

6.0 CUMULATIVE EFFECTS

6.1 REGULATORY BACKGROUND

The Council on Environmental Quality (CEQ) issued guidelines that give consideration to cumulative effects (or impacts) on the socio-economic and biophysical environment (e.g., CEQ, 1997). Cumulative impacts may be defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (CEQ, 1978).

The *CEQA Guidelines* Section 15130 requires that an EIR discuss “cumulative impacts of a project when the project’s incremental effect is cumulatively considerable.” “Cumulatively considerable” means the incremental effects of a project are considerable when viewed in combination with the effects of “past, present, and probable future projects” or in relation to “a summary of projections contained in an adopted general plan or related planning document” [Cal. Code Regs., Title 14 Section 15130(b)(1)(A)(B)]. A cumulative impact is defined as an impact which is created as “a result of a combination of the project together with other projects causing related impacts” [Cal. Code Regs., Title 14, section 15130(a)(1)]. Pursuant to *CEQA Guidelines*, a project’s contribution to a significant impact can be less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure designed to alleviate the cumulative impact, or if the impact is *de minimus* [Cal. Code Regs., Title 14 Section 15130(a)].

6.2 APPROACH TO CUMULATIVE IMPACT ANALYSIS

The approach to the cumulative impact analysis is similar to the approach used for analysis of the proposed SAMP/WSAA Process in Section 4. This programmatic cumulative impacts analysis is structured to cover:

- a) Direct cumulative impacts of all future regulated activities in Corps/Department jurisdictional areas of the Watershed combined; and
- b) Indirect impacts in the greater Watershed area, including upland areas, associated with long-term future build-out of the Watershed. The indirect impacts would occur later in time and are not specifically authorized by the regulatory program. Most of the future, individual projects that could result in indirect cumulative effects would require separate environmental review and approval by the local permitting agency.

Section 4.1.2 discusses these differences in detail.

The programmatic cumulative impact analysis for indirect effects based on build-out of general plans for the jurisdictions in the Watershed and includes unincorporated Orange County and the cities of Irvine, Santa Ana, Tustin, Newport Beach, Orange, Lake Forest, Laguna Hills and Laguna Woods. The general plans of these cities and the County of Orange are the primary plans governing growth and development at the local level. These plans are discussed in Section 10 of this document. Unincorporated Orange County comprises a substantial portion of the northern part of the Watershed and should achieve first generation build-out sometime after the year 2020. Approximately 38 percent of the Watershed is within the City of Irvine and over 60 percent of the City is developed. Approximately 3,608 acres of the City of

Santa Ana are within the southeastern part of the Watershed; however most of this area is essentially built-out. The entire City of Tustin is located within the Watershed and the City estimates full build-out by 2020. The largest remaining undeveloped area in the City is MCAS Tustin, which is located in the center of the Watershed. This area is currently undergoing some redevelopment with residential and commercial uses. The City of Newport Beach forms the south/southwestern boundary of the Watershed and has approximately 2,966 acres within the Watershed, most of which is already built-out. Approximately 1,041 acres of the City of Orange are located within the northeastern portion of the Watershed and the City is currently 95 percent developed. Approximately 5,296 acres of the City of Lake Forest are located in the eastern portion of the Watershed. Most of the City is built out; however, some remaining areas within the Watershed (northwestern portion of the City) are being planned for new residential, commercial and neighborhood park uses. The City of Laguna Hills has approximately 758 acres located within the Watershed and is almost completely built-out. Within the City of Laguna Woods, approximately 1,033 acres is located within the Watershed, and is mostly built-out.

The time frame for the cumulative impact analysis extends until the year 2020, the timeframe over which most of the planned developments described in the various general plans would occur. The geographic scope of the cumulative impact analysis is generally the Watershed since the proposed SAMP/WSAA Process would not be applicable to any other Watershed riparian ecosystem. (e.g. have any opportunity to produce cumulative effects in any other watershed). However, for some environmental topic areas, such as air quality and traffic, the boundaries of effect are beyond the Watershed and are discussed in terms of the larger, regional setting.

6.3 PROGRAMMATIC CUMULATIVE IMPACT ANALYSIS

6.3.1 Aquatic, Wetland and Riparian Habitats

Direct Effects

One of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce potential cumulative impacts of future regulated activities in the Watershed (see Sections 1 and 2). The permitting and mitigation framework elements of the proposed SAMP/WSAA Process are based on a Watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas and targeted mitigation/restoration to enhance the Watershed ecosystem. By design, implementation of all future regulated activities in the Watershed under the proposed SAMP/WSAA Process would not be expected to produce significant cumulative impacts to aquatic, wetland and riparian habitats of the Watershed. The SAMP/WSAA Process is a Watershed-specific permit program allows for more informed permit decisions to avoid or minimize impacts in high quality areas and a mitigation framework that allows for no net loss in acres and functional integrity (e.g. no net loss of riparian habitat acreage and aquatic resource function), thus, reducing the potential for cumulative impacts overall as compared to existing case-by-case permitting. Furthermore, the restoration plan specified in the Strategic Mitigation Plan is designed to improve functional integrity in low and medium quality areas, so that in the long-term, the Watershed's riparian ecosystem is maintained and enhanced. Therefore, the SAMP/WSAA Process would ultimately produce a cumulative benefit to the Watershed's aquatic, wetland and riparian habitats.

The SAMP/WSAA Process and mitigation framework would provide greater opportunities for avoidance of high and medium quality habitat areas (aquatic resource integrity areas). Impacts to low quality areas, such as unvegetated drainages, degraded riparian areas or previous agricultural sites, that are consistent with the SAMP/WSAA Process (and current water quality planning; see water quality sub-section below), would likely result in insignificant or no cumulative impacts in the Watershed. Also, overall effects of impacts to these lower quality drainages would be reduced because the SAMP/WSAA Process identifies future restoration and enhancement opportunities for low quality areas that are essential for habitat and hydrologic connectivity, endangered species habitat, or other functions. The frequency of SAMP/WSAA Process-consistent activities authorized within aquatic resource integrity areas would be less than for authorizations in lower quality areas. Thus, high to medium quality riparian areas would likely be impacted by relatively few projects with minor to insignificant impacts that would be mitigated under the SAMP mitigation framework and Strategic Mitigation Plan. Overall, designation of aquatic resource integrity areas would help ensure a thorough permit evaluation and appropriate mitigation to reduce cumulative impacts to aquatic resources in the Watershed.

The proposed permitting process includes revocation of some NWP's, a new RGP and new LOP's, and Watershed-based permit restrictions, conditions and mitigation policies. To qualify for the new permitting program, project proponents must demonstrate consistency with the SAMP/WSAA Process. If compliance is not demonstrated, or if a project constitutes a substantial impact within certain channels or to previously established mitigation sites, then the project would have to be evaluated through a Corps SIP.

Indirect Effects

The programmatic cumulative impact analysis for indirect effects is based on future land development and maintenance activities that could be permitted under the proposed SAMP/WSAA Process. The primary indirect cumulative effects of the SAMP/WSAA Process, when considered with build-out within the upland areas within the Watershed, would be the loss of: 1) open space; 2) buffer widths along riparian corridors; 3) habitat of sensitive or special status wildlife species; and 4) some regional movement corridors that support migratory avian species. Routine maintenance activities (e.g., for flood control) or an increase in the proximity of residential development to riparian and upland areas, may indirectly affect riparian ecosystems through edge effects, influx of non-native plants and domesticated animals (e.g., cats and dogs), and light from streets and buildings. Other indirect effects are discussed in the water quality and hydrology sections below. For example, hydromodification (i.e., the increased peak flow and duration of base flows), may result in channel incision which may in turn disconnect flood flows from the floodplain area. In time, the riparian areas found on floodplains and terrace positions along these incised streams may dry out and favor upland, invasive plants. These effects may serve to initially increase diversity (non-native species added to the pool of native species), but over time may result in a decrease of diversity (reduction in native species diversity while a few non-native species persist).

Many of these potential indirect cumulative impacts would be reduced or eliminated through the implementation of the RGP/LOP/WSAA Process general conditions and mitigation policies. As discussed above in direct effects, most anticipated activities will be conducted in areas already subject to ongoing maintenance, areas of reduced habitat quality (and therefore not included in the aquatic resource integrity areas), or include benign or beneficial activities such as restoration projects. Overall, the

RGP/LOP/WSAA Process general conditions, mitigation policies, and the identification of (and thus avoidance of) aquatic resource integrity areas would serve to reduce cumulative, indirect effects on riparian and wetland habitats to a level considered less than significant.

6.3.2 Biological Resources, Including Threatened and Endangered Species

Direct Effects

By design, implementation of all future regulated activities in the Watershed under the proposed SAMP/WSAA Process would not be expected to produce significant cumulative impacts to biological resources, including threatened and endangered species present in (or adjacent to) jurisdictional areas of the Watershed. The SAMP/WSAA Process is a Watershed-specific permit program that offers greater opportunities to avoid and minimize impacts to aquatic resources including riparian habitats occupied by endangered species as well as riparian drainages that serve as migration corridors. The SAMP/WSAA Process includes a mitigation framework that allows for no net loss in acres and functional integrity (e.g. no net loss of riparian habitat acreage and aquatic resource function); thus, reducing the potential for cumulative biological impacts in the Watershed overall as compared to existing case-by-case permitting.

One of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce potential cumulative impacts of future regulated activities in the Watershed that could not be done under existing case-by-case permitting. For example, the SAMP tenets, the central guiding concepts for identifying aquatic resource integrity areas of the Watershed, include: “*Protect Riparian Areas and Associated Habitats Supporting Federally- and State-listed Sensitive Species and Their Habitats*” and “*Maintain, Protect, Restore Diverse and Continuous Corridors*” (See Section 2.1.1.3). These two tenets acknowledge the importance of connectivity with upland habitats that support sensitive species, the need to provide adequate buffers from adjacent activities, and the riparian corridor’s ability to connect and enhance biological diversity across the Watershed. Additionally, the Corps restoration plan (Smith and Klimas, 2004) includes a set of criteria that are consistent with the SAMP tenets. The criteria help prioritize restoration sites for implementation as compensatory mitigation sites and attain the greatest functional improvement per unit of effort. Two of the restoration criteria, re-iterated by the USFWS, include: “*Restore connectivity between aquatic resources located in the NCCP Reserve System*”; and “*Restore reaches with federally or state-listed species (endangered, threatened, or species of special concern)*.” These criteria, plus four others, were used to prioritize mitigation sites to be implemented as part of the SAMP/WSAA Process Strategic Mitigation Plan to help maintain and enhance ecosystem function in the Watershed. Also, increased connectivity would re-establish wildlife movement corridors, especially between the Watershed’s northern and southern NCCP reserve areas. Thus, as the SAMP/WSAA Process is designed as an aquatic resource protection program for the entire Watershed, to be utilized for regulated activities over the next 20 years, it serves to cumulatively reduce biological resource impacts, in comparison to existing case-by-case permitting, by seeking to minimize aquatic resource impacts in key habitat areas that are important to sensitive plant and wildlife species. Thus, no significant direct cumulative impacts on biological resources including threatened and endangered species would be expected.

An important component of the SAMP/WSAA Process is that riparian habitats (and buffers) are expected to increase in both area and quality as riparian reaches are created, restored and enhanced. This increase would provide the continued existence and expansion of riparian habitat as compared to current

conditions. The proposed linkages between the northern and southern portions of the Watershed would also allow for expansion and migration of species, especially riparian-obligate species.

With regard to upland habitats, namely coastal sage scrub and California Gnatcatcher habitat areas, cumulative impacts to these areas have been addressed in the NCCP agreement (1996) between the resource agencies and NCCP participants. Implementation of the SAMP/WSAA Process would not affect the NCCP agreement. The remaining undeveloped areas designated for residential development in the northern part of the Watershed are mainly replacing agricultural land uses (e.g., avocado orchards), and are not expected to result in large losses of gnatcatcher habitat. In the southern portion of the Watershed, the remaining undeveloped areas designated for residential development are located in areas dominated by non-native grasslands. Thus, a major loss of habitat for gnatcatcher is not expected.

Cumulative effects on listed species may occur from future activities that do not meet the criteria of the SAMP/WSAA Process. These activities would proceed through a SIP process “outside of” the SAMP/WSAA Process, and would include a separate Section 7 consultation if the Corps determines that any future project “may affect” listed species. The Section 7 process would be especially important where a future activity could have a direct affect on species within an aquatic resource integrity area. Under these circumstances, the Section 7 process generally would ensure that potential biological resource impacts are avoided or mitigated. Limited cumulative direct effects on biological resources, including threatened and endangered species may occur as could be expected with existing case-by-case permitting.

Indirect Effects

The programmatic cumulative impact analysis for indirect effects is based on future activities that could be permitted under the proposed SAMP/WSAA Process in combination with full build-out of the general plans for the nine jurisdictions (e.g., cities, County of Orange) in the Watershed. The primary indirect cumulative effects of the SAMP/WSAA Process, when considered with build-out of the general plans in upland areas within the Watershed, would be the loss of: 1) open space; 2) vegetation important to raptors; 3) habitat of sensitive or special status wildlife species; and 4) some regional movement corridors that support migratory avian species. Routine maintenance activities (e.g., for flood control) or an increase in the proximity of residential development to riparian and upland areas, may indirectly affect wildlife species through edge effects, influx of non-native plants and domesticated animals (e.g., cats and dogs), and light from streets and buildings. These effects may serve to initially increase diversity (non-native species added to the pool of native species), but over time may result in a decrease of diversity (reduction in native species diversity while a few non-native species persist).

Specifically, if listed species migrate and populate new riparian (or upland) habitats in the vicinity of future activities, or if maintenance activities occur near known locations of sensitive species, the Corps would coordinate with the USFWS according to a Programmatic Biological Opinion. In addition, the RGP/LOP/WSAA Process general conditions, mitigation policies, and the identification of priority habitat segments for mitigation/restoration would serve to reduce cumulative effects on fish and wildlife, including listed species, to a level considered less than significant.

6.3.3 Hydrology, Erosion and Sedimentation

Direct Effects

Combined implementation of all regulated activities (e.g. utility lines, road crossings, flood control facilities, land development, etc) in jurisdictional areas of the Watershed could be expected to increase runoff in the Watershed, alter drainage characteristics, and increase erosion and sedimentation to receiving waters including San Diego Creek and Newport Bay, both of which have experienced long-term problems with erosion and sedimentation. Section 4.4.2 discusses these types of impacts in detail.

As discussed in Section 6.3.1 one of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce cumulative impacts of future regulated activities in the Watershed, including hydrological impacts. The proposed SAMP/WSAA Process and mitigation framework is based on a Watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas, which includes areas of high and medium hydrologic integrity, and targeted mitigation/restoration to enhance the Watershed ecosystem, including hydrologic function. By design, implementation of all future regulated activities in jurisdictional areas of the Watershed under the proposed SAMP/WSAA Process would not be expected to result in significant cumulative hydrological impacts. The SAMP/WSAA Process, a Watershed-specific permit program, offers greater opportunities to avoid or minimize impacts in areas of high and medium hydrologic integrity and a mitigation framework that allows for no net loss in functional integrity, thus, reducing the potential for significant cumulative hydrologic impacts in the Watershed overall as compared to existing case-by-case permitting.

Furthermore, the SAMP/WSAA Process mitigation framework and SAMP Strategic Mitigation Plan are designed to improve functional integrity in low quality areas, so that in the long-term, the Watershed's riparian ecosystem, including streams and floodplains is maintained and enhanced. Therefore, implementation of regulated activities permitted under the SAMP/WSAA Process program and subject to the SAMP/WSAA Process mitigation policies and programs would not be expected to result in direct significant cumulative impacts in the Watershed. In fact, long-term implementation of the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program could ultimately be expected to produce a cumulative benefit to the Watershed's hydrological conditions in the long-term, as compared to existing case-by-case permitting.

The proposed permitting process includes revocation of some NWP's, and a new RGP and LOP that contain Watershed-based permit restrictions (impact acreage thresholds), general conditions and mitigation policies to help reduce impacts to the Watershed's riparian ecosystem. To qualify for the new permitting program, project proponents must demonstrate consistency with the SAMP/WSAA Process which would help reduce impacts to below a level of significance (along with compliance with other local, state and federal requirements to control flooding, erosion and sedimentation). If compliance is not demonstrated, or if a project constitutes a substantial impact within certain channels or to previously established mitigation sites, then the project would have to be evaluated through a Corps SIP, and potential impacts would be addressed in that process.

Indirect Effects

As with existing case-by-case permitting, the primary indirect cumulative effects of the SAMP/WSAA Process regulated activities, when considered with full build-out of the local General Plans including

upland areas of the Watershed, would be alterations in drainage patterns, increases in impervious areas and increased site runoff, which could contribute to stream bank erosion and siltation. This would result in potential impacts to existing drainage facilities and downstream receiving waters, such as San Diego Creek and Newport Bay.

An increase in impervious areas can contribute to higher runoff rates and volumes. An increase in runoff can exceed conveyance capacities of existing facilities, contribute to downstream flooding and raise the 100-year flood elevation. However, County and City regulations established for FEMA compliance would minimize or prevent any increase in flood elevation. Furthermore, the existing municipal NPDES permit requirements as prescribed in the Orange County DAMP prevents the discharge of storm water at rates greater than existing conditions, thereby helping to minimize stream bank erosion and streambed siltation.

Grading activities associated with development may alter existing drainage patterns as well as watercourses. Potential impacts would be minimized through compliance with grading permit requirements imposed by the jurisdictions within the Watershed prior to construction. Alterations in drainage patterns that could increase bank erosion or flow rates would be mitigated through compliance with the state construction general NPDES storm water permit and Orange County DAMP requirements to control erosion in construction and post-construction runoff. These regulations applied to new development projects, in conjunction with the existing sediment control programs in the Watershed (discussed in Section 3.3.2), and requirements of the SAMP/WSAA Process would reduce potentially significant cumulative impacts in Watershed to less than significant.

6.3.4 Water Quality

Direct Effects

Combined implementation of all regulated activities in jurisdictional areas of the Watershed could be expected to increase pollutant loading in downstream receiving waters including San Diego Creek and Newport Bay, both of which are classified as impaired water bodies and have been assigned several TMDLs by the RWQCB. Section 4.5.2 discusses these types of impacts in detail.

As discussed in Section 6.3.1 one of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce potential cumulative impacts of future regulated activities in the Watershed, including water quality impacts. The proposed SAMP/WSAA Process permitting and mitigation framework is based on a Watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas (which includes areas of high and medium water quality integrity) and targeted mitigation/restoration to enhance the Watershed ecosystem, including water quality function. By design, implementation of all future regulated activities in jurisdictional areas of the Watershed under the proposed SAMP/WSAA Process would not be expected to result in significant cumulative water quality impacts in the Watershed. Unlike existing case-by case permitting, the SAMP/WSAA Process, as Watershed-specific permit program offers greater opportunities to avoid or minimize impacts in areas of high and medium water quality integrity and a mitigation framework that allows for no net loss in functional integrity, thus, reducing the potential for significant cumulative water quality impacts in the Watershed overall.

Furthermore, the restoration plan specified in the Strategic Mitigation Plan is designed to improve functional integrity in low quality areas, so that in the long-term, the Watershed's riparian ecosystem, including water quality of receiving waters. Therefore, regulated activities under the SAMP/WSAA Process would not be expected to result in direct significant cumulative impacts in the Watershed and could ultimately be expected to produce a cumulative benefit to the Watershed's water quality conditions in the long-term, as compared to existing case-by-case permitting.

The proposed permitting process includes revocation of some NWP's and a new RGP and new LOP that contain Watershed-based permit restrictions (impact acreage thresholds), general conditions and mitigation policies to help reduce impacts to the Watershed's riparian ecosystem. To qualify for the new permitting program, project proponents must demonstrate consistency with the SAMP/WSAA Process which would be expected to reduce impacts to below a level of significance (along with compliance with other local, state and federal regulations to control water quality). If compliance is not demonstrated, or if a project constitutes a substantial impact within certain channels or to previously established mitigation sites, then the project would have to be evaluated through a Corps SIP, and potential impacts would be addressed in that process.

Indirect Effects

As with existing case-by-case permitting, the primary indirect cumulative effects of the SAMP/WSAA Process regulated activities when considered with full build-out of the General Plans in upland areas of the Watershed, would be increases in pollutant loading to Receiving Waters during and after construction of new land development projects.

As discussed in Section 4.5.2 under the land development category, temporary water quality impacts from residential, commercial, industrial, institutional and recreational use projects and attendant features can have temporary impacts on water quality primarily from uncontrolled erosion and sedimentation into Receiving Waters. Other effects may occur as a result of the following factors: a change in vegetation affecting water quality (e.g., by affecting pollutant removal capability, stream shading or bank stability); potential discharge of construction-related pollutants (e.g., concrete, waste oil solvents, debris, etc spilled, leaked or transported via storm runoff into Receiving Waters); and discharge of dewatered groundwater that may contain high-levels of nitrates, phosphorous, selenium and other naturally occurring pollutants as well as pesticides from previous agricultural activities in the area.

In the long-term, full build-out of the Watershed would result in increased impervious surfaces draining new sources and types of polluted runoff in the Watershed during wet and dry weather. Typical pollutants in storm water and non-storm water discharges from developed areas include metals, petroleum hydrocarbons, sediment from construction activities, nutrients, pesticides, bacteria, and litter.

Existing local, state regulations to control the discharge of pollutants in pre and post-construction site runoff (i.e., NPDES permits, DAMP/LIP programs, as discussed in Section 4.5.2) would apply to future projects in the Watershed to reduce potential water quality impacts to downstream receiving waters. Full build-out of the Watershed would be expected to include full build-out of the NTS program, designed to help reduce pollutants in urban runoff throughout the Watershed and help achieve the San Diego Creek and Newport Bay TMDLs. Long-term maintenance and monitoring of the NTS and other project-specific water quality treatment controls would be required to ensure proper operation and function of these

systems to remove pollutants in runoff. Thus, the indirect cumulative effects in the long-term would be reduced to a less than significant level.

6.3.5 Other Topic Areas

The remaining environmental topic areas (also referred to as the public interest review factors) generally cover non-jurisdictional resources in the greater Watershed area, and therefore no direct cumulative impacts would be expected. Impacts in these areas, if any, would only occur indirectly as a result of the permitted actions, primarily through land development. As discussed in Section 4.1.2 of this document, these impacts are considered indirect because they would occur later in time and further removed in distance (e.g. upland areas, not within the jurisdiction of the Corps or the Department).

Implementation of all regulated activities under the SAMP/WSAA Process combined with full build-out of the general plans in the Watershed would not be expected to produce significant indirect cumulative impacts to most of the public interest review factors, including cultural resources, geology/soils, land use, noise, recreation, socioeconomics, visual resources, and water supply/conservation. However, potentially significant indirect cumulative impacts could occur on a more regional basis to air quality and transportation/circulation systems. Potential indirect cumulative impacts of each public interest review factor are analyzed programmatically in the following subsections.

6.3.5.1 Agricultural Resources

Implementation of all regulated activities under the proposed SAMP/WSAA Process combined with full build-out of the general plans in the Watershed would not result in significant cumulative impacts to agricultural resources in the Watershed or the county. In Orange County, 4,191 acres of land, which includes 1,128 acres of important farmland, were converted to urban uses between 2002 and 2004. Also, a total of 2,113 acres of agricultural land were reclassified to urban land by the Farming and Monitoring Mapping Program (California Department of Conservation, 2006). Moreover, 2,088 acres of “other” land, neither built-up nor used for agriculture, such as low-density “ranchettes,” or brush and timberlands unsuitable for grazing, were classified as urban (California Department of Conservation, 2006).

In the Watershed, the amount of land available for agricultural production is rapidly diminishing. Currently, less than six percent of the Watershed is comprised of agricultural fields. These lands are generally located in the foothills of the Santiago Hills, north and west of former MCAS El Toro. Some minor areas of agricultural still remain in the southern portion of the Watershed mostly south of the 405 Freeway and east of Laguna Canyon Road. These areas are planned to be converted to residential and commercial/industrial uses within the next 10-20 years. Future build-out in the region as determined by the general plans would continue the pattern of replacing agriculture with urban land uses. As indicated in the Resources Element of the Orange County General Plan, this land use conversion is typical of Orange County, and thus, the cumulative impact would not be considered significant within the Watershed or county.

6.3.5.2 Air Quality

Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to jurisdictional waters from road crossings, land development, flood control facilities, utilities and other activities in accordance with a Watershed-specific permit program administered by the

Corps and the Department. The major air quality impacts associated with SAMP/WSAA Process regulated activities and projected growth in the Basin include pollutant emissions from short-term construction vehicles, equipment and grading activities, and long-term emissions due to energy consumption and motor vehicle use (mobile sources). Construction impacts are considered short-term and would be mitigated using appropriate measures as required by the SCAQMD and local agencies. Increased energy consumption and motor vehicle emissions (long-term impacts) may contribute to exceedances of the SCAQMD significance criteria. Furthermore, the Basin is currently in non-attainment for O₃, PM₁₀, and PM_{2.5}. Cumulative development from build-out of the regional general plans as well as regulated activities authorized by the SAMP/WSAA Process would contribute criteria pollutants to the Basin, which is currently a non-attainment area, and in violation of air quality standards. As a result, implementation of the SAMP/WSAA Process combined with full build-out of the Watershed could result in indirect significant cumulative impacts to regional air quality. The types of mitigation measures that could be required by the local lead agency during project-specific CEQA and NEPA evaluations are provided in Section 4.6.2, Air Quality. The goal of such measures would be to reduce incremental project-level impacts to regional air quality to below a level of significance.

With regard to global warming and emissions of GHGs, some have argued that any project can cumulatively contribute GHG emissions through its individual incremental contribution combined with the cumulative increase of all other natural and anthropogenic sources of GHG emissions. For this project, there are no direct construction or operational aspects of the proposed SAMP/WSAA Process permitting and mitigation program that would generate GHG emissions, since the proposed SAMP/WSAA Process is a Watershed-specific regulatory program to replace existing case-by-case permitting. Any short-term construction activities and long-term operational activities would occur indirectly as a result of implementation of projects permitted under the proposed SAMP/WSAA Process, and would therefore, only indirectly contribute to an increase in GHG emissions, as described in Section 4.6.2. Therefore, land development, infrastructure projects and other regulated activities in this Watershed permitted under the SAMP/WSAA Process combined with other future land development and infrastructure projects in the South Coast Air Basin and beyond will incrementally contribute to cumulative GHG emissions and global warming. The types of mitigation measures that could be required by local lead agencies during project-specific CEQA and NEPA evaluations are provided in Section 4.6.2, Air Quality.

6.3.5.3 Cultural Resources

Implementation of the SAMP/WSAA Process in conjunction with expected build-out under the general plans has the potential to cumulatively impact cultural resources. Grading activities associated with future projects could uncover previously unknown cultural resources. Any project seeking permit coverage under the Corps LOP procedures must provide evidence of compliance with Section 106 of NHPA. Additionally, both the LOP and RGP contain a general condition (Condition No. 20) to ensure compliance with NHPA prior to any permit authorization (See Section 4.6.3). Therefore, no significant indirect cumulative impacts to cultural resources would be expected.

6.3.5.4 Floodplain Values

See Section 6.3.3, Hydrology, Erosion and Sedimentation.

6.3.5.5 Geology and Soils

Implementation of regulated activities under the SAMP/WSAA Process combined with full build-out of the Watershed under the local general plans could result in substantial amounts of grading, cut and fill activities, soil compaction, and possible import or export of fill material in various locations throughout the Watershed. Individual projects would be required to follow approved grading and erosion control plans, construction storm water pollution prevention plans, water quality management plans, and, proposed conditions of the RGP, LOP, and WSAA Process that address erosion and sedimentation. Combined implementation of these various measures would reduce potential cumulative impacts to less than significant levels.

6.3.5.6 Land Use

Implementation of all regulated activities under the SAMP/WSAA Process in combination with full build-out under the local general plans would not be expected to create significant cumulative impacts on land use in the Watershed. The SAMP/WSAA Process is not a land use planning document that designates areas for certain land uses. Rather, the SAMP/WSAA Process establishes a Watershed-specific permitting program to approve discharges of dredged and fill material into waters of the U.S. pursuant to Clean Water Act Section 404 as well as alterations to lakes and streambeds pursuant to California Fish and Game Code Section 1600 *et seq.* The proposed SAMP/WSAA Process allows planned economic uses (primarily land development) to be permitted within the Watershed provided that sensitive aquatic resources are avoided and mitigated to the extent practicable.

Combined with future build-out, regulated activities under the SAMP/WSAA Process would contribute to a cumulative increase in urbanization of the Watershed. This increased urbanization within the Watershed would proceed in accordance with the general plans of the local jurisdictions in the Watershed. These plans contain policies, implementation measures and programs designed to ensure that future development would be compatible with existing and planned land uses, proceed in an orderly fashion, and contribute to the goals and objectives for land use. Future planned development would be reviewed for consistency with the adopted land use plans and policies of the local jurisdictions in accordance with CEQA, the State Zoning and Planning Law, and the State Subdivision Map Act, all of which require findings of plan and policy consistency prior to land use and entitlement approvals. Therefore, potential cumulative land use impacts would not be considered significant.

6.3.5.7 Noise

Future regulated activities under the proposed SAMP/WSAA Process combined with full build-out under the local general plans would generate an increase in the ambient noise environment of the Watershed. The major indirect noise impacts associated with SAMP/WSAA Process regulated activities and projected growth in the Watershed include increased short-term construction noise from grading activities and construction vehicles, and long-term noise increases associated with commercial, industrial, and residential land development including roads and other public infrastructure. Sensitive receptors located in close proximity to construction activities would be potentially impacted. However, future construction and development in the Watershed is not expected to result in cumulatively significant impacts in the ambient noise environment due to noise controls required by municipal codes for the jurisdictions within the Watershed and other noise mitigation measures that would be required by local jurisdictions as discussed in Section 4.6.7.

6.3.5.8 Public Health & Safety

Implementation of regulated activities under the SAMP/WSAA Process in conjunction with build-out of the general plans would generate new residential, commercial, and industrial land uses with their associated increases in residential population and commercial/industrial activities. Because the Watershed is now nearly built-out, it is not expected that new facilities for fire and police would be required, nor would major new facilities be needed to accommodate increased demand on sewerage, natural gas, electricity and telephone/cable services. Also, minor expected increases in household and commercial/industrial waste could be accommodated by the existing waste operators. Therefore, potential cumulative impacts to public health and safety would not be considered significant.

6.3.5.9 Recreation

Combined implementation of all regulated activities under the SAMP/WSAA Process along with full build-out of the local general plans would result in population increases in the Watershed, thus indirectly increasing use and demand of existing local, regional, and wilderness parks. However, future build out would be regulated by local land use authorities requiring preservation and development of parks and other recreational uses to accommodate population growth. Therefore, potential cumulative impacts to recreational resources would not be considered significant.

Additionally, the SAMP/WSAA Process seeks to avoid and minimize impacts in aquatic resource integrity areas. Some aquatic resource integrity areas may be located within recreational areas (e.g., regional parks and wilderness parks). However, designation as an aquatic resource integrity area does not preclude planned future park uses/recreational facilities in these areas.

6.3.5.10 Socioeconomics

Combined implementation of all regulated activities under the SAMP/WSAA Process along with full build-out of the local general plans would result in an increase in jobs, housing and associated residential population. The increase in residential population could be substantial, but would be in accordance with the planned population growth projected by the general plans. The increase in jobs and housing would create beneficial effects on the socioeconomic conditions in the Watershed, including the opportunity to meet housing demand and help increase income in the County. These increases would provide a cumulative benefit to the socioeconomic conditions in the Watershed. It is not anticipated that future build-out would displace existing housing or people, necessitating replacement structures. Thus, no significant cumulative impacts are expected.

6.3.5.11 Transportation/Circulation

Combined implementation of the regulated activities under the proposed SAMP/WSAA Process along with full build-out of the local general plans and associated roads could result in significant, indirect cumulative increases in traffic in the region. This includes both short-term construction traffic and long-term traffic associated with new residential, commercial, and other development projects. While new or expanded roads would be constructed to accommodate new development, in accordance with the MPAH, the increase in traffic volumes could result in potentially significant cumulative impacts to local streets and regional arterials within the Watershed and beyond. The types of mitigation measures that could be required by local lead agencies to reduce potential significant impacts are discussed in Section 4.6.11.

6.3.5.12 Visual Resources

As with existing case-by-case permitting, implementation of regulated activities under the SAMP/WSAA Process along with future build-out of the Watershed may contribute indirectly to cumulative visual impacts within the Watershed. Short-term construction activities, primarily grading activities would cause various disturbances to the existing landforms from a potentially broad area of the Watershed, while the presence of construction vehicles and equipment at a construction site would create a visual impact in the local construction zone. In general, short-term construction impacts would not be cumulatively significant since projects would not likely occur simultaneously.

However, long-term visual changes could create an indirect cumulative impact, resulting from permanently altering the natural topography and placing residential, commercial, industrial structures as well as man-made parks and trails on previously vacant or natural undeveloped land. The significance of visual effects is subjective and depends upon the degree of alteration, the scenic quality of the area disturbed, the sensitivity of the viewers, and the viewer perception of the features in the viewshed.

Most remaining development in the Watershed would result in the conversion of remaining tracts of agricultural land and former MCAS El Toro lands into suburban residential, commercial, and open space/park uses similar to the majority of existing development in the Watershed. Such areas are located in the northern and eastern portions of the Watershed. This conversion would alter the visual character of localized areas, and also impact views of surrounding Santiago and San Joaquin Hills in some locations. However, new residential and commercial development would be planned and designed in accordance with the existing suburban/urban character of the area, and would not be expected to produce a significant visual change in the Watershed overall, though some local areas could experience significant visual impacts (both in terms of obstruction of views and change in visual character). Also, scenic views of rural and natural areas from Sand Canyon, Jeffrey Road, Culver Drive, and Laguna Canyon Road may be impacted as well. New land development would also introduce new sources of light and glare. However, light that would be generated would be typical of urban development, and would not substantially affect views in this area either at night or during the day. Typical development standards required by local zoning ordinances would address the issue of light and glare.

Mitigation measures that could be required by local lead agencies to reduce impacts are discussed in Section 4.6.12.

6.3.5.13 Water Supply and Conservation

Implementation of regulated activities under the SAMP/WSAA Process in conjunction with full build-out of the general plans in the Watershed would result in increased demand for water supplies in the region. This increased demand is dependent on net increases in population, square footage of new development, and intensity of uses. Implementation of Senate Bill No. 610 and Senate Bill No. 221 requires that a Water Supply Assessment (WSA) be prepared for new development activities (See Section 4.6.13). The WSA relies on water supply information from the local water districts, which includes IRWD for this Watershed. The WSA would be used to assure that adequate water supplies are available for development, without significant impacts on either groundwater or surface water resources within and beyond the Watershed boundaries. Therefore, no significant cumulative impacts to water supply and conservation activities are anticipated.