Michael Baker INTERNATIONAL

We Make a Difference

Sunjoint Development

October 22, 2015

TO: Harry Shore

FROM: Jessica Rendon

SUBJECT: Walnut Development – Flood and Water Quality Recommendations

In this memo Hydrologic and Water Quality analysis has been performed for the Walnut Development-Sunjoint. The site has been analyzed for the 10 and 50-year storm event in order to mitigate for excess runoff due to an increase in impervious area. A potential detention basin is recommended in order to mitigate for the 10 and 50-year storm events. Water quality analysis was completed in order to comply with Los Angeles County Low Impact Development (LID) requirements. LID requires new developments to capture and treat 100% of the 85th percentile storm event. Four potential treatment basins are recommended for water treatment or three basins and the installation of planters in the commercial area. Below is a summary of the analysis done for a flood detention basin and 4 water quality basins onsite.

Existing Drainage Facilities

County of Los Angeles owns two 24-inch reinforced concrete pipeline systems located along north and south Valley Boulevard and are designed for a 10-yr storm event at 24 cfs. Runoff from southeast and northeast of the site currently drain into two catch basins that connect to south Valley Boulevard and three catch basins that connect to north Valley Boulevard.

Hydrologic Analysis

The 49 acre site currently has four discharge points, see Exhibit A. Existing onsite drainage, located northwest of the site (Area A), will be directed southwest with the proposed development conditions, reducing flow to neighboring residential areas. Area B will also be reduced and flow will be directed south east into the existing south Valley Boulevard storm drain system. The proposed development will increase flow into the existing storm drain along south Valley Boulevard and reduce flow along north Valley Boulevard. Off-site drainage from neighboring sites enter existing v-ditches around the perimeter and then enter the storm drain system. Hydrological analysis for onsite drainage areas draining to south Valley Boulevard for the 10-yr and 50-yr storm events are listed below. Please see Exhibits A and B for drainage areas and nodes.

Hydrologic Analysis for 10 and 50-yr Storm Event

Since the development will increase flow to south Valley Boulevard, flood analysis was performed for the areas draining to the south. The proposed areas draining to the south Valley Boulevard include: Areas A-1, B-1, C-1 and D-1 (see Exhibit B). Area draining to south Valley Boulevard will increase from about 20 to 37 acres. The proposed development will increase flow by 36.57 cfs for the 10-yr and 48.14 cfs for the 50-yr storm event, see Table 1. The runoff excess will be mitigated with the construction of a 0.56 acre, 6 feet in depth, detention basin located southeast of the site in the proposed commercial area, see Table 2 and Exhibit B. The basin will have an orifice (bottom) opening of 1.5 feet for the 10-yr while the second orifice

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(top) will have a diameter of 2 feet to accommodate for the 50-yr storm flow. See Exhibit B for proposed detention basin analysis.

Table 1: South Valley Boulevard Existing, Proposed, and Mitigated Flow

	Q 10-YR (cfs)	Q 50YR (cfs)
Existing	15.4	46.7
Developed	51.97	94.84
Mitigated with Basin	14.18	30.62

Table 2: Basin Composite Elevation-Storage-Discharge

Basin Elevation (ft)	Storage (ac-ft)	Outflow (cfs)
0.	**0.0**	**0.0**
1.	**0.65**	**4.47**
2.	**1.12**	**9.98**
3.	**1.68**	**13.40**
4.	**2.24**	**16.10**
5.	**2.80**	**31.69**
6.	**3.36**	**41.16**

LID Requirements for Los Angeles County MS4 Permit

According to County of Los Angeles Department of Public Works (February 2014) Low Impact Development Standards Manual, Sunjoint Development is considered a Designated Project because it is disturbing over an acre and adding more than 10,000 square feet of impervious surface area.

The requirements for Designated Projects include:

- All Designated Projects must retain 100 percent of the SWQDv on-site through infiltration, evapotranspiration, stormwater runoff harvest and use, or a combination thereof unless it is demonstrated that it is technically infeasible to do so. To meet these requirements, Designated Projects must:
    - Conduct site assessment and identify design considerations, including determining the feasibility of on-site infiltration;
    - Apply site-specific source control measures;
    - Calculate the Stormwater Quality Design Volume, see Table 3;
    - Implement stormwater quality control measures;
    - Structural-type source control measures should be considered along with non-structural control measures (CASQA).
    - Implement alternative compliance measures, if necessary;

  In general, all proposed projects must maximize on-site retention of the SWQDv or SWQDv through infiltration and/or bioretention. If it is not feasible to fully infiltrate or use bioretention to handle the SWQDv or stormwater runoff, harvest and use is the next preferred control measure. Project

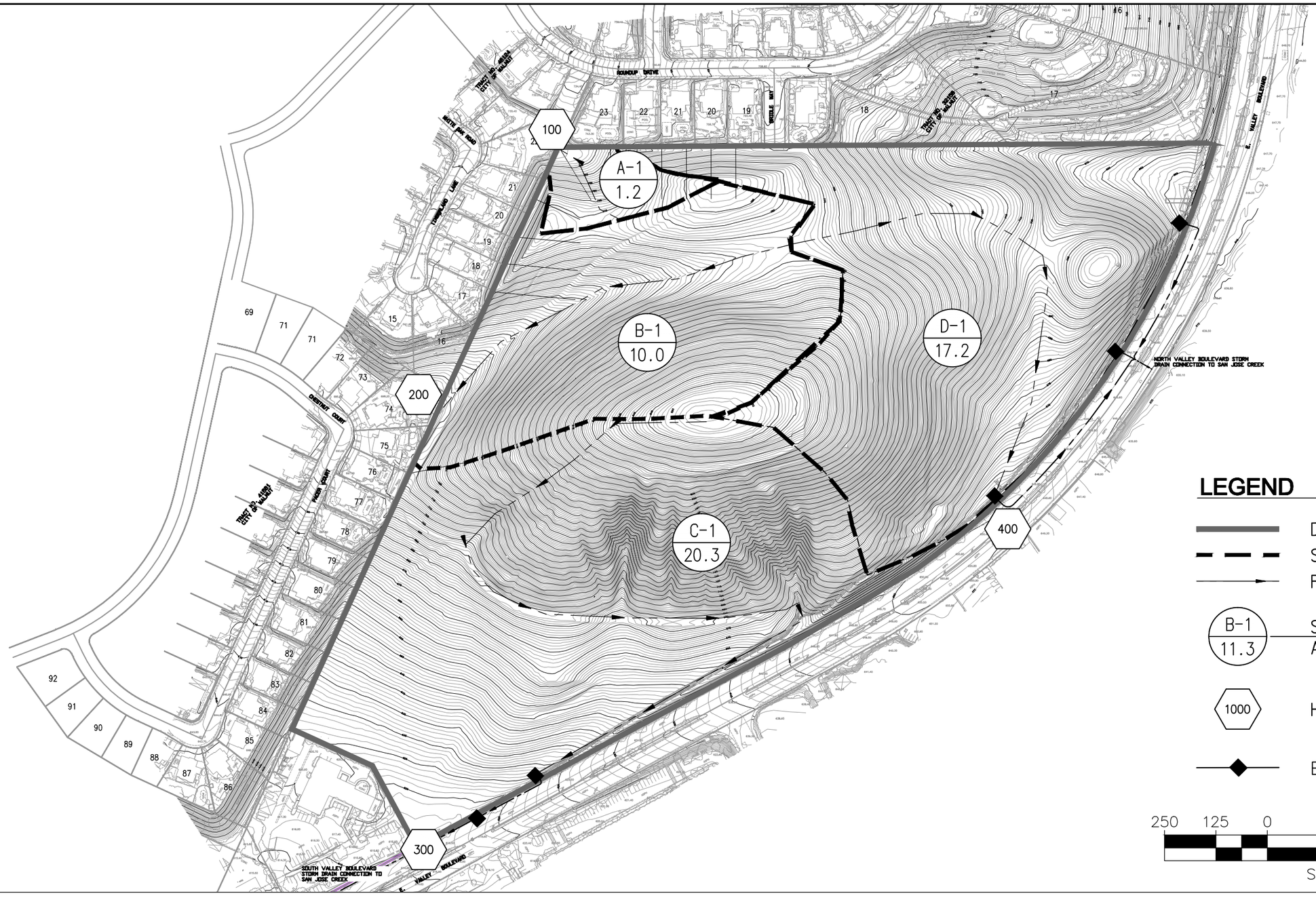
applicants must verify requirements for stormwater runoff harvest and use with the California Department of Public Health.

- Implementation of hydromodification requirements are not necessary as noted below;
    - Projects that discharge directly or through a storm drain into concrete or otherwise engineered channel (i.e., channelized or armored with rip-rap, shotcrete), which, in turn, discharge into receiving water that is not susceptible to hydromodification impacts are not subject to meeting hydromodification requirements. This project discharges to an engineered concrete channel, San Jose Creek.
- Develop a Maintenance Plan, if necessary.
    - LACDPW may request as part of project application submittal.

The proposed development will mitigate the Storm Water Quality volume with the installation of treatment basins throughout the residential part of the site (Basins, A, B/C, D, and E). The treatment basins will capture storm water runoff and connect back to the proposed storm drain system. The proposed commercial site will be either treated with planters or a basin E in the lower corner, see Exhibit B. SWQDv values are shown below in Table 3. Any other areas not draining to the water quality basins will be considered not feasible; these areas may include Areas F, G, and H. Areas are subject to change due to the changes made to the site design.

Table 3: 85th Percentile Stormwater Quality Design Volume

Basin ID	Tributary Drainage Area (acres)	Peak Flow Rate (cfs)	Volume (ac-ft)
A	A-1=8.86	1.77	0.58
B/C	B-1=5.92	0.67	0.59
	C-1=5.75	3.31	
D	D-1=16.28	4.22	1.08
E	E-1=6.19	1.06	0.40



LEGEND

- DRAINAGE BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- B-1 / 11.3 — SUBAREA DESIGNATION / AREA (ACRES)
- 1000 — HYDROLOGY NODE
- EXISTING STORM DRAIN

250 125 0 250 500 750

SCALE: 1"=250'

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EXHIBIT A
EXISITING HYDROLOGY
SUNJOINT DEVELOPMENT
EAST VALLEY BLVD.

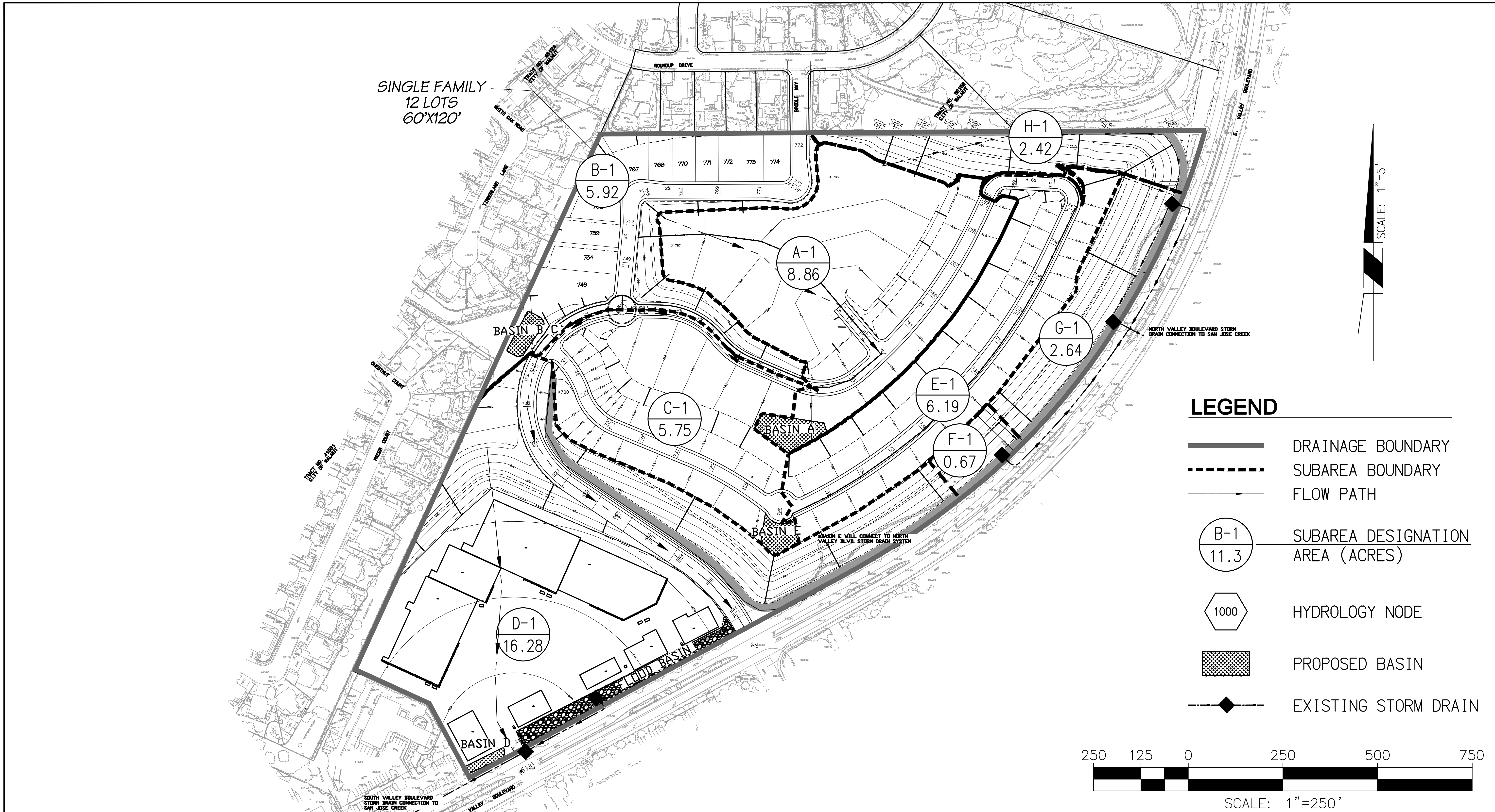

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EXHIBIT B

SUNJOINT DEVELOPMENT

PROPOSED HYDROLOGY

EAST VALLEY BLVD.