

V.K. DRAINAGE, EROSION, AND SEDIMENTATION

This section summarizes the findings of several studies prepared for this project. These studies include the *Floodplain Evaluation Report*, prepared by LSA Associates Inc. (August 2004); the Willow Road Extension, Nipomo Creek Bridge, Hydrology and Hydraulic Report, prepared by RRM Design Group (June 2004), Preliminary Drainage Report (for PSR), prepared by Rajappan and Meyer (July 2004), and Chapter V.K of the *Willow Road/Highway 101 Interchange Final Environmental Impact Report*, prepared by Douglas Wood & Associates, Inc. (March 1999: pp. V176-V185).

1. Existing Conditions

Topography and Drainages. The project area can be divided into two halves, Nipomo Mesa and Nipomo Valley. The boundary between these halves roughly corresponds to US 101. On Nipomo Mesa, located to the west of US 101, the topography comprises open flat areas, linear valleys, and hilly knolls, formed in an area of sand dunes. Slopes in this area generally vary between two and ten percent, although slopes may range between ten and 20 percent in some local depressions. No areas of standing water exist on the Mesa near the project area. Nipomo Valley, located to the east of US 101, is a generally flat floodplain which slopes gently toward the southwest. Numerous creeks drain from the western foothills of the coastal range and run through Nipomo Valley.

The County *Standard Improvement Specifications and Drawings* (County Standards) defines three types of waterways that vary in size. Major waterways have a drainage area over four square miles. Secondary waterways have a drainage area between one and four square miles. Minor waterways have a drainage area of less than one square mile. Secondary and minor waterways exist within the project area.

These waterways are unevenly distributed. Nipomo Mesa contains only minor waterways. Some areas near Willow Road on Nipomo Mesa have been designated as Zone X (unshaded) on a Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for San Luis Obispo County. This designation means that the areas have been determined to be outside the 500-year flood plain. Within Nipomo Valley, Nipomo Creek runs along the eastern edge of the Mesa, passing through the project area. Nipomo Creek is a secondary waterway. It drains a total of 2,103 acres. The watershed for this creek extends from the eastern foothills across Nipomo Valley to a small adjacent area along Nipomo Mesa. Nipomo Creek is depicted on FEMA FIRMs (060304 0750 E and 060304 0761 C) as a 100-year flood plain. This creek is shallow and broad. During a 100-year flood event, the creek channel would be two to three feet deep, and its width would span from 280 to 560 feet.

Soils. Due to differences in parent material and topography, distinct soils form on Nipomo Mesa and in Nipomo Valley (see Figure V.H-1 and Sections V.H and V.J). Alluvial deposits occur within Nipomo Valley, located adjacent to Nipomo Creek and its tributaries. Dune sand deposits, ranging from 70 to 80 feet in thickness within the project area, underlie Nipomo Mesa.

Oceano Series soils (0 to 9 percent slope and 9 to 30 percent slope) form on the sandy dune deposits of Nipomo Mesa. Oceano Series (0 to 9 percent slope) have a slight to moderate erosion potential during wet years, forming gullies. Oceano Series (9 to 30 percent slope) have a moderate to severe erosion potential during wet years. Under dry conditions, wind erosion may impact these sandy areas. Vegetative cover, however, reduces the risk of erosion.

Cropley Clay (0 to 2 percent slope) and Cropley Clay (2 to 9 percent slope) develop within the alluvial deposits near Nipomo Creek. Cropley Clay (2 to 9 percent slope) occurs closer to Thompson Avenue. Erosion potential among these soils is generally low.

Along the low stream terrace bordering Nipomo Creek on its northern side, Tierra Sandy Loam (2 to 9 percent slope) series soil occurs. This soil forms on hills and dissected terraces in old alluvium weathered from sedimentary rocks. The risk of wind erosion impacting this soil is moderate.

2. Thresholds of Significance

According to the CEQA Guidelines (Appendix G) and the County of San Luis Obispo Initial Study Checklist, a project would have a significant impact if it results in the following effects:

- The project places structures within a 100-year flood hazard area that would impede or redirect flood flows;
- The project exposes people or structures to a significant risk of loss, injury, or death involving flooding;
- The project substantially alters the existing drainage pattern of the area or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site;
- Change in quantity or movement of available surface or ground water;
- The project creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems;
- The project exposes people or structures to inundation by seiche, tsunami, or mudflow;
- Change the drainage patterns where substantial on or off-site sedimentation/erosion or flooding may occur.

3. Project Impacts

Project Design Features. The proposed project includes a number of design features that will reduce impacts attributable to flooding, sedimentation, and erosion.

Nipomo Creek Bridge and Flooding. The proposed bridge over Nipomo Creek will be designed to span the width of the existing base floodplain. Depending on the bridge design, three to four piers, ranging from 0.6 to 0.9 meters (two to three feet) in diameter, will be placed within the base floodplain. The bridge and piers will be designed so as not to raise the 100-year water surface elevation more than 0.3 meters (one foot).

Infiltration Basins and Runoff. Infiltration basins are proposed as part of the project design. These project design features capture and dispose of the natural runoff caused by precipitation on the new asphalt so as to not affect the natural drainage patterns. Two separate basins along the Willow Road alignment are designed to accommodate the increased runoff. Figure III-1 depicts Infiltration Basins (IB) 1 and 2. Each basin has distinct design characteristics and a unique configuration. The depth of the infiltration basins will be up to two feet. These infiltration basins will not capture all of the natural runoff, and proposed conveyances and storm drains (see

description that follows) will capture additional surface runoff from the proposed project's impervious areas.

Conveyances and Runoff. Runoff from the western side of US 101 will be collected into inlets near the intersections of the proposed interchange ramps and Willow Road and will be routed across the proposed roadway to continue downgrade on its current eastward course.

A storm drain system will also collect runoff derived from various portions of the proposed interchange. Surface runoff from Willow Road and US 101 will be collected into inlets at the edge of the pavement and in the median. Runoff collected from US 101 and Willow Road will eventually be collected into a mainline culvert that runs down the center of Willow Road. Runoff from this culvert will then be discharged into a rock-slope protected area near Nipomo Creek on the eastern side of the project area.

Design Features and Erosion. Project design features, such as infiltration basins and rock slope protection, will address some of the potential impacts of erosion. The aforementioned infiltration basins may also serve as siltation basins to limit the amount of sediments being carried to drainages. To protect against possible erosion problems that result from the increased water flow collected at culverts, conveyances that generate a water velocity greater than 0.8 m/s will be lined with asphalt concrete or aggregate. Rock slope protection and flared end section protection will be used at new drainage outfalls and steep slopes to prevent scour. Within the project area, slopes will be 1:4 or 1:2 (vertical: horizontal) in order to minimize erosion. Erosion control, such as fiber rolls, will be applied to assist in stabilizing the project area.

Flooding. The proposed project will not expose people or structures to a significant risk of loss, injury, or death involving flooding. On Nipomo Mesa, minor ponds may develop within localized low points during rainy periods, but flooding will not occur. Flooding may, however, occur within Nipomo Valley. The bridge over the creek will keep traffic from being impacted by such floods, but this bridge will have no significant effect on this flooding. As the proposed project is a new road and interchange, no other structures or other improvements will be located within the 100-year floodplain. Consequently, people and structures will not be exposed to the effects of potential floods, and the project poses no potentially significant impacts attributable to flooding.

Alteration of Drainages. Construction of the project will increase the amount of impermeable paved surfaces in the area. These surfaces alter drainage patterns, because asphalt sheds water more quickly and in greater quantities than bare soil. The effects of such changes in drainage are usually insignificant in areas with little other development, such as the areas in which the proposed project will be constructed. Drainage flows along the western side of US 101 are also relatively small. Nevertheless, the County dictates in its Standard Specifications Manual that all runoff caused by impervious bituminous asphalt must be routed into infiltration basins to ultimately be absorbed by the soil. As noted previously, the proposed project includes two infiltration basins as design features.

The project will not significantly alter existing drainages or drainage patterns. Design features of this project accommodate the additional runoff generated by the project. Consequently, the project will not create potentially significant impacts due to alteration of drainage patterns and /or quantity of runoff.

Erosion and Sedimentation. Flowing water can erode soil and carry sediments to other areas. Such impacts are particularly likely during the winter, when the frequency and amount of rainfall is much higher. Rainfall can facilitate erosion, particularly on bare, unvegetated soil.

Construction Impacts. The ground disturbance created by the project may foster such erosion. Within Nipomo Valley, winter storms could exacerbate erosion and sedimentation within areas disturbed by construction. Disturbed areas on Nipomo Mesa may be impacted by wind erosion during dry months if left unvegetated.

Long-Term Impacts. Project features that collect and distribute surface runoff may themselves potentially contribute to erosion. Water concentrates at culvert outlets, where it may impact local drainages by increasing the velocity and volume of water flow within them. Similarly, project components that would result in the steepening of existing slopes could potentially create more erosive surfaces.

The project includes many design features for the control of erosion and sedimentation. Mitigation Measures K-1 to K-5 are prescribed to address potential erosion and sedimentation problems which may result from construction of the project during wet and dry seasons. With the implementation of these measures, the proposed project will have less than significant impacts resulting from erosion and sedimentation.

Inundation by Seiche, Tsunami, or Mudflow. A seiche, tsunami, or mudflow is not likely to affect the project area. No large body of water exists in the surrounding inland region that could generate a dangerous seiche. Similarly, the project area lies approximately 8 miles from the coast, so a tsunami would not reach this area. Mudflows are also unlikely to pose a hazard to people or property in the project area, since the narrow mountain valleys that would foster large, fast-moving mud flows during rain storms do not exist near the project area. The project will therefore have no potentially significant impacts resulting from a seiche, tsunami, or mudflow.

4. Cumulative Impacts

The cumulative study area for this project is the watershed into which runoff from the project flows. This watershed is the Nipomo Creek watershed. The proposed project accommodates other, planned development in the area. These projects will disturb the ground surface during construction and lead to the creation of more impermeable ground surfaces. Most projects on the cumulative projects list, discussed in Chapter IV, occur on Nipomo Mesa. Many of these projects will drain to undrained depressions within the Mesa. They will contribute little runoff to the Nipomo Creek watershed. Those projects that lie near Nipomo Creek could, however, increase runoff, erosion, and sedimentation. These impacts can be mitigated on a project-by-project basis.

The proposed project will not alter drainage patterns within this watershed. Increases in surface runoff will be insignificant, contributing only a minor addition to existing runoff levels in the area. This runoff will not impact the capacity of regional drainage facilities. Similarly, sediment carried by runoff will be minor when proper erosion control measures have been implemented. Therefore these impacts will be less than significant.

The proposed project will not significantly contribute to cumulative impacts on drainage patterns, erosion, and sedimentation within the region. Most development accommodated by the proposed project will not impact the Nipomo Creek watershed. Any potential impacts from these projects can be mitigated by implementing measures similar to those prescribed for the proposed project. The proposed project itself will have no significant impacts on this watershed.

5. Mitigation Measures

Some mitigation measures from the previous EIR have been implemented as the previously described project design features, so they are no longer included as additional mitigation measures for the purposes of this Supplemental EIR.

K-1, Construction During the Dry Season. Prior to approval by the County, the final PS&E for the project shall specify that construction of any project facilities within or adjacent to Nipomo Creek east of the proposed US 101 interchange will take place during the dry season. As defined by County Land Use Ordinance Section 22.05.036, this season occurs between April 15 and October 15.

K-2, Erosion Control Plan for Rainy Season Construction. Prior to approval of any grading plan or permit by the County, the project engineer shall complete an erosion control plan for any construction proposed to occur during the rainy season. The plan shall provide methods for controlling erosion, including—but not limited to—erosion fencing, hay bales, temporary siltation basins, and erosion control blankets. This plan shall conform to Section 22.05.036 of the County Land Use Ordinance. Replacement vegetation and landscaping should be planted sufficiently in advance of October 15 to allow plant roots time to become established and effectively protect the soil.

K-3, Erosion Control Plan for Dry Season Construction. Prior to approval of any grading plan or permit by the County, the project engineer shall complete an erosion control plan for any construction on Nipomo Mesa proposed to occur during the dry season. This plan shall provide methods for controlling wind erosion, including—but not limited to—using a water truck to apply water to disturbed and unvegetated surfaces. This plan shall conform to Section 22.05.036 of the County Land Use Ordinance.

K-4, Monitoring of Project Area. Following completion of each project construction phase, the County monitor shall evaluate the area following storms to determine whether additional work must be done to stabilize areas subject to surface erosion. The County monitor shall document the post-storm condition of areas susceptible to erosion.

K-5, Design of Equestrian Trails. Prior to approving a final PS&E for construction of the equestrian trails located adjacent to the proposed road extension, the County shall require that the PS&E specify the use of compacted native soils (where appropriate), Class 3 aggregate base materials, or similar long-lasting products to minimize erosion on the trail surfaces.

6. Residual Impacts

The foregoing analyses have identified a number of potentially significant impacts to drainages that could be caused by the project. The project, however, includes a number of design features that

address both potential impacts to drainages and potential impacts arising from erosion and sedimentation caused by construction of the project. Mitigation measures, prescribed in the previous section, also address potential impacts from erosion and sedimentation that may be caused during project construction. These design features and mitigation measures reduce these impacts to a less than significant level.