

## Technical Memorandum

Date: 23 November 2015

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Solid Waste Division

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Subject: Addendum to SMaRT Station Feasibility Study  
Geosyntec Project Number: WW1940A

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### BACKGROUND

Geosyntec Consultants (Geosyntec) and EOA, Inc. (EOA) (the Project Team) have prepared this Technical Memorandum for the City of Sunnyvale (City) as an Addendum to the SMaRT Station Feasibility Study (Geosyntec & EOA, 2014). As an outcome of the Feasibility Study, the City and the Project Team became aware of the need to further delineate the drainage areas associated with the SMaRT Station industrial activities to be included in the diversion to the Water Pollution Control Plant (WPCP). Additional areas under consideration include the service road to the SMaRT Station beginning at the west side of the scales on Carl Road and continuing to the east as well as a portion of the access road to the pump station. A field investigation was conducted to delineate the extent of the drainage areas associated with industrial activities in these locations. During the field investigation, it was also observed that several off-site non-industrial areas have the potential to contribute run-on to the industrial portions of the site.

### RECOMMENDATIONS

The Project Team has the following recommendations based on the field investigation:

1. Expand the industrial area of the site to include the service road to the SMaRT Station from the scales to the main entrance gate as shown on Figure 1. This area can be divided into two subdrainage areas: the area which drains to the catch basin at the northeast corner of

the service road (drainage area K) and the area drained by the scale drain sumps (drainage area L). Stormwater from these areas should be diverted to the WPCP for treatment. Revised diversion flow rates are described below.

2. As shown on Figure 2, install berms (e.g., speed bumps) along the entrances to the parking lot and along the entrance to the access road to the pump station. This would allow for better separation of industrial runoff from non-industrial drainage areas.
3. As required by the IGP, run-on from offsite, non-industrial areas should be minimized. Areas of potential run-on observed during the field investigation include portions of the north-facing slope of the South Hill, located south of Carl Road, and portions of the hillside east and south of the Smart Station between the Concrete Facility's haul road and the SMaRT Station (see Figure 2). Improvements are currently in progress to reduce run-on from these areas as discussed below.
4. Collect wet weather stormwater samples from SWPPP sampling locations SM-4 and SM-5 during the 2015-2016 wet season. Suggested sampling is described in more detail below.

## **RUN-ON REDUCTION**

Improvements are currently underway at the Concrete Facility and the SMaRT Station which will significantly limit potential for run-on. Any run-on to the SMaRT Station's industrial areas would increase the flows to be diverted to the WPCP; therefore, run-on should be minimized, controlled and segregated as feasible. At the Concrete Facility, improvements are designed to preclude runoff from the haul road from flowing beyond the Concrete Facility's main gate, which has been defined as the westerly extent of the Concrete Facility. Only the area west of the gate may have the potential to contribute flow to the SMaRT Station's industrial area and is included in drainage area K (see Figure 2). Additionally, the City is in the process of scheduling equipment, materials and personnel to re-establish the mid-slope bench on the north-facing slope of the South Hill (see Figure 2), which will more completely intercept run-off from the slopes above the bench. This will significantly reduce potential run-on into areas K and L. The small areas below the bench (drainage areas O and P) are pervious and are anticipated to contribute little, if any, run-on to the industrial areas of the SMaRT Station.

In drainage area M, there are somewhat steep slopes between the main haul road and the landfill's lower road that transects this area. Between the lower road and the SMaRT Station, slopes are either very shallow or flat, with berms and shallow ditches that significantly limit or even preclude run-on to the SMaRT Station facility. Drainage areas M, O and P will be monitored by City staff

during the 2015-2016 wet season for run-on to the industrial areas of the SMaRT Station. If run-on is observed, further evaluation of additional run-on reduction measures will occur.

**REVISED DIVERSION FLOW RATES**

WPCP Diversion, as described in the Feasibility Study, continues to be the recommended Project alternative for management of stormwater. WPCP Diversion involves diverting stormwater flows from outdoor surface areas where industrial activities occur and from roof drains in the northwest corner of the site (drainage area H) to the WPCP for treatment. Runoff from the remaining roofed areas and from the employee parking areas (drainage areas A and B) would continue to flow to the existing outfalls. Flows that exceed the design intensity of 0.18 inches/hr would also flow to existing outfalls.

The addition of industrial drainage areas L and K as discussed above will increase the anticipated flows to the WPCP during diversion events by approximately 29 percent. Revised estimate of peak hourly flow rates would be approximately 473 gallon/minute (0.68 million gallons/day rate). Based on an analysis of historic data, the daily average flows to the WPCP during diversion events would be approximately 80,000 gallons/day (0.08 mgd) for days when there is flow. The WPCP can accommodate this level of increase. If feasible, flows from the scales (drainage area L) would be directed to the storm drain inlet in drainage area K (SM-4). A diversion structure at this location would divert flows back to the junction box and WPCP pretreatment sampling location, shown on Figure 2. The diverted flows would be routed to the WPCP influent. The conceptual design calls for use of a gravity line to collect flows and transport them to the WPCP. Another possible option would be to use gravity lines for the on-site portion of the system, and a force main to convey the flow to the WPCP.

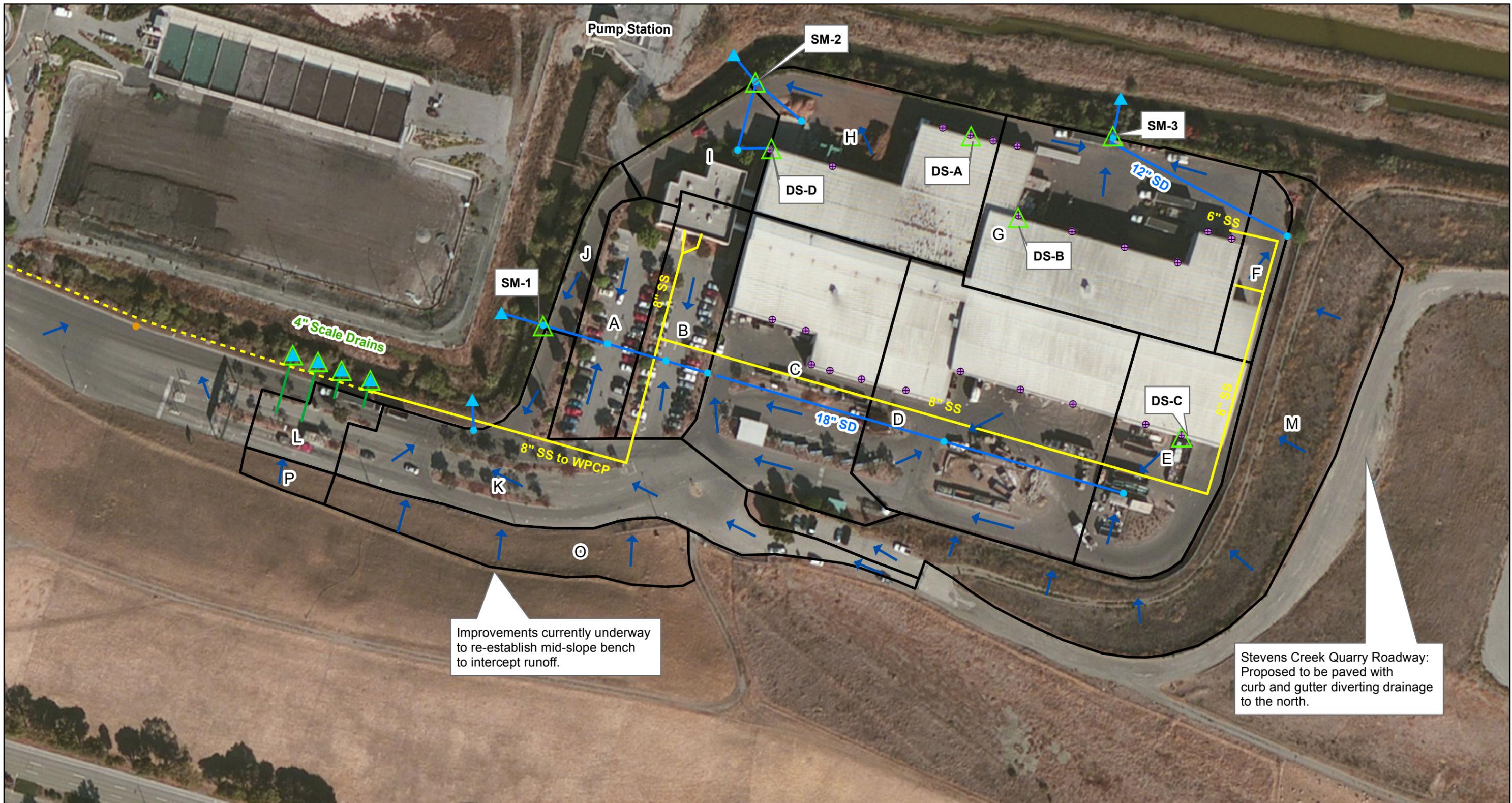
**Table 1: Projected Maximum Hourly Diversion Flow Rates**

Drainage Area	Peak Hourly Flow for 0.18 in/hr Design Storm	
	gpm	mgd (rate)
SM-1 (excluding roof drains and employee parking area)	187	0.27
SM-2 (includes all paved areas and roof drains from NW roof area.)	108	0.16
SM-3 (excluding roof drains)	70	0.10
SM-4	92	0.13
SM-5 (scale drains)	17	0.02
<b>Entire Site (industrial areas only)</b>	<b>473</b>	<b>0.68</b>

## **2015-2016 WET WEATHER SAMPLING**

As discussed in the Feasibility Study, the stormwater diversion flow would be viewed as an industrial discharge by the City of Sunnyvale Environmental Services Department WPCP staff that would require permitting under the City's Pretreatment Program and compliance with Pretreatment Program requirements. The Feasibility Study characterized pollutant concentrations to assess likely compliance with the City's local limits for wastewater discharges and also to assess the potential need for pretreatment prior to discharge. In order to update this analysis, concentration data is needed to represent the new access road drainage area (SM-5). Stormwater runoff samples should be collected during the 2016-2017 wet season according to the SWPPP at locations SM-4 and a composite of SM-5. The parameters identified for analysis in the SWPPP are pH, TSS, oil and grease, iron, COD, aluminum, copper, lead and zinc. No additional parameters are required.

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Improvements currently underway to re-establish mid-slope bench to intercept runoff.

Stevens Creek Quarry Roadway: Proposed to be paved with curb and gutter diverting drainage to the north.

**Legend**

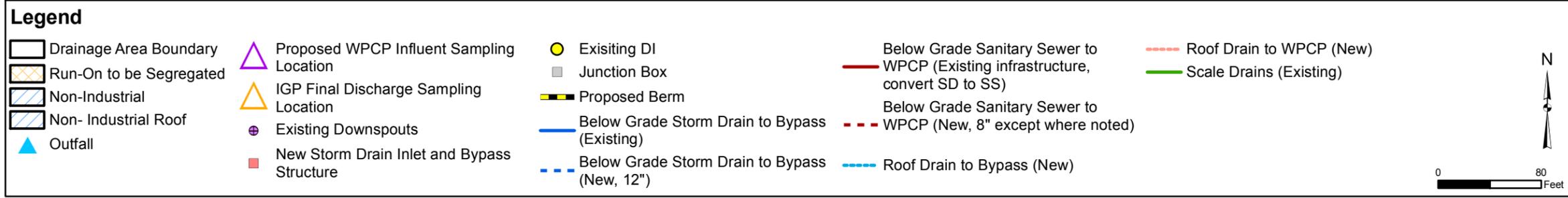
Drainage Area Boundary	Approximate Location of Sanitary Sewer	Outfall
Existing Sampling Point	Scale Drains	Flow Lines
Existing Downspouts	Inlet	
Sanitary Sewer	Off Site Inlet	
Storm Drain System		

<b>SMaRT Station Existing Drainage</b>	
301 Carl Road Sunnyvale, CA	
Geosyntec consultants	
WW1940A	November 2015
<b>Figure 1</b>	



Improvements currently underway to re-establish mid-slope bench to intercept runoff.

Stevens Creek Quarry (SCQ) Roadway: Improvements underway to pave with curb and gutter diverting drainage to the north.



<b>SMaRT Station</b> <b>Revised Diversion Alternative</b>	
301 Carl Road Sunnyvale, CA	
Geosyntec consultants	
WW1940A	November 2015
<b>Figure</b> <b>2</b>	