW083257	10	216.2	0.33	0.57	0.42	0.09	0.67	0.27	-0.06	0.50	0.48	0.74	0.42	-0.06	0.67	0.27	-0.21	0.50
		Topeka St	SW083257	SW083261	10	207.7	0.33	0.56	0.43	0.10	0.67	0.27	-0.06	0.50	0.48	0.74	0.43	-0.06	0.67	0.27	-0.21	0.50
		Olive St	SW083210	SW083125	10	295.8	0.62	0.65	0.65	0.03	0.67	0.41	-0.21	0.50	0.89	1.00	0.65	-0.24	0.67	0.41	-0.48	0.50
		Lemon St	SW083120	SW072406	15	334.0	1.62	0.70	1.76	0.13	0.75	1.29	-0.33	0.60	2.06	1.00	1.76	-0.30	0.75	1.29	-0.76	0.60
	Olive St	Adele St	SW082327	SW083229	8	303.8	0.16	0.55	0.22	0.06	0.67	0.14	-0.02	0.50	0.24	0.71	0.22	-0.02	0.67	0.14	-0.10	0.50
			SW083229	SW083242	8	231.0	0.16	0.53	0.24	0.07	0.67	0.15	-0.01	0.50	0.24	0.68	0.24	0.00	0.67	0.15	-0.09	0.50
		Cypress St	SW083242	SW083204	8	88.7	0.22	0.54	0.31	0.08	0.67	0.19	-0.03	0.50	0.33	0.70	0.31	-0.02	0.67	0.19	-0.13	0.50
			SW084215	SW084223	8	395.0	0.18	0.56	0.23	0.06	0.67	0.15	-0.03	0.50	0.29	0.79	0.23	-0.05	0.67	0.15	-0.14	0.50
		South St	SW084401	SW084427	8	406.9	0.18	0.51	0.27	0.09	0.67	0.17	-0.01	0.50	0.29	0.70	0.27	-0.02	0.67	0.17	-0.12	0.50
	Ox Rd	Vermont	SW074314	SW074327	33	487.1	6.14	0.63	7.76	1.62	0.75	5.72	-0.42	0.60	7.86	0.76	7.76	-0.10	0.75	5.72	-2.14	0.60
			SW074327	SW074328	33	159.4	6.14	0.65	7.43	1.29	0.75	5.48	-0.67	0.60	7.86	0.79	7.43	-0.43	0.75	5.48	-2.38	0.60
			SW074328	SW074329	33	275.4	6.14	0.65	7.48	1.34	0.75	5.51	-0.63	0.60	7.86	0.78	7.48	-0.38	0.75	5.51	-2.35	0.60
		Berry Ave	SW086117	SW086112	8	226.9	0.15	0.57	0.19	0.04	0.67	0.12	-0.03	0.50	0.20	0.70	0.19	-0.01	0.67	0.12	-0.08	0.50
	Rost St	Cypress St	SW093106	SW093109	6	235.5	0.11	0.65	0.11	0.01	0.67	0.07	-0.04	0.50	0.12	0.71	0.11	-0.01	0.67	0.07	-0.05	0.50
			SW093109	SW093113	6	308.3	0.11	0.68	0.11	0.00	0.67	0.07	-0.04	0.50	0.16	1.00	0.11	-0.05	0.67	0.07	-0.09	0.50
	Santa Ana St	S James St	SW073211	SW073117	8	217.5	0.14	0.50	0.22	0.08	0.67	0.14	0.00	0.50	0.24	0.72	0.22	-0.02	0.67	0.14	-0.10	0.50
	Vermont Ave	Philadelphia St	SW085226	SW085216	18	283.9	2.06	0.68	2.32	0.27	0.75	1.71	-0.34	0.60	2.46	0.79	2.32	-0.14	0.75	1.71	-0.75	0.60
	Vine St		SW093102	SW093105	6	80.2	0.16	1.00	0.11	-0.05	0.67	0.07	-0.09	0.50	0.26	1.00	0.11	-0.15	0.67	0.07	-0.19	0.50
			SW093105	SW093108	6	345.6	0.16	1.00	0.11	-0.05	0.67	0.07	-0.09	0.50	0.26	1.00	0.11	-0.15	0.67	0.07	-0.19	0.50
			SW093108	SW093112	6	209.6	0.17	1.00	0.11	-0.06	0.67	0.07	-0.10	0.50	0.27	1.00	0.11	-0.16	0.67	0.07	-0.20	0.50

TABLE 4 - PROJECT BUILDOUT CONDITION SEWER WATCHLIST

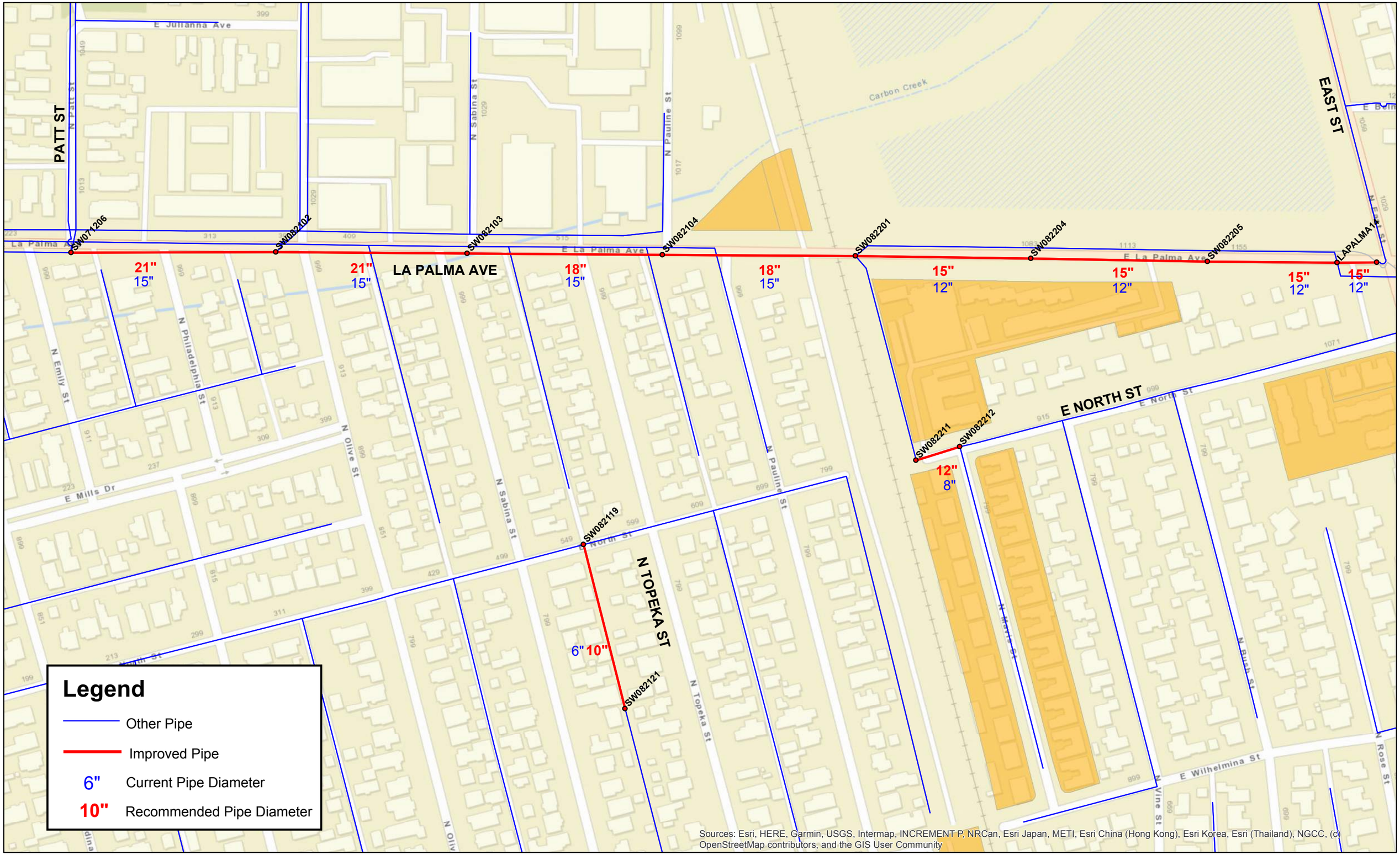
Basin	Street	Cross Street	Pipe Data				Existing Condition Scenario								Project Buildout Scenario							
			From MH	To MH	Diameter (in)	Length (ft)	Existing Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio	Buildout Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio
Ball Rd	Water St		SW073417	SW073418	15	282.9	1.35	0.70	1.47	0.12	0.75	1.08	-0.27	0.60	1.86	1.00	1.47	-0.38	0.75	1.08	-0.77	0.60
			SW073418	SW073420	15	317.6	1.36	0.71	1.46	0.11	0.75	1.08	-0.28	0.60	1.86	1.00	1.46	-0.40	0.75	1.08	-0.78	0.60
			SW073420	SW073419	15	13.8	1.36	0.68	1.54	0.19	0.75	1.14	-0.22	0.60	1.86	1.00	1.54	-0.32	0.75	1.14	-0.72	0.60
		James St	SW073419	SW073333	15	301.7	1.36	0.71	1.46	0.11	0.75	1.08	-0.28	0.60	1.86	1.00	1.46	-0.40	0.75	1.08	-0.78	0.60
			SW073333	SW073332	15	302.4	1.36	0.71	1.46	0.10	0.75	1.08	-0.28	0.60	1.86	1.00	1.46	-0.40	0.75	1.08	-0.79	0.60
		Citron St	SW073332	SW073331	15	312.4	1.36	0.72	1.44	0.08	0.75	1.06	-0.30	0.60	1.86	1.00	1.44	-0.43	0.75	1.06	-0.80	0.60
			SW073331	SW073330	15	298.4	1.36	0.71	1.47	0.11	0.75	1.08	-0.28	0.60	1.86	1.00	1.47	-0.39	0.75	1.08	-0.78	0.60
		Indiana St	SW073330	SW073329	15	296.0	1.36	0.70	1.48	0.11	0.75	1.09	-0.28	0.60	1.87	1.00	1.48	-0.39	0.75	1.09	-0.78	0.60
			SW073329	SW063442	15	272.4	1.36	0.70	1.49	0.12	0.75	1.10	-0.27	0.60	1.87	1.00	1.49	-0.38	0.75	1.10	-0.77	0.60
			SW063442	SW063443	15	113.9	1.37	0.71	1.45	0.09	0.75	1.07	-0.29	0.60	1.87	1.00	1.45	-0.41	0.75	1.07	-0.80	0.60
			SW063443	SW063444	15	8.2	1.37	0.65	1.63	0.27	0.75	1.20	-0.16	0.60	1.87	1.00	1.63	-0.24	0.75	1.20	-0.66	0.60
	Alleys	Claudina St	SW083320	SW084107	6	467.4	0.13	0.67	0.13	0.00	0.67	0.08	-0.05	0.50	0.19	1.00	0.13	-0.06	0.67	0.08	-0.11	0.50
		Claudina St	SW083321	SW083320	6	386.7	0.12	0.59	0.15	0.03	0.67	0.09	-0.03	0.50	0.17	0.76	0.15	-0.02	0.67	0.09	-0.08	0.50
		Valencia Ave	SW084418	SW084411	6	228.9	0.08	0.63	0.09	0.01	0.67	0.06	-0.03	0.50	0.10	0.76	0.09	-0.02	0.67	0.06	-0.05	0.50
		E North St	SW082121	SW082119	6	379.5	0.05	1.00	0.04	-0.01	0.67	0.02	-0.02	0.50	0.06	1.00	0.04	-0.02	0.67	0.02	-0.03	0.50
	Broadway	Citron St	SW073102	SW073115	6	405.8	0.11	0.63	0.12	0.01	0.67	0.08	-0.03	0.50	0.13	0.72	0.12	-0.01	0.67	0.08	-0.06	0.50
		Illinois St	SW063213	SW063212	6	388.1	0.16	0.80	0.13	-0.03	0.67	0.08	-0.08	0.50	0.20	1.00	0.13	-0.08	0.67	0.08	-0.12	0.50
		West St	SW063211	SW063210	6	44.4	0.21	1.00	0.16	-0.05	0.67	0.10	-0.11	0.50	0.27	1.00	0.16	-0.11	0.67	0.10	-0.17	0.50
			SW063210	SW063225	6	296.9	0.21	1.00	0.14	-0.07	0.67	0.09	-0.12	0.50	0.27	1.00	0.14	-0.13	0.67	0.09	-0.18	0.50
		Walnut St	SW063225	SW063209	6	318.3	0.24	1.00	0.14	-0.10	0.67	0.09	-0.15	0.50	0.30	1.00	0.14	-0.17	0.67	0.09	-0.21	0.50
			SW063209	SW063215	6	218.2	0.27	1.00	0.21	-0.06	0.67	0.13	-0.14	0.50	0.33	1.00	0.21	-0.13	0.67	0.13	-0.20	0.50
Howell Ave	Sinclair St		SW117205	SW117209	8	378.3	0.02	0.13	0.34	0.32	0.67	0.21	0.20	0.50	0.37	0.73	0.34	-0.04	0.67	0.21	-0.16	0.50
			SW117209	SW117403	8	247.0	0.02	0.13	0.32	0.31	0.67	0.20	0.19	0.50	0.37	0.76	0.32	-0.05	0.67	0.20	-0.17	0.50
			SW117403	SW117412	8	225.1	0.02	0.13	0.34	0.32	0.67	0.21	0.20	0.50	0.37	0.73	0.34	-0.04	0.67	0.21	-0.16	0.50
	Howell Ave		SW117408	SW117405	10	139.1	0.03	0.17	0.43	0.40	0.67	0.27	0.24	0.50	0.46	0.70	0.43	-0.03	0.67	0.27	-0.18	0.50
		Sinclair St	SW117405	SW117404	10	135.0	0.05	0.16	0.70	0.65	0.67	0.45	0.40	0.50	0.79	0.73	0.70	-0.08	0.67	0.45	-0.34	0.50
			SW117404	SW117304	10	303.7	0.05	0.19	0.50	0.45	0.67	0.32	0.27	0.50	0.79	1.00	0.50	-0.28	0.67	0.32	-0.47	0.50
		Sunkist St	SW117304	SW117303	10	260.9	0.05	0.18	0.60	0.55	0.67	0.38	0.33	0.50	0.79	1.00	0.60	-0.18	0.67	0.38	-0.40	0.50
			SW117303	SW117302	10	120.1	0.05	0.16	0.73	0.67	0.67	0.46	0.41	0.50	0.79	0.71	0.73	-0.06	0.67	0.46	-0.33	0.50
Katella Ave	Anaheim Blvd		SW096308	SW096307	8	343.8	0.09	0.36	0.26	0.17	0.67	0.17	0.08	0.50	0.45	1.00	0.26	-0.18	0.67	0.17	-0.28	0.50
		Midway Dr	SW096307	SW096305	8	361.4	0.10	0.37	0.26	0.16	0.67	0.17	0.07	0.50	0.45	1.00	0.26	-0.19	0.67	0.17	-0.29	0.50
		Palais Rd	SW096302	SW096305	10	368.2	0.12	0.30	0.48	0.36	0.67	0.30	0.18	0.50	0.81	1.00	0.48	-0.33	0.67	0.30	-0.50	0.50
			SW097102	SW097103	10	330.7	0.10	0.28	0.47	0.37	0.67	0.30	0.20	0.50	0.70	1.00	0.47	-0.23	0.67	0.30	-0.41	0.50
		Anaheim Way	SW097103	SW097104	10	130.4	0.10	0.26	0.55	0.45	0.67	0.35	0.25	0.50	0.70	1.00	0.55	-0.16	0.67	0.35	-0.36	0.50
	Cerritos Ave		SW096311	SW096310	8	358.5	0.05	0.27	0.26	0.21	0.67	0.17	0.11	0.50	0.38	1.00	0.26	-0.12	0.67	0.17	-0.22	0.50
	Claudina St		SW096114	SW096116	8	302.0	0.03	0.20	0.27	0.24	0.67	0.17	0.14	0.50	0.32	0.77	0.27	-0.05	0.67	0.17	-0.15	0.50
		Palais Rd	SW096116	SW096304	8	310.3	0.03	0.20	0.29	0.26	0.67	0.18	0.15	0.50	0.38	1.00	0.29	-0.09	0.67	0.18	-0.20	0.50
	E Howell Ave		SW107111	SW107110	8	362.0	0.00	0.00	0.26	0.26	0.67	0.16	0.16	0.50	0.36	1.00	0.26	-0.10	0.67	0.16	-0.20	0.50
			SW107110	SW107109	8	339.1	0.03	0.20	0.26	0.23	0.67	0.17	0.14	0.50	0.56	1.00	0.26	-0.30	0.67	0.17	-0.40	0.50
		Lewis St	SW107109	SW107108	8	361.5	0.03	0.18	0.32	0.29	0.67	0.20	0.17	0.50	0.56	1.00	0.32	-0.25	0.67	0.20	-0.36	0.50
	Harbor Blvd	W Disney Way	SW087105	SW087106	15	340.4	0.90	0.58	1.28	0.38	0.75	0.94	0.04	0.60	1.31	0.76	1.28	-0.03	0.75	0.94	-0.36	0.60

TABLE 4 - PROJECT BUILDOUT CONDITION SEWER WATCHLIST

Basin	Street	Cross Street	Pipe Data				Existing Condition Scenario								Project Buildout Scenario							
			From MH	To MH	Diameter (in)	Length (ft)	Existing Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio	Buildout Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio
Katella Ave	Katella Ave (S)	Clementine St	SW087416	SW087415	21	15.4	2.26	0.54	3.63	1.37	0.75	2.67	0.41	0.60	4.12	1.00	3.63	-0.49	0.75	2.67	-1.45	0.60
			SW087415	SW087414	21	146.5	2.26	0.54	3.63	1.37	0.75	2.67	0.41	0.60	4.12	1.00	3.63	-0.49	0.75	2.67	-1.45	0.60
			SW087414	SW087413	21	103.6	2.26	0.54	3.63	1.37	0.75	2.67	0.41	0.60	4.12	1.00	3.63	-0.49	0.75	2.67	-1.45	0.60
			SW087413	SW087425	21	90.2	2.30	0.55	3.63	1.33	0.75	2.67	0.37	0.60	4.16	1.00	3.63	-0.53	0.75	2.67	-1.49	0.60
			SW087425	SW087317	21	239.5	2.30	0.55	3.63	1.33	0.75	2.67	0.37	0.60	4.16	1.00	3.63	-0.53	0.75	2.67	-1.49	0.60
			SW087305	SW087306	15	332.5	1.25	0.62	1.62	0.37	0.75	1.19	-0.06	0.60	1.65	0.76	1.62	-0.03	0.75	1.19	-0.46	0.60
			SW087317	SW087315	21	124.2	2.30	0.55	3.63	1.33	0.75	2.67	0.37	0.60	4.16	1.00	3.63	-0.53	0.75	2.67	-1.49	0.60
			SW087315	SW087318	21	93.7	2.45	0.57	3.63	1.18	0.75	2.67	0.23	0.60	4.31	1.00	3.63	-0.68	0.75	2.67	-1.63	0.60
			SW087318	SW087313	21	116.0	2.51	0.58	3.63	1.12	0.75	2.67	0.17	0.60	4.36	1.00	3.63	-0.73	0.75	2.67	-1.69	0.60
			SW087306	SW087319	15	319.4	1.25	0.62	1.62	0.37	0.75	1.19	-0.06	0.60	1.65	0.76	1.62	-0.03	0.75	1.19	-0.46	0.60
			SW087313	SW087311	21	125.6	2.53	0.58	3.63	1.10	0.75	2.67	0.14	0.60	4.39	1.00	3.63	-0.76	0.75	2.67	-1.71	0.60
			SW087311	SW087309	21	213.2	2.56	0.58	3.63	1.07	0.75	2.67	0.11	0.60	4.42	1.00	3.63	-0.79	0.75	2.67	-1.74	0.60
		Harbor Blvd	SW087309	SW087307	21	317.0	2.66	0.60	3.63	0.97	0.75	2.67	0.01	0.60	4.51	1.00	3.63	-0.88	0.75	2.67	-1.84	0.60
			SW087307	SW076411	24	56.5	3.92	0.61	5.18	1.27	0.75	3.82	-0.10	0.60	6.17	1.00	5.18	-0.98	0.75	3.82	-2.35	0.60
			SW076411	SW076424	24	52.5	3.92	0.61	5.18	1.27	0.75	3.82	-0.10	0.60	6.17	1.00	5.18	-0.98	0.75	3.82	-2.35	0.60
			SW076424	SW076410	24	278.2	5.41	0.78	5.18	-0.23	0.75	3.82	-1.60	0.60	7.65	1.00	5.18	-2.47	0.75	3.82	-3.84	0.60
			SW076410	SW076409	24	159.1	5.47	0.79	5.19	-0.28	0.75	3.82	-1.64	0.60	7.70	1.00	5.19	-2.52	0.75	3.82	-3.88	0.60
			SW076409	SW076408	24	158.6	5.56	0.80	5.18	-0.37	0.75	3.82	-1.74	0.60	7.79	1.00	5.18	-2.61	0.75	3.82	-3.98	0.60
			SW076408	SW076407	24	60.0	5.79	1.00	5.18	-0.61	0.75	3.82	-1.98	0.60	8.03	1.00	5.18	-2.85	0.75	3.82	-4.21	0.60
			SW076407	SW076405	24	318.3	5.79	1.00	5.18	-0.61	0.75	3.82	-1.98	0.60	8.03	1.00	5.18	-2.85	0.75	3.82	-4.21	0.60
			SW076405	SW076433	24	56.4	6.03	1.00	5.19	-0.84	0.75	3.82	-2.21	0.60	8.26	1.00	5.19	-3.07	0.75	3.82	-4.44	0.60
			SW076433	SW076308	24	379.5	6.03	1.00	5.18	-0.85	0.75	3.82	-2.21	0.60	8.26	1.00	5.18	-3.08	0.75	3.82	-4.44	0.60
			SW076308	SW076307	24	176.0	6.03	1.00	5.18	-0.85	0.75	3.82	-2.21	0.60	8.26	1.00	5.18	-3.08	0.75	3.82	-4.44	0.60
			SW076307	SW076306	24	202.5	6.03	1.00	5.18	-0.85	0.75	3.82	-2.21	0.60	8.26	1.00	5.18	-3.08	0.75	3.82	-4.44	0.60
			SW076306	SW076305	24	113.2	6.03	1.00	5.18	-0.85	0.75	3.82	-2.22	0.60	8.26	1.00	5.18	-3.08	0.75	3.82	-4.44	0.60
			SW076305	SW076304	24	261.9	6.28	1.00	5.18	-1.10	0.75	3.82	-2.46	0.60	8.50	1.00	5.18	-3.32	0.75	3.82	-4.68	0.60
			SW076304	SW076303	24	109.7	6.28	1.00	5.19	-1.09	0.75	3.82	-2.46	0.60	8.50	1.00	5.19	-3.31	0.75	3.82	-4.68	0.60
			SW076303	SW076302	24	279.0	6.28	1.00	5.18	-1.10	0.75	3.82	-2.46	0.60	8.50	1.00	5.18	-3.32	0.75	3.82	-4.68	0.60
			SW076302	SW066417	24	53.3	4.27	0.65	5.17	0.90	0.75	3.81	-0.46	0.60	5.78	1.00	5.17	-0.61	0.75	3.81	-1.97	0.60
			SW066417	SW066422	24	275.5	4.27	0.65	5.18	0.91	0.75	3.82	-0.45	0.60	5.78	1.00	5.18	-0.60	0.75	3.82	-1.96	0.60
			SW066422	SW066421	24	330.6	4.28	0.65	5.18	0.90	0.75	3.82	-0.46	0.60	5.79	1.00	5.18	-0.61	0.75	3.82	-1.97	0.60
			SW066421	SW066420	24	250.1	4.30	0.65	5.19	0.88	0.75	3.82	-0.48	0.60	5.81	1.00	5.19	-0.63	0.75	3.82	-1.99	0.60
			SW066420	SW066419	24	79.7	4.43	0.66	5.17	0.75	0.75	3.81	-0.61	0.60	5.93	1.00	5.17	-0.76	0.75	3.81	-2.12	0.60
			SW066419	SW066418	24	338.3	4.43	0.66	5.18	0.76	0.75	3.82	-0.61	0.60	5.93	1.00	5.18	-0.75	0.75	3.82	-2.12	0.60
			SW066418	SW066328	24	329.5	4.43	0.66	5.18	0.76	0.75	3.82	-0.61	0.60	5.93	1.00	5.18	-0.75	0.75	3.82	-2.12	0.60
			SW066328	SW066327	24	331.3	4.43	0.66	5.18	0.75	0.75	3.82	-0.61	0.60	5.93	1.00	5.18	-0.76	0.75	3.82	-2.12	0.60
			SW066327	SW066325	24	326.9	4.43	0.66	5.18	0.76	0.75	3.82	-0.61	0.60	5.93	1.00	5.18	-0.75	0.75	3.82	-2.12	0.60
			SW066325	SW066324	24	299.2	4.43	0.66	5.18	0.75	0.75	3.82	-0.61	0.60	5.93	1.00	5.18	-0.76	0.75	3.82	-2.12	0.60

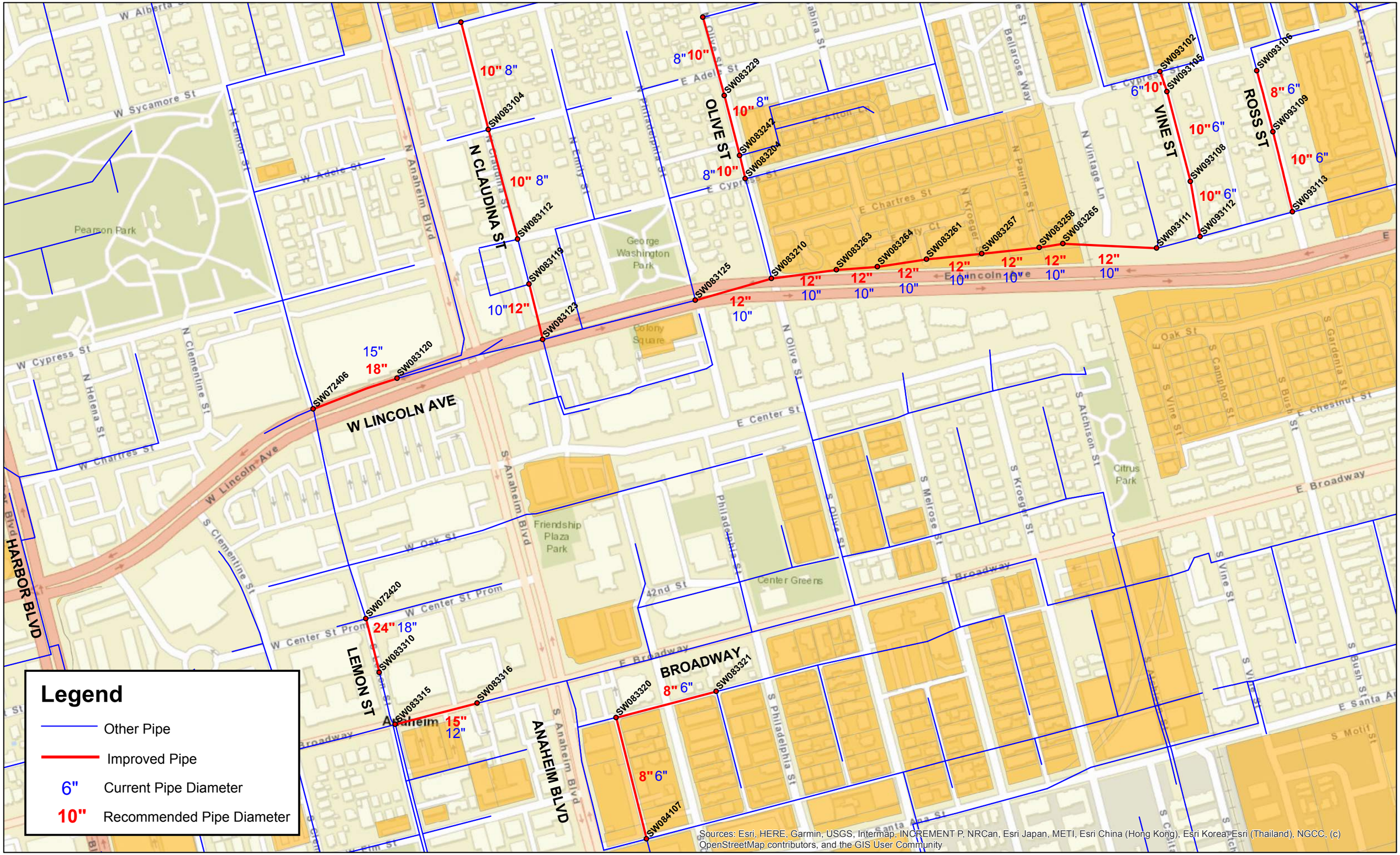
TABLE 4 - PROJECT BUILDOUT CONDITION SEWER WATCHLIST

Basin	Street	Cross Street	Pipe Data				Existing Condition Scenario								Project Buildout Scenario							
			From MH	To MH	Diameter (in)	Length (ft)	Existing Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio	Buildout Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Analysis d/D Ratio	Design Flow (mgd)	Design Excess (mgd)	Design d/D Ratio
Katella Ave	Katella Ave (N)	Harbor Blvd	OT066331	OT066329	27	660.7	6.96	0.77	6.73	-0.23	0.75	4.96	-2.00	0.60	7.20	0.80	6.73	-0.47	0.75	4.96	-2.24	0.60
			OT066329	OT057445	27	657.6	6.96	0.77	6.73	-0.24	0.75	4.96	-2.01	0.60	7.20	0.80	6.73	-0.47	0.75	4.96	-2.24	0.60
	Midway Dr		SW086411	SW086409	12	284.4	0.26	0.36	0.89	0.62	0.75	0.65	0.39	0.60	1.34	1.00	0.89	-0.45	0.75	0.65	-0.69	0.60
		Zeyn St	SW086409	SW086408	12	292.5	0.26	0.36	0.88	0.62	0.75	0.65	0.39	0.60	1.34	1.00	0.88	-0.46	0.75	0.65	-0.69	0.60
		Lemon St	SW086408	SW086407	12	93.0	0.26	0.34	0.97	0.70	0.75	0.71	0.45	0.60	1.34	1.00	0.97	-0.37	0.75	0.71	-0.63	0.60
			SW086405	SW086313	15	206.7	0.61	0.40	1.63	1.01	0.75	1.20	0.59	0.60	1.73	0.79	1.63	-0.10	0.75	1.20	-0.53	0.60
		Cherry St	SW086313	SW086312	15	174.3	0.62	0.48	1.23	0.61	0.75	0.90	0.28	0.60	1.73	1.00	1.23	-0.51	0.75	0.90	-0.83	0.60
	Palais Rd	Claudina St	SW096304	SW096303	8	352.3	0.04	0.21	0.29	0.26	0.67	0.18	0.15	0.50	0.46	1.00	0.29	-0.17	0.67	0.18	-0.28	0.50
		Anaheim Blvd	SW096303	SW096302	8	349.0	0.04	0.24	0.28	0.24	0.67	0.18	0.14	0.50	0.55	1.00	0.28	-0.27	0.67	0.18	-0.37	0.50
	Willow St	Midway Dr	SW086412	SW086405	8	197.3	0.33	0.70	0.32	-0.02	0.67	0.20	-0.13	0.50	0.38	0.77	0.32	-0.06	0.67	0.20	-0.18	0.50
La Palma Ave	La Palma Ave	East St	SW091322	LAPALMA14	12	89.0	1.22	1.00	1.08	-0.14	0.75	0.80	-0.43	0.60	1.23	1.00	1.08	-0.15	0.75	0.80	-0.43	0.60
			SW082205	SW082204	12	396.0	1.05	0.76	1.03	-0.01	0.75	0.76	-0.28	0.60	1.05	0.76	1.03	-0.01	0.75	0.76	-0.29	0.60
			SW082204	SW082201	12	393.4	1.08	0.78	1.03	-0.05	0.75	0.76	-0.32	0.60	1.09	0.79	1.03	-0.05	0.75	0.76	-0.33	0.60
			SW082201	SW082104	15	432.3	1.92	0.74	1.95	0.03	0.75	1.44	-0.49	0.60	2.02	0.77	1.95	-0.07	0.75	1.44	-0.58	0.60
		Sabina St	SW082103	SW082102	15	429.1	1.93	1.00	1.49	-0.44	0.75	1.10	-0.83	0.60	2.03	1.00	1.49	-0.54	0.75	1.10	-0.93	0.60
		Patt St	SW082102	SW071206	15	458.3	1.97	1.00	1.71	-0.26	0.75	1.26	-0.71	0.60	2.06	1.00	1.71	-0.35	0.75	1.26	-0.80	0.60
	North St	Bush St	SW082212	SW082211	8	102.5	0.20	0.66	0.21	0.00	0.67	0.13	-0.07	0.50	0.29	1.00	0.21	-0.09	0.67	0.13	-0.16	0.50
Orangewood	Rio Vista St	Lincoln Ave	SW123213	SW123214	10	179.5	0.59	1.00	0.44	-0.15	0.67	0.28	-0.31	0.50	0.65	1.00	0.44	-0.22	0.67	0.28	-0.38	0.50
			SW123214	SW123405	10	383.9	0.59	0.75	0.51	-0.08	0.67	0.32	-0.27	0.50	0.66	1.00	0.51	-0.15	0.67	0.32	-0.33	0.50
			SW123405	SW123410	10	274.3	0.60	0.70	0.57	-0.03	0.67	0.36	-0.24	0.50	0.66	0.76	0.57	-0.10	0.67	0.36	-0.30	0.50
		Virginia Ave	SW123410	SW123416	10	269.6	0.63	0.67	0.63	0.01	0.67	0.40	-0.23	0.50	0.69	0.72	0.63	-0.06	0.67	0.40	-0.29	0.50
			SW123416	SW123419	10	173.1	0.65	1.00	0.47	-0.18	0.67	0.30	-0.35	0.50	0.71	1.00	0.47	-0.24	0.67	0.30	-0.42	0.50
		Standish Ave	SW123419	SW123425	10	114.0	0.65	0.67	0.64	-0.01	0.67	0.41	-0.24	0.50	0.71	0.73	0.64	-0.07	0.67	0.41	-0.31	0.50
		South St	SW123425	SW123427	10	238.6	0.66	0.70	0.63	-0.04	0.67	0.40	-0.27	0.50	0.73	0.75	0.63	-0.10	0.67	0.40	-0.33	0.50
	Page Ct		SW117104	SW117106	8	332.7	0.04	0.23	0.30	0.26	0.67	0.19	0.15	0.50	0.43	1.00	0.30	-0.13	0.67	0.19	-0.24	0.50
		Howell Ave	SW117106	SW117301	8	336.8	0.04	0.23	0.29	0.25	0.67	0.19	0.14	0.50	0.43	1.00	0.29	-0.14	0.67	0.19	-0.25	0.50
	Howell Ave	Page Ct	SW117301	SW117109	10	228.1	0.05	0.25	0.30	0.24	0.67	0.19	0.13	0.50	0.56	1.00	0.30	-0.26	0.67	0.19	-0.37	0.50
		St College Blvd	SW117109	SW117108	10	435.5	0.05	0.30	0.22	0.17	0.67	0.14	0.09	0.50	0.56	1.00	0.22	-0.34	0.67	0.14	-0.42	0.50
Romneya	Harbor Blvd	Romneya Dr	SW070102	ROMNEYA25	8	394.2	0.00	0.07	0.28	0.28	0.67	0.18	0.18	0.50	0.32	0.73	0.28	-0.03	0.67	0.18	-0.14	0.50
EAST ANAHEIM																						
La Palma	E La Palma	N Chrisden St	SW184403	SW184402	10	61.0	0.754	0.76	0.64	-0.11	0.67	0.41	-0.35	0.50	0.755	0.76	0.64	-0.11	0.67	0.41	-0.35	0.50
			SW184402	SW184401	10	172.0	0.787	0.77	0.66	-0.13	0.67	0.42	-0.37	0.50	0.886	1.00	0.66	-0.22	0.67	0.42	-0.47	0.50
			SW184401	SW184203	10	239.8	0.791	0.76	0.67	-0.12	0.67	0.43	-0.37	0.50	0.904	1.00	0.67	-0.23	0.67	0.43	-0.48	0.50
			SW184203	SW184120	10	292.6	0.797	0.76	0.68	-0.12	0.67	0.43	-0.37	0.50	0.935	1.00	0.68	-0.25	0.67	0.43	-0.50	0.50
			SW184120	SW184119	10	98.0	0.816	0.79	0.67	-0.15	0.67	0.42	-0.39	0.50	0.989	1.00	0.67	-0.32	0.67	0.42	-0.56	0.50
		S Imperial Hwy	SW184119	OT184118	10	75.8	0.820	0.78	0.68	-0.14	0.67	0.43	-0.39	0.50	1.009	1.00	0.68	-0.33	0.67	0.43	-0.58	0.50
Kraemer	E La Palma		SW145221	SW145102	8	365.8	0.058	0.26	0.32	0.26	0.67	0.20	0.14	0.50	0.335	0.70	0.32	-0.02	0.67	0.20	-0.14	0.50
			SW145102	SW145104	8	273.8	0.058	0.26	0.31	0.25	0.67	0.19	0.14	0.50	0.335	0.72	0.31	-0.03	0.67	0.19	-0.14	0.50
			SW145104	SW145107	8	320.9	0.081	0.31	0.31	0.23	0.67	0.20	0.11	0.50	0.439	1.00	0.31	-0.13	0.67	0.20	-0.24	0.50
			SW145107	SW145108	8	68.8	0.096	0.35	0.29	0.19	0.67	0.18	0.09	0.50	0.503	1.00	0.29	-0.21	0.67	0.18	-0.32	0.50
		Shepard St	SW145108	SW145110	10	264.5	0.152	0.34	0.48	0.33	0.67	0.31	0.15	0.50	0.752	1.00	0.48	-0.27	0.67	0.31	-0.45	0.50
			SW145110	SW140208	10	305.1	0.171	0.34	0.56	0.39	0.67	0.35	0.18	0.50	0.836	1.00	0.56	-0.28	0.67	0.35	-0.48	0.50



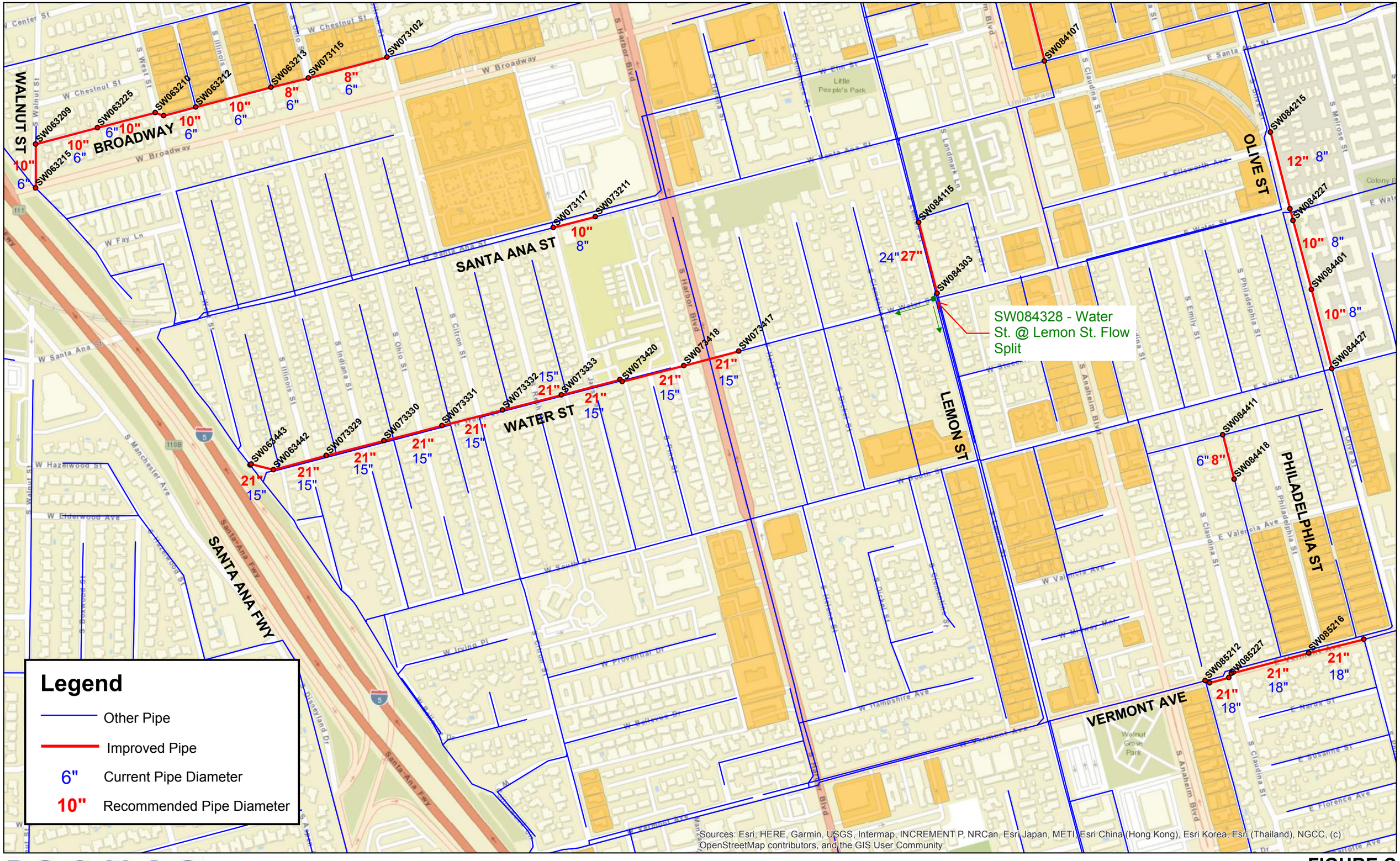
PSOMAS

FIGURE A
LA PALMA BASIN CIP AREA A



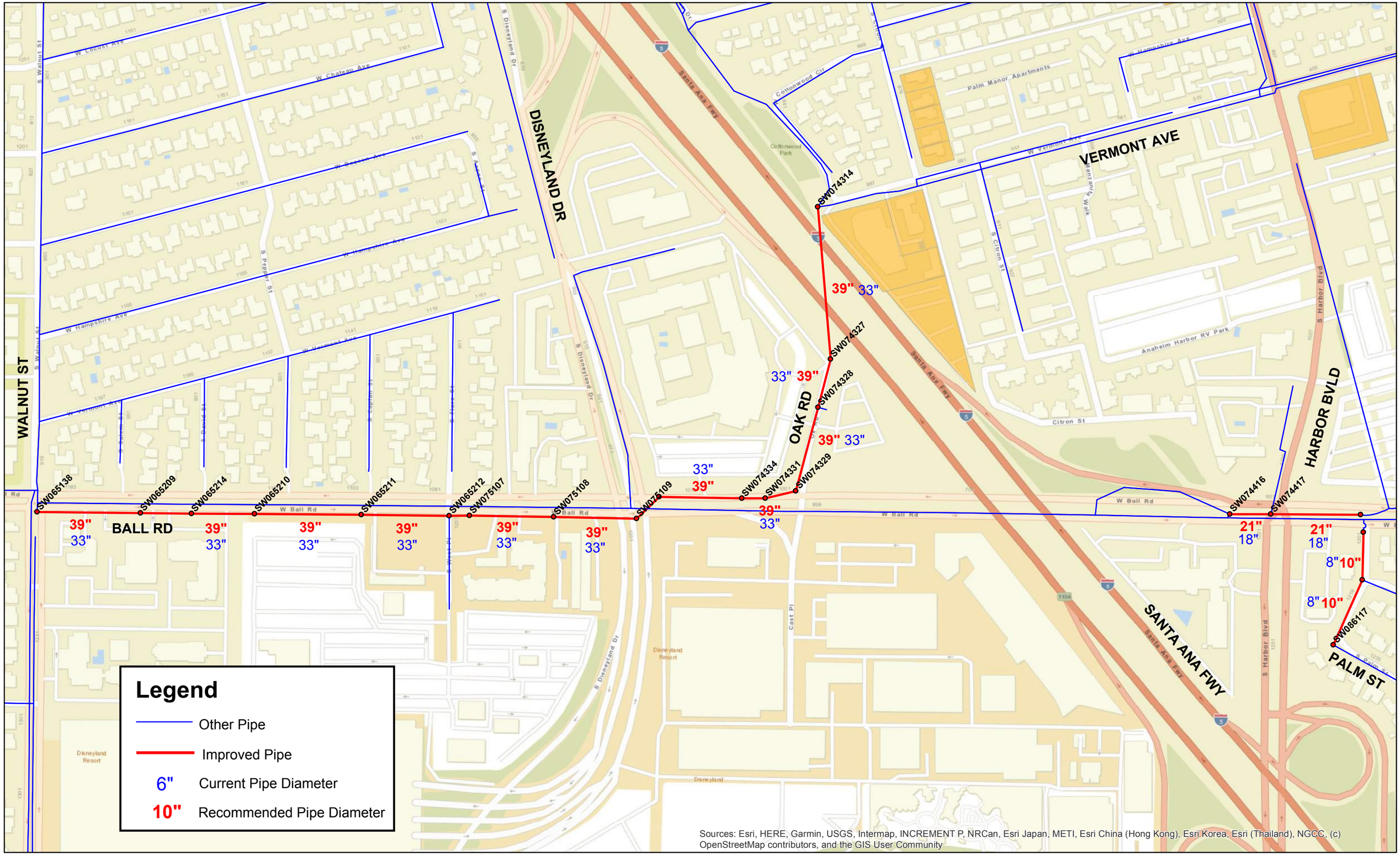
PSOMAS

FIGURE B
BALL ROAD BASIN CIP AREA B



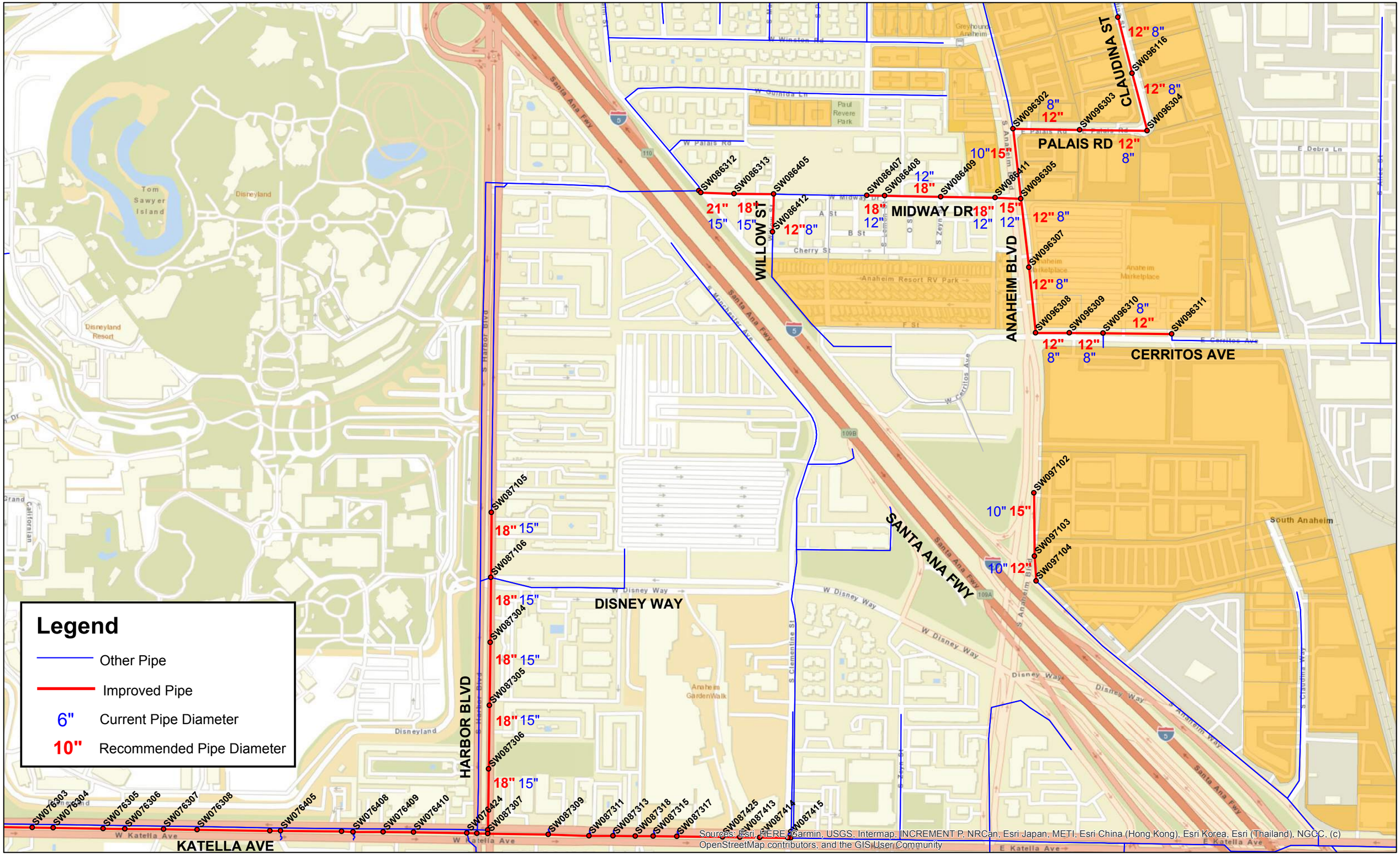
PSOMAS

FIGURE C
BALL ROAD BASIN CIP AREA C



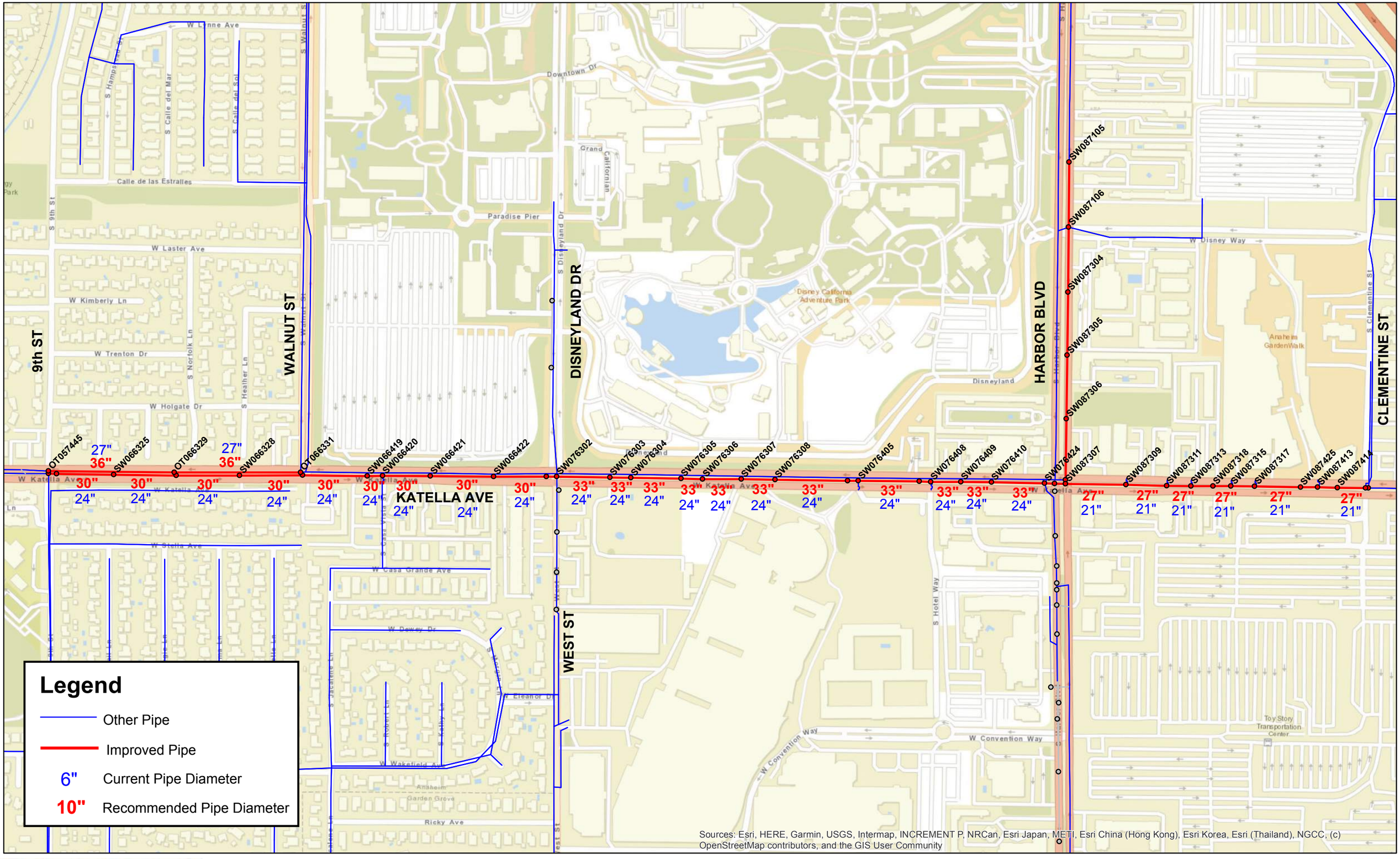
PSOMAS

FIGURE D
BALL ROAD BASIN CIP AREA D



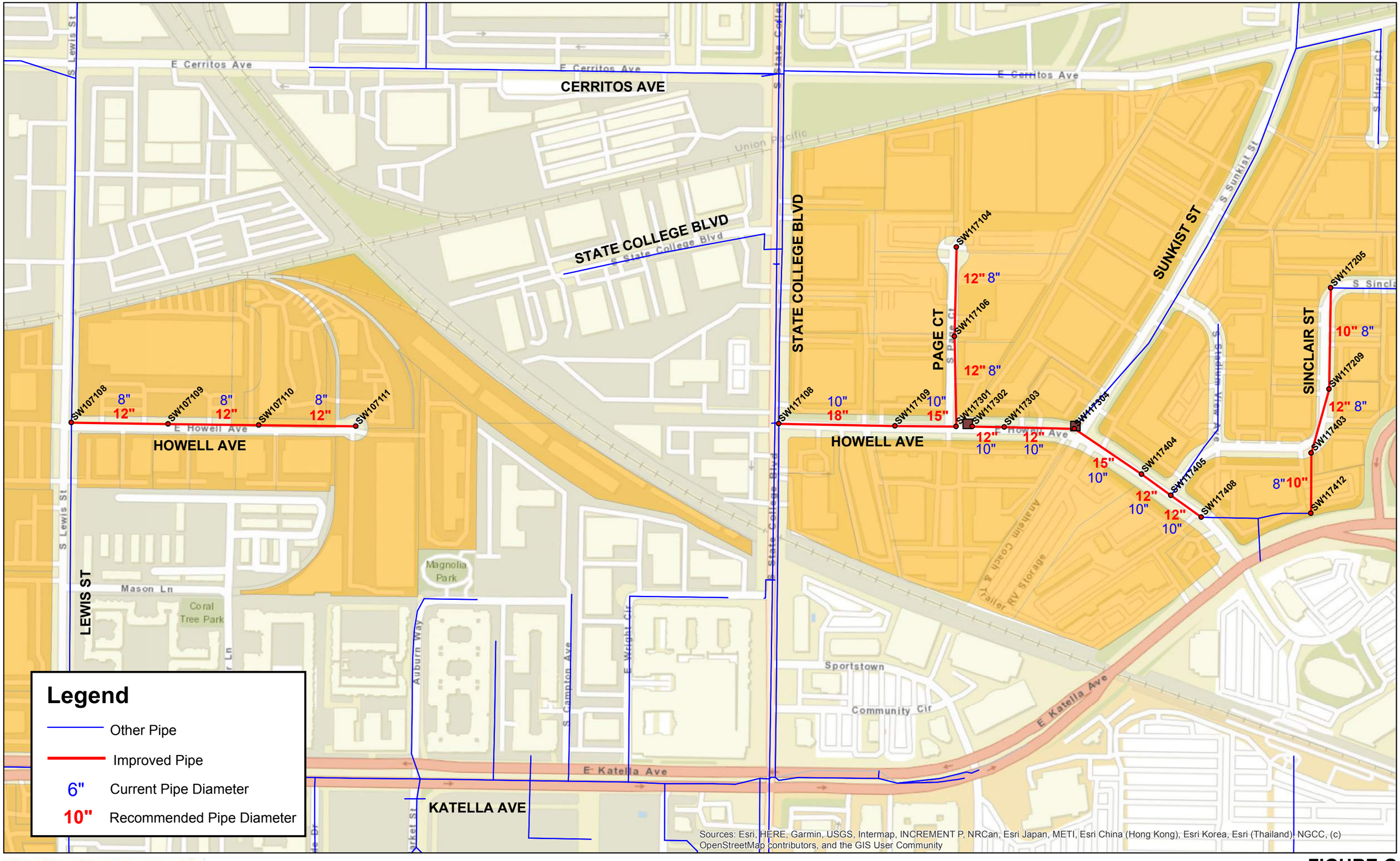
PSOMAS

FIGURE E
KATELLA BASIN CIP AREA E



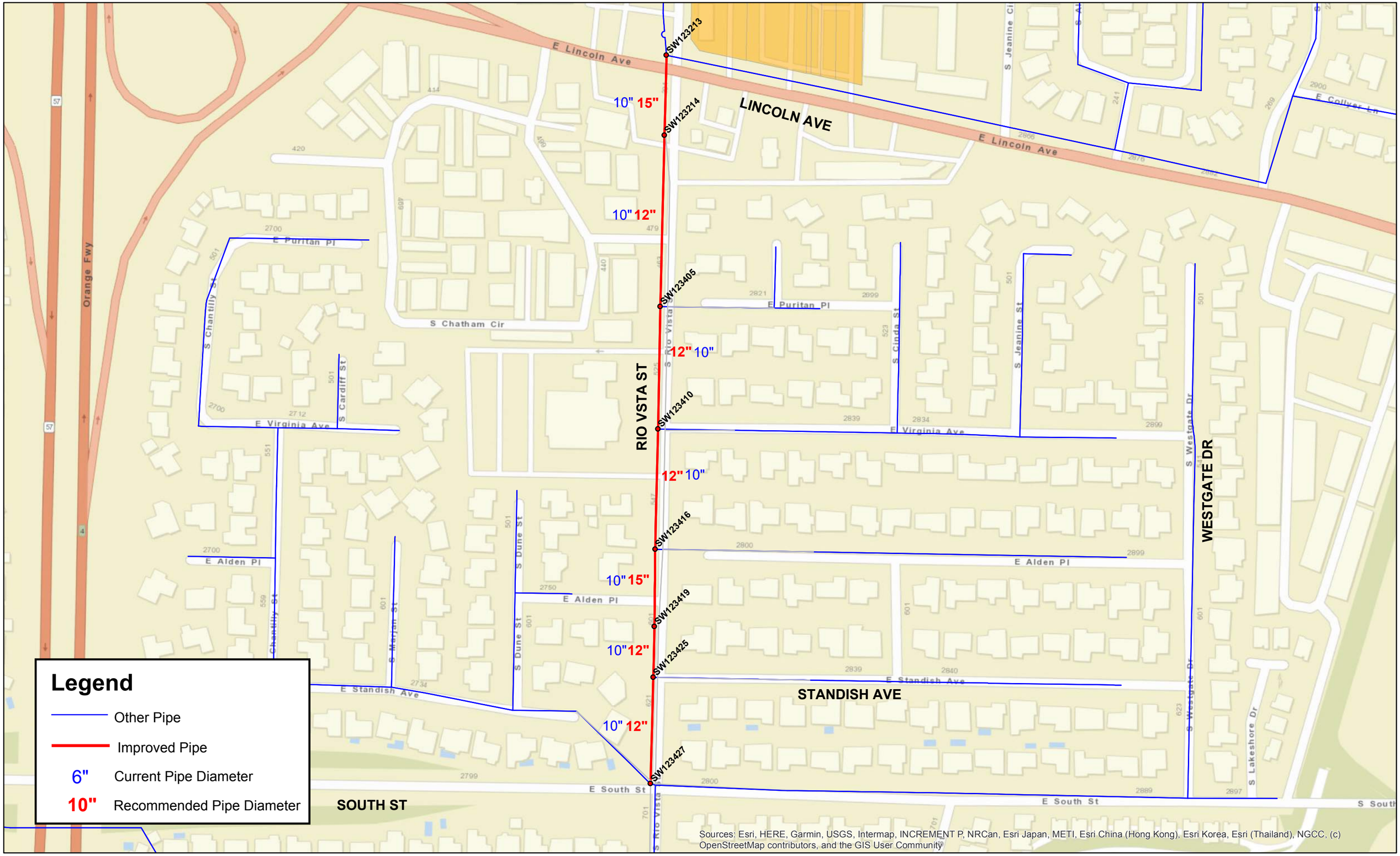
PSOMAS

FIGURE F
KATELLA BASIN CIP AREA F



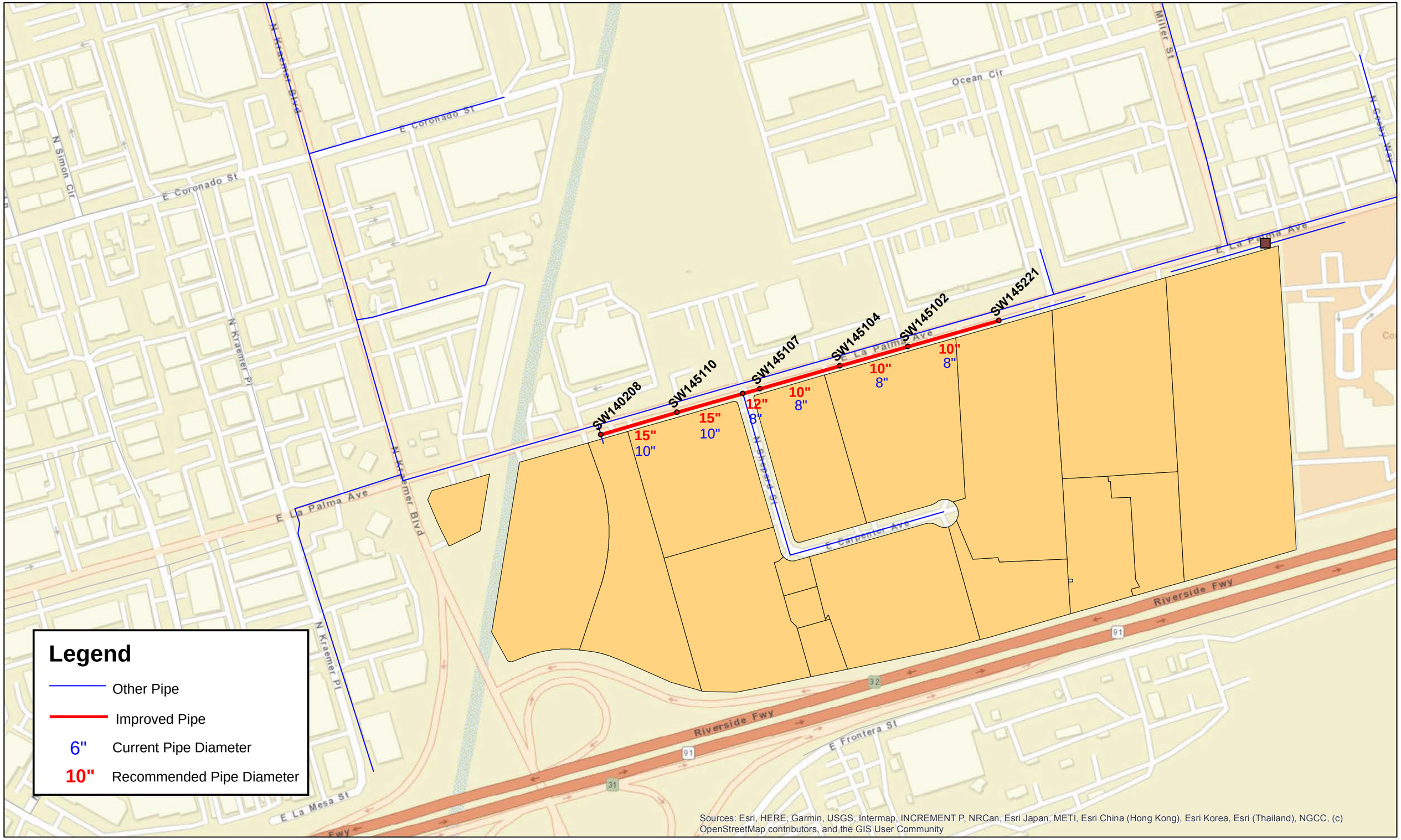
PSOMAS

FIGURE G
ORANGEWOOD BASIN CIP AREA G



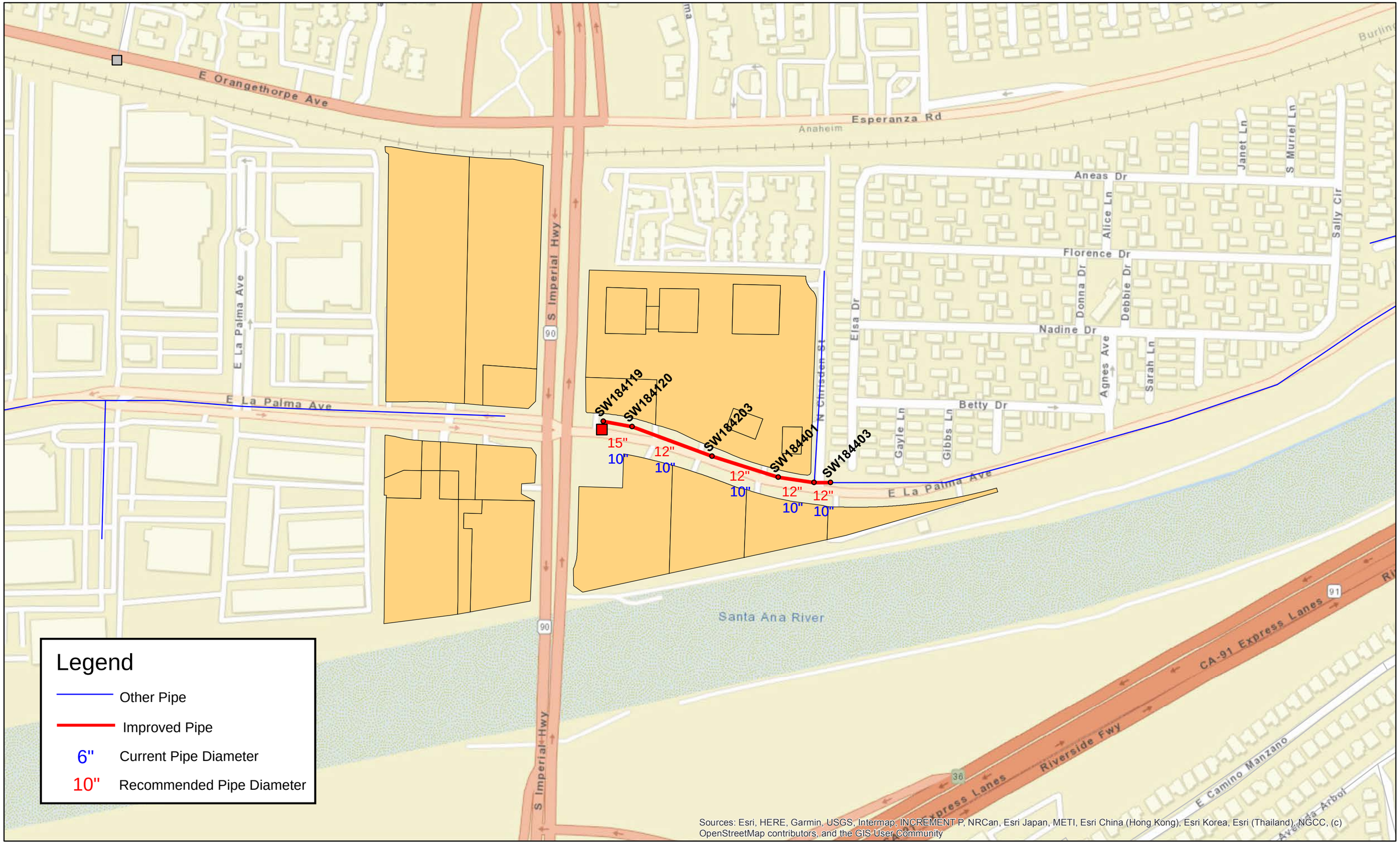
PSOMAS

FIGURE H
ORANGEWOOD BASIN CIP AREA H



PSOMAS

FIGURE I
KRAEMER BASIN CIP AREA I



PSOMAS

FIGURE J
LA PALMA BASIN CIP AREA J

TABLE 6 - CIP PIPELINES AND COST ESTIMATE

Map ID	Location	Upstrm MH-Dwnstrm MH	Pipe Length (ft)	Existing Size (in)	Improved d/D Ratio	Recom-mended Size (in)	Pipe Unit Cost ($/LF)	No. of MHs	Cost for MHs	Estimated Construction Cost	Estimated Project Cost incl. Eng, Contract, & CM
A	Alley	SW082121-SW082119	380	6	0.499	10	$683	1	$ 10,500	$ 269,726	$ 391,102
	E North St	SW082212-SW082211	102	8	0.426	12	$888	1	$ 10,500	$ 101,481	$ 147,147
	Harbor Blvd	SW070102-SW070301-A	394	8	0.493	10	$683	1	$ 10,500	$ 279,735	$ 405,615
	La Palma Ave	SW091322-LAPLAMA14	89	12	0.542	15	$1,059	1	$ 10,500	$ 104,715	$ 151,837
		LAPALMA14-SW082205	290	12	0.496	15	$1,059	1	$ 10,500	$ 317,931	$ 461,000
		SW082205-SW082204	396	12	0.536	15	$1,059	1	$ 10,500	$ 429,897	$ 623,350
		SW082204-SW082201	393	12	0.547	15	$1,059	1	$ 10,500	$ 427,116	$ 619,318
		SW082201-SW082104	432	15	0.547	18	$1,230	1	$ 10,500	$ 542,195	$ 786,182
		SW082104-SW082103	438	15	0.484	18	$1,230	1	$ 10,500	$ 548,731	$ 795,660
		SW082103-SW082102	429	15	0.503	21	$1,366	1	$ 10,500	$ 596,630	$ 865,114
		SW082102-SW071206	458	15	0.469	21	$1,366	1	$ 10,500	$ 636,561	$ 923,013
	Subtotal		**3,802**								**$ 6,169,339**
B	Ross St	SW093106-SW093109	235	6	0.437	8	$594	1	$ 10,500	$ 150,381	$ 218,053
		SW093109-SW093113	308	6	0.365	10	$683	1	$ 10,500	$ 221,059	$ 320,536
	Vine St	SW093102-SW093105	80	6	0.486	10	$683	1	$ 10,500	$ 65,242	$ 94,602
		SW093105-SW093108	346	6	0.491	10	$683	1	$ 10,500	$ 246,577	$ 357,537
		SW093108-SW093112	210	6	0.493	10	$683	1	$ 10,500	$ 153,629	$ 222,762
	Alley	SW083321-SW083320	387	6	0.457	8	$594	1	$ 10,500	$ 240,203	$ 348,295
		SW083320-SW084107	467	6	0.377	10	$683	1	$ 10,500	$ 329,712	$ 478,082
	Olive St	SW082327-SW083229	304	8	0.484	10	$683	1	$ 10,500	$ 218,023	$ 316,134
		SW083229-SW083242	231	8	0.464	10	$683	1	$ 10,500	$ 168,293	$ 244,025
		SW083242-SW083204	89	8	0.479	10	$683	1	$ 10,500	$ 71,064	$ 103,042
	Claudina St	SW082322-SW083104	414	8	0.498	10	$683	1	$ 10,500	$ 293,426	$ 425,468
		SW083104-SW083112	424	8	0.476	10	$683	1	$ 10,500	$ 299,955	$ 434,935
		SW083119-SW083123	213	10	0.561	12	$888	1	$ 10,500	$ 199,508	$ 289,287
	E Lincoln Ave	SW093111-SW083265	350	10	0.576	12	$888	1	$ 10,500	$ 321,650	$ 466,392
		SW083265-SW083258	89	10	0.517	12	$888	1	$ 10,500	$ 89,533	$ 129,823
		SW083258-SW083257	216	10	0.53	12	$888	1	$ 10,500	$ 202,447	$ 293,549
		SW083257-SW083261	208	10	0.528	12	$888	1	$ 10,500	$ 194,938	$ 282,660
		SW083261-SW083264	185	10	0.435	12	$888	1	$ 10,500	$ 174,895	$ 253,597
		SW083264-SW083263	154	10	0.366	12	$888	1	$ 10,500	$ 147,150	$ 213,367
		SW083263-SW083210	245	10	0.443	12	$888	1	$ 10,500	$ 227,953	$ 330,531
		SW083210-SW083125	296	10	0.597	12	$888	1	$ 10,500	$ 273,172	$ 396,100
	W Lincoln Ave	SW083120-SW072406	334	15	0.592	18	$1,230	1	$ 10,500	$ 421,345	$ 610,950
	E Broadway	SW083316-SW083315	316	12	0.512	15	$1,059	1	$ 10,500	$ 344,931	$ 500,150
	Lemon St	SW072420-SW083310	208	18	0.467	24	$1,544	1	$ 10,500	$ 330,932	$ 479,852
	Subtotal		**6,308**								**$ 7,809,726**
C	Alley	SW084418-SW084411	229	6	0.459	8	$594	1	$ 10,500	$ 146,465	$ 212,375
	Broadway	SW073102-SW073115	406	6	0.443	8	$594	1	$ 10,500	$ 251,520	$ 364,704
		SW073115-SW063213	192	6	0.376	8	$594	1	$ 10,500	$ 124,404	$ 180,386
		SW063213-SW063212	388	6	0.388	10	$683	1	$ 10,500	$ 275,604	$ 399,626
		SW063212-SW063211	165	6	0.409	10	$683	1	$ 10,500	$ 123,134	$ 178,544
		SW063211-SW063210	44	6	0.403	10	$683	1	$ 10,500	$ 40,850	$ 59,233
		SW063210-SW063225	297	6	0.435	10	$683	1	$ 10,500	$ 213,271	$ 309,243
		SW063225-SW063209	318	6	0.469	10	$683	1	$ 10,500	$ 227,895	$ 330,448
		SW063209-SW063215	218	6	0.392	10	$683	1	$ 10,500	$ 159,524	$ 231,309
	Olive St	SW084215-SW084223	395	8	0.395	12	$888	1	$ 10,500	$ 361,252	$ 523,815
		SW084223-SW084227	60	8	0.401	10	$683	1	$ 10,500	$ 51,226	$ 74,278
		SW084227-SW084401	356	8	0.461	10	$683	1	$ 10,500	$ 253,636	$ 367,772
		SW084401-SW084427	407	8	0.478	10	$683	1	$ 10,500	$ 288,385	$ 418,159
	Santa Ana St	SW073211-SW073117	218	8	0.489	10	$683	1	$ 10,500	$ 159,055	$ 230,630
	Water St	SW073417-SW073418	283	15	0.482	21	$1,366	1	$ 10,500	$ 396,933	$ 575,553
		SW073418-SW073420	318	15	0.484	21	$1,366	1	$ 10,500	$ 444,327	$ 644,274
		SW073420-SW073419	14	15	0.469	21	$1,366	1	$ 10,500	$ 29,333	$ 42,533
		SW073419-SW073333	302	15	0.484	21	$1,366	1	$ 10,500	$ 422,598	$ 612,767
		SW073333-SW073332	302	15	0.485	21	$1,366	1	$ 10,500	$ 423,603	$ 614,224
		SW073332-SW073331	312	15	0.489	21	$1,366	1	$ 10,500	$ 437,195	$ 633,932
		SW073331-SW073330	298	15	0.483	21	$1,366	1	$ 10,500	$ 418,056	$ 606,181
		SW073330-SW073329	296	15	0.482	21	$1,366	1	$ 10,500	$ 414,780	$ 601,431
		SW073329-SW063442	272	15	0.48	21	$1,366	1	$ 10,500	$ 382,654	$ 554,849
		SW063442-SW063443	114	15	0.487	21	$1,366	1	$ 10,500	$ 166,035	$ 240,751
		SW063443-SW063444	8	15	0.583	21	$1,366	1	$ 10,500	$ 21,734	$ 31,514
	Vermont Ave	SW085226-SW085216	284	18	0.581	21	$1,366	1	$ 10,500	$ 398,294	$ 577,526
		SW085216-SW085213	398	18	0.539	21	$1,366	1	$ 10,500	$ 553,695	$ 802,858
		SW085213-SW085227	24	18	0.506	21	$1,366	1	$ 10,500	$ 42,929	$ 62,247
		SW085227-SW085228	101	18	0.533	21	$1,366	1	$ 10,500	$ 148,060	$ 214,687
		SW085228-SW085212	25	18	0.536	21	$1,366	1	$ 10,500	$ 44,207	$ 64,101
	Lemon St	SW084115-SW084303	365	24	0.6	27	$1,735	1	$ 10,500	$ 644,610	$ 934,684
	Subtotal		**7,408**								**$ 11,694,635**

TABLE 6 - CIP PIPELINES AND COST ESTIMATE

Map ID	Location	Upstrm MH-Dwnstrm MH	Pipe Length (ft)	Existing Size (in)	Improved d/D Ratio	Recom-mended Size (in)	Pipe Unit Cost ($/LF)	No. of MHs	Cost for MHs	Estimated Construction Cost	Estimated Project Cost incl. Eng, Contract, & CM
D	Palm St	SW086117-SW086112	227	8	0.475	10	$683	1	$ 10,500	$ 165,493	$ 239,965
		SW086112-SW086109	152	8	0.46	10	$683	1	$ 10,500	$ 114,224	$ 165,625
	W Ball Rd	SW085322-SW074417	286	18	0.58	21	$1,366	1	$ 10,500	$ 401,034	$ 581,499
		SW074417-SW074416	130	18	0.597	21	$1,366	1	$ 10,500	$ 188,411	$ 273,195
	W Ball Rd	SW074314-SW074327	487	33	0.554	39	$2,482	1	$ 10,500	$ 1,219,368	$ 1,768,084
		SW074327-SW074328	159	33	0.569	39	$2,482	1	$ 10,500	$ 406,235	$ 589,041
		SW074328-SW074329	275	33	0.567	39	$2,482	1	$ 10,500	$ 693,941	$ 1,006,215
		SW074329-SW074331	100	33	0.558	39	$2,482	1	$ 10,500	$ 258,365	$ 374,629
		SW074331-SW074334	75	33	0.558	39	$2,482	1	$ 10,500	$ 196,568	$ 285,024
		SW074334-SW074330	264	33	0.568	39	$2,482	1	$ 10,500	$ 664,790	$ 963,945
		SW074330-SW075109	100	33	0.583	39	$2,482	1	$ 10,500	$ 259,045	$ 375,615
		SW075109-SW075108	264	33	0.56	39	$2,482	1	$ 10,500	$ 665,113	$ 964,413
		SW075108-SW075107	269	33	0.563	39	$2,482	1	$ 10,500	$ 676,991	$ 981,638
		SW075107-SW065212	65	33	0.536	39	$2,482	1	$ 10,500	$ 172,458	$ 250,064
		SW065212-FIT-770	280	33	0.564	39	$2,482	1	$ 10,500	$ 705,733	$ 1,023,313
		SW065211-SW065210	340	33	0.576	39	$2,482	1	$ 10,500	$ 855,405	$ 1,240,337
		SW065210-SW065214	201	33	0.551	39	$2,482	1	$ 10,500	$ 509,677	$ 739,032
		SW065214-SW065209	163	33	0.549	39	$2,482	1	$ 10,500	$ 414,411	$ 600,896
		SW065209-SW065138	330	33	0.551	39	$2,482	1	$ 10,500	$ 829,381	$ 1,202,603
	Subtotal		**4,167**								**$ 13,625,132**
E	Claudina St	SW096114-SW096116	302	8	0.389	12	$888	1	$ 10,500	$ 278,671	$ 404,072
		SW096116-SW096304	310	8	0.41	12	$888	1	$ 10,500	$ 286,074	$ 414,807
	Cerritos Ave	SW096311-SW096310	358	8	0.434	12	$888	1	$ 10,500	$ 328,804	$ 476,767
		SW096310-SW096309	177	8	0.436	12	$888	1	$ 10,500	$ 167,425	$ 242,766
		SW096309-SW096308	176	8	0.448	12	$888	1	$ 10,500	$ 167,095	$ 242,288
	Palais Rd	SW096304-SW096303	352	8	0.455	12	$888	1	$ 10,500	$ 323,366	$ 468,881
		SW096303-SW096302	349	8	0.51	12	$888	1	$ 10,500	$ 320,390	$ 464,565
	Anaheim Blvd	SW096308-SW096307	344	8	0.472	12	$888	1	$ 10,500	$ 315,759	$ 457,850
		SW096307-SW096305	361	8	0.481	12	$888	1	$ 10,500	$ 331,402	$ 480,533
		SW096302-SW096305	368	10	0.472	15	$1,059	1	$ 10,500	$ 400,463	$ 580,671
	Willow St	SW086412-SW086405	197	8	0.389	12	$888	1	$ 10,500	$ 185,745	$ 269,330
	Anaheim Blvd	SW097102-SW097103	331	10	0.44	15	$1,059	1	$ 10,500	$ 360,755	$ 523,094
		SW097103-SW097104	130	10	0.574	12	$888	1	$ 10,500	$ 126,292	$ 183,123
	Midway Dr	SW096305-SW086411	135	12	0.48	15	$1,059	1	$ 10,500	$ 153,138	$ 222,050
		SW086411-SW086409	284	12	0.481	18	$1,230	1	$ 10,500	$ 360,269	$ 522,390
		SW086409-SW086408	292	12	0.482	18	$1,230	1	$ 10,500	$ 370,217	$ 536,815
		SW086408-SW086407	93	12	0.458	18	$1,230	1	$ 10,500	$ 124,945	$ 181,171
		SW086405-SW086313	207	15	0.555	18	$1,230	1	$ 10,500	$ 264,707	$ 383,825
		SW086313-SW086312	174	15	0.515	21	$1,366	1	$ 10,500	$ 248,655	$ 360,550
		SW086312-SW086321	14	15	0.299	18	$1,230	1	$ 10,500	$ 27,705	$ 40,173
	Harbor Blvd East	SW087105-SW087106	340	15	0.542	18	$1,230	1	$ 10,500	$ 429,196	$ 622,334
		SW087106-SW087304	340	15	0.513	18	$1,230	1	$ 10,500	$ 428,176	$ 620,855
		SW087304-SW087305	330	15	0.53	18	$1,230	1	$ 10,500	$ 416,704	$ 604,221
		SW087305-SW087306	333	15	0.542	18	$1,230	1	$ 10,500	$ 419,516	$ 608,298
		SW087306-SW087319	319	15	0.542	18	$1,230	1	$ 10,500	$ 403,308	$ 584,796
	Subtotal		**6,619**								**$ 10,496,225**
F	Katella Ave South	SW087416-SW087415	15	21	0.518	27	$1,735	1	$ 10,500	$ 37,292	$ 54,073
		SW087415-SW087414	147	21	0.518	27	$1,735	1	$ 10,500	$ 264,731	$ 383,860
		SW087414-SW087413	104	21	0.518	27	$1,735	1	$ 10,500	$ 190,211	$ 275,806
		SW087413-SW087425	90	21	0.521	27	$1,735	1	$ 10,500	$ 166,995	$ 242,143
		SW087425-SW087317	239	21	0.521	27	$1,735	1	$ 10,500	$ 426,019	$ 617,727
		SW087317-SW087315	124	21	0.521	27	$1,735	1	$ 10,500	$ 225,928	$ 327,596
		SW087315-SW087318	94	21	0.531	27	$1,735	1	$ 10,500	$ 173,037	$ 250,903
		SW087318-SW087313	116	21	0.536	27	$1,735	1	$ 10,500	$ 211,673	$ 306,926
		SW087313-SW087311	126	21	0.537	27	$1,735	1	$ 10,500	$ 228,440	$ 331,238
		SW087311-SW087309	213	21	0.54	27	$1,735	1	$ 10,500	$ 380,334	$ 551,485
		SW087309-SW087307	317	21	0.547	27	$1,735	1	$ 10,500	$ 560,563	$ 812,816
		SW087307-SW076411	56	24	0.558	30	$1,913	1	$ 10,500	$ 118,546	$ 171,892
		SW076411-SW076424	52	24	0.557	30	$1,913	1	$ 10,500	$ 110,871	$ 160,763
		SW076424-SW076410	278	24	0.545	33	$2,099	1	$ 10,500	$ 594,501	$ 862,026
		SW076410-SW076409	159	24	0.547	33	$2,099	1	$ 10,500	$ 344,459	$ 499,466
		SW076409-SW076408	159	24	0.551	33	$2,099	1	$ 10,500	$ 343,317	$ 497,810
		SW076408-SW076407	60	24	0.561	33	$2,099	1	$ 10,500	$ 136,501	$ 197,926
		SW076407-SW076405	318	24	0.561	33	$2,099	1	$ 10,500	$ 678,679	$ 984,084
		SW076405-SW076433	56	24	0.571	33	$2,099	1	$ 10,500	$ 128,814	$ 186,781
		SW076433-SW076308	379	24	0.571	33	$2,099	1	$ 10,500	$ 806,978	$ 1,170,118
		SW076308-SW076307	176	24	0.571	33	$2,099	1	$ 10,500	$ 379,966	$ 550,951
		SW076307-SW076306	202	24	0.571	33	$2,099	1	$ 10,500	$ 435,453	$ 631,407
		SW076306-SW076305	113	24	0.572	33	$2,099	1	$ 10,500	$ 248,002	$ 359,603
		SW076305-SW076304	262	24	0.582	33	$2,099	1	$ 10,500	$ 560,199	$ 812,288
		SW076304-SW076303	110	24	0.582	33	$2,099	1	$ 10,500	$ 240,830	$ 349,203
		SW076303-SW076302	279	24	0.582	33	$2,099	1	$ 10,500	$ 596,129	$ 864,388
		SW076302-SW066417	53	24	0.537	30	$1,913	1	$ 10,500	$ 112,528	$ 163,166

TABLE 6 - CIP PIPELINES AND COST ESTIMATE

Map ID	Location	Upstrm MH-Dwnstrm MH	Pipe Length (ft)	Existing Size (in)	Recom-mended Size (in)	Improved d/D Ratio	Pipe Unit Cost ($/LF)	No. of MHs	Cost for MHs	Estimated Construction Cost	Estimated Project Cost incl. Eng, Contract, & CM
F	Katella Ave South	SW066417-SW066422	276	24	30	0.54	$1,913	1	$ 10,500	$ 537,532	$ 779,421
		SW066422-SW066421	331	24	30	0.54	$1,913	1	$ 10,500	$ 642,928	$ 932,246
		SW066421-SW066420	250	24	30	0.54	$1,913	1	$ 10,500	$ 488,855	$ 708,840
		SW066420-SW066419	80	24	30	0.55	$1,913	1	$ 10,500	$ 163,006	$ 236,359
		SW066419-SW066418	338	24	30	0.55	$1,913	1	$ 10,500	$ 657,637	$ 953,574
		SW066418-SW066328	329	24	30	0.55	$1,913	1	$ 10,500	$ 640,790	$ 929,145
		SW066328-SW066327	331	24	30	0.55	$1,913	1	$ 10,500	$ 644,344	$ 934,299
		SW066327-SW066325	327	24	30	0.55	$1,913	1	$ 10,500	$ 635,906	$ 922,063
		SW066325-SW066324	299	24	30	0.55	$1,913	1	$ 10,500	$ 582,873	$ 845,166
		SW066324-OT057444	43	24	30	0.55	$1,913	1	$ 10,500	$ 92,591	$ 134,256
	Katella Ave North	OT066331-OT066329	661	27	36	0.47	$2,291	1	$ 10,500	$ 1,524,104	$ 2,209,951
		OT066329-OT057445	658	27	36	0.47	$2,291	1	$ 10,500	$ 1,516,970	$ 2,199,606
	Subtotal		**8,222**								**$ 24,401,372**
G	Sinclair St	SW117205-SW117209	378	8	10	0.49	$683	1	$ 10,500	$ 268,911	$ 389,921
		SW117209-SW117403	247	8	12	0.38	$888	1	$ 10,500	$ 229,794	$ 333,202
		SW117403-SW117412	225	8	10	0.49	$683	1	$ 10,500	$ 164,223	$ 238,123
	Howell Ave	SW107111-SW107110	362	8	12	0.42	$888	1	$ 10,500	$ 331,942	$ 481,316
		SW107110-SW107109	339	8	12	0.55	$888	1	$ 10,500	$ 311,599	$ 451,819
		SW107109-SW107108	361	8	12	0.48	$888	1	$ 10,500	$ 331,497	$ 480,671
	Page Ct	SW117104-SW117106	333	8	12	0.43	$888	1	$ 10,500	$ 305,935	$ 443,606
		SW117106-SW117301	337	8	12	0.44	$888	1	$ 10,500	$ 309,609	$ 448,934
	Howell Ave	SW117408-SW117405	139	10	12	0.51	$888	1	$ 10,500	$ 134,055	$ 194,379
		SW117405-SW117404	135	10	12	0.52	$888	1	$ 10,500	$ 130,385	$ 189,059
		SW117404-SW117304	304	10	15	0.45	$1,059	1	$ 10,500	$ 332,100	$ 481,545
		SW117304-SW117303	261	10	12	0.58	$888	1	$ 10,500	$ 242,147	$ 351,113
		SW117303-SW117302	120	10	12	0.52	$888	1	$ 10,500	$ 117,191	$ 169,926
		SW117301-SW117109	228	10	15	0.50	$1,059	1	$ 10,500	$ 252,009	$ 365,413
		SW117109-SW117108	435	10	18	0.45	$1,230	1	$ 10,500	$ 546,134	$ 791,895
	Subtotal		**4,205**								**$ 5,810,921**
H	Rio Vista St	SW123213-SW123214	179	10	15	0.44	$1,059	1	$ 10,500	$ 200,589	$ 290,855
		SW123214-SW123405	384	10	12	0.57	$888	1	$ 10,500	$ 351,403	$ 509,535
		SW123405-SW123410	274	10	12	0.54	$888	1	$ 10,500	$ 254,053	$ 368,376
		SW123410-SW123416	270	10	12	0.52	$888	1	$ 10,500	$ 249,873	$ 362,316
		SW123416-SW123419	173	10	15	0.45	$1,059	1	$ 10,500	$ 193,769	$ 280,966
		SW123419-SW123425	114	10	12	0.52	$888	1	$ 10,500	$ 111,688	$ 161,948
		SW123425-SW123427	239	10	12	0.54	$888	1	$ 10,500	$ 222,373	$ 322,441
	Subtotal		**1,633**								**$ 2,296,437**
EAST ANAHEIM											
I	La Palma Ave	SW145221-SW145102	366	8	10	0.48	$683	1	$ 10,500	$ 260,331	$ 377,481
		SW145102-SW145104	274	8	10	0.49	$683	1	$ 10,500	$ 197,501	$ 286,376
		SW145104-SW145107	321	8	10	0.57	$683	1	$ 10,500	$ 229,670	$ 333,021
		SW145107-SW145108	69	8	12	0.48	$888	1	$ 10,500	$ 71,627	$ 103,860
		SW145108-SW145110	265	10	15	0.45	$1,059	1	$ 10,500	$ 290,640	$ 421,428
		SW145110-SW140208	305	10	15	0.44	$1,059	1	$ 10,500	$ 333,551	$ 483,649
	Subtotal		**1,599**								**$ 2,005,815**
J	La Palma Ave	SW184403-SW184402	61	10	12	0.54	$888	1	$ 10,500	$ 64,668	$ 93,769
		SW184402-SW184401	172	10	12	0.59	$888	1	$ 10,500	$ 163,236	$ 236,692
		SW184401-SW184203	240	10	12	0.59	$888	1	$ 10,500	$ 223,440	$ 323,988
		SW184203-SW184120	293	10	12	0.60	$888	1	$ 10,500	$ 270,302	$ 391,938
		SW184120-SW184119	98	10	15	0.44	$1,059	1	$ 10,500	$ 114,324	$ 165,770
		SW184119-OT184118	76	10	15	0.44	$1,059	1	$ 10,500	$ 90,740	$ 131,574
	Subtotal		**939**								**$ 1,343,731**
TOTAL CIP			**44,901**								**$ 85,653,334**
EXISTING DEFICIENCIES			**10,881**								**$ 21,670,927**

Pipes with Existing Deficiency

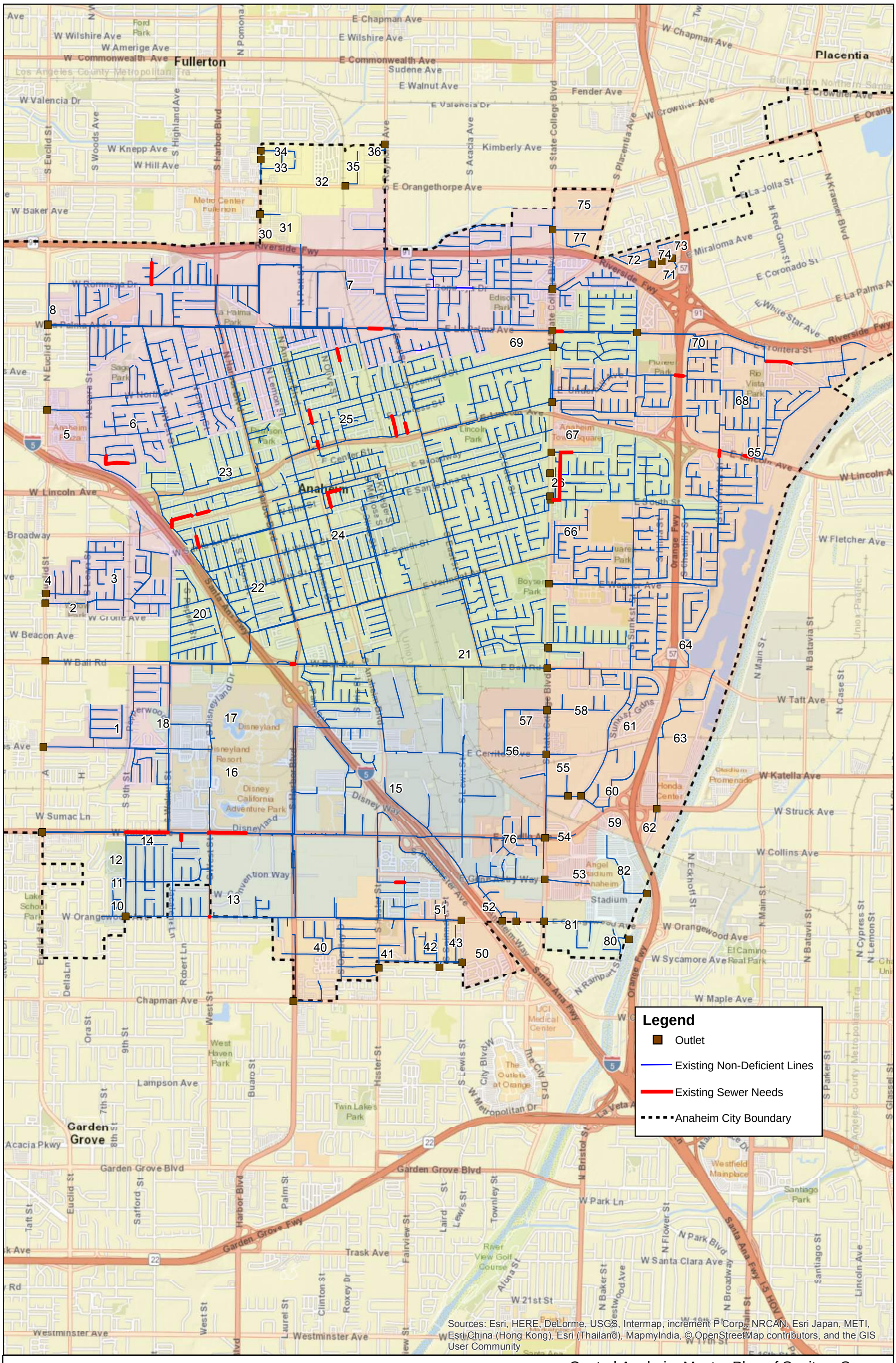
Major Pipeline Imrovement Area

APPENDIX A
PROPOSED GENERAL PLAN
STATISTICAL SUMMARY

Summary of Proposed and Existing General Plan Land Use

	General Plan Dwelling Units (DUs)		General Plan Non-Residential Square Feet (sqft)	
Land Use	**Proposed DUs**	**Existing DUs**	**Proposed sqft**	**Existing sqft**
General Commercial	0	138	104,341	27,136
Industrial	0	0	157,565	29,875
Mixed-Use High	3,864	22	1,306,017	1,143,951
Mixed-Use Industrial	305	0	989,531	315,316
Mixed-Use Low-Medium	243	223	215,490	0
Mixed-Use Medium	9,007	496	3,782,489	4,249,979
Mixed-Use Mid	362	523	145,033	28,413
Mixed-Use Urban Core	103	0	126,879	18,404
No Change	10,857	6,141	4,258,917	4,262,511
Office-Low	0	0	8,504	6,378
Open Space	0	5	0	94,276
Open Space - Parks	0	8	0	0
Public / Quasi-Public - Institutional	0	0	20,124	17,250
Public / Quasi-Public - Institutional-Low	0	0	0	0
Public / Quasi-Public - Schools	0	9	0	0
Residential - Low Density	65	200	0	21,283
Residential - Low-Medium Density	525	133	555,587	558,167
Residential - Medium Density	3,151	766	467,925	878,000
Residential - Mid Density	1,620	776	222,875	476,574
Grand Total	**30,102**	**9,440**	**12,361,277**	**12,127,513**

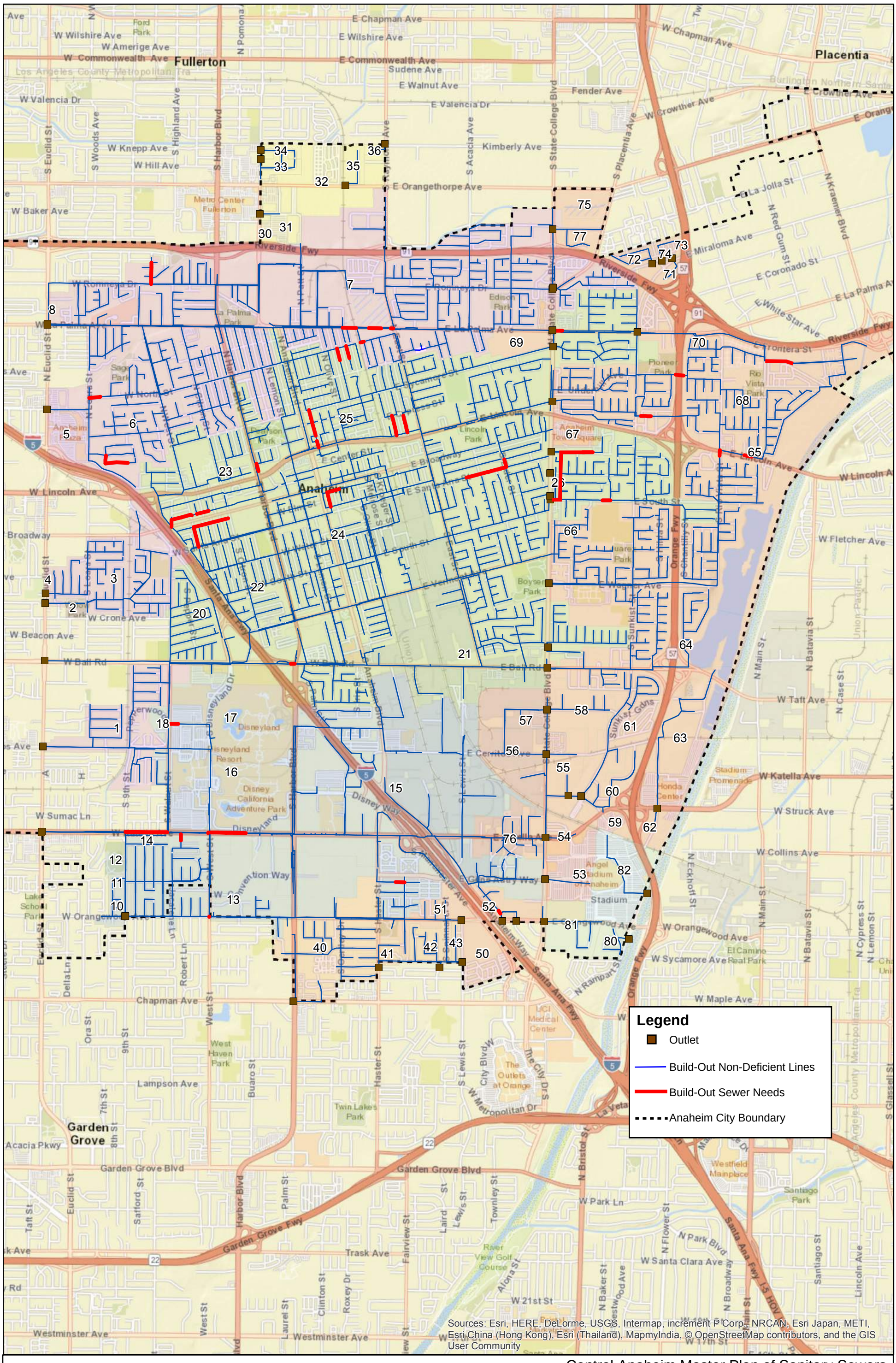
APPENDIX B
SEWER MASTER PLAN
IDENTIFIED DEFICIENCIES



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 3.1
Existing Conditions

PSOMAS



Central Anaheim Master Plan of Sanitary Sewers

Figure 3.2
Build-Out Conditions

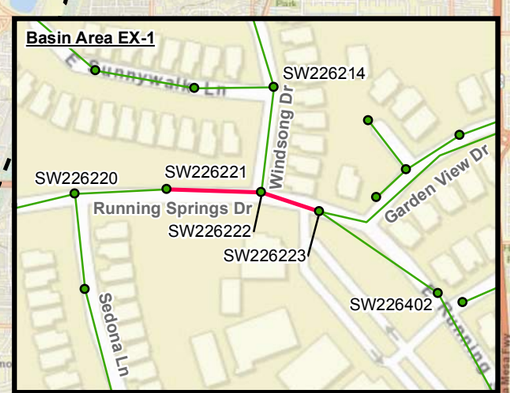
PSOMAS

Legend

- Existing Non-Deficient Lines
- Existing Sewer Needs
- City of Anaheim Limits
- EAMPSS Study Area Boundary

Area EX-1
(See Inset Map Below)

Basin Area EX-1



Paper Size ANSI B

0 1,100 2,200 3,300 4,400

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California VI FIPS 0406 Ft US

N

CITY OF ANAHEIM
EAST ANAHEIM MASTER PLAN
OF SANITARY SEWERS

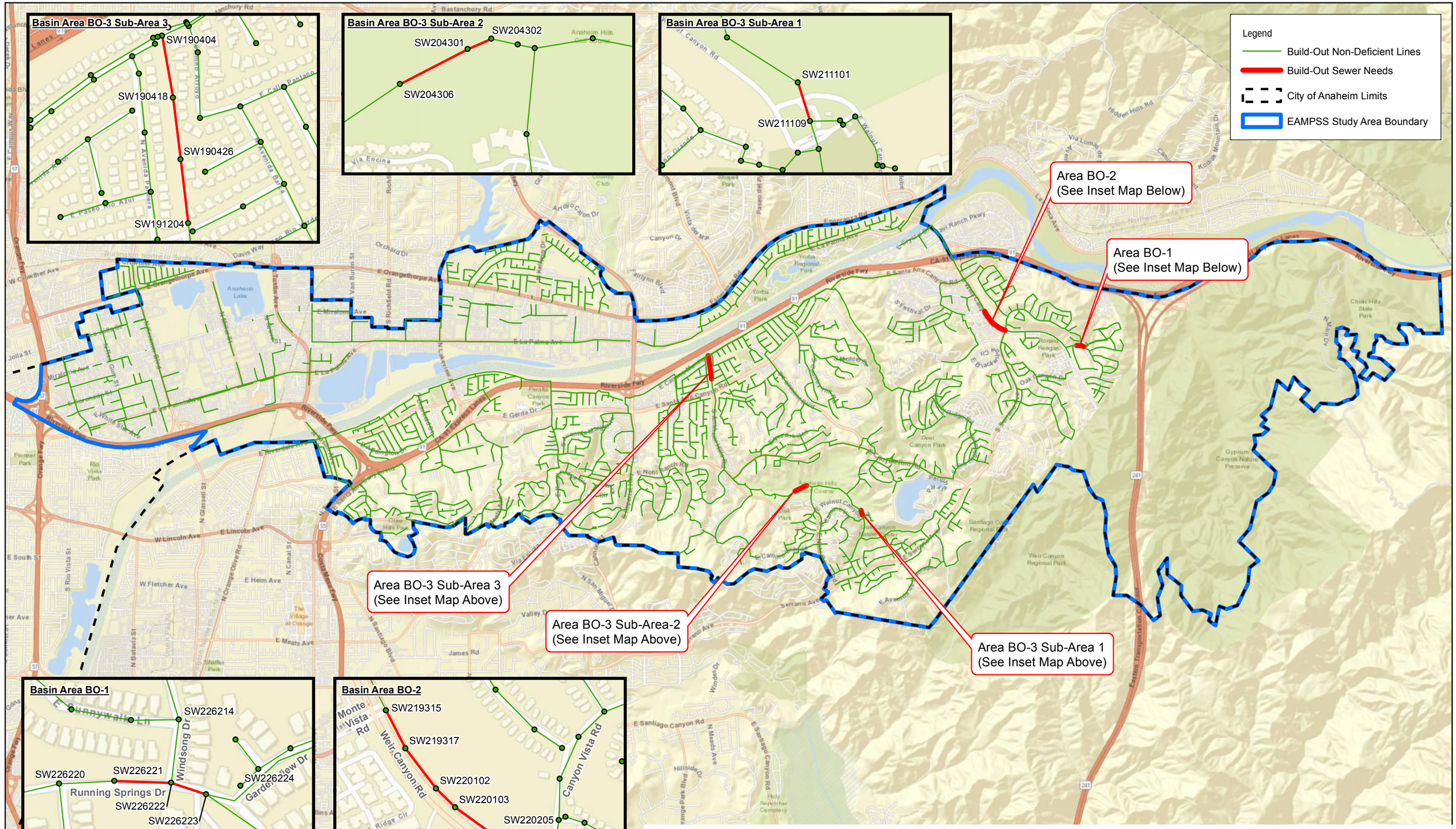
EXISTING CONDITION
SEWER NEEDS

Project No. 11146303
Revision No. -
Date 07/15/2022

FIGURE 3.1

G:\111\11146303 City of Anaheim\2017 E MP\08-GIS\Maps\Deliverables\EAMPSS Report\Figure 3.1 - Existing Deficiencies.mxd
Print date: 15 Jul 2022 - 12:19

Data source: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community. Created by: pwleung



Paper Size ANSI B

0 1,100 2,200 3,300 4,400

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California VI FIPS 0406 Ft US

N

GHD

ANAHEIM

CITY OF ANAHEIM
EAST ANAHEIM MASTER PLAN
OF SANITARY SEWERS

BUILD-OUT CONDITION
SEWER NEEDS

Project No. 11146303
Revision No. -
Date 07/15/2022

FIGURE 3.2

G:\11\11146303 City of Anaheim2017 E MP\08-GIS\Maps\Deliverables\EAMPSS Report\Figure 3.2 - Build-Out Deficiencies.mxd
Print date: 15 Jul 2022 - 11:28

Data source: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community. Created by: pwleung

APPENDIX C
MODEL OUTPUT FOR PROJECT TRIBUTARY BASINS
(PIPELINES 12-INCH AND LARGER)

Romneya System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH-Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
COMMERCIAL ST		ROMNEYA39-ROMNEYA40	24	297.0	0.003	1.12	0.28	6.09	4.97	10,348	1.25	0.29	6.10	4.85	10,110	0.12
		ROMNEYA38-ROMNEYA39	24	289.0	0.002	1.13	0.31	5.05	3.93	8,179	1.34	0.34	5.06	3.72	7,752	0.21
		ROMNEYA37-ROMNEYA38	24	24.1	0.002	1.13	0.32	4.72	3.59	7,479	1.34	0.35	4.73	3.38	7,050	0.21
		ROMNEYA36-ROMNEYA37	24	68.5	0.002	1.13	0.31	5.05	3.92	8,167	1.34	0.34	5.06	3.71	7,738	0.21
		ROMNEYA35-ROMNEYA36	24	218.4	0.002	1.15	0.31	5.14	4.00	8,325	1.47	0.35	5.15	3.68	7,671	0.32
ANAHEIM BLVD	Commercial St	ROMNEYA34-ROMNEYA35	24	221.6	0.002	1.15	0.31	5.10	3.96	8,248	1.47	0.35	5.11	3.65	7,594	0.32
		ROMNEYA33-ROMNEYA34	24	42.0	0.002	1.15	0.32	4.73	3.59	7,469	1.47	0.36	4.74	3.27	6,815	0.32
		ROMNEYA32-ROMNEYA33	24	136.4	0.003	1.16	0.27	6.43	5.27	10,977	1.49	0.31	6.44	4.95	10,319	0.33
		ROMNEYA31-ROMNEYA32	24	300.0	0.003	1.16	0.27	6.52	5.36	11,167	1.49	0.31	6.53	5.04	10,508	0.33
CARL KARCHER WAY	Anaheim Blvd	ROMNEYA30-ROMNEYA31	24	191.9	0.003	1.16	0.27	6.48	5.32	11,081	1.49	0.31	6.49	5.00	10,423	0.33
		ROMNEYA29-ROMNEYA30	24	330.8	0.002	1.42	0.33	5.66	4.24	8,840	2.02	0.39	5.67	3.65	7,600	0.61
	Swan St	ROMNEYA28-ROMNEYA29	24	314.2	0.002	1.49	0.33	5.62	4.14	8,621	2.16	0.41	5.63	3.47	7,238	0.67
	Homer St	ROMNEYA27-ROMNEYA28	24	170.0	0.002	1.50	0.34	5.62	4.12	8,588	2.25	0.42	5.63	3.38	7,042	0.75
		ROMNEYA26-ROMNEYA27	24	263.1	0.002	1.51	0.34	5.62	4.12	8,581	2.26	0.42	5.63	3.38	7,033	0.75
ROMNEYA DR	Harbor Blvd	ROMNEYA25-ROMNEYA26	24	300.0	0.002	1.51	0.34	5.64	4.13	8,608	2.26	0.42	5.65	3.39	7,060	0.75
		ROMNEYA24-ROMNEYA25	24	130.4	0.002	1.51	0.34	5.56	4.05	8,433	2.57	0.45	5.57	3.00	6,254	1.06
		ROMNEYA23-ROMNEYA24	24	137.1	0.002	1.57	0.35	5.60	4.03	8,388	2.68	0.46	5.61	2.93	6,104	1.11
		ROMNEYA22-ROMNEYA23	24	262.1	0.002	1.59	0.35	5.64	4.05	8,433	2.69	0.46	5.65	2.95	6,148	1.11
	Riviera St	ROMNEYA21-ROMNEYA22	24	246.1	0.002	1.60	0.35	5.63	4.02	8,379	2.71	0.46	5.64	2.92	6,092	1.11
	Ralston St	ROMNEYA20-ROMNEYA21	24	248.0	0.002	1.64	0.35	5.65	4.01	8,358	2.75	0.47	5.66	2.91	6,065	1.11
		ROMNEYA19-ROMNEYA20	24	206.4	0.002	1.65	0.36	5.59	3.93	8,194	2.77	0.47	5.60	2.83	5,896	1.11
	Citron Ln	ROMNEYA18-ROMNEYA19	24	49.9	0.002	1.65	0.36	5.44	3.79	7,890	2.77	0.48	5.45	2.68	5,590	1.11
		ROMNEYA17-ROMNEYA18	24	167.8	0.002	1.67	0.36	5.59	3.92	8,156	2.78	0.47	5.60	2.81	5,856	1.11
		ROMNEYA16-ROMNEYA17	24	66.5	0.002	1.67	0.37	5.32	3.65	7,598	2.78	0.49	5.33	2.54	5,296	1.11
		ROMNEYA15-ROMNEYA16	24	242.3	0.002	1.70	0.36	5.57	3.88	8,075	2.81	0.48	5.58	2.77	5,767	1.12
	Robin St	ROMNEYA14-ROMNEYA15	24	239.0	0.002	1.70	0.36	5.61	3.91	8,138	2.82	0.48	5.62	2.80	5,827	1.12
		ROMNEYA13-ROMNEYA14	24	274.3	0.002	1.95	0.39	5.64	3.69	7,688	3.08	0.50	5.65	2.57	5,354	1.13
		ROMNEYA12-ROMNEYA13	24	280.9	0.002	1.96	0.39	5.62	3.66	7,627	3.09	0.50	5.63	2.54	5,292	1.13
		ROMNEYA11-ROMNEYA12	24	179.4	0.002	1.96	0.39	5.61	3.65	7,598	3.09	0.50	5.62	2.53	5,263	1.13
	Lombard Dr	ROMNEYA10-ROMNEYA11	24	292.4	0.002	2.03	0.39	5.63	3.60	7,502	3.16	0.51	5.64	2.47	5,152	1.14
		ROMNEYA9-ROMNEYA10	24	77.6	0.003	2.08	0.38	6.31	4.23	8,817	3.22	0.48	6.32	3.10	6,467	1.14
	Cherry Way	ROMNEYA8-ROMNEYA9	24	295.0	0.003	2.08	0.37	6.47	4.39	9,152	3.22	0.47	6.48	3.27	6,802	1.14
	Medford St	ROMNEYA7-ROMNEYA8	24	300.0	0.003	2.08	0.37	6.49	4.41	9,181	3.22	0.47	6.50	3.28	6,831	1.14
		ROMNEYA6-ROMNEYA7	24	300.0	0.003	2.08	0.37	6.49	4.41	9,179	3.22	0.47	6.50	3.28	6,829	1.14
	Arbor St	ROMNEYA5-ROMNEYA6	24	299.8	0.003	2.08	0.37	6.49	4.41	9,181	3.22	0.47	6.50	3.28	6,831	1.14
		ROMNEYA4-ROMNEYA5	24	285.2	0.003	2.08	0.37	6.51	4.43	9,221	3.22	0.47	6.52	3.30	6,871	1.14
		ROMNEYA3-ROMNEYA4	24	300.0	0.003	2.08	0.37	6.52	4.44	9,244	3.22	0.47	6.53	3.31	6,894	1.14
		ROMNEYA2-ROMNEYA3	24	216.0	0.003	2.08	0.37	6.50	4.42	9,204	3.22	0.47	6.51	3.29	6,854	1.14
EUCLID ST	Romneya Dr	ROMNEYA1-ROMNEYA2	24	134.0	0.003	2.08	0.37	6.49	4.40	9,173	3.22	0.47	6.50	3.28	6,823	1.14
		ROMNEYA1-OT051311	30	506.2	0.001	2.08	0.37	6.64	4.56	9,500	3.22	0.47	6.67	3.44	7,175	1.14
	Cutter Rd	OT051311-OT051312	30	163.3	0.001	2.08	0.37	6.57	4.48	9,340	3.22	0.47	6.59	3.37	7,013	1.14
		OT051312-SW051328	30	515.6	0.001	2.08	0.37	6.64	4.56	9,494	3.22	0.47	6.66	3.44	7,169	1.14
	La Palma Ave	SW051328-SW052128	30	143.7	0.001	2.08	0.37	6.63	4.55	9,481	3.22	0.47	6.66	3.43	7,154	1.14

La Palma North System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH-Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
L A P A L M A A V E		SW060429-SW060428	12	361.6	0.00	0.17	0.27	0.95	0.78	1,623	0.18	0.28	0.95	0.77	1,598	0.01
	Citron St	SW060428-SW060427	12	313.3	0.00	0.17	0.27	1.02	0.85	1,760	0.18	0.27	1.02	0.83	1,733	0.01
		SW060427-SW060426	10	327.7	0.00	0.17	0.31	0.63	0.46	963	0.18	0.33	0.63	0.45	935	0.01
		SW060426-SW060425	10	145.9	0.00	0.17	0.36	0.50	0.33	677	0.18	0.37	0.50	0.31	650	0.01
		SW060425-SW060424	10	170.6	0.00	0.18	0.57	0.22	0.05	98	0.19	0.60	0.22	0.04	73	0.01
		SW060424-SW060314	10	378.1	0.00	0.18	0.35	0.53	0.36	746	0.19	0.36	0.53	0.35	719	0.01
	Mayfair Ave	SW060314-SW060313	10	308.5	0.01	0.19	0.29	0.79	0.60	1,258	0.20	0.30	0.79	0.59	1,231	0.01
		SW060313-SW060312	10	275.5	0.01	0.21	0.34	0.67	0.46	954	0.24	0.37	0.67	0.42	881	0.04
	West St	SW060312-SW051421	12	532.8	0.00	0.32	0.41	0.84	0.52	1,090	0.35	0.43	0.84	0.49	1,017	0.04
		SW051421-SW051420	12	413.9	0.00	0.32	0.38	0.96	0.64	1,338	0.35	0.40	0.96	0.61	1,267	0.03
		SW051420-SW051419	12	360.8	0.00	0.32	0.38	0.96	0.64	1,338	0.35	0.40	0.96	0.61	1,267	0.03
		SW051419-SW051418	12	310.9	0.00	0.32	0.38	0.96	0.64	1,338	0.35	0.40	0.96	0.61	1,267	0.03
		SW051418-SW051310	12	352.0	0.00	0.32	0.38	0.96	0.64	1,333	0.36	0.40	0.96	0.61	1,260	0.04
	Arbor St	SW051310-SW052106	12	928.5	0.00	0.32	0.38	0.96	0.64	1,329	0.36	0.40	0.96	0.60	1,256	0.04
	Euclid St	SW52106-OC-2-26-3	12	77.3	0.00	0.32	0.54	0.52	0.20	406	0.36	0.58	0.52	0.16	331	0.04

La Palma South System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH-Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
LA PALMA AVE		LAPALMA14-SW082205	12	290.3	0.004	1.04	0.68	1.18	0.13	279	1.05	0.68	1.18	0.13	273	0.00
		SW052102-SW052105	24	259.2	0.001	3.13	0.60	4.26	1.13	2,348	3.38	0.63	4.26	0.87	1,821	0.25
		SW052103-SW052102	24	381.9	0.001	3.13	0.69	3.46	0.33	679	3.38	0.74	3.46	0.07	154	0.25
		SW052104-SW052128	24	82.5	0.010	3.13	0.34	11.41	8.28	17,244	3.39	0.36	11.41	8.02	16,717	0.25
		SW052105-SW052104	24	262.6	0.002	3.13	0.53	5.16	2.02	4,217	3.39	0.56	5.16	1.77	3,690	0.25
	Pauline St	SW052201-SW052103	24	337.3	0.001	3.02	0.62	3.94	0.92	1,923	3.27	0.65	3.94	0.67	1,398	0.25
	Sabina St	SW052202-SW052201	24	130.5	0.002	2.91	0.52	4.97	2.06	4,296	3.16	0.55	4.97	1.81	3,773	0.25
	Olive St	SW052203-SW052202	24	122.2	0.002	2.91	0.49	5.45	2.54	5,288	3.16	0.52	5.45	2.29	4,765	0.25
	Patt St	SW052204-SW052203	24	345.4	0.002	2.91	0.49	5.44	2.53	5,267	3.16	0.52	5.44	2.28	4,744	0.25
	Claudina St	SW052205-SW052204	24	58.8	0.006	2.91	0.37	8.94	6.03	12,569	3.16	0.39	8.94	5.78	12,044	0.25
		SW052206-SW052205	21	260.4	0.002	2.89	0.65	3.52	0.63	1,317	3.14	0.69	3.52	0.38	792	0.25
	Anaheim Blvd	SW052207-SW052206	21	149.6	0.002	2.89	0.62	3.75	0.87	1,802	3.14	0.65	3.75	0.61	1,279	0.25
		SW060430-SW061201	21	200.0	0.003	2.55	0.50	4.60	2.05	4,260	2.79	0.53	4.60	1.81	3,773	0.23
	Lemon St	SW061101-SW052207	21	275.0	0.002	2.89	0.63	3.63	0.74	1,544	3.14	0.67	3.63	0.49	1,019	0.25
		SW061102-SW061101	21	115.7	0.004	2.80	0.48	5.44	2.65	5,510	3.03	0.51	5.44	2.41	5,021	0.24
		SW061103-SW061102	21	337.5	0.003	2.79	0.53	4.60	1.80	3,752	3.03	0.56	4.60	1.57	3,260	0.24
	Harbor Blvd	SW061104-SW061103	21	272.1	0.003	2.79	0.53	4.60	1.80	3,754	3.03	0.56	4.60	1.57	3,263	0.24
		SW061105-SW061104	21	177.4	0.003	2.69	0.52	4.60	1.91	3,977	2.92	0.55	4.60	1.67	3,485	0.24
		SW061106-SW061105	21	135.5	0.003	2.68	0.52	4.60	1.92	3,998	2.91	0.55	4.60	1.68	3,508	0.24
		SW061201-SW061106	21	105.4	0.003	2.55	0.50	4.60	2.04	4,256	2.79	0.53	4.60	1.81	3,769	0.23
	Citron St	SW061202-SW060430	21	431.7	0.003	2.36	0.48	4.60	2.24	4,665	2.58	0.51	4.60	2.02	4,200	0.22
		SW061203-SW061202	21	386.2	0.003	2.36	0.48	4.60	2.24	4,665	2.58	0.51	4.60	2.02	4,200	0.22
		SW071101-SW061203	21	347.6	0.003	2.36	0.48	4.60	2.24	4,669	2.58	0.51	4.60	2.02	4,204	0.22
		SW071102-SW071101	21	26.4	0.003	2.29	0.47	4.60	2.31	4,806	2.48	0.50	4.60	2.11	4,400	0.20
	Mayfair Ave	SW071104-SW071102	21	424.3	0.003	2.25	0.47	4.60	2.35	4,896	2.44	0.49	4.60	2.16	4,490	0.19
		SW071105-SW071104	21	396.6	0.003	2.24	0.47	4.60	2.35	4,898	2.44	0.49	4.60	2.16	4,494	0.20
	West St	SW071201-SW071105	21	426.9	0.003	2.24	0.47	4.60	2.36	4,906	2.44	0.49	4.60	2.16	4,502	0.19
		SW071202-SW071201	18	443.3	0.003	2.24	0.60	3.05	0.81	1,679	2.44	0.63	3.05	0.61	1,275	0.19
		SW071203-SW071202	18	310.2	0.003	2.24	0.60	3.05	0.81	1,679	2.44	0.63	3.05	0.61	1,275	0.19
		SW071204-SW071203	18	24.0	0.003	2.19	0.59	3.05	0.86	1,792	2.37	0.62	3.05	0.67	1,402	0.19
		SW071205-SW071204	18	109.9	0.003	2.09	0.57	3.05	0.96	1,996	2.23	0.60	3.05	0.82	1,708	0.14
		SW071206-SW071205	18	445.3	0.003	2.09	0.57	3.05	0.96	2,004	2.22	0.60	3.05	0.82	1,717	0.14
	Hermosa Dr	SW082102-SW071206	15	458.3	0.003	1.97	1.00	1.71	-0.26	0	2.06	1.00	1.71	-0.35	0	0.09
		SW082103-SW082102	15	429.1	0.002	1.93	1.00	1.49	-0.44	0	2.03	1.00	1.49	-0.54	0	0.09
		SW082104-SW082103	15	437.6	0.005	1.93	0.64	2.39	0.47	973	2.02	0.66	2.39	0.37	779	0.09
	Arbor St	SW082201-SW082104	15	432.3	0.003	1.92	0.74	1.95	0.03	56	2.02	0.77	1.95	-0.07	0	0.09
		SW082204-SW082201	12	393.4	0.003	1.08	0.78	1.03	-0.05	0	1.09	0.79	1.03	-0.05	0	0.01
		SW082205-SW082204	12	396.0	0.003	1.05	0.76	1.03	-0.01	0	1.05	0.76	1.03	-0.01	0	0.00
	Euclid St	SW091322-LAPLAMA14	12	89.0	0.003	1.22	1.00	1.08	-0.14	0	1.23	1.00	1.08	-0.15	0	0.01

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
ANAHEIM BLVD	North St	SW071414-SW071415	12	284.9	0.002	0.32	0.42	0.79	0.48	994	0.38	0.46	0.79	0.41	863	0.06
		SW071415-SW071416	12	294.0	0.001	0.32	0.48	0.62	0.30	627	0.39	0.55	0.62	0.23	475	0.07
		SW071416-SW071417	12	271.0	0.001	0.32	0.47	0.65	0.33	679	0.39	0.53	0.65	0.25	525	0.07
	Wilhelmina St	SW071417-SW071418	12	327.7	0.001	0.41	0.55	0.63	0.22	467	0.51	0.64	0.63	0.12	256	0.10
	Alberta St	SW071418-SW071419	12	331.6	0.001	0.41	0.55	0.64	0.23	488	0.52	0.64	0.64	0.12	254	0.11
	Sycamore St	SW071419-SW083136	12	329.2	0.001	0.41	0.56	0.63	0.22	454	0.53	0.66	0.63	0.10	204	0.12
		SW083136-SW083137	12	330.5	0.001	0.41	0.55	0.64	0.23	469	0.53	0.65	0.64	0.11	219	0.12
		SW083137-SW083138	12	320.5	0.001	0.41	0.56	0.63	0.22	454	0.53	0.66	0.63	0.10	204	0.12
	Cypress St	SW083138-SW083139	12	313.5	0.001	0.41	0.56	0.62	0.21	435	0.53	0.67	0.62	0.09	183	0.12
	Lincoln Ave	SW083139-SW083140	12	63.6	0.002	0.41	0.51	0.72	0.31	654	0.53	0.60	0.72	0.19	402	0.12
LINCOLN AVE	Anaheim Blvd	SW083140-SW083141	12	246.3	0.002	0.41	0.52	0.71	0.30	619	0.53	0.61	0.71	0.18	369	0.12
		SW083141-SW083120	12	10.0	0.020	0.42	0.26	2.58	2.16	4,504	0.54	0.30	2.58	2.04	4,248	0.12
		SW083120-SW072406	15	334.0	0.003	1.62	0.70	1.76	0.13	277	2.06	1.00	1.76	-0.30	0	0.44
	Lemon St	SW072406-SW072410	18	204.6	0.003	1.77	0.56	2.71	0.95	1,969	2.24	0.65	2.71	0.47	985	0.47
LEMON ST WEST	Lincoln Ave	SW072410-SW072412	18	192.0	0.003	1.77	0.54	2.83	1.06	2,206	2.24	0.63	2.83	0.59	1,225	0.47
		SW072412-SW072418	18	201.9	0.003	1.80	0.53	3.01	1.21	2,521	2.27	0.61	3.01	0.73	1,525	0.48
	Oak St	SW072418-SW072420	18	209.8	0.003	1.80	0.55	2.85	1.05	2,185	2.34	0.65	2.85	0.51	1,060	0.54
	Center St Prom	SW072420-SW083310	18	207.5	0.002	1.81	0.64	2.24	0.43	890	2.35	0.78	2.24	-0.11	0	0.54
		SW083310-SW083324	24	99.5	0.004	1.82	0.33	7.07	5.25	10,929	2.36	0.38	7.07	4.71	9,802	0.54
		SW083324-SW083315	24	108.5	0.003	1.82	0.34	6.67	4.85	10,113	2.36	0.39	6.67	4.31	8,985	0.54
	Broadway	SW083315-SW084103	24	296.2	0.001	2.40	0.53	3.93	1.52	3,175	3.16	0.64	3.93	0.77	1,602	0.76
		SW084103-SW084130	24	124.5	0.003	2.42	0.42	6.06	3.64	7,581	3.17	0.49	6.06	2.88	6,008	0.76
	Elm St	SW084130-SW084106	24	162.8	0.002	2.45	0.50	4.54	2.10	4,367	3.20	0.58	4.54	1.34	2,788	0.76
		SW084106-SW084123	24	265.3	0.001	2.46	0.50	4.44	1.98	4,131	3.22	0.59	4.44	1.22	2,550	0.76
	Santa Ana St	SW084123-SW084112	24	18.5	0.004	2.52	0.38	7.63	5.12	10,656	3.34	0.44	7.63	4.29	8,935	0.83
		SW084112-SW084115	24	402.3	0.001	2.59	0.56	3.96	1.37	2,858	3.45	0.67	3.96	0.52	1,073	0.86
		SW084115-SW084303	24	365.5	0.001	2.60	0.61	3.43	0.83	1,735	3.45	0.76	3.43	-0.03	0	0.86
		SW084303-SW084304	24	15.2	0.013	2.68	0.29	13.30	10.62	22,123	3.68	0.34	13.30	9.62	20,040	1.00
	Water St	SW084304-SW084328	24	20.8	0.010	2.68	0.32	11.36	8.68	18,073	3.68	0.37	11.36	7.67	15,988	1.00
		SW084328-SW084309	24	270.7	0.001	1.34	0.40	3.66	2.32	4,825	1.84	0.48	3.66	1.82	3,783	0.50
		SW084309-SW084315	24	295.7	0.002	1.35	0.33	5.39	4.04	8,419	1.85	0.38	5.39	3.54	7,375	0.50
		SW084315-SW084325	24	292.2	0.001	1.36	0.39	3.89	2.53	5,275	1.86	0.46	3.89	2.03	4,231	0.50
	South St	SW084325-SW085101	24	318.1	0.001	0.00	0.00	7.82	7.82	16,281	0.00	0.00	7.82	7.82	16,281	0.00
		SW085101-SW085110	24	326.2	0.001	1.37	0.39	3.89	2.53	5,260	1.88	0.47	3.89	2.01	4,190	0.51
	Valencia Ave	SW085110-SW085121	24	328.0	0.001	1.37	0.39	3.89	2.52	5,254	1.89	0.47	3.89	2.01	4,179	0.52
		SW085121-SW085127	24	328.0	0.001	1.38	0.39	3.89	2.52	5,244	1.89	0.47	3.89	2.00	4,169	0.52
	Vermont Ave	SW085127-SW085133	24	47.1	0.001	1.38	0.39	3.89	2.51	5,238	1.89	0.47	3.89	2.00	4,156	0.52
		SW085134-SW085136	21	329.6	0.001	1.70	0.51	2.98	1.28	2,665	2.14	0.59	2.98	0.84	1,756	0.44
		SW085136-SW085315	21	99.8	0.001	1.71	0.51	2.99	1.27	2,646	2.15	0.59	2.99	0.83	1,735	0.44
		SW085315-SW085306	21	425.9	0.001	1.72	0.52	2.98	1.26	2,625	2.16	0.59	2.98	0.82	1,713	0.44
		SW085306-SW085422	21	198.9	0.001	1.73	0.52	2.98	1.26	2,621	2.16	0.59	2.98	0.82	1,708	0.44
		SW085422-SW085424	21	218.5	0.001	1.73	0.52	2.98	1.26	2,617	2.17	0.59	2.98	0.82	1,704	0.44
	Ball Rd	SW085424-SW085429	21	427.2	0.001	1.73	0.52	2.98	1.26	2,615	2.17	0.59	2.98	0.82	1,702	0.44
	Siphon	SW086201-SW085429	21	49.8	0.001	1.33	0.45	2.93	1.61	3,344	1.64	0.51	2.93	1.29	2,692	0.31

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
LEMON ST EAST	Vermont Ave	SW084327-SW085107	24	447.5	0.001	1.55	0.46	3.24	1.69	3,515	2.00	0.54	3.24	1.24	2,585	0.45
		SW085107-SW085118	24	443.8	0.001	1.56	0.46	3.25	1.70	3,540	2.00	0.54	3.25	1.25	2,602	0.45
		SW085118-SW085134	24	449.2	0.001	1.56	0.46	3.23	1.68	3,494	2.01	0.54	3.23	1.23	2,556	0.45
		SW085138-SW085316	15	414.6	0.001	0.86	0.58	1.24	0.37	779	1.05	0.66	1.24	0.19	388	0.19
		SW085316-SW085319	15	297.2	0.001	0.90	0.60	1.24	0.34	702	1.09	0.68	1.24	0.15	308	0.19
		SW085319-SW085423	15	341.9	0.001	0.91	0.60	1.24	0.32	675	1.10	0.68	1.24	0.14	281	0.19
		SW085423-SW085425	15	347.9	0.001	0.91	0.60	1.24	0.33	677	1.10	0.68	1.24	0.14	283	0.19
		SW085425-SW085428	15	286.2	0.001	0.93	0.61	1.24	0.31	652	1.12	0.69	1.24	0.12	258	0.19
	Ball Rd	SW085428-SW085429	15	14.3	0.001	0.93	0.68	1.05	0.13	260	1.12	0.79	1.05	-0.06	0	0.19
EAST ST	Sycamore St	SW092310-SW092316	12	286.2	0.001	0.24	0.40	0.65	0.41	852	0.24	0.40	0.65	0.41	852	0.00
	Flower St	SW092316-SW092321	12	263.6	0.002	0.26	0.35	0.90	0.64	1,325	0.26	0.35	0.90	0.64	1,325	0.00
	Adele St	SW092321-SW092325	12	252.7	0.001	0.28	0.42	0.70	0.42	865	0.28	0.42	0.70	0.42	865	0.00
	Cypress St	SW092325-SW093115	12	662.7	0.006	0.32	0.31	1.39	1.08	2,240	0.34	0.32	1.39	1.06	2,206	0.02
		SW093115-SW093116	12	160.7	0.010	0.34	0.28	1.86	1.52	3,175	0.35	0.28	1.86	1.51	3,140	0.02
	Lincoln Ave	SW093116-SW093213	18	254.3	0.002	0.99	0.45	2.16	1.17	2,438	1.01	0.46	2.16	1.15	2,402	0.02
		SW093213-SW093216	18	142.0	0.002	1.00	0.43	2.39	1.39	2,894	1.02	0.43	2.39	1.37	2,858	0.02
	Oak St	SW093216-SW093220	18	276.6	0.001	1.02	0.53	1.71	0.69	1,444	1.20	0.58	1.71	0.51	1,069	0.18
	Chestnut St	SW093220-SW093222	18	173.0	0.001	1.05	0.56	1.58	0.53	1,108	1.23	0.62	1.58	0.35	733	0.18
	Broadway	SW093222-SW093407	18	280.5	0.001	1.05	0.54	1.70	0.65	1,350	1.23	0.59	1.70	0.47	975	0.18
		SW093407-SW093416	18	287.1	0.001	1.08	0.55	1.68	0.60	1,254	1.26	0.61	1.68	0.42	873	0.18
		SW093416-SW093412	18	271.7	0.001	1.10	0.55	1.70	0.60	1,252	1.28	0.61	1.70	0.42	871	0.18
	Santa Ana St	SW093412-SW093425	21	263.3	0.005	1.62	0.35	5.50	3.89	8,098	1.80	0.37	5.50	3.70	7,710	0.19
		SW093425-SW094201	21	143.5	0.002	1.62	0.45	3.59	1.97	4,096	1.81	0.48	3.59	1.78	3,708	0.19
		SW094201-SW094203	21	128.4	0.002	1.63	0.43	3.86	2.23	4,638	1.82	0.46	3.86	2.04	4,250	0.19
		SW094203-SW094210	21	265.2	0.001	1.63	0.61	2.17	0.54	1,127	1.82	0.65	2.17	0.35	738	0.19
		SW094210-SW094213	21	29.1	0.003	1.66	0.41	4.25	2.59	5,400	1.85	0.44	4.25	2.41	5,010	0.19
	Haven Dr	SW094213-SW094214	21	298.5	0.001	1.72	0.52	2.93	1.22	2,540	2.07	0.58	2.93	0.86	1,800	0.36
	Crestbrook Pl	SW094214-SW094217	21	263.8	0.001	1.73	0.64	2.12	0.39	808	2.09	0.74	2.12	0.03	65	0.36
		SW094217-SW094222	21	251.6	0.003	1.76	0.42	4.43	2.68	5,573	2.13	0.46	4.43	2.30	4,785	0.38
	South St	SW094222-SW094403	18	439.7	0.002	0.54	0.34	2.04	1.50	3,117	0.65	0.37	2.04	1.39	2,894	0.11
		SW094403-SW094406	18	370.2	0.002	1.60	0.56	2.41	0.81	1,681	1.90	0.63	2.41	0.50	1,048	0.30
		SW094406-SW094408	18	83.8	0.002	1.62	0.59	2.28	0.66	1,377	1.92	0.66	2.28	0.36	744	0.30
	Vermont Ave	SW094408-SW094415	18	462.9	0.002	1.62	0.53	2.68	1.07	2,219	1.95	0.59	2.68	0.74	1,535	0.33
BROADWAY	Kroeger St	SW083428-SW083432	12	338.4	0.004	0.13	0.21	1.21	1.08	2,248	0.14	0.22	1.21	1.06	2,217	0.02
	Melrose St	SW083432-SW083433	12	308.8	0.008	0.17	0.21	1.63	1.47	3,056	0.24	0.25	1.63	1.39	2,900	0.08
		SW083433-SW083419	12	50.0	0.005	0.17	0.24	1.24	1.07	2,235	0.24	0.29	1.24	1.00	2,077	0.08
	Olive St	SW083419-SW083418	12	198.0	0.003	0.40	0.43	0.94	0.54	1,123	0.49	0.49	0.94	0.45	931	0.09
		SW083418-SW083411	12	200.0	0.001	0.40	0.56	0.61	0.21	435	0.49	0.64	0.61	0.12	242	0.09
	Philadelphia St	SW083411-SW083319	12	388.7	0.003	0.41	0.44	0.93	0.52	1,073	0.50	0.50	0.93	0.42	879	0.09
		SW083319-SW083318	12	326.8	0.002	0.42	0.46	0.88	0.46	950	0.57	0.55	0.88	0.31	650	0.14
	Anaheim Blvd	SW083318-SW083316	12	343.8	0.003	0.57	0.53	0.93	0.36	756	0.78	0.66	0.93	0.15	306	0.22
	Lemon St	SW083316-SW083315	12	315.8	0.002	0.57	0.61	0.76	0.19	394	0.78	0.77	0.76	-0.03	0	0.22
ELM ST	Harbor Blvd	SW073208-SW073221	12	393.0	0.008	0.01	0.06	1.62	1.61	3,352	0.02	0.07	1.62	1.60	3,338	0.01
HARBOR		SW073221-SW073222	12	378.7	0.003	0.01	0.08	0.95	0.94	1,956	0.02	0.09	0.95	0.93	1,944	0.01

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
SANTA ANA ST	Janss St	SW073222-SW073223	12	39.7	0.065	0.01	0.04	4.67	4.66	9,702	0.02	0.04	4.67	4.65	9,690	0.01
		SW073223-SW073116	12	531.6	0.002	0.01	0.08	0.89	0.88	1,833	0.02	0.10	0.89	0.87	1,819	0.01
		SW073116-SW073112	12	51.4	0.002	0.15	0.27	0.88	0.73	1,517	0.26	0.36	0.88	0.62	1,290	0.11
		SW073112-SW073114	12	353.1	0.002	0.15	0.27	0.87	0.71	1,481	0.32	0.40	0.87	0.54	1,131	0.17
		SW073114-SW073109	12	333.3	0.002	0.16	0.28	0.87	0.71	1,469	0.38	0.44	0.87	0.48	1,002	0.22
		SW073109-SW073301	12	280.3	0.002	0.17	0.28	0.87	0.70	1,454	0.39	0.45	0.87	0.47	985	0.23
		SW073301-SW063406	12	313.9	0.002	0.17	0.29	0.87	0.69	1,446	0.40	0.45	0.87	0.47	977	0.23
		SW063406-SW063405	12	278.4	0.002	0.18	0.29	0.87	0.69	1,435	0.40	0.45	0.87	0.46	967	0.23
		SW063405-SW063404	12	181.6	0.002	0.18	0.29	0.87	0.69	1,429	0.41	0.46	0.87	0.46	958	0.23
	West St	SW063404-SW063440	12	46.1	0.002	0.18	0.29	0.87	0.69	1,429	0.41	0.46	0.87	0.46	958	0.23
		SW063440-SW063408	12	74.4	0.002	0.18	0.29	0.87	0.69	1,429	0.41	0.46	0.87	0.46	958	0.23
		SW063408-SW063439	12	44.1	0.002	0.18	0.29	0.87	0.69	1,429	0.41	0.46	0.87	0.46	958	0.23
		SW063439-SW063441	24	8.2	0.006	1.36	0.26	8.69	7.33	15,279	1.70	0.29	8.69	7.00	14,581	0.34
		SW063441-SW063414	24	66.9	0.003	1.49	0.31	6.64	5.14	10,717	1.83	0.34	6.64	4.81	10,015	0.34
		SW063414-SW063435	24	28.1	0.003	1.49	0.31	6.56	5.07	10,554	1.83	0.34	6.56	4.73	9,852	0.34
	5 FWY	SW063435-SW063418	24	20.7	0.003	1.49	0.31	6.56	5.07	10,552	1.83	0.34	6.56	4.73	9,850	0.34
WATER ST	Lemon St	SW084328-SW084329	15	194.9	0.006	1.34	0.50	2.46	1.12	2,333	1.84	0.61	2.46	0.62	1,292	0.50
		SW084329-SW084330	15	210.3	0.004	1.35	0.54	2.14	0.79	1,654	1.85	0.67	2.14	0.29	613	0.50
		SW084330-SW073416	15	306.1	0.005	1.35	0.51	2.36	1.01	2,110	1.85	0.63	2.36	0.51	1,069	0.50
		SW073416-SW073417	15	301.9	0.005	1.35	0.51	2.38	1.03	2,140	1.85	0.62	2.38	0.53	1,096	0.50
	Harbor Blvd	SW073417-SW073418	15	282.9	0.002	1.35	0.70	1.47	0.12	246	1.86	1.00	1.47	-0.38	0	0.50
		SW073418-SW073420	15	317.6	0.002	1.36	0.71	1.46	0.11	221	1.86	1.00	1.46	-0.40	0	0.50
		SW073420-SW073419	15	13.8	0.002	1.36	0.68	1.54	0.19	390	1.86	1.00	1.54	-0.32	0	0.50
	Janns St	SW073419-SW073333	15	301.7	0.002	1.36	0.71	1.46	0.11	223	1.86	1.00	1.46	-0.40	0	0.50
	Resh St	SW073333-SW073332	15	302.4	0.002	1.36	0.71	1.46	0.10	210	1.86	1.00	1.46	-0.40	0	0.50
	Citron St	SW073332-SW073331	15	312.4	0.002	1.36	0.72	1.44	0.08	160	1.86	1.00	1.44	-0.43	0	0.50
	Ohio St	SW073331-SW073330	15	298.4	0.002	1.36	0.71	1.47	0.11	227	1.86	1.00	1.47	-0.39	0	0.50
	Indiana St	SW073330-SW073329	15	296.0	0.002	1.36	0.70	1.48	0.11	238	1.87	1.00	1.48	-0.39	0	0.50
	Illinois St	SW073329-SW063442	15	272.4	0.002	1.36	0.70	1.49	0.12	254	1.87	1.00	1.49	-0.38	0	0.50
	West St	SW063442-SW063443	15	113.9	0.002	1.37	0.71	1.45	0.09	188	1.87	1.00	1.45	-0.41	0	0.50
		SW063443-SW063444	15	8.2	0.002	1.37	0.65	1.63	0.27	556	1.87	1.00	1.63	-0.24	0	0.50
SOUTH ST	East St	SW094222-SW094229	18	25.1	0.002	0.53	0.32	2.15	1.62	3,371	0.63	0.35	2.15	1.52	3,167	0.10
		SW094229-SW094230	18	272.3	0.001	0.54	0.32	2.23	1.69	3,521	0.68	0.36	2.23	1.55	3,221	0.14
		SW094230-SW094231	18	203.8	0.002	0.54	0.35	1.93	1.39	2,890	0.69	0.39	1.93	1.24	2,590	0.14
		SW094231-SW094232	18	7.8	0.001	0.55	0.34	2.02	1.47	3,054	0.76	0.40	2.02	1.26	2,631	0.20
		SW094232-SW094233	18	398.2	0.001	0.59	0.37	1.85	1.26	2,629	0.90	0.47	1.85	0.95	1,977	0.31
		SW094233-SW094234	18	8.5	0.001	0.59	0.34	2.12	1.53	3,185	0.90	0.43	2.12	1.22	2,531	0.31
		SW094234-SW094313	18	336.1	0.002	0.59	0.34	2.13	1.55	3,221	0.90	0.43	2.13	1.23	2,569	0.31
	Orange St	SW094313-SW094314	18	317.9	0.002	0.64	0.37	2.03	1.39	2,892	0.96	0.46	2.03	1.07	2,233	0.32
		SW094314-SW094315	18	112.2	0.001	0.65	0.36	2.18	1.53	3,188	0.97	0.44	2.18	1.21	2,529	0.32
	Mkroeger St	SW094315-SW094316	18	158.3	0.002	0.66	0.37	2.05	1.39	2,896	0.98	0.46	2.05	1.07	2,233	0.32
		SW094316-SW094317	18	172.2	0.001	0.81	0.41	2.15	1.34	2,781	1.13	0.49	2.15	1.01	2,113	0.32
	Melrose St	SW094317-SW084426	18	169.7	0.002	1.59	0.56	2.38	0.79	1,646	1.88	0.63	2.38	0.50	1,035	0.29
		SW084426-SW084427	21	167.2	0.002	0.81	0.33	3.20	2.39	4,969	1.14	0.39	3.20	2.06	4,300	0.32

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
S O U T H S T	Olive St	SW084427-SW084428	21	40.6	0.001	1.01	0.37	3.12	2.12	4,406	1.46	0.46	3.12	1.67	3,469	0.45
		SW084428-SW084429	21	130.9	0.002	1.21	0.38	3.69	2.48	5,163	1.56	0.43	3.69	2.12	4,421	0.36
		SW084429-SW084430	21	292.0	0.002	1.22	0.38	3.59	2.37	4,927	1.58	0.44	3.59	2.01	4,183	0.36
		SW084430-SW084431	21	295.2	0.002	1.24	0.37	3.92	2.68	5,588	1.60	0.42	3.92	2.32	4,842	0.36
		SW084431-SW084432	21	240.2	0.002	1.26	0.37	3.99	2.72	5,675	1.62	0.42	3.99	2.37	4,929	0.36
		SW084432-SW084433	21	50.3	0.002	1.47	0.42	3.62	2.15	4,469	1.87	0.48	3.62	1.75	3,635	0.40
		SW084433-SW084434	21	193.5	0.003	1.49	0.40	4.13	2.64	5,492	1.91	0.45	4.13	2.21	4,606	0.42
	Anaheim Blvd	SW084434-SW084326	21	295.5	0.006	1.50	0.31	6.40	4.91	10,227	1.94	0.36	6.40	4.47	9,308	0.44
		SW084326-SW084327	21	271.6	0.006	1.36	0.39	3.89	2.53	5,271	1.87	0.46	3.89	2.03	4,223	0.50
	Lemon St	SW084327-SW084323	24	6.6	0.005	1.55	0.32	6.50	4.94	10,296	2.00	0.36	6.50	4.50	9,367	0.45
		SW084323-SW084322	8	201.3	0.004	0.00	0.06	0.34	0.33	692	0.00	0.06	0.34	0.33	692	0.00
		SW084322-SW084321	8	75.3	0.003	0.02	0.15	0.29	0.28	573	0.02	0.17	0.29	0.27	560	0.01
		SW084321-SW084320	8	28.0	0.003	0.02	0.15	0.29	0.28	573	0.03	0.18	0.29	0.27	558	0.01
		SW084320-SW084319	8	62.4	0.003	0.04	0.23	0.29	0.25	517	0.05	0.25	0.29	0.24	502	0.01
	Clementine St	SW084319-SW084318	8	226.8	0.003	0.05	0.25	0.29	0.24	506	0.06	0.27	0.29	0.24	492	0.01
	Dickel St	SW084318-SW073415	8	213.5	0.003	0.07	0.30	0.29	0.22	460	0.08	0.31	0.29	0.21	446	0.01
		SW073415-SW073414	8	79.5	0.003	0.08	0.31	0.29	0.22	452	0.08	0.32	0.29	0.21	438	0.01
	Helena St	SW073414-SW073413	8	27.1	0.003	0.10	0.35	0.29	0.20	406	0.11	0.36	0.29	0.19	392	0.01
		SW073413-SW073412	8	266.4	0.004	0.11	0.35	0.34	0.23	479	0.12	0.36	0.34	0.22	463	0.01
	Harbor Blvd	SW073412-SW074205	12	302.4	0.004	0.15	0.23	1.13	0.98	2,042	0.20	0.27	1.13	0.93	1,933	0.05
	Pine St	SW074205-SW074204	12	97.3	0.004	0.16	0.24	1.16	1.00	2,077	0.21	0.28	1.16	0.95	1,969	0.05
		SW074204-SW074203	12	191.9	0.004	0.16	0.24	1.14	0.98	2,038	0.22	0.28	1.14	0.92	1,925	0.05
	Janss St	SW074203-SW074201	12	294.2	0.004	0.18	0.26	1.14	0.95	1,985	0.24	0.30	1.14	0.90	1,871	0.05
	Resh St	SW074201-SW074112	12	286.1	0.004	0.20	0.27	1.15	0.95	1,981	0.26	0.31	1.15	0.90	1,867	0.06
		SW074112-SW074111	12	13.2	0.004	0.20	0.27	1.12	0.92	1,917	0.26	0.31	1.12	0.86	1,800	0.06
	Citron St	SW074111-SW074110	12	293.4	0.004	0.45	0.40	1.19	0.74	1,542	0.50	0.43	1.19	0.68	1,425	0.06
	Ohio St	SW074110-SW074109	12	137.0	0.003	0.45	0.45	1.00	0.55	1,138	0.51	0.48	1.00	0.49	1,019	0.06
		SW074109-SW074108	15	146.6	0.002	0.46	0.36	1.52	1.07	2,219	0.51	0.38	1.52	1.01	2,100	0.06
	Indiana St	SW074108-SW074107	15	124.6	0.002	0.47	0.38	1.36	0.89	1,858	0.52	0.41	1.36	0.84	1,740	0.06
	Bellevue Dr	SW074107-SW074106	15	87.2	0.001	0.47	0.42	1.18	0.71	1,475	0.53	0.44	1.18	0.65	1,356	0.06
	5 FWY	SW074106-SW074105	10	13.5	0.008	0.47	0.45	0.88	0.41	852	0.53	0.48	0.88	0.35	733	0.06

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
	Broadway	SW063215-SW063216	15	216.49	0.002	1.10	0.56	1.65	0.56	1,156	1.21	0.60	1.65	0.44	925	0.11
		SW063216-SW063223	15	222.31	0.001	1.15	0.69	1.28	0.13	273	1.26	0.74	1.28	0.02	40	0.11
		SW063223-SW063402	15	139.73	0.002	1.15	0.69	1.28	0.13	277	1.26	0.74	1.28	0.02	44	0.11
		SW063402-SW063437	24	268.54	0.001	1.16	0.44	2.64	1.47	3,069	1.27	0.47	2.64	1.36	2,835	0.11
		SW063437-SW063438	24	253.92	0.001	1.18	0.36	3.81	2.63	5,479	1.29	0.38	3.81	2.52	5,244	0.11
		SW063438-SW063439	24	54.726	0.001	1.18	0.35	4.05	2.87	5,985	1.29	0.37	4.05	2.76	5,750	0.11
	Santa Ana St	SW063418-SW063421	24	213.0	0.003	1.49	0.31	6.56	5.07	10,563	1.83	0.34	6.56	4.73	9,860	0.34
		SW063421-SW063428	24	212.6	0.003	1.49	0.31	6.55	5.06	10,542	1.83	0.34	6.55	4.72	9,840	0.34
		SW063428-SW063432	24	259.0	0.003	1.49	0.31	6.55	5.06	10,535	1.83	0.34	6.55	4.72	9,833	0.34
		SW063432-SW063444	24	97.8	0.003	1.49	0.31	6.56	5.07	10,556	1.83	0.34	6.56	4.73	9,854	0.34
	Water St	SW063444-SW063433	24	105.7	0.004	2.83	0.42	6.95	4.12	8,581	3.65	0.49	6.95	3.30	6,865	0.82
5		SW063433-SW063434	24	246.8	0.002	2.88	0.53	4.84	1.95	4,071	3.71	0.62	4.84	1.13	2,354	0.82
		SW063434-SW064232	24	40.7	0.002	2.88	0.51	5.14	2.26	4,698	3.71	0.59	5.14	1.43	2,983	0.82
F		SW064232-SW074129	24	198.2	0.002	2.88	0.55	4.52	1.64	3,415	3.71	0.65	4.52	0.82	1,700	0.82
W		SW074129-SW074131	24	180.0	0.002	2.88	0.55	4.52	1.64	3,419	3.71	0.64	4.52	0.82	1,702	0.82
Y	Illinois St	SW074131-SW074105	24	199.6	0.002	2.89	0.55	4.52	1.63	3,404	3.71	0.65	4.52	0.81	1,688	0.82
		SW074105-SW074134	24	308.6	0.002	3.32	0.53	5.52	2.20	4,583	4.20	0.61	5.52	1.32	2,756	0.88
	Irving Pl	SW074134-SW074138	30	364.6	0.002	3.33	0.38	9.84	6.52	13,573	4.20	0.43	9.84	5.64	11,746	0.88
		SW074138-SW074141	30	53.5	0.002	3.33	0.40	9.08	5.76	11,992	4.20	0.45	9.08	4.88	10,167	0.88
	Bellevue Dr	SW074141-SW074139	30	127.6	0.002	3.33	0.41	8.72	5.39	11,227	4.21	0.46	8.72	4.51	9,402	0.88
		SW074139-SW074140	30	115.1	0.001	3.33	0.44	7.58	4.25	8,854	4.21	0.50	7.58	3.37	7,029	0.88
		SW074140-SW074321	30	111.7	0.001	3.33	0.44	7.70	4.37	9,096	4.21	0.50	7.70	3.49	7,269	0.88
		SW074324-SW074325	30	46.3	0.001	3.34	0.47	6.91	3.57	7,438	4.21	0.53	6.91	2.69	5,610	0.88
		SW074321-SW074322	30	194.2	0.001	3.33	0.47	6.74	3.41	7,100	4.21	0.54	6.74	2.53	5,273	0.88
		SW074322-SW074323	30	64.0	0.001	3.34	0.46	6.95	3.61	7,521	4.21	0.53	6.95	2.73	5,696	0.88
		SW074323-SW074324	30	38.5	0.001	3.34	0.47	6.77	3.44	7,165	4.21	0.54	6.77	2.56	5,338	0.88
		SW074325-SW074314	30	67.6	0.001	3.34	0.44	7.66	4.33	9,019	4.21	0.50	7.66	3.45	7,194	0.88
	East St	SW094415-SW094414	18	372.7	0.002	1.80	0.60	2.46	0.67	1,385	2.13	0.67	2.46	0.34	698	0.33
	Rose Pl	SW094414-SW094413	18	51.0	0.002	1.83	0.64	2.26	0.43	885	2.22	0.74	2.26	0.04	79	0.39
		SW094413-SW095202	18	403.4	0.002	1.83	0.62	2.35	0.52	1,075	2.22	0.72	2.35	0.13	269	0.39
		SW095202-SW095113	18	414.5	0.002	1.83	0.62	2.35	0.51	1,071	2.22	0.72	2.35	0.13	265	0.39
V		SW095113-SW095112	18	274.6	0.002	1.83	0.63	2.34	0.51	1,056	2.22	0.72	2.34	0.12	250	0.39
E	South Dakota St	SW095112-SW095110	18	125.7	0.002	1.91	0.62	2.45	0.54	1,123	2.30	0.71	2.45	0.15	315	0.39
R		SW095110-SW095108	18	362.2	0.002	1.92	0.63	2.42	0.50	1,035	2.31	0.72	2.42	0.11	227	0.39
M		SW095108-SW095106	18	377.1	0.003	1.92	0.57	2.84	0.92	1,915	2.31	0.64	2.84	0.53	1,104	0.39
O	Olive St	SW095106-SW085226	18	140.1	0.003	1.92	0.55	2.98	1.06	2,208	2.31	0.62	2.98	0.67	1,400	0.39
N	Philadelphia St	SW085226-SW085216	18	283.9	0.002	2.06	0.68	2.32	0.27	558	2.46	0.79	2.32	-0.14	0	0.40
T		SW085216-SW085213	18	397.7	0.002	2.06	0.63	2.63	0.57	1,188	2.46	0.71	2.63	0.17	346	0.40
	Claudina St	SW085213-SW085227	18	23.7	0.003	2.06	0.58	2.92	0.86	1,794	2.46	0.66	2.92	0.46	952	0.40
S		SW085227-SW085228	18	100.7	0.002	2.06	0.62	2.68	0.62	1,292	2.46	0.70	2.68	0.22	450	0.40
T		SW085228-SW085212	18	24.7	0.002	2.06	0.62	2.65	0.59	1,231	2.47	0.71	2.65	0.19	385	0.41
		SW085212-SW085232	24	92.1	0.002	2.15	0.41	5.69	3.54	7,371	2.62	0.45	5.69	3.07	6,392	0.47
	Anaheim Blvd	SW085232-SW085211	24	174.5	0.002	2.16	0.41	5.69	3.53	7,356	2.63	0.45	5.69	3.06	6,377	0.47
		SW085211-SW085231	24	271.5	0.002	2.16	0.41	5.69	3.53	7,356	2.63	0.45	5.69	3.06	6,377	0.47
		SW085231-SW085138	24	262.4	0.002	2.16	0.41	5.69	3.53	7,356	2.63	0.45	5.69	3.06	6,377	0.47

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
VERMONT ST	Lemon St	SW085138-SW085134	24	9.1	0.002	1.30	0.31	5.69	4.39	9,150	1.58	0.34	5.69	4.11	8,563	0.28
		SW085134-SW085133	15	98.9	0.050	1.14	0.25	7.40	6.26	13,040	1.43	0.28	7.40	5.97	12,433	0.29
		SW085133-SW085131	24	315.8	0.001	2.52	0.55	3.97	1.45	3,019	3.33	0.66	3.97	0.64	1,333	0.81
		SW085131-SW085130	24	305.1	0.001	2.53	0.54	4.04	1.50	3,129	3.34	0.65	4.04	0.69	1,444	0.81
		SW085130-SW085128	24	274.0	0.001	2.54	0.54	4.02	1.48	3,083	3.35	0.65	4.02	0.67	1,396	0.81
		SW085128-SW074227	24	227.1	0.001	2.54	0.53	4.21	1.67	3,475	3.36	0.63	4.21	0.86	1,781	0.81
	Harbor Blvd	SW074227-SW074226	24	15.0	0.001	2.54	0.53	4.23	1.69	3,510	3.36	0.63	4.23	0.87	1,815	0.81
		SW074226-SW074224	24	48.2	0.002	2.54	0.45	5.54	2.99	6,233	3.36	0.53	5.54	2.18	4,540	0.81
		SW074224-SW074411	24	336.0	0.001	2.64	0.56	4.00	1.36	2,823	3.46	0.67	4.00	0.54	1,127	0.81
		SW074411-SW074409	24	288.6	0.001	2.66	0.57	3.92	1.26	2,617	3.48	0.68	3.92	0.44	917	0.82
		SW074409-SW074407	24	242.6	0.001	2.69	0.56	4.07	1.39	2,894	3.50	0.67	4.07	0.57	1,192	0.82
	Citron St	SW074407-SW074404	24	262.4	0.001	2.69	0.57	3.98	1.29	2,694	3.51	0.68	3.98	0.48	994	0.82
		SW074404-SW074402	24	59.0	0.001	2.81	0.56	4.27	1.46	3,031	3.63	0.66	4.27	0.64	1,331	0.82
		SW074402-SW074326	24	223.8	0.002	2.82	0.51	4.90	2.08	4,340	3.66	0.61	4.90	1.24	2,585	0.84
	5 Fwy	SW074326-SW074314	24	41.4	0.006	2.82	0.37	8.82	6.01	12,519	3.66	0.43	8.82	5.17	10,765	0.84
OX RD	Crossing 5 FWY	SW074314-SW074327	33	487.1	0.001	6.14	0.63	7.76	1.62	3,377	7.86	0.76	7.76	-0.10	0	1.72
		SW074327-SW074328	33	159.4	0.001	6.14	0.65	7.43	1.29	2,685	7.86	0.79	7.43	-0.43	0	1.72
	Ball Rd	SW074328-SW074329	33	275.4	0.001	6.14	0.65	7.48	1.34	2,790	7.86	0.78	7.48	-0.38	0	1.72
BALL ROAD SOUTH	Anaheim Blvd	SW086206-SW086205	15	119.6	0.002	0.81	0.47	1.63	0.82	1,713	1.08	0.56	1.63	0.55	1,146	0.27
		SW086205-SW086204	15	256.8	0.002	0.81	0.49	1.55	0.74	1,538	1.13	0.60	1.55	0.41	860	0.32
		SW086204-SW086203	15	86.7	0.004	0.86	0.43	2.04	1.19	2,471	1.22	0.53	2.04	0.82	1,706	0.37
		SW086203-SW086202	15	313.9	0.003	0.86	0.46	1.81	0.96	1,994	1.24	0.57	1.81	0.58	1,198	0.38
		SW086202-SW086201	15	294.4	0.003	0.86	0.46	1.81	0.95	1,983	1.25	0.57	1.81	0.57	1,181	0.38
	Lemon St	New Connection	24	19.8	0.003	2.18	0.39	6.32	4.15	8,638	2.84	0.45	6.32	3.49	7,260	0.66
		SW086201-SW086108	24	250.3	0.001	2.18	0.48	4.33	2.15	4,483	2.84	0.56	4.33	1.49	3,104	0.66
	Cambridge St	SW086108-SW086107	24	74.9	0.001	2.18	0.48	4.34	2.16	4,496	2.84	0.56	4.34	1.50	3,117	0.66
	Claremont St	SW086107-SW086106	24	65.7	0.001	2.22	0.48	4.34	2.11	4,400	2.91	0.57	4.34	1.43	2,969	0.69
		SW086106-SW086105	24	389.9	0.001	2.22	0.48	4.34	2.11	4,400	2.91	0.57	4.34	1.43	2,969	0.69
		SW086105-SW086104	24	290.1	0.001	2.23	0.48	4.33	2.11	4,390	2.91	0.57	4.33	1.42	2,958	0.69
		SW086104-SW086103	24	40.5	0.001	2.23	0.48	4.35	2.12	4,413	2.91	0.57	4.35	1.43	2,981	0.69
		SW086103-SW086102	24	65.6	0.001	2.23	0.48	4.34	2.11	4,398	2.91	0.57	4.34	1.42	2,967	0.69
		SW086102-SW086101	24	86.7	0.001	2.23	0.48	4.33	2.10	4,375	2.91	0.57	4.33	1.41	2,944	0.69
	Palm St	SW086101-SW086133	24	9.7	0.001	2.39	0.50	4.40	2.01	4,194	3.13	0.59	4.40	1.27	2,650	0.74
		SW086133-SW075204	24	289.4	0.001	2.39	0.50	4.33	1.95	4,056	3.13	0.59	4.33	1.21	2,513	0.74
	Harbor Blvd	SW075204-SW075206	24	86.3	0.002	2.39	0.49	4.50	2.11	4,392	3.13	0.58	4.50	1.37	2,850	0.74
		SW075206-SW075203	24	49.9	0.002	2.39	0.49	4.49	2.10	4,381	3.13	0.58	4.49	1.36	2,838	0.74
		SW075203-SW075205	24	101.8	0.001	2.99	0.56	4.48	1.49	3,096	3.84	0.67	4.48	0.63	1,321	0.85
		SW075205-SW075202	24	318.7	0.002	3.04	0.57	4.49	1.45	3,023	3.89	0.67	4.49	0.60	1,248	0.85
	5 FWY	SW075202-SW075201	24	447.0	0.003	4.08	0.54	6.46	2.38	4,954	5.14	0.63	6.46	1.32	2,758	1.05
		SW075201-SW075104	24	437.4	0.004	4.08	0.50	7.35	3.27	6,806	5.14	0.58	7.35	2.21	4,608	1.05
		SW075104-SW075103	24	108.0	0.004	4.08	0.50	7.40	3.31	6,904	5.14	0.58	7.40	2.26	4,706	1.05
		SW075103-SW075102	24	489.3	0.004	4.08	0.49	7.61	3.53	7,346	5.14	0.57	7.61	2.47	5,148	1.05
	Disneyland Dr	SW075102-SW075101	24	510.4	0.004	4.09	0.51	7.13	3.03	6,321	5.15	0.59	7.13	1.98	4,125	1.06
	Flore St	SW075101-SW065203	24	467.7	0.004	4.09	0.51	7.35	3.26	6,783	5.15	0.58	7.35	2.20	4,585	1.06
		SW065203-SW065215	24	419.9	0.004	4.09	0.50	7.39	3.30	6,883	5.15	0.58	7.39	2.25	4,685	1.06

Ball System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
BALL ROAD SOUTH		SW065215-SW065202	24	40.2	0.004	4.09	0.51	7.31	3.22	6,715	5.15	0.58	7.31	2.17	4,517	1.06
		SW065202-SW065201	24	453.9	0.004	4.09	0.50	7.46	3.37	7,013	5.15	0.58	7.46	2.31	4,815	1.06
	Walnut St	SW065201-SW064427	33	39.3	0.003	10.29	0.61	13.66	3.37	7,013	13.07	0.72	13.66	0.59	1,235	2.77
		SW064427-SW064426	33	8.9	0.005	10.56	0.50	19.44	8.88	18,496	13.33	0.57	19.44	6.10	12,717	2.78
		SW064426-SW064317	33	357.0	0.005	10.56	0.50	19.44	8.88	18,498	13.33	0.57	19.44	6.10	12,717	2.78
		SW064317-SW064316	33	520.8	0.005	10.56	0.50	19.44	8.88	18,498	13.33	0.57	19.44	6.10	12,717	2.78
		SW064316-OT064315	33	353.4	0.005	10.56	0.50	19.44	8.88	18,498	13.33	0.57	19.44	6.11	12,719	2.78
	Hampstead St	OT064315-OT055436	33	613.0	0.003	10.56	0.62	13.81	3.25	6,775	13.33	0.73	13.81	0.48	996	2.77
		OT055436-OT055435	33	586.2	0.003	10.56	0.62	13.81	3.25	6,775	13.33	0.73	13.81	0.48	996	2.77
		OT055435-OT055336	33	603.2	0.003	10.56	0.62	13.81	3.25	6,777	13.33	0.73	13.81	0.48	996	2.77
		OT055336-OT055334	33	599.0	0.003	10.56	0.62	13.81	3.25	6,777	13.33	0.73	13.81	0.48	996	2.77
	Euclid St	OT055334-OT055333	33	296.2	0.003	10.56	0.62	13.81	3.26	6,781	13.33	0.73	13.81	0.48	1,002	2.77
	Cast Pl	SW074329-SW074331	33	99.9	0.001	6.14	0.64	7.67	1.53	3,177	7.86	0.77	7.67	-0.19	0	1.72
		SW074331-SW074334	33	75.0	0.001	6.14	0.64	7.66	1.52	3,169	7.86	0.77	7.66	-0.20	0	1.72
		SW074334-SW074330	33	263.6	0.001	6.14	0.65	7.46	1.32	2,748	7.86	0.79	7.46	-0.40	0	1.72
	Disneyland Dr	SW074330-SW075109	33	100.1	0.001	6.14	0.67	7.16	1.02	2,125	7.86	1.00	7.16	-0.70	0	1.72
		SW075109-SW075108	33	263.7	0.001	6.16	0.64	7.64	1.48	3,090	7.88	0.77	7.64	-0.23	0	1.72
		SW075108-SW075107	33	268.5	0.001	6.16	0.64	7.58	1.41	2,944	7.88	0.78	7.58	-0.30	0	1.72
		SW075107-SW065212	33	65.3	0.001	6.17	0.61	8.21	2.04	4,254	7.89	0.73	8.21	0.33	679	1.72
	West Pl	SW065212-SW065211	33	280.1	0.001	6.19	0.64	7.59	1.40	2,917	7.91	0.78	7.59	-0.32	0	1.72
		SW065211-SW065210	33	340.4	0.001	6.20	0.66	7.34	1.14	2,377	7.92	0.81	7.34	-0.58	0	1.72
		SW065210-SW065214	33	201.1	0.001	6.20	0.63	7.88	1.68	3,492	7.92	0.75	7.88	-0.04	0	1.72
		SW065214-SW065209	33	162.7	0.001	6.20	0.62	7.95	1.74	3,627	7.92	0.75	7.95	0.02	50	1.72
		SW065209-SW065138	33	329.9	0.001	6.21	0.63	7.89	1.69	3,510	7.92	0.75	7.89	-0.03	0	1.72
	Walnut St	SW065138-SW065201	33	29.8	0.005	6.21	0.37	19.23	13.03	27,138	7.92	0.43	19.23	11.31	23,560	1.72
BALL ROAD NORTH	Lemon St	SW085429-SW085430	18	32.0	0.002	1.33	0.55	2.09	0.76	1,581	1.64	0.63	2.09	0.45	929	0.31
		SW085430-SW085320	18	253.7	0.002	1.33	0.55	2.09	0.76	1,579	1.64	0.63	2.09	0.45	927	0.31
	Cambridge St	SW085320-SW085318	18	198.6	0.001	1.37	0.56	2.08	0.71	1,477	1.69	0.64	2.08	0.40	825	0.31
		SW085318-SW085317	18	564.2	0.002	1.37	0.56	2.08	0.71	1,485	1.69	0.64	2.08	0.40	831	0.31
		SW085317-SW085321	18	154.8	0.001	1.52	0.60	2.08	0.56	1,169	1.84	0.68	2.08	0.25	513	0.32
		SW085321-SW085322	18	94.2	0.001	1.57	0.61	2.08	0.52	1,073	1.88	0.69	2.08	0.20	417	0.32
	Palm St	SW085322-SW074417	18	285.9	0.001	1.57	0.68	1.79	0.22	456	1.88	0.79	1.79	-0.10	0	0.32
	Harbor Blvd	SW074417-SW074416	18	130.2	0.001	1.65	0.70	1.78	0.13	277	1.97	1.00	1.78	-0.18	0	0.32
	Overflow Line	SW074416-SW075203	18	15.3	0.001	0.60	0.38	1.79	1.19	2,479	0.72	0.42	1.79	1.08	2,244	0.11
		SW074416-SW074428	24	176.6	0.002	1.05	0.29	5.23	4.18	8,717	1.25	0.32	5.23	3.98	8,294	0.20
		SW074428-SW074429	24	177.3	0.002	1.05	0.29	5.22	4.17	8,696	1.25	0.32	5.22	3.97	8,273	0.20
		SW074429-SW074430	24	94.5	0.002	1.05	0.29	5.20	4.15	8,646	1.25	0.32	5.20	3.95	8,223	0.20
	Ball Rd South	SW074430-SW075202	24	48.9	0.002	1.05	0.29	5.24	4.19	8,733	1.25	0.32	5.24	3.99	8,310	0.20

Katella System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
MIDWAY DR	Anaheim Blvd	SW096305-SW086411	12	134.7	0.006	0.22	0.26	1.38	1.16	2,423	1.28	0.71	1.38	0.10	208	1.06
		SW086411-SW086409	12	284.4	0.002	0.26	0.36	0.89	0.62	1,298	1.34	1.00	0.89	-0.45	0	1.08
	Zeyn St	SW086409-SW086408	12	292.5	0.002	0.26	0.36	0.88	0.62	1,285	1.34	1.00	0.88	-0.46	0	1.08
	Lemon	SW086408-SW086407	12	93.0	0.003	0.26	0.34	0.97	0.70	1,460	1.34	1.00	0.97	-0.37	0	1.08
		SW086407-SW086406	15	196.3	0.002	0.28	0.27	1.60	1.33	2,763	1.35	0.66	1.60	0.25	525	1.08
	Clementine St	SW086406-SW086405	15	291.6	0.002	0.28	0.27	1.62	1.35	2,804	1.35	0.65	1.62	0.27	565	1.08
	Dickel St	SW086405-SW086313	15	206.7	0.002	0.61	0.40	1.63	1.01	2,113	1.73	0.79	1.63	-0.10	0	1.11
	Yucca St	SW086313-SW086312	15	174.3	0.001	0.62	0.48	1.23	0.61	1,263	1.73	1.00	1.23	-0.51	0	1.11
	5-FWY	SW086312-SW086321	15	14.0	0.023	0.62	0.23	5.00	4.38	9,129	1.73	0.39	5.00	3.27	6,813	1.11
		SW086321-SW086322	18	412.1	0.002	0.77	0.37	2.43	1.66	3,454	1.91	0.63	2.43	0.52	1,083	1.14
MANCHESTER AVE		SW086322-SW086323	18	70.4	0.002	0.77	0.36	2.48	1.71	3,569	1.91	0.62	2.48	0.58	1,198	1.14
		SW086323-SW086324	18	231.9	0.002	0.77	0.37	2.40	1.63	3,385	1.91	0.63	2.40	0.49	1,015	1.14
		SW086324-SW086325	18	167.0	0.002	0.85	0.39	2.39	1.54	3,210	1.99	0.65	2.39	0.41	846	1.14
		SW086325-SW086326	18	126.2	0.002	0.95	0.42	2.40	1.45	3,013	2.08	0.67	2.40	0.31	652	1.13
	Harbor Blvd	SW086326-SW076416	18	113.9	0.011	0.49	0.19	5.61	5.12	10,675	1.21	0.30	5.61	4.41	9,181	0.72
HARBOR WEST		SW076416-SW075417	18	354.6	0.002	0.49	0.28	2.57	2.08	4,340	1.21	0.46	2.57	1.37	2,846	0.72
		SW075417-SW076418	18	167.1	0.005	1.37	0.39	3.79	2.43	5,056	1.71	0.45	3.79	2.08	4,331	0.35
		SW076418-SW076419	18	297.0	0.001	1.37	0.56	2.07	0.71	1,471	1.71	0.65	2.07	0.36	746	0.35
		SW076419-SW076420	18	276.2	0.002	1.36	0.55	2.10	0.73	1,529	1.71	0.64	2.10	0.39	802	0.35
		SW076420-SW076421	18	226.3	0.001	1.36	0.56	2.06	0.69	1,440	1.71	0.65	2.06	0.34	710	0.35
		SW076421-SW076422	18	227.8	0.001	1.36	0.56	2.08	0.72	1,492	1.71	0.65	2.08	0.37	760	0.35
		SW076422-SW076423	18	269.8	0.001	1.36	0.56	2.07	0.71	1,477	1.71	0.65	2.07	0.36	746	0.35
		SW076423-SW076224	18	266.7	0.001	1.36	0.62	1.74	0.38	794	1.71	0.74	1.74	0.03	63	0.35
	Disneyland Way	SW076224-SW076425	18	312.0	0.002	1.36	0.52	2.32	0.96	1,994	1.71	0.60	2.32	0.61	1,263	0.35
		SW076425-SW076402	18	188.8	0.002	1.36	0.50	2.48	1.11	2,321	1.71	0.58	2.48	0.76	1,590	0.35
		SW076402-SW076403	18	238.1	0.002	1.36	0.50	2.51	1.15	2,400	1.71	0.57	2.51	0.80	1,669	0.35
		SW076403-SW076404	18	235.9	0.002	1.36	0.49	2.55	1.19	2,477	1.71	0.57	2.55	0.84	1,744	0.35
	Katella Ave	SW076404-SW076432	18	235.2	0.003	1.36	0.44	3.14	1.78	3,700	1.71	0.50	3.14	1.42	2,967	0.35
HARBOR EAST		SW086326-SW086327	15	26.4	0.003	0.46	0.32	1.93	1.47	3,067	0.88	0.45	1.93	1.06	2,200	0.42
		SW086327-SW086309	15	45.9	0.002	0.46	0.38	1.38	0.92	1,917	0.88	0.55	1.38	0.51	1,052	0.42
		SW086309-SW086310	15	356.7	0.002	0.46	0.37	1.48	1.02	2,123	0.88	0.52	1.48	0.60	1,256	0.42
		SW086310-SW065317	15	31.3	0.002	0.46	0.36	1.49	1.02	2,133	0.88	0.52	1.49	0.61	1,269	0.42
		SW065317-SW086311	15	306.0	0.002	0.61	0.42	1.48	0.87	1,815	1.02	0.57	1.48	0.46	963	0.41
		SW086311-SW087101	15	339.0	0.002	0.69	0.46	1.48	0.79	1,644	1.10	0.60	1.48	0.38	798	0.41
		SW087101-SW087102	15	40.5	0.002	0.75	0.48	1.48	0.73	1,517	1.16	0.62	1.48	0.32	675	0.40
		SW087102-SW087103	15	296.9	0.002	0.80	0.50	1.48	0.68	1,413	1.21	0.64	1.48	0.28	573	0.40
		SW087103-SW087104	15	43.0	0.002	0.83	0.51	1.48	0.65	1,352	1.23	0.65	1.48	0.25	513	0.40
		SW087104-SW087105	15	291.3	0.002	0.88	0.52	1.48	0.61	1,260	1.28	0.67	1.48	0.20	421	0.40
		SW087105-SW087106	15	340.4	0.001	0.90	0.58	1.28	0.38	788	1.31	0.76	1.28	-0.03	0	0.40
	Disney Way	SW087106-SW087304	15	339.6	0.002	0.98	0.56	1.48	0.50	1,046	1.38	0.71	1.48	0.10	208	0.40
		SW087304-SW087305	15	330.2	0.002	1.19	0.60	1.62	0.43	894	1.59	0.74	1.62	0.03	58	0.40
		SW087305-SW087306	15	332.5	0.002	1.25	0.62	1.62	0.37	769	1.65	0.76	1.62	-0.03	0	0.40
	Katella Ave	SW087306-SW087319	15	319.4	0.002	1.25	0.62	1.62	0.37	763	1.65	0.76	1.62	-0.03	0	0.40
		SW087319-SW087307	15	19.4	0.028	1.25	0.37	4.01	2.76	5,746	1.65	0.43	4.01	2.36	4,913	0.40

Katella System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
KATELLA AVE NORTH	Harbor Blvd	SW087319-SW076432	21	56.0	0.002	0.00	0.00	3.45	3.45	7,177	0.00	0.00	3.45	3.45	7,177	0.00
		SW076432-SW076431	21	41.3	0.002	1.36	0.42	3.44	2.07	4,319	1.71	0.47	3.44	1.72	3,585	0.35
		SW076431-SW076430	21	23.1	0.053	1.36	0.17	18.74	17.38	36,200	1.71	0.20	18.74	17.02	35,467	0.35
		SW076430-SW076429	21	267.3	0.002	1.36	0.42	3.44	2.08	4,333	1.71	0.47	3.44	1.73	3,600	0.35
		SW076429-SW076428	21	264.7	0.002	1.39	0.42	3.45	2.06	4,285	1.80	0.49	3.45	1.64	3,421	0.42
		SW076428-SW076427	21	39.3	0.018	1.39	0.23	10.74	9.35	19,473	1.80	0.27	10.74	8.93	18,608	0.42
	Hotel Way	SW076427-SW076417	21	448.9	0.002	1.39	0.42	3.44	2.05	4,275	1.81	0.49	3.44	1.63	3,392	0.42
		SW076417-SW076312	21	384.2	0.002	1.39	0.42	3.44	2.05	4,273	1.81	0.49	3.44	1.63	3,390	0.42
		SW076312-SW076311	21	374.4	0.002	2.89	0.66	3.44	0.55	1,144	3.13	0.70	3.44	0.31	648	0.24
		SW076311-SW076310	21	252.8	0.002	2.89	0.66	3.44	0.55	1,146	3.13	0.70	3.44	0.31	650	0.24
		SW076310-SW076309	21	249.0	0.002	2.89	0.66	3.44	0.55	1,148	3.13	0.70	3.44	0.31	652	0.24
		SW076309-SW066430	21	260.6	0.002	2.89	0.66	3.44	0.55	1,150	3.13	0.70	3.44	0.31	654	0.24
	Disney Way	SW066430-SW066424	24	44.1	0.002	3.28	0.56	4.94	1.66	3,450	3.52	0.59	4.94	1.42	2,954	0.24
		SW066424-SW066428	24	19.3	0.002	3.28	0.57	4.87	1.59	3,302	3.52	0.59	4.87	1.35	2,806	0.24
		SW066428-SW066427	24	265.2	0.002	3.28	0.56	4.92	1.64	3,415	3.52	0.59	4.92	1.40	2,919	0.24
		SW066427-SW066423	24	331.9	0.002	3.28	0.56	4.91	1.64	3,406	3.52	0.59	4.91	1.40	2,910	0.24
		SW066423-SW066426	24	314.1	0.002	3.28	0.56	4.91	1.64	3,406	3.52	0.59	4.91	1.40	2,910	0.24
		SW066426-SW066332	24	340.4	0.002	3.28	0.56	4.92	1.64	3,413	3.52	0.59	4.92	1.40	2,917	0.24
	Walnut St	SW066332-OT066331	24	25.0	0.002	3.29	0.56	4.91	1.63	3,388	3.53	0.59	4.91	1.39	2,890	0.24
		OT066331-OT066329	27	660.7	0.002	6.96	0.77	6.73	-0.23	0	7.20	0.80	6.73	-0.47	0	0.24
		OT066329-OT057445	27	657.6	0.002	6.96	0.77	6.73	-0.24	0	7.20	0.80	6.73	-0.47	0	0.24
	9th St	OT057445-OT057447	27	143.0	0.009	6.96	0.46	14.63	7.67	15,971	7.20	0.47	14.63	7.43	15,479	0.24
		OT057447-OT057448	27	450.3	0.008	6.96	0.46	14.62	7.66	15,963	7.20	0.47	14.62	7.43	15,471	0.24
		OT057448-OT057449	27	83.4	0.014	6.96	0.40	18.87	11.91	24,806	7.20	0.41	18.87	11.67	24,315	0.24
		OT057449-OT057450	27	565.5	0.005	6.96	0.54	11.33	4.37	9,096	7.20	0.55	11.33	4.13	8,602	0.24
		OT057450-OT057342	27	98.1	0.005	6.97	0.54	11.34	4.37	9,104	7.20	0.55	11.34	4.13	8,613	0.24
		OT057342-OT057339	27	681.0	0.005	6.97	0.54	11.33	4.36	9,090	7.20	0.55	11.33	4.13	8,596	0.24
	Euclid St	OT057339-SW050430	27	603.4	0.007	6.97	0.50	12.79	5.82	12,131	7.20	0.51	12.79	5.59	11,638	0.24
ANAHEIM		SW097104-SW097301	12	252.8	0.002	0.10	0.23	0.79	0.69	1,433	0.70	0.69	0.79	0.08	173	0.61
		SW097301-SW097303	12	231.2	0.002	0.10	0.22	0.82	0.72	1,508	0.70	0.66	0.82	0.12	248	0.61
		SW097303-SW097306	12	264.6	0.002	0.10	0.22	0.89	0.79	1,646	0.71	0.63	0.89	0.19	385	0.61
		SW097306-SW097307	12	312.3	0.002	0.10	0.23	0.83	0.73	1,510	0.71	0.66	0.83	0.12	250	0.61
		SW097307-SW097309	12	325.5	0.002	0.12	0.25	0.81	0.69	1,438	0.72	0.69	0.81	0.09	177	0.61
		SW097309-SW097405	12	350.9	0.002	0.12	0.25	0.82	0.70	1,450	0.72	0.68	0.82	0.09	190	0.61
	Claudina Way	SW097405-SW097415	15	251.1	0.004	0.14	0.17	2.11	1.97	4,098	1.03	0.47	2.11	1.08	2,242	0.89
	Katella Ave	SW097415-SW097416	15	56.0	0.006	0.14	0.15	2.54	2.40	4,998	1.03	0.42	2.54	1.51	3,142	0.89
KATELLA AVE SOUTH	Anaheim Way	SW097416-SW097407	21	31.1	0.002	0.37	0.21	3.65	3.28	6,835	2.25	0.54	3.65	1.40	2,917	1.88
		SW097407-SW097406	21	112.7	0.002	0.37	0.21	3.64	3.27	6,817	2.25	0.54	3.64	1.39	2,898	1.88
	5 FWY	SW097406-SW097325	21	90.7	0.002	0.37	0.21	3.64	3.27	6,804	2.25	0.54	3.64	1.39	2,885	1.88
		SW097325-SW097317	21	118.2	0.002	0.37	0.21	3.64	3.27	6,817	2.25	0.54	3.64	1.39	2,898	1.88
		SW097317-SW097316	21	112.0	0.002	0.37	0.21	3.65	3.28	6,825	2.25	0.54	3.65	1.40	2,906	1.88
		SW097316-SW097315	21	47.1	0.002	0.37	0.21	3.63	3.26	6,781	2.25	0.54	3.63	1.37	2,863	1.88
		SW097315-SW097328	21	199.1	0.002	0.37	0.21	3.64	3.27	6,819	2.25	0.54	3.64	1.39	2,900	1.88
		SW097328-SW097314	21	57.8	0.002	0.37	0.21	3.65	3.28	6,835	2.25	0.54	3.65	1.40	2,917	1.88

Katella System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
		SW097314-SW097323	21	46.0	0.002	0.37	0.21	3.63	3.26	6,788	2.25	0.54	3.63	1.38	2,869	1.88
		SW097323-SW097313	21	219.8	0.002	0.37	0.21	3.64	3.27	6,819	2.25	0.54	3.64	1.39	2,900	1.88
	Manchester Ave	SW097313-SW097312	21	80.3	0.002	0.58	0.26	3.65	3.07	6,385	2.46	0.57	3.65	1.18	2,465	1.88
		SW097312-SW097311	21	313.3	0.002	0.58	0.26	3.64	3.06	6,375	2.46	0.57	3.64	1.18	2,452	1.88
		SW097311-SW097310	21	310.0	0.002	0.61	0.26	3.64	3.04	6,325	2.49	0.57	3.64	1.15	2,402	1.88
	Anaheim Blvd	SW097310-SW087420	21	317.7	0.002	0.94	0.33	3.63	2.69	5,608	2.82	0.62	3.63	0.81	1,690	1.88
		SW087420-SW087419	21	152.9	0.002	0.99	0.34	3.63	2.64	5,490	2.88	0.63	3.63	0.76	1,573	1.88
	Zeyn St	SW087419-SW087418	21	184.7	0.002	1.22	0.38	3.63	2.41	5,021	3.09	0.66	3.63	0.54	1,115	1.88
		SW087418-SW087417	21	328.4	0.002	1.22	0.38	3.63	2.41	5,021	3.09	0.66	3.63	0.54	1,115	1.88
		SW087417-SW087416	21	56.4	0.002	1.22	0.38	3.63	2.41	5,021	3.09	0.66	3.63	0.54	1,117	1.88
	Clementine St	SW087416-SW087415	21	15.4	0.002	2.26	0.54	3.63	1.37	2,846	4.12	1.00	3.63	-0.49	0	1.86
		SW087415-SW087414	21	146.5	0.002	2.26	0.54	3.63	1.37	2,846	4.12	1.00	3.63	-0.49	0	1.86
		SW087414-SW087413	21	103.6	0.002	2.26	0.54	3.63	1.37	2,846	4.12	1.00	3.63	-0.49	0	1.86
K		SW087413-SW087425	21	90.2	0.002	2.30	0.55	3.63	1.33	2,763	4.16	1.00	3.63	-0.53	0	1.86
A		SW087425-SW087317	21	239.5	0.002	2.30	0.55	3.63	1.33	2,763	4.16	1.00	3.63	-0.53	0	1.86
T		SW087317-SW087315	21	124.2	0.002	2.30	0.55	3.63	1.33	2,763	4.16	1.00	3.63	-0.53	0	1.86
E		SW087315-SW087318	21	93.7	0.002	2.45	0.57	3.63	1.18	2,460	4.31	1.00	3.63	-0.68	0	1.86
L		SW087318-SW087313	21	116.0	0.002	2.51	0.58	3.63	1.12	2,338	4.36	1.00	3.63	-0.73	0	1.86
L		SW087313-SW087311	21	125.6	0.002	2.53	0.58	3.63	1.10	2,290	4.39	1.00	3.63	-0.76	0	1.86
A		SW087311-SW087309	21	213.2	0.002	2.56	0.58	3.63	1.07	2,225	4.42	1.00	3.63	-0.79	0	1.85
		SW087309-SW087307	21	317.0	0.002	2.66	0.60	3.63	0.97	2,017	4.51	1.00	3.63	-0.88	0	1.85
A	Harbor Blvd	SW087307-SW076411	24	56.5	0.002	3.92	0.61	5.18	1.27	2,640	6.17	1.00	5.18	-0.98	0	2.25
V		SW076411-SW076424	24	52.5	0.002	3.92	0.61	5.18	1.27	2,642	6.17	1.00	5.18	-0.98	0	2.25
E		SW076424-SW076410	24	278.2	0.002	5.41	0.78	5.18	-0.23	0	7.65	1.00	5.18	-2.47	0	2.24
		SW076410-SW076409	24	159.1	0.002	5.47	0.79	5.19	-0.28	0	7.70	1.00	5.19	-2.52	0	2.24
		SW076409-SW076408	24	158.6	0.002	5.56	0.80	5.18	-0.37	0	7.79	1.00	5.18	-2.61	0	2.24
S	Hotel Way	SW076408-SW076407	24	60.0	0.002	5.79	1.00	5.18	-0.61	0	8.03	1.00	5.18	-2.85	0	2.23
O		SW076407-SW076405	24	318.3	0.002	5.79	1.00	5.18	-0.61	0	8.03	1.00	5.18	-2.85	0	2.23
U		SW076405-SW076433	24	56.4	0.002	6.03	1.00	5.19	-0.84	0	8.26	1.00	5.19	-3.07	0	2.23
T		SW076433-SW076308	24	379.5	0.002	6.03	1.00	5.18	-0.85	0	8.26	1.00	5.18	-3.08	0	2.23
H		SW076308-SW076307	24	176.0	0.002	6.03	1.00	5.18	-0.85	0	8.26	1.00	5.18	-3.08	0	2.23
		SW076307-SW076306	24	202.5	0.002	6.03	1.00	5.18	-0.85	0	8.26	1.00	5.18	-3.08	0	2.23
		SW076306-SW076305	24	113.2	0.002	6.03	1.00	5.18	-0.85	0	8.26	1.00	5.18	-3.08	0	2.23
		SW076305-SW076304	24	261.9	0.002	6.28	1.00	5.18	-1.10	0	8.50	1.00	5.18	-3.32	0	2.22
		SW076304-SW076303	24	109.7	0.002	6.28	1.00	5.19	-1.09	0	8.50	1.00	5.19	-3.31	0	2.22
		SW076303-SW076302	24	279.0	0.002	6.28	1.00	5.18	-1.10	0	8.50	1.00	5.18	-3.32	0	2.22
	Disneyland Dr	SW076302-SW066417	24	53.3	0.002	4.27	0.65	5.17	0.90	1,869	5.78	1.00	5.17	-0.61	0	1.51
		SW066417-SW066422	24	275.5	0.002	4.27	0.65	5.18	0.91	1,902	5.78	1.00	5.18	-0.60	0	1.51
		SW066422-SW066421	24	330.6	0.002	4.28	0.65	5.18	0.90	1,879	5.79	1.00	5.18	-0.61	0	1.51
		SW066421-SW066420	24	250.1	0.002	4.30	0.65	5.19	0.88	1,840	5.81	1.00	5.19	-0.63	0	1.51
	Casa Vista St	SW066420-SW066419	24	79.7	0.002	4.43	0.66	5.17	0.75	1,558	5.93	1.00	5.17	-0.76	0	1.51
		SW066419-SW066418	24	338.3	0.002	4.43	0.66	5.18	0.76	1,577	5.93	1.00	5.18	-0.75	0	1.51
	Walnut St	SW066418-SW066328	24	329.5	0.002	4.43	0.66	5.18	0.76	1,573	5.93	1.00	5.18	-0.75	0	1.51
		SW066328-SW066327	24	331.3	0.002	4.43	0.66	5.18	0.75	1,569	5.93	1.00	5.18	-0.76	0	1.51

Katella System Tributary Pipelines

Pipe Data						Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH- Dwnstrm MH	Size (in)	Length (ft)	Slope (ft/ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
K		SW066327-SW066325	24	326.9	0.002	4.43	0.66	5.18	0.76	1,573	5.93	1.00	5.18	-0.75	0	1.51
A		SW066325-SW066324	24	299.2	0.002	4.43	0.66	5.18	0.75	1,569	5.93	1.00	5.18	-0.76	0	1.51
T		SW066324-OT057444	24	42.9	0.002	4.43	0.66	5.19	0.76	1,583	5.93	1.00	5.19	-0.75	0	1.51
E	9th St	OT057444-SW057450	24	120.1	0.002	2.28	0.44	5.19	2.91	6,065	2.94	0.51	5.19	2.25	4,685	0.66
L		SW057450-SW057442	24	224.7	0.002	2.28	0.44	5.18	2.90	6,044	2.94	0.51	5.18	2.24	4,667	0.66
L		SW057442-SW057441	24	350.0	0.002	2.32	0.45	5.18	2.86	5,960	2.98	0.52	5.18	2.20	4,581	0.66
A		SW057441-SW057440	24	338.4	0.002	2.32	0.45	5.18	2.86	5,963	2.98	0.52	5.18	2.20	4,581	0.66
		SW057440-SW057341	24	361.7	0.002	2.34	0.45	5.18	2.84	5,923	3.00	0.52	5.18	2.18	4,542	0.66
A		SW057341-SW057340	24	78.9	0.002	2.34	0.45	5.19	2.85	5,935	3.00	0.52	5.19	2.19	4,552	0.66
V		SW057340-SW057339	24	267.3	0.002	2.37	0.45	5.18	2.81	5,854	3.03	0.52	5.18	2.15	4,471	0.66
E		SW057339-SW057338	24	356.0	0.002	2.37	0.45	5.18	2.81	5,858	3.03	0.52	5.18	2.15	4,475	0.66
		SW057338-SW057337	24	349.8	0.002	2.37	0.45	5.18	2.81	5,863	3.03	0.52	5.18	2.15	4,479	0.66
S		SW057337-SW057336	24	94.0	0.002	2.37	0.45	5.18	2.81	5,863	3.03	0.52	5.18	2.15	4,479	0.66
O		SW057336-SW057335	24	19.1	0.033	2.37	0.22	21.14	18.77	39,108	3.03	0.24	21.14	18.11	37,725	0.66
U		SW057335-SW057334	24	44.0	0.007	2.37	0.32	9.90	7.53	15,688	3.03	0.36	9.90	6.87	14,304	0.66
T		SW057334-SW057333	24	36.1	0.007	2.37	0.32	9.89	7.53	15,677	3.03	0.36	9.89	6.86	14,294	0.66
H	Euclid St															

Orangewood System Tributary Pipelines

Pipe Data					Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH-Dwnstrm MH	Size (in)	Length (ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
RIO VISTA	South St	RIOVISTA1-RIOVISTA2	18	269.5	1.03	0.43	2.41	1.38	2,865	1.10	0.45	2.41	1.31	2,729	0.07
		RIOVISTA2-RIOVISTA3	18	200.0	1.03	0.44	2.41	1.37	2,860	1.10	0.45	2.41	1.31	2,725	0.07
		RIOVISTA3-RIOVISTA4	18	219.8	1.04	0.44	2.41	1.37	2,848	1.11	0.45	2.41	1.30	2,713	0.06
	Viking Ave	RIOVISTA4-RIOVISTA5	18	125.2	1.06	0.44	2.40	1.34	2,800	1.13	0.46	2.40	1.28	2,665	0.06
		RIOVISTA5-RIOVISTA6	21	133.7	1.07	0.36	3.58	2.51	5,231	1.13	0.37	3.58	2.45	5,094	0.07
		RIOVISTA6-RIOVISTA7	21	262.8	1.07	0.36	3.61	2.54	5,283	1.14	0.37	3.61	2.47	5,146	0.06
		RIOVISTA7-RIOVISTA8	21	185.6	1.09	0.36	3.62	2.53	5,273	1.16	0.37	3.62	2.47	5,138	0.06
	Ames Ave	RIOVISTA8-RIOVISTA9	18	186.9	1.09	0.45	2.43	1.33	2,779	1.16	0.46	2.43	1.27	2,642	0.06
		RIOVISTA9-SW0124408	18	11.7	1.09	0.58	1.57	0.48	998	1.16	0.60	1.57	0.41	863	0.06
		SW124408-SW124413	15	277.9	1.12	0.55	1.73	0.62	1,281	1.18	0.57	1.73	0.55	1,144	0.07
		SW124413-SW124418	15	287.7	1.12	0.61	1.49	0.36	758	1.19	0.63	1.49	0.30	623	0.06
		SW124418-SW124423	15	302.1	1.13	0.63	1.44	0.31	644	1.19	0.65	1.44	0.24	508	0.07
	Wagner Ave	SW124423-SW124427	15	194.4	1.20	0.65	1.44	0.24	508	1.26	0.68	1.44	0.18	373	0.06
WAGNER AVE		SW124427-SW124426	15	294.6	1.20	0.66	1.42	0.22	452	1.26	0.69	1.42	0.15	317	0.06
		SW124426-SW124429	15	445.6	1.20	0.48	2.36	1.16	2,423	1.27	0.49	2.36	1.10	2,285	0.06
		SW124429-SW124428	15	436.9	1.20	0.48	2.39	1.19	2,469	1.27	0.49	2.39	1.12	2,333	0.06
	5 Fwy	SW124428-SW124324	15	287.6	1.20	0.60	1.62	0.42	873	1.27	0.62	1.62	0.35	738	0.06
		SW124324-SW124323	15	422.7	1.20	0.60	1.62	0.42	873	1.27	0.62	1.62	0.35	738	0.06
		SW124323-SW124322	15	424.2	1.20	0.60	1.62	0.42	871	1.27	0.63	1.62	0.35	733	0.06
	Sunkist St	SW124322-WAGNER1	21	37.5	1.21	0.28	6.63	5.42	11,296	1.27	0.28	6.63	5.36	11,160	0.06
		WAGNER1-WAGNER2	21	300.0	1.21	0.33	4.66	3.46	7,202	1.27	0.34	4.66	3.39	7,067	0.06
		WAGNER2-SW114429	21	14.2	1.21	0.35	4.30	3.10	6,456	1.27	0.35	4.30	3.03	6,321	0.06
		SW114429-SW114428	18	249.8	1.44	0.58	2.07	0.63	1,306	1.51	0.60	2.07	0.56	1,171	0.06
		SW114428-SW114427	18	303.2	1.45	0.62	1.88	0.43	904	1.51	0.64	1.88	0.37	771	0.06
		SW114427-SW114426	18	87.4	1.46	0.42	3.69	2.22	4,633	1.53	0.43	3.69	2.16	4,498	0.06
		SW114426-SW114425	18	180.7	1.46	0.41	3.73	2.27	4,731	1.53	0.42	3.73	2.21	4,596	0.06
		SW114425-SW114424	18	221.5	1.47	0.40	4.06	2.59	5,388	1.54	0.41	4.06	2.52	5,254	0.06
	Chaucer St	SW114424-SW114423	18	35.7	1.47	0.38	4.32	2.85	5,933	1.54	0.39	4.32	2.78	5,800	0.06
		SW114423-SW114332	18	375.9	1.48	0.45	3.22	1.74	3,625	1.55	0.46	3.22	1.68	3,490	0.06
		SW114332-SW114331	18	320.0	1.50	0.45	3.35	1.85	3,844	1.57	0.46	3.35	1.78	3,708	0.06
		SW114330-SW114329	18	287.1	1.59	0.49	2.98	1.39	2,885	1.66	0.50	2.98	1.32	2,752	0.06
		SW114331-SW114330	18	92.3	1.59	0.49	2.96	1.37	2,856	1.66	0.51	2.96	1.31	2,721	0.06
		SW114329-SW114328	18	91.1	1.60	0.53	2.64	1.04	2,165	1.67	0.54	2.64	0.98	2,031	0.06
	State College	SW114328-OT114327	18	401.0	1.65	0.51	2.94	1.29	2,690	1.72	0.52	2.94	1.23	2,556	0.06
STATE COLLEGE BLVD		OT114327-OT114333	15	20.5	1.65	0.30	7.87	6.22	12,954	1.72	0.30	7.87	6.15	12,821	0.06
		OT114334-OT115119	54	641.5	3.29	0.17	45.86	42.57	88,677	3.36	0.18	45.86	42.50	88,544	0.06
		OT115119-OT115118	54	508.0	3.29	0.17	45.57	42.28	88,077	3.36	0.18	45.57	42.21	87,944	0.06
	Clifpark Way	OT115118-OT115328	54	862.5	3.29	0.16	53.79	50.49	105,196	3.36	0.16	53.79	50.43	105,063	0.06
		OT115328-OT115327	54	626.9	3.48	0.17	53.82	50.34	104,865	3.55	0.17	53.82	50.27	104,731	0.06
	Ball Road	OT115327-OT116116	54	663.7	4.22	0.18	53.75	49.53	103,177	4.28	0.18	53.75	49.46	103,046	0.06
		OT116116-OT116115	54	645.0	4.22	0.18	53.80	49.58	103,283	4.28	0.18	53.80	49.51	103,150	0.06
	Winston Rd	OT116115-OT116312	54	328.4	4.45	0.19	53.88	49.44	102,990	4.51	0.19	53.88	49.37	102,858	0.06
		OT116312-OT116311	54	360.0	4.47	0.17	63.92	59.45	123,844	4.54	0.17	63.92	59.38	123,713	0.06

Orangewood System Tributary Pipelines

Pipe Data					Existing Scenario					Buildout Scenario with GPU					
Street	Cross Street	Upstrm MH-Dwnstrm MH	Size (in)	Length (ft)	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
STATE COLLEGE BLVD	Cerritos Ave	OT116311-OT116313	54	498.8	4.49	0.20	46.21	41.72	86,923	4.55	0.20	46.21	41.66	86,792	0.06
		OT116313-OT117116	54	187.2	4.49	0.20	45.97	41.49	86,429	4.55	0.20	45.97	41.42	86,298	0.06
		OT117116-OT117115	54	703.2	4.56	0.20	46.05	41.49	86,440	4.62	0.20	46.05	41.43	86,308	0.06
		OT117115-OT117114	54	587.7	4.56	0.20	46.08	41.52	86,492	4.62	0.20	46.08	41.45	86,360	0.06
		OT117114-OT117316	54	578.3	4.56	0.17	66.49	61.93	129,017	4.62	0.17	66.49	61.87	128,885	0.06
		OT117316-OT117315	54	558	4.56	0.21	43.48	38.92	81,088	4.62	0.21	43.48	38.86	80,956	0.06
		OT117315-OT118106	54	171.16	4.56	0.22	40.00	35.44	73,840	4.62	0.22	40.00	35.38	73,708	0.06
	Katella Ave	OT118106-OT118125	54	710.39	6.20	0.24	43.25	37.05	77,192	6.80	0.26	43.25	36.45	75,942	0.60
		OT118125-OT118124	54	597.79	6.22	0.27	34.71	28.49	59,360	6.82	0.29	34.71	27.89	58,113	0.60
	Gene Autry Way	OT118124-OT118322	54	600.66	6.38	0.28	34.87	28.50	59,365	6.98	0.29	34.87	27.89	58,113	0.60
		OT118322-OT118323	54	592.72	8.40	0.32	34.61	26.21	54,602	9.01	0.33	34.61	25.61	53,348	0.60
		OT118323-OT109203	39	117.12	4.48	0.31	19.54	15.05	31,363	4.80	0.32	19.54	14.74	30,710	0.31
	Orangewood	OT118323-OT119103	48	132.28	4.03	0.25	26.37	22.34	46,542	4.32	0.26	26.37	22.05	45,938	0.29

East Anaheim System Tributary Pipelines

BASIN	STREET	CROSS STREET	Upstrm MH-Dwnstrm MH	Diameter (in)	Length (ft)	Existing Scenario					Buildout Scenario with GPU					
						Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
KRAEMER	E La Palma		SW140213-SW140211	18	317.6	1.245	0.45	2.76	1.52	3,165	2.04	0.60	2.76	0.73	1,514	0.79
			SW140211-SW140211_SIP	15	10.0	1.246	0.12	37.77	36.52	76,092	2.04	0.15	37.77	35.73	74,441	0.79
			SW140211_SIP-SW14021	15	60.0	1.246	0.48	2.41	1.17	2,434	2.04	0.66	2.41	0.38	783	0.79
			SW140212_SIP-SW14021	15	10.0	1.246	1.00	1.25	0.00	0	2.04	1.00	2.04	0.00	0	0.79
		Kraemar Blvd	SW140212-SW140403	18	364.7	1.249	0.44	2.82	1.57	3,263	2.05	0.60	2.82	0.76	1,588	0.80
	Kraemar Blvd	E La Palma Ave	SW140403-SW140401	18	24.1	1.251	0.51	2.19	0.94	1,958	2.05	0.71	2.19	0.14	283	0.80
			SW140401-SW140206	21	307.6	1.277	0.34	4.68	3.41	7,099	2.08	0.44	4.68	2.60	5,424	0.80
			SW140206-SW140205	21	315.0	1.282	0.34	4.59	3.31	6,885	2.09	0.45	4.59	2.50	5,210	0.80
			SW140205-SW140201	21	334.8	1.297	0.35	4.59	3.29	6,858	2.10	0.45	4.59	2.49	5,183	0.80
			SW140201-SW140104	21	334.3	1.302	0.35	4.44	3.13	6,528	2.11	0.46	4.44	2.33	4,853	0.80
		Coronado St	SW140104-SW139315	24	334.9	1.327	0.28	7.16	5.83	12,147	2.13	0.36	7.16	5.03	10,471	0.80
			SW139315-SW139313	24	328.2	1.333	0.30	6.04	4.71	9,807	2.14	0.39	6.04	3.90	8,131	0.80
			SW139313-SW139312	24	326.6	1.339	0.31	6.01	4.67	9,731	2.14	0.39	6.01	3.87	8,055	0.80
		Miraloma Ave	SW139312-OT139311	24	335.3	1.349	0.31	6.02	4.67	9,730	2.15	0.39	6.02	3.87	8,054	0.80
RIVERDALE	Alderdale Ave	Lakeview Ave	SW167101-SW167103	15	476.0	0.917	0.48	1.79	0.88	1,824	0.95	0.49	1.79	0.85	1,765	0.03
			SW167103-SW167102	15	480.0	0.917	0.41	2.38	1.47	3,053	0.95	0.42	2.38	1.44	2,994	0.03
			SW167102-SW167104	15	95.1	1.132	0.62	1.46	0.33	692	1.16	0.63	1.46	0.30	633	0.03
			SW167104-SW161201	15	471.7	1.133	0.53	1.87	0.74	1,533	1.16	0.54	1.87	0.71	1,474	0.03
			SW161201-SW161203	15	129.0	1.133	0.52	1.93	0.80	1,662	1.16	0.53	1.93	0.77	1,603	0.03
		Deerfield St	SW161203-SW161205	15	514.0	1.136	0.53	1.86	0.72	1,508	1.16	0.54	1.86	0.70	1,449	0.03
			SW161205-SW161202	15	186.1	1.189	0.52	2.04	0.85	1,767	1.22	0.53	2.04	0.82	1,708	0.03
			SW161202-SW161204	15	178.5	1.191	0.51	2.12	0.93	1,934	1.22	0.51	2.12	0.90	1,875	0.03
		Bluerock St	SW161204-SW161207	15	402.1	1.195	0.58	1.72	0.53	1,101	1.22	0.59	1.72	0.50	1,041	0.03
			SW161207-SW161301	15	323.1	1.213	0.55	1.86	0.65	1,355	1.24	0.56	1.86	0.62	1,295	0.03
			SW161301-SW161302	15	217.5	1.217	0.55	1.88	0.67	1,391	1.25	0.56	1.88	0.64	1,331	0.03
			SW161302-SW161304	15	268.0	1.222	0.55	1.89	0.67	1,400	1.25	0.56	1.89	0.64	1,341	0.03
		Redrock St	SW161304-SW161308	15	285.8	1.229	0.53	2.06	0.83	1,726	1.26	0.53	2.06	0.80	1,666	0.03
			SW161308-SW161307	15	148.6	1.343	0.53	2.21	0.87	1,815	1.37	0.54	2.21	0.84	1,755	0.03
	Parallel to Alderdale Ave		SW161307-SW161306	15	126.2	1.344	0.54	2.18	0.83	1,731	1.37	0.54	2.18	0.80	1,672	0.03
			SW161306-SW161305	15	157.4	1.345	0.55	2.09	0.74	1,543	1.37	0.56	2.09	0.71	1,484	0.03
			SW161305-SW155401	15	352.2	1.346	0.55	2.10	0.76	1,580	1.37	0.56	2.10	0.73	1,520	0.03
			SW155401-SW155402	15	324.0	1.481	0.59	2.08	0.60	1,244	1.51	0.59	2.08	0.57	1,185	0.03
			SW155402-SW155405	15	250.1	1.482	0.66	1.76	0.28	573	1.51	0.67	1.76	0.25	514	0.03
			SW155405-SW155404	15	340.4	1.484	0.63	1.86	0.38	787	1.51	0.64	1.86	0.35	728	0.03
	Parallel to Riverdale Ave		SW155404-SW155304	15	453.7	1.484	0.63	1.88	0.40	824	1.51	0.64	1.88	0.37	765	0.03
			SW155304-SW155307	18	14.4	1.484	0.60	2.00	0.52	1,076	1.51	0.61	2.00	0.49	1,017	0.03
		91 Freeway	SW155307-SW155306	18	321.7	1.490	0.61	1.96	0.47	975	1.53	0.62	1.96	0.43	889	0.04
			SW155306-SW155305	18	15.0	1.489	0.61	1.96	0.48	990	1.53	0.62	1.96	0.43	904	0.04
			SW155305-SW155303	18	61.3	1.490	0.62	1.94	0.45	943	1.53	0.63	1.94	0.41	857	0.04
			SW155303-SW156104	15	258.6	1.509	0.37	4.83	3.32	6,918	1.55	0.37	4.83	3.28	6,832	0.04
		Tustin Ave	SW156104-SW156103	18	204.1	2.011	0.52	3.39	1.38	2,879	2.06	0.53	3.39	1.34	2,788	0.04
			SW156103-SW156101	18	300.3	2.021	0.53	3.38	1.36	2,831	2.10	0.54	3.38	1.28	2,673	0.08

East Anaheim System Tributary Pipelines

BASIN	STREET	CROSS STREET	Upstrm MH-Dwnstrm MH	Diameter (in)	Length (ft)	Existing Scenario					Buildout Scenario with GPU					
						Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Peak Flow (mgd)	d/D Ratio	Analysis Flow (mgd)	Analysis Excess (mgd)	Additional DUs that would fit	Additional GPU Flow into System (mgd)
RIVERDALE	Riverdale Ave		SW151101-SW151202	18	558.8	2.137	0.56	3.24	1.10	2,293	2.21	0.57	3.24	1.02	2,133	0.08
			SW151202-SW151201	18	461.4	2.137	0.58	3.06	0.92	1,920	2.21	0.59	3.06	0.84	1,760	0.08
		Gayle St	SW151201-SW151203	18	320.6	2.137	0.67	2.45	0.31	656	2.21	0.69	2.45	0.24	496	0.08
			SW151203-SW151105	18	459.0	2.137	0.54	3.39	1.25	2,614	2.21	0.56	3.39	1.18	2,454	0.08
			SW151105-SW151104	18	338.5	2.137	0.59	2.98	0.84	1,756	2.21	0.60	2.98	0.77	1,596	0.08
			SW151104-SW151103	18	27.0	0.264	0.19	3.16	2.90	6,036	0.27	0.19	3.16	2.89	6,015	0.01
		Orange Olive	SW151104-OT151102	18	148.0	1.873	0.19	20.91	19.04	39,668	1.94	0.20	20.91	18.97	39,529	0.07
LA PALMA	E La Palma Ave	Brasher St	SW178202-SW178201	12	400.0	0.144	0.22	1.25	1.11	2,313	0.36	0.35	1.25	0.89	1,862	0.22
			SW178201-SW178109	12	400.0	0.175	0.24	1.25	1.08	2,249	0.39	0.36	1.25	0.87	1,805	0.21
			SW178109-SW178108	15	325.0	0.182	0.19	2.14	1.96	4,076	0.39	0.28	2.14	1.74	3,634	0.21
			SW178108-SW178107	15	450.0	0.200	0.20	2.04	1.84	3,824	0.41	0.29	2.04	1.63	3,386	0.21
			SW178107-SW172208	15	450.0	0.240	0.22	2.08	1.84	3,839	0.45	0.30	2.08	1.63	3,406	0.21
			SW172208-SW172207	15	450.0	0.290	0.24	2.08	1.79	3,736	0.50	0.32	2.08	1.59	3,306	0.21
			SW172207-SW172206	15	344.0	0.290	0.24	2.09	1.80	3,748	0.50	0.32	2.09	1.59	3,318	0.21
			SW172206-SW172108	15	344.0	0.303	0.25	2.08	1.78	3,699	0.51	0.32	2.08	1.57	3,271	0.21
		Kellogg Dr	SW172108-SW172107	12	450.0	0.319	0.36	1.03	0.71	1,475	0.52	0.48	1.03	0.50	1,048	0.20
			SW172107-SW172106	12	450.0	0.324	0.37	1.03	0.70	1,463	0.53	0.48	1.03	0.50	1,036	0.20
			SW172106-SW166210	12	450.0	0.336	0.37	1.03	0.69	1,438	0.54	0.49	1.03	0.49	1,013	0.20
		Mannassero St	SW166210-SW166209	12	450.0	0.354	0.39	1.03	0.67	1,401	0.57	0.36	1.86	1.29	2,695	0.21
			SW166209-SW166212	12	450.0	0.359	0.39	1.03	0.67	1,391	0.56	0.50	1.03	0.47	978	0.20
			SW166212-SW166108	15	450.0	0.365	0.29	1.86	1.50	3,117	0.56	0.50	1.03	0.46	968	0.20
			SW166108-SW166107	15	450.0	0.372	0.29	1.86	1.49	3,104	0.57	0.36	1.86	1.29	2,682	0.20
			SW166107-SW166106	15	400.0	0.376	0.28	1.98	1.61	3,350	0.58	0.35	1.98	1.41	2,928	0.20
		Lakeview Ave	SW166106-SW160213	18	347.5	0.423	0.24	3.02	2.59	5,401	0.62	0.29	3.02	2.39	4,985	0.20
			SW160213-SW160212	18	380.0	0.434	0.24	3.02	2.59	5,389	0.63	0.30	3.02	2.39	4,973	0.20
			SW160212-SW160211	18	376.0	0.449	0.25	3.02	2.57	5,356	0.65	0.30	3.02	2.37	4,940	0.20
			SW160211-SW160210	18	362.4	0.457	0.24	3.39	2.93	6,107	0.66	0.28	3.39	2.73	5,690	0.20
		Fee Ana St	SW160210-SW160209	18	21.3	0.457	0.24	3.29	2.84	5,909	0.66	0.29	3.29	2.64	5,492	0.20
			SW160209-SW160113	18	221.2	0.480	0.24	3.36	2.88	6,010	0.68	0.29	3.36	2.69	5,595	0.20
			SW160113-SW160105	18	166.0	0.481	0.24	3.41	2.93	6,094	0.68	0.29	3.41	2.73	5,678	0.20
			SW160105-SW160104	18	164.0	0.495	0.26	3.10	2.61	5,435	0.70	0.31	3.10	2.41	5,017	0.20
			SW160104-SW160103	18	225.0	0.507	0.25	3.41	2.91	6,053	0.71	0.29	3.41	2.70	5,632	0.20
		Richfield Rd	SW160103-SW160102	15	287.9	0.512	0.33	2.04	1.53	3,178	0.71	0.39	2.04	1.32	2,756	0.20
			SW160102-SW160101	15	288.0	0.520	0.33	2.07	1.55	3,237	0.72	0.39	2.07	1.35	2,814	0.20
			SW160101-SW154209	15	300.0	0.527	0.33	2.08	1.55	3,234	0.73	0.39	2.08	1.35	2,809	0.20
			SW154209-SW154208	15	360.1	0.534	0.33	2.08	1.55	3,223	0.74	0.39	2.08	1.34	2,797	0.20
		Van Buren St	SW154208-SW154207	15	360.3	0.541	0.33	2.08	1.54	3,206	0.75	0.39	2.08	1.33	2,779	0.20
	Coranado St	Van Buren St	SW154207-SW154206	18	400.0	0.581	0.27	3.39	2.80	5,843	0.79	0.31	3.39	2.60	5,410	0.21
			SW154206-SW154106	18	450.0	0.595	0.27	3.39	2.79	5,818	0.80	0.32	3.39	2.58	5,383	0.21
			SW154106-SW154105	18	30.8	0.599	0.27	3.36	2.76	5,746	0.81	0.32	3.36	2.55	5,311	0.21
			SW154105-SW154104	18	419.0	0.604	0.27	3.39	2.79	5,805	0.81	0.32	3.39	2.58	5,369	0.21
		Jefferson St	SW154104-SW154103	18	446.3	0.619	0.28	3.39	2.77	5,769	0.83	0.32	3.39	2.56	5,333	0.21
	Jefferson St	Coronado St	SW154103-SW154102	18	508.4	0.622	0.31	2.74	2.12	4,412	0.83	0.36	2.74	1.91	3,976	0.21
			SW154102-SW154101	18	460.4	0.637	0.30	2.94	2.30	4,789	0.85	0.35	2.94	2.09	4,353	0.21
		Miraloma Ave	SW154101-SW153304	18	371.6	0.646	0.28	3.42	2.78	5,786	0.86	0.32	3.42	2.57	5,350	0.21

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community