

CHAPTER SIX CUMULATIVE IMPACTS

6.1 INTRODUCTION

This chapter provides a discussion of cumulative impacts of actions proposed at Gness Field Airport (DVO or Airport) evaluated in this Environmental Impact Statement (EIS), in combination with other related or independent actions in the vicinity of DVO. The analysis of cumulative impacts recognizes that while the impacts of individual actions may be small, when combined with the impacts of past, present, and reasonably foreseeable future actions on populations or resources in and around DVO, the impacts could be potentially significant.

The Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) defines cumulative impacts 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 non-Federal) or person undertakes such other actions." (See Title 40 Code of Federal Regulations (CFR) § 1508.7.) Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.¹

6.2 REGULATORY SETTING

Cumulative impacts must be evaluated relative to the direct and indirect effects of the proposed action for each environmental category discussed in Chapter Five, *Environmental Consequences*. As with the discussion of environmental consequences, the Existing Condition (2008) serves as the reference point for the Alternative A (No Action) against which potentially significant cumulative impacts of Alternatives B and D are evaluated. Significant cumulative impacts are determined according to the same thresholds of significance used in the evaluation of each environmental category in the environmental consequences discussion.

It can be difficult to determine levels beyond which cumulative impacts significantly degrade a resource. Local, state, and Federal standards for some resources would apply, and goals or objectives from land use management plans and other guiding programs may serve as thresholds. Where numerical thresholds are not available or cannot be determined, impacts are typically qualified in relative terms of magnitude. The thresholds of significance for each environmental category, where applicable, are defined in FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.

¹ 40 CFR Part 1500, *Council on Environmental Policy*, § 1508.7 *Cumulative Impact*.

6.3 IDENTIFICATION OF PERTINENT PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The evaluation of cumulative impacts in this EIS considers the past, present, and reasonably foreseeable future projects or actions undertaken at the Airport by Marin County or other parties, as well as other actions, including development undertaken by others within the spatial boundaries of the General Study Area (GSA). For linear transportation projects, this evaluation considered the portions of the project physically located within the GSA. For the purposes of this assessment, the past actions are defined as those that were completed before or during 2008. Present actions are defined as those completed between 2009 and 2013. Reasonably foreseeable future actions are defined as those planned to be completed between 2014 and 2018, which is within the planning horizon of this EIS.

As there are several multiphase projects that completed construction phases in 2013, but also have ongoing or anticipated future work between 2014 and 2018, the present projects and reasonably foreseeable future projects are discussed in a combined section. The 2018 planning horizon represents a timeframe that is long enough to identify potential follow on environmental impacts yet near enough that realistic predictions of projects and associated environmental impacts can be made. This section evaluates those past, present, and reasonably foreseeable future projects.

6.3.1 PAST PROJECTS

Recent past projects could potentially add incremental impacts to those created by the Sponsor's Proposed Project or its alternatives. The availability of older data often determines how far back past effects may be examined. Certain types of data "may be available for extensive periods in the past," while other data "may be available only for much shorter periods," according to CEQ guidance. Consequently, because the data describing past conditions are usually scarce, the analysis of past impacts is often qualitative.² This section includes a discussion of recently completed past projects that were identified to have occurred within the GSA that have the ability to contribute to the cumulative impacts for this EIS.

6.3.1.1 DVO Levee Maintenance Project

The DVO Levee Maintenance Project consisted of two actions. The first was adding additional material to the top and sides of the levees and the second was the installation of culverts and flow control gates. These improvements provide a greater degree of flood protection for Airport facilities and allow the Airport to be autonomous in the event of an outer levee breach or intrusion of floodwater. In 2001, Marin County prepared an initial study in accordance with the California Environmental Quality Act, which found no significant impacts would result from the project. The only impacts discussed were related to construction activity and all

² Council on Environmental Quality, *Considering Cumulative Impacts Under the National Environmental Policy Act*, January 1997.

would occur only during the period when construction was occurring. Since the maintenance project was completed in 2007 and none of the impacts were identified to occur beyond the construction period, the impacts related to the levee maintenance project are not included in the discussion of cumulative impacts.

6.3.1.2 North Coast Rail Authority Russian River Division Freight Rail Project

The Russian River Division of the North Coast Rail Authority (NCRA) rail corridor extends approximately 142 miles from Willits in Mendocino County, California southward to Lombard in Napa County. From Willits the line runs southward generally following Highway 101 through Redwood Valley, Calpella, Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Windsor, Santa Rosa, Rohnert Park, Cotati, Petaluma, and Novato. South of Novato, at Highway 37, the line runs eastward near the shore of San Pablo Bay, over the Petaluma River, past Black Point, past the old station at Schellville, over the Napa River, and terminates in Lombard north of the city of American Canyon. The NCRA proposed resuming freight rail service from Willits to Lombard, traveling through Novato. The rail line has provided rail service dating back to the early 1900's and required rehabilitation before trains could safely resume operations. Commercial freight operations began on July 13, 2011.³

6.3.1.3 Redwood Landfill Solid Waste Facility⁴

The Redwood Landfill (RLI) is located approximately 3,000 feet north/northwest of DVO along Highway 101. This project included the following activities:

- Merge the existing landfill permit and composting permit into a single solid waste facility permit;
- Establish maximum daily tonnages of solid waste, compostable material, cover material and recyclables, the total of which is 2,310 tons per day;
- Increase traffic to 662 vehicles per day;
- Clarify hours and days for the receipt of wastes and other materials and for certain landfill activities;
- Add food waste as a compost feedstock;
- Increase site capacity; and
- Extend the estimated closure date to July 2024.

³ North Coast Rail Authority Draft Environmental Impact Report, 2009, On-line at: <http://www.northcoastrailroad.org>

⁴ Redwood Landfill Solid Waste Facilities Permit Revision Final Supplemental Environmental Impact Report. On-line at: <http://www.ciwmb.ca.gov/permittoolbox/Notices/RedwoodLF/default.htm>

Mitigation for this project, which is included as a condition of the expanded permit from Marin County, includes the continued implementation of the RLI bird control program. To discourage gull populations, RLI currently has the following operational controls available as part of its wildlife management plan.

- Minimize the area of the working face and push distance when possible;
- Use pyrotechnic devices to discourage scavenging gulls during refuse placement and compaction;
- Place daily cover consisting of a 6-inch thickness of compacted soil or approved alternative;
- Employ an outside contractor in the winter months who uses falcons to deter gulls from the landfill; and
- A propane gas-fired cannon may be used in conjunction with the pyrotechnic devices. The cannon emits a loud blast that discourages gulls from approaching the active face of the landfill.

Currently, aircraft fly over all portions of the RLI when arriving to and departing from DVO. There have been no reported bird strikes related to activity at the RLI.

In 2009 the landfill received and updated Waste Discharge Requirements from the San Francisco Regional Water Quality Control Board and received a Title 5 Air Permit from the Bay Area Air Quality Management District in 2010.⁵

6.3.2 PRESENT PROJECTS AND REASONABLY FORESEEABLE FUTURE ACTIONS

Projects that are presently ongoing, or soon to get underway could potentially add incremental impacts to those created by Alternative B or Alternative D. Like past and present projects, future projects could potentially add incremental impacts to those created by Alternative B or Alternative D. This section includes a discussion of development and improvement plans within the GSA that are currently being proposed, are underway, were recently completed as well as reasonably foreseeable future development and improvement plans.

6.3.2.1 Binford Road LLC Storage Project

This project involves the development of multi-purpose self-storage facility on 29 acres of the Binford Road LLC's 47.3-acre project site, located at 8190 Binford Road, Novato, directly west of DVO. The project would contain approximately 685 storage units in 25 buildings (approximately 247,440 square feet of floor area) ranging from 18 to 24 feet in height for personal vehicles, RV's, boats, general household items and office storage. Access to the storage units would be from Binford Road and from two internal roadways that would extend along the north

⁵ *Redwood Landfill Final Environmental Impact Report*. On-line at: <http://www.ciwmb.ca.gov/permittoolbox/Notices/RedwoodLF/default.htm>. California Integrated Waste Management Board. September 26, 2011.

and south levees of the Black John Slough. A public viewing area with parking for viewing the marsh wetlands would be provided immediately off Binford Road to afford the public views down the length of the canal towards the Petaluma River. The project includes amending the Countywide Plan Land Use Designation from RC (Recreational Commercial) to IND (Industrial) (Parcels 1 and 2) and OS (Open Space) (Parcel 3) and re-zoning the property from RCR (Resort and Commercial Recreation District) to BFC-IP (Bayfront Conservation – Industrial Planned District) (Parcels 1 and 2) and BFC-OA (Bayfront Conservation – Open Space) (Parcel 3).⁶ The Marin County Board of Supervisors adopted County Ordinance 3467 on April 3, 2007, to rezone the property for the Binford Road LLC Self-Storage Facility. The construction timeline is to be determined based on applicant cash flow.⁷

6.3.2.2 Sonoma Marin Area Rail Transit Project

The Sonoma-Marin Area Rail Transit District (SMART) project includes development of a 70-mile-long passenger railroad and parallel bicycle-pedestrian path along the existing Northwestern Pacific Railroad right of way through Marin and Sonoma counties. The rail line would run from Cloverdale, at the north end of Sonoma County, to Larkspur, where the Golden Gate Ferry connects Marin County with San Francisco. Stations are to be located at major population and job centers of the North Bay, including San Rafael, Novato, Petaluma, Cotati, Rohnert Park, Santa Rosa, Windsor, and Healdsburg. Estimated project cost is \$690 million, the majority of which would be funded by a voter-approved one-quarter percent sales tax increase.

Since that vote, the economic downturn has reduced SMART's projected revenues by several hundred million dollars over the 20-year life of the sales tax, leaving the agency short of the money needed to complete the project as originally envisioned. Consequently, SMART's Board of Directors has decided to build in stages. Construction on the Phase 1 Segment, 37 miles from downtown San Rafael with Railroad Square in Santa Rosa, began in 2012 and will connect the two largest cities in the North Bay and all of the cities in between. Passenger train service is scheduled to begin in 2016. Future segments, ultimately completing the project from Larkspur to Cloverdale, will be built as additional revenues become available.⁸

6.3.2.3 Redevelopment of Fireman's Fund Campus/The Commons at Mount Burdell

American Assets, Inc., a San Diego based real estate investment and development company, has submitted a proposal to the City of Novato to redevelop the Fireman's Fund Office Campus located on San Marin Drive, just north of the

⁶ Marin County Planning Commission, Meeting Agenda, August 28, 2006. On-line at: http://www.co.marin.ca.us/EFiles/docs/CD/PlanCom/06_0828_AG_060818125653.pdf

⁷ http://www.co.marin.ca.us/depts/CD/Main/pdf/Propdev/PD45_Report.pdf. Telephone conversation between with Curtis Havel, Senior Planner, Marin County; March 18, 2013.

⁸ *Sonoma Marin Area Rail Transit Project*, On-line at: www.sonomamarintrain.org/get-smart Retrieved October 9, 2013.

intersection with Redwood Boulevard, approximately 1.5 miles south/southwest of DVO along Highway 101. The project proposes a comprehensive redevelopment of the 65-acre Fireman's Fund campus to add approximately 700,000 square feet of new office and retail space, pedestrian-friendly walkways, parks and plazas, an interactive museum on sustainability, a hotel/meeting center, health club, community facility, 150 multi-family residential units, and underground and structured parking facilities. The existing three office buildings at the site (totaling 710,000 square feet) would remain. In addition, a proposed SMART Rail Station would be located near the southeast corner of the project site, along Redwood Boulevard, in between the project site and Highway 101. Associated traffic improvements at major intersections surrounding the project site are also proposed. The project has been designed with the goal of achieving carbon neutral building operations, relying on passive and active measures to meet the energy, heating/cooling, water, and solid waste disposal needs of the development. A public scoping meeting was held on October 5, 2009 to accept comment on the preparation of an Environmental Impact Report (EIR) for the proposed development. Since the publication of the Draft EIS this project was withdrawn therefore this project has been abandoned and is not considered in the cumulative impact evaluation.⁹

6.3.2.4 Marin Sonoma Narrows HOV Widening Project

This proposed project would widen Highway 101 along specific freeway portions located in Novato and Petaluma in Marin and Sonoma Counties, respectively. This section discusses the portions of the project within the GSA. This widening would occur primarily in the existing freeway median. The proposed project also includes widening and realigning the roadway in the Petaluma portion, and upgrading the Highway 101 facility along its entire length. The various improvements that are being proposed include:

- Adding northbound and southbound High Occupancy Vehicle (HOV) lanes the entire project length of 26.0 kilometers (km) (16.1 miles) that would be restricted to vehicles carrying two or more people per vehicle (also referred to as carpool lanes). These HOV lanes would be installed in the median of Highway 101 and directly connect to proposed HOV lanes to the south near the SR 37 Interchange and to proposed HOV lanes to the north beginning at Old Redwood Highway in the City of Petaluma (Sonoma County); Widening and realigning Highway 101 in the Central Segment along the Novato Narrows, which makes up 13.1 km (8.1 miles) of the entire project boundaries. This would result in converting the existing expressway to an access-controlled freeway. Access would be available through new interchanges and existing local roads, which would be reconfigured to connect to new interchanges in this segment;
- Replacing bridges and constructing new bridges across San Antonio Creek and replacing the Petaluma River Bridge;
- Constructing soundwalls along the Novato and Petaluma Segments;

⁹ Conversation with Elizabeth Dunn, City of Novato on March 18, 2013.

- Constructing bicycle and pedestrian paths within the Central Segment to replace bicycle access that currently exists along the expressway shoulder; and
- Upgrading drainage facilities.

A Final EIR was released in July 2009. Ground was broken on July 14, 2011. As of October 2013 the Transportation Authority of Marin¹⁰ had the following information available regarding Phase 1 of the project:

- *A1 - HOV Lanes in Novato* – Primarily addresses congestion by adding HOV lanes through median widening, which includes NB HOV lanes from Highway 37 to north of Atherton Boulevard and SB HOV lanes from Highway 37 to Rowland Boulevard. The HOV lanes opened to traffic in summer 2012.
- *A2 - Extend Southbound HOV Lane* – to Franklin overhead. Construction started in June 2013 and is expected to be completed by the end of 2013.
- *A3 - Extend Northbound HOV Lane* - from Atherton to 1.4 miles south of the Redwood Landfill Interchange. Construction started in April 2013 and is expected to be completed in spring 2014.

6.4 POTENTIAL INCREMENTAL INCREASES IN ADVERSE EFFECTS

Chapter Four, *Affected Environment*, describes the existing environmental conditions within the study area for the runway development alternatives. If no action were to take place, it can be reasonably determined that the existing environment at DVO and its vicinity would not change significantly from current conditions. However, as the population of the region changes in the future, related changes are anticipated to occur; these changes would occur regardless of whether any of the runway extension project alternatives are approved and implemented. Therefore, the conditions described in Chapter Four, *Affected Environment*, serve as a basis for comparison of the incremental increases in adverse effects that would potentially result from implementation of any of the runway extension project alternatives.

6.5 CUMULATIVE IMPACT COMPARISON

Impacts of Alternative B and Alternative D are evaluated in this section as compared to the Alternative A (No Action) for the future years. Several past, present, and future projects in the vicinity of DVO are described in this section as they may relate or contribute to potential cumulative impacts within the various environmental categories evaluated in this EIS.

¹⁰ *Transportation Authority of Marin*, On-line at: <http://www.tam.ca.gov/index.aspx?page=92>, Retrieved October 9, 2013.

In general, the projects considered in this cumulative impact analysis are included because they are either within the existing Airport boundary where the EIS alternatives would be implemented or are in close proximity of the Airport. Consideration of impacts beyond the DVO property boundary is dependent on the environmental resource being considered, and is influenced by such factors as political and land use jurisdictions, any unique characteristics of the resource, importance of the resource in a local and regional setting, and the distance the impact within that resource can travel.

For environmental resources where implementation of Alternative B or Alternative D would have no environmental impact, there is no potential for an adverse cumulative environmental impact to occur. Therefore the following discussion of cumulative impacts discusses only those environmental categories where environmental impacts could result from implementation of Alternative B (Sponsor's Proposed Project) or Alternative D. Those categories are: air quality; water quality; fish, wildlife, and plants; wetlands and streams; natural resources, energy supply, and sustainable design. Cumulative construction impacts are discussed within the impact categories previously listed.

6.5.1 AIR QUALITY

The air quality assessment of future conditions presented in Section 5.5, *Air Quality*, in Chapter Five, *Environmental Consequences*, is required to include all reasonably foreseeable¹¹ future conditions associated with emission sources at the Airport, particularly for the use of motor vehicles, Ground Service Equipment (GSE), and aircraft. As such, all known and quantifiable past, present, and reasonably foreseeable future actions relating to emission sources at the Airport for the 2018 and 2023 analyses were included in the emissions inventory. A discussion of this analysis is included in Appendix F, *Air Quality*. The analysis showed that none of the future baseline conditions under Alternative A, or conditions under Alternative B or Alternative D would have the potential to cause significant air quality impacts.

DVO is located in Marin County which, for Federal air quality attainment status, is included in the San Francisco Bay Intrastate Air Quality Region. The region does not currently meet the Federal eight hour standard for ozone levels and has been designated by the U.S. Environmental Protection Agency (USEPA) as a marginal nonattainment area for ozone.¹² Further, USEPA has determined the county exceeds the 24 hour standard for emissions of fine particulate matter (PM_{2.5}). In the past Marin County was been designated as nonattainment for Carbon Monoxide (CO) but in April 1998 the Bay Area was redesignated to attainment and now operates under a maintenance plan in order to prevent emissions from exceeding the current CO standard.

¹¹ FAA, *Environmental Impacts: Policies and Procedures Order 1050.1E*, Appendix A Section 2.1c, 2006.

¹² USEPA website, <http://www.epa.gov/oar/oaqps/greenbk>, accessed October 2011.

For State of California air quality attainment status, DVO is located within the Bay Area Air Quality Management District (BAAQMD). California maintains more stringent standards than the USEPA for which the County must adhere called the California Ambient Air Quality Standards. Marin County has been designated by the BAAQMD as nonattainment for the eight-hour and one-hour standards for ozone, the annual arithmetic mean and the twenty four-hour standards for coarse particulate matter (PM₁₀), and the annual arithmetic mean standard for PM_{2.5}.¹³

Construction activities associated with this project would result in temporary air quality impacts, including direct emissions from construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on the on-site and off-site roads. The impacts would occur only within the immediate vicinity of the construction site and would be mitigated through best management practices to reduce emissions, particularly fugitive particle emissions, during construction.

As discussed in Section 5.5, *Air Quality*, in Chapter Five, *Environmental Consequences*, and Appendix F, the increase in onsite emissions due to construction and project implementation would not exceed the applicable Clean Air Act (CAA) thresholds and are therefore not significant. The mitigation procedures identified in Section 5.5 would be implemented to minimize potential impacts that would occur during construction.

Due to their proximity to DVO and similar timing of construction with implementation of either Alternative B or Alternative D, the following projects have the potential to cumulatively impact air quality within the San Francisco Bay Intrastate Air Quality Region/BAAQMD:

- Sonoma Marin Area Rail Transit Project – this project would cause a temporary increase in emissions during construction. Implementation of this project would generate CO, Reactive Organic Gas (ROG), Nitrogen Oxides (NO_x), and PM₁₀ air emissions. Operation of the passenger trains would generate some new pollutant emissions as diesel fuel is consumed to operate the trains. However, reductions in pollutant emissions would be achieved as a result of a slight decrease in motor vehicle usage as some members of the public reduce their vehicle usage and take the train.¹⁴ The net emissions of CO, ROG, NO_x, and PM₁₀ as a result of this project would not exceed the significance thresholds set by the CAA.¹⁵

¹³ BAAQMD website, http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, accessed October 2011.

¹⁴ *Sonoma-Marin Area Rail Transit Draft Environmental Impact Report*, November 2005.

¹⁵ *Sonoma-Marin Area Rail Transit Final Environmental Impact Report*, June 2006.

- Marin Sonoma Narrows HOV Widening Project – this project would cause a temporary increase in emissions during construction. Implementation of this project would not result in a significant impact to air quality as a result of emissions of criteria pollutants. Implementation of this project would lead to a reduction in traffic congestion along Highway 101 in Marin and Sonoma Counties.¹⁶
- Redwood Landfill Solid Waste Facility – construction and implementation of this project would result in an increase in criteria air emissions. This increase would not exceed the applicable CAA thresholds for these air emissions and is not significant.¹⁷
- North Coast Rail Authority Russian River Division Freight Rail Project – this project would reintroduce freight rail service in Marin County along the existing Northwestern Pacific Railroad, the same route that would be used by the SMART passenger service. The Supplemental EIR for this project included an analysis of cumulative air emissions of criteria pollutants from the freight rail service. This analysis found that the reintroduction of freight service would add to air emissions; however, cumulative criteria air pollutant emissions were still below the applicable CAA significance thresholds.¹⁸
- Binford Road LLC Storage Project – construction of this project is to be determined by applicant cash flow.¹⁹ Therefore it is unknown whether air quality impacts from construction activity would occur in the same timeframe as construction impacts from implementation of Alternative B or Alternative D. In either case air emissions associated with construction activities are temporary. This project would likely result in a minor increase in air emissions due to additional surface vehicles accessing the site; however, due to the minimal number of additional vehicles these air emissions are likely to be below the CAA *de minimis* thresholds for criteria air pollutants.
- In addition to the projects above, implementation of Alternative B or Alternative D would increase the need for electricity to light the extended runway and taxiway. This would require additional electricity generation offsite, which may increase emissions from fossil fuel burning power plants. The utility plants serving electricity to the Airport are required to follow strict guidelines concerning air emissions. The relatively small increase in electricity that would be needed to power the additional lights would not result in the need for additional power generating systems and therefore is assumed to be able to be handled by the existing system.

The additional criteria pollutant air emissions resulting from implementation of either Alternative B or Alternative D are below the CAA and BAAQMD *de minimis* thresholds, and as such the project is assumed not to cause an exceedance of the

¹⁶ Marin-Sonoma Narrow (MSN) HOV Widening Project Final Environmental Impact Report/Final Environmental Impact Statement, July 2009.

¹⁷ Redwood Landfill Solid Waste Facilities Permit Revision Environmental Impact Report, July 2005.

¹⁸ Sonoma-Marina Area Rail Transit Draft Supplemental EIR, March 2008.

¹⁹ http://www.co.marin.ca.us/depts/CD/Main/pdf/Propdev/PD45_Report.pdf. Telephone conversation between with Curtis Havel, Senior Planner, Marin County; March 18, 2013.

National Ambient Air Quality Standards (NAAQS).²⁰ Furthermore, none of the past, present, or reasonably foreseeable future projects described above would cause criteria air pollutant emissions that exceed CAA *de minimus* thresholds.

Marin County has been designated by the USEPA as a marginal nonattainment area for ozone, nonattainment for the 24 hour standard for emissions of PM_{2.5}, and maintenance for CO. In addition, Marin County has been designated by the BAAQMD as nonattainment for the eight-hour and one-hour standards for ozone, the annual arithmetic mean and the twenty four-hour standards for PM₁₀, and the annual arithmetic mean standard for PM_{2.5}.

The net increase in emissions calculated for Alternative B and Alternative D for the projects listed above are *de minimis* and as such are considered negligible and insignificant. Therefore, while the projects contribute to the cumulative emissions of air pollutants in Marin County, the cumulative effect of the net air emissions would not cause or contribute to any new violation of the NAAQS or the CAAQS, would not increase the frequency or severity of an existing violation, and would not delay timely attainment of any standard, and the cumulative impact on air quality is not significant.

The cumulative impact of this Proposed Action on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately three percent of global carbon dioxide (CO₂) emissions; this contribution may grow to five percent by 2050. Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures and environmental regulations including an aircraft CO₂ standard. The U.S. has ambitious goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in GHG emissions by 2050. At present there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO₂ emissions. Moreover, there are large uncertainties regarding aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program and its participating Federal agencies (e.g., NASA, NOAA, EPA, and DOE), has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions.²¹

²⁰ FAA, *Air Quality Procedures for Civilian Airports and Air Force Bases*, April 1997, quoted from Section 2.5.1, *NAAQS Assessment*, "If the action is in a nonattainment or maintenance area and exempt or presumed to conform under conformity requirements, it is assumed that a NAAQS assessment is not required for an airport or air base action since it is unlikely the action's pollutant concentrations would exceed the NAAQS."

²¹ 27th International Congress of the Aeronautical Sciences, Nathan Brown, et. al. *The U.S. Strategy for Tackling Aviation Climate Impacts*, 2010.

6.5.2 WATER QUALITY

Section 5.6, *Water Quality*, in Chapter Five, *Environmental Consequences*, discussed the potential water quality impacts of Alternative B and Alternative D. It is disclosed in that section that cumulatively there would be an increase in stormwater quantity from implementing the projects identified in this cumulative impact section. The increase would not exceed applicable standards. Marin County would amend the existing Stormwater Pollution Prevention Plan (SWPPP) for DVO and Best Management Practices (BMPs) would be adhered to in order to minimize erosion and runoff during construction.

Alternative B and Alternative D do not have the potential to disturb hazardous materials that could impact water quality. However, previous contamination from leaking underground storage tanks (USTs) exists on Airport property. It was determined by the California Regional Water Control Board San Francisco Bay Region that this subsurface contamination poses a potential threat to human health and water quality and needs to be addressed. Marin County was issued a Requirement for Technical Report in June 2009. Marin County submitted a Technical Report in September 2009 and is currently coordinating with the Regional Water Quality Control Board to address this situation. The area in question is located immediately east of the Airport manager's office and would not be affected by implementation of Alternative B or Alternative D. As such, it is assumed for the purposes of this EIS that any impact to water quality that is present due to this site would be remediated with or without implementation of Alternative B or Alternative D. Due to these remediation efforts, the contamination it is not expected to cause significant cumulative impacts to water quality.

The other projects identified in this chapter would be required to comply with all existing and future water quality regulatory criteria and permit requirements. In addition, these projects would also be required to develop BMPs that would ensure that concentrations of pollutants of concern do not exceed regulatory criteria. Therefore, there would be no significant cumulative impacts to water quality.

6.5.3 FISH, WILDLIFE, AND PLANTS

As discussed in Section 5.9, *Fish, Wildlife, and Plants*, in Chapter Five, *Environmental Consequences*, Alternative B would result in permanent impacts to 6.88 acres of salt marsh harvest mouse (SMHM) and California clapper rail (CCR) endangered species High Brackish Marsh/Annual Grassland habitat, 1.54 acres of Open Water CCR habitat, and 16.05 acres of temporary impacts SMHM and CCR habitat. Alternative D would result in permanent impacts to 8.24 acres of SMHM and CCR endangered species High Brackish Marsh/Annual Grassland habitat, 1.62 acres of Open Water CCR habitat, and 18.43 acres of temporary impacts SMHM and CCR habitat.

Through formal Endangered Species Act (ESA) Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) on Alternative B, suitable mitigation options and restoration/compensation ratios were determined along with habitat compensation ratios. The habitat compensation ratios are presented in Section 5.9, *Fish, Wildlife and Plants* and possible locations of the habitat compensation sites are discussed concurrently with wetland mitigation sites in Section 5.10, *Wetlands and Streams*. No fish species or sensitive plant species occur on DVO.

The necessary habitat compensation for impacts to the endangered SMHM and CCR required for implementation of Alternative B or Alternative D, would also provide habitat compensation for more common plant and animal species that currently occur on the Airport.

The following projects have the potential to cause cumulative impacts to the same biological resources as Alternative B and Alternative D due to their geographic proximity.

- Sonoma Marin Area Rail Transit Project – this project would result in the permanent loss of approximately 31.7 acres of wetland habitat and temporary disturbance of upland habitat. A portion of this acreage is within the GSA for the Sponsors' Proposed Project and its alternatives. Temporary impacts to upland habitat would be minimized to the extent possible and permanent loss of wetlands would be mitigated through wetland replacement at a minimum ratio of 1:1. This project also has the potential to disturb nesting birds. Impacts to nesting birds associated with this project would be mitigated through surveying, limiting construction activity to periods when birds are not present, and adherence to appropriate buffers around nesting locations.²²
- Marin Sonoma Narrows HOV Widening Project – right-of-way acquisition for this project would cause the loss of up to 7.3 acres of wetlands, depending upon the access option that is selected. A portion of these wetlands are located within the GSA for this project. Impacts to wetlands associated with this project would be mitigated through wetland replacement at ratios to be determined by the U.S. Army Corps of Engineers. The project also has the potential to disturb nesting birds. Impacts to nesting birds would be avoided by conducting surveys and removing nesting locations prior to construction.²³
- Redwood Landfill Solid Waste Facility – construction and implementation of this project has the potential to disturb the western burrowing owl and other bird species. This impact is not considered significant due to the abundance of habitat for these species located to the west of the landfill.²⁴

²² *Sonoma-Marin Area Rail Transit Draft Environmental Impact Report*, November 2005.

²³ Marin-Sonoma Narrow (MSN) HOV Widening Project Final Environmental Impact Report/Final Environmental Impact Statement, July 2009.

²⁴ Redwood Landfill Solid Waste Facilities Permit Revision, Environmental Impact Report, July 2005.

Implementation of Alternative B or Alternative D combined with the implementation of one or more of the projects described above would not result in a cumulative impact to fish, wildlife, or plants because each of these projects is required to have their own protective measures to avoid, minimize, and provide habitat compensation during implementation of their project. Therefore, implementation of Alternative B or Alternative D, when combined with other past, present, or reasonably foreseeable projects would not result in significant adverse impacts to fish, wildlife, or plants.

6.5.4 WETLANDS AND STREAMS

Wetlands located on Airport property were delineated and classified in 2009. Section 5.10, *Wetlands and Streams*, in Chapter Five, *Environmental Consequences*, discusses the potential impacts of Alternative B and Alternative D on wetlands and streams and provides a thorough description of Clean Water Act (CWA), Section 404 permitting requirements including compensatory mitigation requirements, and possible locations of compensatory mitigation sites. Alternative B would result in the filling of approximately 11.83 acres wetlands and other waters and Alternative D would result in the filling of approximately 12.73 acres of wetlands and other waters. Marin County would conduct wetland mitigation in accordance with U.S. Army Corps of Engineers (USACOE) guidelines.

The following projects have the potential to cause cumulative impacts to the same wetland and other waters resources as Alternative B and Alternative D due to their geographic proximity.

- Sonoma Marin Area Rail Transit Project – this project would result in the permanent loss of approximately 31.7 acres of wetland habitat and temporary disturbance of upland habitat. A portion of this acreage is within the GSA for the Sponsors’ Proposed Project and its alternatives. Permanent loss of wetlands would be mitigated through wetland replacement at a minimum ratio of 1:1 in accordance with a Clean Water Act, Section 404 permit issued by the USACOE.²⁵
- Marin Sonoma Narrows HOV Widening Project – right-of-way acquisition for this project would cause the loss of up to 7.3 acres of wetlands, depending upon the access option that is selected. A portion of these wetlands are located within the GSA for this project. Impacts to wetlands associated with this project would be mitigated through wetland replacement at a minimum ratio of 1:1 in accordance with a Clean Water Act, Section 404 permit issued by the USACOE.

As discussed in Section 5.10 the habitat acreages necessary to compensate for wetland and aquatic resource impacts under Alternative B and Alternative D based on the 3:1 (replaced:impacted) off-site habitat compensation ratio identified in the Marin Countywide Plan, Natural Systems Goal Bio-3, Policy Bio-3.2, are shown in **Table 5.10-3** and **Table 5.10-4**. Under Alternative B, 35.49 acres of

²⁵ Sonoma-Marin Area Rail Transit Draft Environmental Impact Report, November 2005.

compensatory mitigation acreage would be needed to compensate at a 3:1 ratio for the removal of 11.83 acres of wetland and aquatic habitat. Under Alternative D, 38.19 acres of compensatory mitigation acreage would be needed to compensate at a 3:1 ratio for the removal of 12.73 acres of wetland and aquatic habitat.

The CWA, Section 404, USACOE permit regulations require that each permitted project provide compensatory mitigation for the impacts to wetlands and waters created by that project. As this EIS identifies compensatory wetland mitigation that would be required to implement Alternative B or Alternative D, and other projects that could occur at the same time would also be required to provide compensatory mitigation for their impacts to wetlands, implementation of Alternative B or Alternative D would not result in a significant cumulative impact to wetland resources.

6.5.5 ENERGY SUPPLY, NATURAL RESOURCES, AND SUSTAINABLE DESIGN

Section 5.15, *Energy Supply, Natural Resources, and Sustainable Design*, in Chapter Five, *Environmental Consequences*, discusses the potential impacts of Alternative B and Alternative D on the supply of energy and natural resources. Implementation of either Alternative B or Alternative D would result in increased use of energy resources, such as natural gas, fuel, and electricity. Implementation of Alternative B or Alternative D would result in a minor increase in the electricity consumption to light the extended runway and taxiway. This would require additional electricity generation offsite. PG&E indicated that they could serve this load for the Airport with no further infrastructure upgrades. There would also be a temporary increase in demand for building materials. However, as these additional demands for electricity and building supplies is relatively small, this would not result in a significant impact on energy or natural resources supplies.

None of the other present or reasonably foreseeable cumulative projects require substantial increases in energy supplies or natural resources. Combining the impacts of other past, present, or reasonably foreseeable future projects with implementation of Alternative B or Alternative D would not result in a significant impact to natural resources or energy supplies.

6.6 CONCLUSIONS

The discussion of cumulative impacts discloses the impacts of Alternative A and Alternative D in combination with other past, present, and reasonably foreseeable future actions at DVO.

As described in Chapter Four, *Affected Environment*, the GSA encompasses approximately 12,655 acres and is defined as the area where potential indirect impacts may result from the Sponsor's Proposed Project or its alternatives. The area surrounding DVO within the GSA is predominantly agricultural, vacant, and open space to the east and south with light industrial/office areas to the north

and west. With combined cumulative effects of the implementation of Alternative B or Alternative D and the past, present and reasonably foreseeable projects described in this chapter, cumulative impacts are limited to those categories listed under Section 6.5, *Cumulative Impact Comparison*. The level of cumulative impacts anticipated to occur within these categories is not significant due to the types of projects proposed, the extent of the built environment in which they would occur, and the existing requirements to provide mitigation for Alternative B, Alternative D, and the past present, and reasonably foreseeable projects that may be occur when either Alternative B or Alternative D is implemented. Therefore, implementation of either Alternative B or Alternative D would not result in significant cumulative environmental impacts.