

3.8 HYDROLOGY AND WATER QUALITY

3.8.1 SETTING

The Salinas River and the Pajaro River, two of the major hydrologic features of the region, both flow into Monterey Bay. A large proportion of the population in the Monterey Bay region relies on aquifers for their water supply, and saltwater intrusion has become a major concern in some areas.

3.8.2 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Implementation of the three plans could have a significant environmental impact if it were to result in:

- A violation of any water quality standards;
- A violation of any waste discharge requirements;
- Substantial depletion of groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantial alteration of the existing drainage pattern of the site or area (including through the alteration of the course of a stream or river) in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantial alteration of the existing drainage pattern of the site or area (including through the alteration of the course of a stream or river) in a manner which would result in flooding on- or off-site;
- A substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- The creation (or contribution) of runoff water which would exceed the capacity of existing or planned storm water drainage systems;

- The creation (or contribution) of substantial additional sources of polluted runoff;
- A substantial degradation of water quality;
- The placement of housing within a 100-year flood hazard area as mapped on the federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- The placement of structures within a 100-year flood hazard area which would impede or redirect flood flows;
- The exposure of people or structures to a significant risk of loss, injury or death involving flooding (including flooding as a result of the failure of a levee or dam); or
- Inundation by seiche, tsunami or mudflow.

Although adoption of the three plans would not, in and of itself, entail any hydrological or water quality impacts, construction of several of the projects identified in the financially constrained Action Elements might be expected to entail adverse effects.

Water Quality

The construction and expansion of transportation facilities may generate significant adverse impacts to water quality. Pollutants and chemicals associated with urban activities would run off new roadways (and other transportation facilities such as parking lots, airport runways and train stations), flowing into nearby bodies of water. These pollutants would include (but are not limited to) heavy metals from motor vehicle emissions, oil, grease, debris and air pollution residue. Eventually, these urban pollutants can filter down into the groundwater table, especially where groundwater is near the surface. Such contaminated urban runoff remains largely untreated, thus resulting in the incremental long-term degradation of water quality.

Short-term adverse impacts to water quality may also occur during the construction of individual transportation system improvement projects when areas of disturbed soils become susceptible to water erosion and downstream sedimentation. This impact is of particular concern where projects are located on previously contaminated sites. Grading and vegetation removal in proximity to creeks for the construction of bridges could result in an increase in creek bank erosion, which could affect both water quality and slope stability along the creeks.

Regulations under the federal Clean Water Act require that a National Pollutant Discharge Elimination System (NPDES) storm water permit be obtained for projects that would disturb more than one acre during construction. Acquisition of the General Construction permit is dependent on the preparation of a Storm Water Pollution Prevention Plan (SWPPP) that contains specific actions (termed Best Management Practices, or BMPs) to control the discharge of pollutants (including sediment) into the local surface water drainages. Many of the projects identified in the three plans would be subject to these regulations.

IMPACT 3.8.1: Construction-Related and Operational Water Quality Effects. During construction, some of the projects identified in the financially constrained Action Elements of the three plans may introduce pollutants to local bodies of water and groundwater through storm water runoff. Examples of projects which might involve such impacts may include (but are not necessarily limited to) construction of new roadways, rail improvements on rail lines that are not currently used by trains and bridge replacements. This could represent a **potentially significant environmental impact** associated with these types of projects.

RECOMMENDED MITIGATION MEASURE

MITIGATION MEASURE 3.8.1: Water Pollution Prevention Measures

A. Prior to final design approval, implementing agencies shall, where appropriate, evaluate potential increases in surface water runoff volume for each transportation system improvement project with the potential to have significant effects on drainage ways. If it is found that increased runoff volumes will significantly affect drainage capacities or increase flood hazards, site-specific measures to control runoff (i.e., the use of detention or retention basins, french drains, vegetated swales and medians, or other techniques designed to delay peak flows) should be implemented.

B. Implementing agencies shall, where appropriate, ensure that fertilizer/pesticide application plans for any new right-of-way landscaping are prepared to minimize deep percolation of chemicals.

C. Implementing agencies shall, where appropriate, ensure that transportation system improvement projects direct runoff into subsurface percolation basins and traps which would allow for the removal of sediment, urban pollutants, fertilizers, pesticides and other chemicals.

D. For transportation system improvement projects that would disturb at least one acre, a Storm Water Pollution Prevention Plan (SWPPP) shall, where appropriate, be developed by the implementing agency prior to the initiation of grading. The measures identified in the SWPPP shall, where appropriate, be implemented for all construction activity on the project site. The SWPPP shall, where appropriate, include specific BMPs to control the discharge of materials from the site and into creeks and local storm drains. BMP methods may include (but would not be limited to) the use of temporary retention basins, straw bales, sand bagging, mulching, erosion control blankets, soil stabilizers and native erosion control grass seed.

RESULTING LEVEL OF SIGNIFICANCE

Implementation of the above measures could reduce potential impacts to a level of less than significant.

Water Supply

Implementation of some transportation system improvement projects identified in the financially constrained Action Elements of the three plans could result in both short-term and long-term impacts to local water supplies, many of which are reliant on groundwater resources. During grading activities, water could be needed to suppress fugitive dust generated by construction equipment. It is likely that more than one project could be constructed simultaneously in areas with overdrafted groundwater basins. Since this could contribute to the current overdraft situation, the short-term water impact of these projects could be considered potentially significant.

Most of the roadway, transit, airport and rail system improvement projects identified in the financially constrained Action Elements of the three plans involve modification of existing facilities, and a substantial increase in landscaped areas would not be anticipated for these projects. However, irrigation of landscaping associated with other transportation system improvement projects could require water, and could contribute to long-term adverse impacts to the local water supply. In addition, some large projects could also affect groundwater supplies by reducing groundwater recharge potential. This reduction in groundwater recharge could occur because the impermeable surfaces associated with some transportation system improvement projects could increase surface water runoff and reduce natural infiltration. While the relative significance of such an impact cannot be accurately determined, given the current overdraft of the majority of the region's groundwater basins, the reduction in groundwater recharge could be considered potentially significant.

IMPACT 3.8.2: Depletion of Groundwater Supplies and Interference with Groundwater Recharge. Construction and maintenance of transportation system improvement projects identified in the financially constrained Action Elements of the three plans could incrementally increase demand for water within the region, and several of the projects could be expected to reduce groundwater recharge. Since many local water supply systems are reliant on groundwater resources, and since many local groundwater basins are being overdrafted, increased water demand combined with reduced groundwater recharge capability could be considered a **potentially significant environmental impact**.

RECOMMENDED MITIGATION MEASURE

MITIGATION MEASURE 3.8.2: Reduce Water Demand/Increase Permeability

- A. Implementing agencies shall, where appropriate, ensure that, where economically and technically feasible, reclaimed and/or desalinated water is used for dust suppression during construction activities.
- B. Implementing agencies shall, where appropriate, ensure that low water use landscaping (i.e., drought-tolerant plants and drip irrigation) is installed.

C. Implementing agencies shall, where appropriate, ensure that, where economically and technically feasible, landscaping associated with transportation system improvement projects is maintained using reclaimed and/or desalinated water.

D. Implementing agencies shall, where appropriate, ensure that porous pavement materials are utilized, where feasible, to allow for groundwater percolation. Rural bicycle and other recreational trails shall be left unpaved, where appropriate.

RESULTING LEVEL OF SIGNIFICANCE

Implementation of the above measures could reduce potential impacts to a level of less than significant.

Storm Water Runoff

IMPACT 3.8.3: Increased Impervious Surface/Storm Water Runoff. Construction of some of the projects identified in the financially constrained Action Elements of the three plans could be expected to result in an increase in the area of impervious surface and/or modifications in local drainage/groundwater recharge patterns, which could result in increased flood risk on- or off-site. Examples of projects which might involve such impacts may include (but are not necessarily limited to) the construction of new roadways, the widening of existing roadways and the development of transit system improvements with large parking areas. This could represent a **potentially significant environmental impact** associated with these types of projects.

RECOMMENDED MITIGATION MEASURE

MITIGATION MEASURE 3.8.3: Evaluation/Design/Permitting

The following measures may be used by implementing agencies to limit the area of impervious surface and/or modifications in local drainage/groundwater recharge patterns resulting from project construction:

A. Prior to the finalization of project design, the drainage and groundwater recharge characteristics of the area for which the project is proposed should be thoroughly evaluated. In those instances where the capacity of the existing or planned storm water drainage systems may be exceeded, it will be necessary to identify appropriate site-specific measures to control surface runoff, and to detain surface water runoff on-site, if possible.

B. Implementing agencies shall, where appropriate, ensure that adequate drainage infrastructure is in place to accommodate runoff from each transportation system improvement project prior to the issuance of grading permits. If adequate drainage infrastructure is not available, the implementing agency shall, where appropriate, pay utility mitigation fees or otherwise provide improvements to the

drainage facilities of the jurisdiction in which the project is located such that drainage facilities affected by the project in question maintain an acceptable level of service.

C. Based on the results of the drainage/groundwater recharge evaluation, the proposed project should be designed to minimize the area of impervious surface and to maintain existing drainage/groundwater recharge patterns to the extent practicable.

D. In those instances where a streambed would be altered as a result of project construction, it will be necessary to enter into a Streambed Alteration Agreement with the California Department of Fish and Game prior to the start of construction.

RESULTING LEVEL OF SIGNIFICANCE

Although it may be possible to limit the area of impervious surface associated with roadway improvement projects to some extent, it will generally not be possible to avoid increasing impervious surfaces as new roadways are built or as existing roadways are widened, and this potential impact could remain **significant and unavoidable** in those cases. It may not be possible to design some projects in such a way so as to completely avoid significant alteration of existing drainage/ groundwater recharge patterns, and in such cases these potential impacts could remain **significant and unavoidable**. In those instances where a specific project would require a Streambed Alteration Agreement, compliance with the conditions of such an agreement could be expected to reduce streambed impacts to a level of less than significant.

Flood Hazards

None of the projects identified in the financially constrained Action Elements of the three plans would place any housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. However, some road and bikeway projects proposed in low-lying areas may be subject to flood hazards. The effects of flooding could include temporary inundation of a facility that impedes its use or causes long-term damage to the facility. Flooding may cause immediate damage to roadways, bikeways and bridges, particularly during high velocity flood events that wash away or erode facilities. This would typically occur adjacent to rising rivers or streams. In addition, people could be exposed to flood hazards in the event of a dam or levee failure. Unpaved bikeways are particularly vulnerable, although any facility within the flood zone of a stream could be subject to impacts. Erosion caused by flooding can damage paved facilities, and bridge supports can be undermined or washed away.

IMPACT 3.8.4: Increased Exposure to Flood Hazards. Some of the transportation system improvement projects identified in the financially constrained Action Elements of the three plans that may be proposed in low-lying areas could be subject to flood hazards. This could represent a **potentially significant environmental impact**.

RECOMMENDED MITIGATION MEASURE

MITIGATION MEASURE 3.8.4: All Structures Above the 100-Year Flood Zone Elevation/Stabilization Along Creek Crossings/Avoid Encroachment of Designated Flood Areas

A. If a particular transportation system improvement project is located in an area with high flooding potential, the implementing agency shall, where appropriate, ensure that the structure is elevated at least one foot above the 100-year flood zone elevation, is designed to minimize damage to the physical improvement and ensure public safety, and that feasible stabilization and erosion control measures are implemented along creek crossings.

B. Implementing agencies shall, where appropriate, ensure that projects located in areas with high flooding potential are designed to keep designated floodways free from encroachment as much as possible. Encroachment into the flood plain can be accommodated with proper design, planning and mitigation, as long as the resulting shift of flood waters does not increase adjacent flood ways or flood plains.

RESULTING LEVEL OF SIGNIFICANCE

Implementation of the above measures could reduce potential impacts to a level of less than significant.

Tsunami and Seiche

The potential for impacts related to tsunami or seiche are considered low throughout the region. No lakes large enough to produce substantial seiche events are located within the region. Although impacts related to tsunami are considered unlikely, they are potentially significant without mitigation.

IMPACT 3.8.5: Increased Exposure to Tsunami Hazards. Some transportation system improvement projects identified in the financially constrained Action Elements of the three plans may be located in areas subject to tsunami. This could represent a **potentially significant environmental impact**.

RECOMMENDED MITIGATION MEASURE

MITIGATION MEASURE 3.8.5: Incorporate Features to Minimize Tsunami Damage

In areas subject to tsunami effects, implementing agencies shall, where appropriate, ensure that all projects incorporate features designed to minimize damage from a tsunami. Structures should either be placed at elevations above those likely to be adversely affected during a tsunami event, or designed to allow swift water to flow around, through, or underneath without causing collapse. Other features to be considered in designing projects within areas subject to tsunami may include

using structures as buffer zones, providing front-line defenses, and securing foundations of expendable structures so as not to add to debris.

RESULTING LEVEL OF SIGNIFICANCE

Implementation of the above measure could reduce potential impacts to a level of less than significant.