

# **CHAPTER ONE INTRODUCTION**

## **1.1 MARIN COUNTY PLANNING AND PROJECT REVIEW PROCESS**

Based on a Preliminary Project Review prepared by Marin County (the Sponsor), it was determined that a full-scope Environmental Impact Report (EIR) would be prepared for the proposed Runway Extension at Gness Field Airport (Proposed Project) (DVO or Airport). The State Clearinghouse assigned #2008072037 to this project. Marin County issued a Notice of Preparation (NOP) of an EIR for the Runway Extension pursuant to §15082 of the California Environmental Quality Act (CEQA) Guidelines to seek comments from affected agencies and the public about the scope and content of the EIR. On July 11, 2008, the Marin County circulated the NOP for public review and comment. A copy of the NOP is included in Appendix A, *Agency Scoping and Coordination*. On August 14, 2008, Marin County held an agency scoping meeting regarding the project. The agency scoping meeting was held to help identify potentially significant environmental effects to be analyzed in the EIR. Agency comments are included in Appendix A. Also on August 14, 2008, Marin County conducted a public scoping meeting. Approximately 60 members of the public attended. Public comments were submitted on a number of issues including aircraft noise and overflights, greenhouse gas emissions, climate change, impacts to wetlands, water quality, the purpose of the project, proximity of the Redwood Landfill and Recycling Center, Inc., and cumulative impacts. Public comments on the scope of the EIR were accepted through August 29, 2008. Appendix B, *Public Involvement* contains a summary of the written public comments received on the NOP during the review period and those received during the public scoping meeting together with an indication of where the issue raised by agency, group, and individual is addressed in the Draft EIR.

This Draft EIR was prepared by Landrum & Brown under contract to Marin County. The document has been reviewed by Marin County staff. Subconsultants to Landrum & Brown have assisted with technical analysis and peer review of reports prepared by the applicant. Landrum & Brown's subconsultants include: Civil Engineering Solutions (Floodplains, hydrology, & drainage analysis), Foothill and Associates (Water quality, biotic communities, endangered & threatened species, and wetlands), Kleinfelder, Inc. (Mineral Resources, Hazardous Materials, Coastal resources, and Solid Waste, Geology, Seismicity, and Soils), Tremaine and Associates (Historic, Archaeological, & Cultural resources analysis), and Urban Alternatives (public outreach).

Marin County will circulate the Draft EIR to the public for review by public agencies, interested parties, and organizations for a 45-day period, in accordance with CEQA and Marin County Guidelines. During the 45-day public review period the County will schedule a public hearing to receive oral and written comments on the Draft EIR. The public hearing will be on the Draft EIR will be scheduled before the close of the public review period.

At the close of the Draft EIR review period, Marin County will assemble all of the written comments received before the closure date and verbal comments received at the public hearing on the Draft EIR. As required by CEQA Guidelines, Marin County will evaluate comments received on the Draft EIR and prepare written responses to all comments received. The comments and responses will be included in the Final EIR as a separate chapter. In addition, the Draft EIR will be amended to correct any errors or CEQA omissions, and will incorporate, if necessary, information provided in the County's responses to comments received on the Draft EIR.

Marin County will circulate the Final EIR to Responsible and Trustee Agencies that commented on the Draft EIR and all interested parties for review of the adequacy of the response to comments. The County will provide a 14-day period for the submission of written comments related to changes made to the Draft EIR and written responses to comments received on the Draft EIR. Upon the conclusion of the Final EIR review period, the Marin County Department of Public Works will consider the comments received on the Final EIR and make its recommendation on certification to the Marin County Board of Supervisors.

In certifying a Final EIR, the Board of Supervisors would be affirming that the Final EIR is adequate and complete pursuant to CEQA and the County Environmental Review Guidelines. In conjunction with a decision on the project, Marin County Board of Supervisors would also find that it reviewed and considered the information contained in the Final EIR before taking action on the project.

No action can be taken to approve the project until the Final EIR has been certified. However, County acceptance of the Final EIR upon certification does not require nor ensure approval of the project studied in the Final EIR.

In addition, because the Proposed Project involves the approval of the Airport Layout Plan and Federal funding, the project is subject to a Federal National Environmental Policy Act review. The Federal Aviation Administration (FAA) is the lead agency for the preparation of the Environmental Impact Statement (EIS). The Federal EIS is being prepared in conjunction with the County's EIR. The environmental studies prepared for the EIS were also used in preparing the County EIR. Federal approval of the Final EIS through a Record of Decision will also be necessary before implementation of the Proposed Project can occur. For more information on the EIS process and findings, see Volume I.

## **1.2 DOCUMENTS INCORPORATED BY REFERENCE IN THE DRAFT EIR**

An EIR may "... incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public" (CEQA Guidelines §15150). Documents that are relevant to the environmental analysis for the proposed project are summarized and referenced in various sections of the Draft EIR are listed below. All referenced documents are available at the Marin County Department of Public Works, 3501 Civic Center Drive, Room 404, San Rafael, California, 94903.

*Gnoss Field Airport Draft Environmental Impact Statement/Environmental Impact Report Volumes 1 and 3, prepared by Landrum & Brown Inc. 2011. Volume 1 is an analysis of the environmental impacts of the Proposed Project and Alternatives based on the threshold criteria adopted by the FAA in implementing the National Environmental Policy Act. Volume 3 contains the various environmental and technical studies prepared for the EIS and are used as the basis for environmental impact analysis in preparation of the Draft EIR.*

*Airport Master Plan for Marin County Airport (Gnoss Field), Prepared by Cortright & Seibold, 1989. This document and the next form the basis for the Project Description (Chapter Three) of this EIR.*

*Marin County, Environmental Impact Review Guidelines (EIR Guidelines): Policy and Procedures for Implementation of the California Environmental Policy Act, May 17, 1994.*

*Marin Community Development Agency. Marin Countywide Plan, adopted November 6, 2007.*

*Preliminary Design Report, Runway Extension, Gnoss Field, Prepared by Cortright & Seibold, 2002. This document and the previous form the basis for the Project Description (Chapter Three) of this EIR.*

*Title 14, California Code of Regulations, Chapter Three, Guidelines for Implementation of the California Environmental Quality Act.*

## **1.3 ORGANIZATION OF THE DRAFT EIR**

The Draft EIR is organized into eight chapters, preceded by the Table of Contents, List of Tables, and List of Figures. The eight chapters of the EIR and a brief summary of their contents are presented below. As mentioned, the EIR is being prepared concurrently with a Federal EIS. Therefore, in order to minimize duplication and to offer the public a clear understanding of the review of the Proposed Project, the EIR is being published together as part of a three volume set with the EIS and the technical appendices. The Draft EIS and Draft EIR are standalone documents. The Draft EIS analyzes the environmental impacts of the Proposed Project as required by NEPA and the Draft EIR as required by CEQA.

## **VOLUME II – ENVIRONMENTAL IMPACT REPORT (EIR)**

**Chapter One – Introduction:** The introduction describes the Marin County planning and project review process as it pertains to the project, presents the technical documents that are incorporated by reference into the EIR (in accordance with §15150 of the CEQA Guidelines), and describes the organization of the EIR.

**Chapter Two – Summary:** The EIR summary, prepared in accordance with §15123 of the CEQA Guidelines, contains an overview of key elements of the Draft EIR. The chapter summary includes a summary of the project description and characteristics, as well as an overview of project objectives, with reference to the full text version, pursuant to §15124 of the CEQA Guidelines. A comprehensive overview of all environmental impacts and mitigation measures, along with the level of significance before and after mitigation, is presented in a table format for reader convenience. This chapter summarizes impacts of the project alternatives as they compare to the project. Summaries of growth inducing impacts, irreversible environmental changes, and significant and unavoidable impacts are also provided in this chapter. Documentation of the major conclusions, areas of controversy, and issues to be resolved in the EIR is provided. Finally, a summary of project consistency with plans and policies is presented.

**Chapter Three – Project Description:** The project description is prepared pursuant to §15124 of the CEQA Guidelines and contains a discussion the project attributes through text, exhibits, and tables. Specifically, this chapter includes a description of the project site and location, a discussion of objectives for the project, and a discussion of project characteristics. This chapter presents a description of lead, trustee, and responsible agency actions required for project approval. Lastly, this chapter explains the time frames for potential actions.

**Chapter Four – Environmental Setting, Environmental Impacts, Cumulative Impacts, and Mitigation Measures:** The majority of the environmental impact evaluation for the project is contained in this chapter. A description of the physical setting for each environmental issue is provided along with disclosure of the anticipated changes to physical conditions after project implementation. The "setting," for purposes of this EIR, contains the existing physical characteristics of the site. Mitigation measures are included for any significant impact that would result from the implementation of the Proposed Project. Cumulative impacts that would result from the project in combination with reasonably foreseeable projects are disclosed.

Environmental impacts are numbered throughout this portion of the EIR, beginning with the chapter number, followed by sequentially numbered impacts. For example, the first impact in Section 4.2, "Land Use and Planning," is impact number 4.2-1, and the second impact is 4.2-2. Mitigation measures are numbered to correspond with environmental impacts.

**Chapter Five – Other CEQA-Mandated Sections:** As required by the CEQA, this chapter of the Draft EIR provides a discussion of other CEQA considerations based on the technical analyses presented in Chapter Four. These considerations include significant unavoidable adverse impacts, growth inducing impacts, and significant, irreversible environmental changes.

**Chapter Six – Alternatives to the Project:** In accordance with §15126.6 of the CEQA Guidelines, Chapter Six of the EIR presents a range of reasonable alternatives designed to feasibly attain most of the basic objectives of the project and avoid or substantially reduce significant project effects. The potential environmental impacts of the alternatives are discussed in comparison to the impacts that would result with the Proposed Project. The advantages and disadvantages of each alternative are also presented.

**Chapter Seven – List of Preparers:** This chapter identifies the individuals who were involved in the preparation of this EIR.

**Chapter Eight – References:** A list of the reports, technical documents, and other publications used in preparation of this EIR are contained in Chapter Eight.

## **VOLUME III – TECHNICAL APPENDICES**

**Appendix A – Agency Scoping and Coordination:** This appendix includes documentation of agency scoping and coordination that was conducted on behalf of this EIR.

**Appendix B – Public Involvement:** This appendix includes documentation of the public outreach and coordination that was conducted for this EIR.

**Appendix C – Aviation Activity Forecast:** This appendix includes the forecast of aviation activity for Gness Field Airport that was prepared for this EIR.

**Appendix D – Runway Length Analysis:** This appendix includes the runway length analysis for Gness Field Airport that was prepared for this EIR.

**Appendix E – Noise:** This appendix provides detailed information related to the noise analysis results for this EIR. This appendix also includes the methodology used in preparing the noise analysis, statistical information used in the development of the predicted noise levels, and information related to the impact of noise on people located within the Study Area.

**Appendix F – Air Quality:** This appendix contains the Air Quality Technical Report which provides supporting documentation for the assessment of air quality impacts.

**Appendix G – Water Quality:** This appendix contains the Water Quality Technical Report prepared for this EIR.

**Appendix H –Cultural Resources:** This appendix contains the Cultural Resources Existing Conditions and Survey Methodology Report and Archaeological Survey to support the assessment of Historic, Architectural, Archaeological, and Cultural Resources prepared for the EIS and EIR.

**Appendix I – Biological Resources:** This appendix contains the Biological Resources Assessment prepared for this EIR.

**Appendix J – Wetlands:** This appendix includes the Clean Water Act and Rivers and Harbors Act jurisdictional determination letter and map issued by the U.S. Army Corps of Engineers for DVO as related to this project.

**Appendix K - Energy and Natural Resources:** This appendix provides information that supplements the assessment of existing conditions and the evaluation of potential future impacts to energy supply, natural resources, and sustainable design under the Proposed Project.

**Appendix L – Hazardous Materials:** This appendix contains supporting documentation for the assessment of Hazardous Materials for this EIR.

**Appendix M – Geology, Soils, and Seismicity Resources:** This appendix contains supporting documentation for the assessment of Geology, Soils, and Seismicity conditions related to the project for this EIR.

**Appendix N – Mineral Resources:** This appendix contains supporting documentation for the assessment of mineral resources for this EIR.

**Appendix O – Land Use Assurance Letter**

## **VOLUME I – ENVIRONMENTAL IMPACT STATEMENT (EIS)**

**Chapters One through Seven** include the EIS documentation prepared for the Proposed Project by the FAA.

## **1.4 LIST OF ACRONYMS**

The following is a list of acronyms used in this EIR.

069	Petaluma Municipal Airport
0Q3	Sonoma Valley Airport
3D	Three-Dimensional
AC	Advisory Circular
ACHP	Advisory Council on Historic Preservation
AGL	Above Ground Level
AIM	Aeronautical Information Management
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ANCA	Airport Noise and Capacity Act of 1990
APC	Napa County Airport
APE	Area of Potential Effect
APU	Auxiliary Power Unit
AQCR	Air Quality Control Region
ARDF	Airport Research and Development Foundation
ARFF	Aircraft Rescue and Fire Fighting
ASA	Airport Service Area
ASCE	American Society of Civil Engineers
ASNA	Aviation Safety and Noise Abatement Act
AST	Aboveground Storage Tank
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower (or Airport Traffic Control Tower)
AvGas	Low-lead aviation gasoline
BAAQMD	Bay Area Air Quality Management District
BAT	Best Available Technology Economically Achievable
BCDC	San Francisco Bay Conservation and Development Commission
BCT	Best Conventional Pollutant Control Technology
BMPs	Best Management Practices
BOD	Biochemical Oxygen Demand
BTU	British Thermal Units
BUSTR	The Bureau of Underground Storage Tanks Regulations
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEPA	California Environmental Protection Agency
CESA	California Endangered Species Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second

CGS	California Geological Survey
CH <sub>4</sub>	Methane
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
CIWMP	California Integrated Waste Management Plan
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO <sub>2</sub> e	Carbon Dioxide Equivalencies
COD	Chemical Oxygen Demand
CRHR	California Register of Historic Resources
Cu	Copper
CWA	Clean Water Act (Federal Water Pollution Control Act, as amended)
CZMA	Coastal Zone Management Act
CY	Cubic Yards
Day	7:00 am to 9:59 pm
dB	Decibel
dBA	A-weighted decibel
DNL	Day-Night Average Sound Level
DSA	Detailed Study Area
DVO	Gross Field Airport
EA	Environmental Assessment
EDDA	Environmental Due Diligence Audits
EDMS	Emission & Dispersion Modeling System
EDR	Environmental Data Resources
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Federal Endangered Species Act
FAA	Federal Aviation Administration
FBO	Fixed-Base Operator
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
FIGR	Federated Indians of Graton Rancheria
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
FY	Fiscal Year
GA	General Aviation
GHG	Greenhouse Gas
GIS	Geographic Information System
GPS	Global Positioning System
GSA	General Study Area
GSE	Ground Support Equipment
H <sub>2</sub> O	Water Vapor
HAF	Half Moon Bay Airport
HAP	Hazardous Air Pollutant

HST	Central Valley High-Speed Train
HSWA	Hazardous and Solid Waste Amendments of 1984
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilating, and Air Conditioning
IFR	Instrument Flight Rules
ILS	Instrument Landing System
INM	Integrated Noise Model
IPCC	Intergovernmental Panel on Climate Control
ISR	Indirect Source Review
Jet A	Jet fuel
kWh	Kilowatt Hours
Leq	Equivalent Sound Level
Lmax	Maximum Noise Level
LL	Low-Lead
LOC	Localizer
LOS	Level of Service
LSAA	Lake and Streambed Alteration Agreement
LTO	Landing and Takeoff Cycle
LWCA	Land and Water Conservation Act
MA	Metropolitan Area
MBTA	Federal Migratory Bird Treaty Act
MBTRA	Migratory Bird Treaty Reform Act
MBTU	Million British thermal units
MCP	Marin Countywide Plan of 2007
MGD	Million Gallons per Day
mg/L	Milligrams per liter
MOA	Memorandum of Agreement
MMCF	Million Cubic Feet
MMRP	Mitigation Monitoring and Reporting Program
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
MSWLF	Municipal Solid Waste Landfill Units
MTOW	Maximum Take Off Weight
MW	Megawatts
N <sub>2</sub> O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVAIDs	Navigational Aids
NCDC	National Climatic Data Center
NCRA	North Coast Rail Authority
NEM	Noise Exposure Map
NEPA	National Environmental Policy Act of 1969
NFA	No Further Action
NFD	Novato Fire District
NHPA	National Historic Preservation Act
Ni	Nickel
Night	10:00 pm to 6:59 am
NLR	Noise Level Reduction
NMFS	National Marine Fisheries Service

NMWD	North Marin Water District
NOAA	National Oceanic and Atmospheric Administration
NOD	Notice of Determination
NOI	Notice of Intent
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems
NPL	National Priorities List
NRC	National Response Center
NRCS	Natural Resources Conservation Service
NRHP	National Registry of Historic Places
NRI	Nationwide Rivers Inventory
NSD	Novato Sanitary District
NSHMP	National Seismic Hazard Mapping Project
NWSFO	National Weather Service Forecast Office
O <sub>3</sub>	Ozone
O&D	Origin & Destination (passengers)
OAG	Official Airline Guide
OHWM	Ordinary High Water Mark
OTR	Ozone Transport Region
P	Phosphorous
PAPI	Precision Approach Path Indicator
Pb	Lead
PFC	Passenger Facility Charges
PG&E	Pacific Gas & Electric
PM	Particulate Matter (PM <sub>10</sub> & PM <sub>2.5</sub> )
PPA	Pollution Prevention Act
RCRA	Resource Conservation and Recovery Act
RHA	Rivers and Harbors Act
RLI	Redwood Landfill and Recycling Center, Inc.
ROA	Record of Approval (issued by FAA on a Part 150 Noise Compatibility Program)
ROD	Record of Decision (issued by FAA on an EIS)
ROG	Reactive Organic Gases
ROWD	Report of Waste Discharge
RPZ	Runway Protection Zone
RQ	Reportable Quantity
RSA	Runway Safety Areas
RVR	Runway Visual Range
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SCA	Stream Conservation Area
SCWA	Sonoma County Water Agency
SEI	Structural Engineering Institute
SEL	Sound Exposure Level
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFO	San Francisco International Airport
SHPO	State Historic Preservation Office

SIC	Standard Industry Classification
SIP	State Implementation Plan
SMART	Sonoma-Marin Area Rail Transit District
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>x</sub>	Sulfur Oxide
SPCC	Oil Spill Prevention Control and Countermeasure Program
SSURGO	Soil Survey Geographic
STS	Charles M. Schultz Sonoma County Airport
SWMAC	Solid Waste Management Advisory Council
SWMM	Stormwater Management Model
SWMMD	Solid Waste Management Districts
SWMMP	Stormwater Management Master Plan
SWPPP	Stormwater Management Prevention Plan
SWRCB	State Water Resources Control Board
SWWTP	Southerly Wastewater Treatment Plan
TAC	Toxic Air Contaminants
TAF	Terminal Area Forecast (prepared by the FAA)
TBD	To Be Determined
THPO	Tribal Historic Preservation Office
TIP	Transportation Improvement Program
TKN	Total Kjeldahl Nitrogen
TOFA	Taxiway Object Free Areas
TN	Total Nitrogen
TOC	Total Organic Carbon
TOG	Total Organic Gases
TP	Total Phosphorous
TPH	Total Petroleum Hydrocarbon
TSCA	Toxic Substances Control Act of 1976
TSS	Total Suspended Solids
UCERF	Uniform California Earthquake Rupture Forecast
USACOE	U.S. Army Corps of Engineers
USC	U.S. Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFWCA	U.S. Fish and Wildlife Coordination Act
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VA	Department of Veterans Affairs
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VOC	Volatile Organic Compounds
WCA	Water Conservation Areas
WDR	Waste Discharge Requirement
WMI	Waste Management Incorporated
Zn	Zinc

## **1.5 GLOSSARY OF TERMS**

The following is a list of key terms used in this Draft EIR.

**Air Route Traffic Control Center (ARTCC or Center)** - A *Federal Aviation Administration* facility established to provide *air traffic control* service to aircraft operating on *Instrument Flight Rules* flight plans within *controlled airspace*, principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory and assistance services may be provided to *Visual Flight Rules* aircraft.

**Air Taxi Aircraft** – A term no longer used by the *Federal Aviation Administration*, though still used by the U.S. Department of Transportation (USDOT). The *Federal Aviation Administration* uses the term “on demand” to describe those operations formerly described as “air taxi.”

**Air Traffic** - Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

**Air Traffic Control (ATC)** - An FAA service operated for the public, to ensure adequate separation of aircraft and to promote the safe, orderly, and expeditious flow of air traffic. The air traffic facility with jurisdiction over mapped and designated airspace may authorize aircraft to proceed under specified traffic conditions within *controlled airspace*.

**Airport Traffic Control Tower (ATCT)** - An *air traffic control* facility established on an airport to provide for safe, orderly, and expeditious flow of air traffic arriving at and departing from an airport, including airport surface areas such as runways and taxiways.

**Air Traffic Service (ATS) Routes** - "ATS route," a generic term, includes "VOR Federal airways," "colored Federal airways," "alternate airways," "jet routes," "Military Training Routes," "named routes," and "RNAV routes." The term "ATS route" serves as an overall title for listing the types of routes that comprise the United States route structure.

**Aircraft Approach Category** - A grouping of aircraft based on a speed calculation that takes into account the stall speed in the landing configuration at maximum gross landing weight. An aircraft must fit only one category; its category determines speed minimums that must be observed for various maneuvers. For example, an aircraft which falls in *Category A*, but is circling to land at a speed in excess of 91 knots, must use the approach *Category B* minimums when circling to land. The categories are: *Category A* - Speed less than 91 knots; *Category B* - Speed 91 knots or more but less than 121 knots; *Category C* - Speed 121 knots or more but less than 141 knots; *Category D* - Speed 141 knots or more but less than 166 knots; *Category E*- Speed 166 knots or more. (See 14 CFR Part 97.)

**Aircraft Classes** - For the purposes of wake turbulence aircraft separation minimums, ATC classifies aircraft as (a) *Heavy* - Aircraft capable of takeoff weights of more than 255,000 pounds whether or not they are operating at this weight during a particular phase of flight, (b) *Large* - Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to 255,000 pounds, or (c) *Small* - Aircraft of 41,000 pounds or less maximum certificated takeoff weight.

**Airman's Information Manual (AIM)** - A publication containing basic flight information and *air traffic control* procedures, designed primarily as a pilot's information and instructional manual for use in the ***National Airspace System***.

**Airport Departure Rate** - A dynamic parameter specifying the number of aircraft per hour that can depart from an airport and be accepted into the airspace.

**Airport Elevation** - The highest point on an airport's usable runways, expressed in feet above ***mean sea level***.

**Airport Improvement Program (AIP)** - A Federal funding program for airport improvements. AIP is periodically reauthorized by Congress with funding appropriated from the Aviation Trust Fund. Proceeds to the Aviation Trust Fund are derived from excise taxes on airline tickets, aviation fuel, etc.

**Airport Layout Plan (ALP)** - A scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows boundaries and proposed additions to all areas owned or controlled by the airport operator for airport purposes, the location and nature of existing and proposed action, and the location on the airport of existing and proposed non-aviation areas and improvements thereon.

**Airport Operations** – The total takeoffs (departures) and landings (arrivals) from an airport.

**Airport Reference Code (ARC)** - A coding system used to relate airport design criteria to the operational and physical characteristics of the ***design aircraft*** intended to operate at the airport (i.e. the most critical aircraft type currently using, or projected to use, an airport, with a minimum of 500 operations per year). ARC can either be one aircraft or a group of aircraft. The first component of the ARC is a capital letter (A, B, C, D, or E with "A" being the lowest, and "E" being the highest), which refers to the aircraft approach speed in its landing configuration. The second component, which is depicted by a Roman numeral (I, II, III, IV, V, VI, with "I" being the lowest and "VI" being the highest), refers to aircraft wingspan. Together, the two components relate aircraft operational and physical characteristics to the required design criteria of various airport components, such as runway/taxiway widths, runway to taxiway separation standards, and obstacle clearance items. Under this methodology, safety margins are provided in the physical design of airport facilities.

**Airport Surveillance Radar (ASR)** - Approach control radar used by air traffic controllers to detect and display an aircraft's position in the airport terminal area. ASR provides range (distance) and *azimuth* (direction) information with regard to arriving or departing aircraft.

**Air Traffic Service (ATS) Routes** - "ATS route," a generic term, includes "VOR Federal airways," "colored Federal airways," "alternate airways," "jet routes," "Military Training Routes," "named routes," and "RNAV routes." The term "ATS route" serves as an overall title for listing the types of routes that comprise the United States route structure.

**Airway** - A corridor of *controlled airspace* whose centerline is established by radio *navigational aids*. Low altitude airways (between 3,000 and 18,000 feet **Mean Sea Level**) are identified by number with the letter V as a prefix. High altitude airways (above 18,000 feet *Mean Sea Level*) are known as Jet airways and are identified by number with the letter J as a prefix.

**Ambient Noise** - The total sum of noise from all sources in a given place and time. This is also known as *Existing Ambient Noise*. See also *Natural Ambient Noise*.

**Approach Light Systems (ALS)** - One of various lighting aids that may be installed on an airport. The ALS is a series of lights that provide visual guidance to landing aircraft by radiating light beams in a directional pattern, to assist the pilot when aligning aircraft with the extended runway centerline on *final approach*.

**Attenuation** - Acoustical phenomenon whereby *sound* energy is reduced between the noise source and the receiver. This energy loss can be attributed to atmospheric conditions, terrain, vegetation, other natural features, and man-made features (e.g., sound insulation).

**A-Weighted Sound (dBA)** - A system for measuring *sound* energy that is designed to represent the response of the human ear to sound. Energy at frequencies more readily detected by the human ear is more heavily weighted in the measurement, while frequencies less well detected are assigned lower weights. A-weighted *sound* measurements are commonly used in studies where the human response to *sound* is the object of the analysis.

**Base Flight Segment** – A flight path at right angles to the landing runway off its approach end. The base segment normally extends from the downwind segment to the intersection of the extended runway centerline.

**Base Leg** - A flight path at right angles to the approach of a runway end. It usually extends from the downwind leg to the intersection of the extended runway centerline.

**Baseline Condition** - The existing condition or conditions prior to future development, which serve as a foundation for analysis.

**Building Restriction Line (BRL)** - A line drawn on an *airport layout plan* that distinguishes between areas that are suitable for buildings and areas that are unsuitable. Typically, a 35-foot building height is used to ensure that all the surfaces in 14 CFR Part 77 are clear.

**California Environmental Quality Act (CEQA)** – California law requiring the disclosure of environmental effects of proposed projects before discretionary approval can be issued. California law requiring the disclosure of environmental effects of proposed projects before discretionary approval can be issued. CEQA is codified at Public Resources Code Section 21000 et seq.

**Community Noise Equivalent Level (CNEL)** – The CNEL metric is a single value of sound level for 24 hour period, which includes all of the time-varying sound energy within the period. To represent the greater annoyance caused by a noise event during the evening hours, the CNEL metric includes an added 5 dB weighting for evening noise events occurring between 7:00 P.M. and 10:00 P.M. Similarly, the CNEL metric also incorporates a 10 dB nighttime (10:00 P.M. and 7:00 A.M.) penalty to represent the greater annoyance caused by a noise event at night.

**Commuter Aircraft** - Generally, aircraft of designated size or seating capacity (usually nine or fewer seats) that support scheduled air transportation services for compensation or hire in air commerce, with a frequency of at least five round trip operations per week on at least one route according to a published flight schedule. Commuter aircraft operate pursuant to a *Federal Aviation Administration* air carrier certificate issued under 14 CFR Parts 119 and 135 of the *Federal Aviation Regulations*. (See 14 CFR § 119.3, *Definitions*.) **Regional Jets** (RJs) are not “commuters,” because they are large transport category aircraft and fall within the *Federal Aviation Administration’s air carrier aircraft* category.

**Contour** - See *Noise Contour*.

**Controlled Airspace** - An airspace of defined dimensions within which *air traffic control* service is provided to flights operating under both *Instrument Flight Rules* and *Visual Flight Rules* in accordance with the airspace classification. Controlled airspace designated as Class A, Class B, Class C, Class D, and Class E, generally according to altitude above the surface, distance from a primary airport, and volume of aircraft operations. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements (for specific operating requirements, see 14 CFR Part 91).

**Crosswind Leg** - A flight path at right angles to the approach runway end off of the upwind end.

**Day-Night Average Sound Level (DNL)** - A noise measure used to describe the average *sound* level over a 24-hour period, typically an average day over the course of a year. In computing DNL, an extra weight of ten *decibels* is assigned to noise occurring between the hours of 10:00 p.m. and 7:00 a.m. to account for increased annoyance when ambient noise levels are lower and people are trying to sleep. DNL may be determined for individual locations or expressed in noise contours.

**dBA** - See *A-weighted Sound Level*

**Decibel (dB)** - *Sound* is energy and is measured by its pressure. Because of the enormous range of *sound* pressures to which the human ear is sensitive, the raw sound pressure measurement is converted to the *decibel* scale for purposes of description and analysis. The *decibel* scale is logarithmic. A ten-*decibel* increase in *sound* is perceived as a doubling of sound (or twice as loud) by the human ear.

**Declared Distances** – The distance the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements.

**Departure Fix** – A departure fix, or so-called departure gate, is a section of airspace used to separate departing from arriving aircraft. This fix determines the initial flight path and direction of the aircraft.

**Design Aircraft** - The most critical aircraft type currently using, or projected to use, an airport, with a minimum of 500 operations per year. It can either be one aircraft or a group of aircraft. See also *Airport Reference Code*.

**Detailed Study Area** - One of the areas identified for detailed environmental investigation as part of this *Environmental Impact Statement*. This *study area* is smaller in scale than the *General Study Area* to accommodate the more detailed analyses. (See *General Study Area*.)

**Displaced Threshold** - A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

**Distance Measuring Equipment (DME)** - A flight instrument that measures the line-of-sight distance of an aircraft from a navigational radio station in *nautical miles*.

**Downwind Approach/Arrival** – A flight path parallel to the landing runway in the direction opposite to landing.

**Easement** - The legal right of one party to use part of the rights of a piece of real estate belonging to another party. This may include, but is not limited to, the rite of passage over, on or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity.

**Engine Run-ups** – A routine procedure for testing aircraft systems by running one or more engines at a high power setting. Engine run-ups are normally conducted by airline maintenance personnel checking an engine or other on board systems following maintenance.

**Enplanements** - The number of revenue passengers boarding an aircraft at an airport.

**EnRoute Air Traffic Control System** - Unlike *airport traffic control tower* or terminal radar approach control service, *Air Route Traffic Control Centers* provide enroute service, generally for aircraft on **Instrument Flight Rules** flight plans, when these aircraft are operating between departure and destination airports at designated higher altitudes. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to **Visual Flight Rules** aircraft. Enroute airspace is that airspace not delegated to approach control.

**Environmental Impact Report (EIR)** – An environmental impact report is an informational document which, when its preparation is required, shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.

**Environmental Impact Statement (EIS)** - As stated in CEQ regulation 40 CFR § 1508.11, a detailed written statement that complies with NEPA section 102 (42 USC § 4332) by including in every report on proposals for major Federal actions significantly affecting the quality of the human environment, a detailed statement on (i) environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposal, (iv) relationship between local short-term uses of the environment and maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitment of resources involved in the proposed action, should it be implemented.

**Equivalent Sound Level (Leq)** - The **A-weighted** energy average **sound** level experienced over a given period of time. The metric is expressed as ten times the log of the total noise energy divided by the number of seconds during the period under consideration.

**Federal Aviation Administration (FAA)** - The FAA is the Federal agency responsible for insuring the safe and efficient use of the nation's airspace, for fostering civil aeronautics and air commerce, and for supporting the requirements of national defense. The activities required to carry out these responsibilities include: safety regulations, airspace management and the establishment, operation and maintenance of a system of **air traffic control** and navigation facilities; research and development in support of the fostering of a national system of airports, promulgation of standards and specifications for civil airports, and administration of Federal grants-in-aid for developing public airports; various joint and cooperative activities with the Department of Defense, and technical assistance (under State Department auspices) to other countries.

**Federal Aviation Regulations (FAR)** - The body of Federal regulations enacted by the U.S. Secretary of Transportation, under the statutory authority of the Federal Aviation Act and published in Title 14 of the Code of Federal Regulations (CFR).

**Final Approach** - A flight path in the direction of landing that follows the extended runway centerline. It usually extends from the **base leg** to the runway.

**Fixed-Base Operator (FBO)** - A business located on the airport that provides services such as hangar space, fuel, flight training, repair, and maintenance to airport users.

**Fleet Mix** - The mix or differing types of aircraft operating in a particular airport environment.

**Flight Track Utilization** - The use of established routes for arrival and departure by aircraft to and from the runways at the airport.

**General Aviation Aircraft** - Generally, those U.S. registered civil aircraft which operate for private and noncommercial purposes and whose operations are not governed by 14 CFR Parts 119, 121, 125, or 135 of the **Federal Aviation Regulations**. General aviation aircraft range from small single-engine propeller aircraft to large **turbojet** private aircraft.

**General Study Area (GSA)** - One of the areas identified for environmental investigation as part of this **EIS**. This study area is larger in scale than the **Detailed Study Area**. (See **Detailed Study Area**.)

**Geographic Information Systems (GIS)** - An information system that is designed for storing, integrating, manipulating, analyzing, and displaying data referenced by spatial or geographic coordinates.

**Glide Slope (GS)** - Provides vertical guidance for aircraft during approach and landing. The glide slope consists of the following:

Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as **Instrument Landing System**, or visual ground aids, such as **Visual Approach Slope Indicator**, which provide vertical guidance for **visual flight rules** approach or for the visual portion of an **instrument approach** and landing.

**GPS - Global Positioning System** equipment onboard an aircraft takes advantage of various radio navigation and/or **Global Positioning System** routes to guide the aircraft. A system of satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

**Grid Analysis** - A type of aircraft noise analysis that evaluates the noise levels at individual points rather than through generation of **noise contours**.

**Ground Effect** - Noise **attenuation** attributed to absorption or reflection of noise by man-made or natural features on the ground surface.

**Hub** - An airport that services airlines that have **hubbing** operations.

**Hubbing** - A method of airline scheduling that times the arrival and departure of several aircraft in a close period of time in order to allow the transfer of passengers between different flights of the same airline in order to reach their ultimate destination. Several airlines may conduct hubbing operations at an airport.

**Infill** - Urban development occurring on vacant lots in substantially developed areas; may also include the redevelopment of areas to a greater density.

**Instrument Approach** - A series of predetermined maneuvers for the orderly transfer of an aircraft under **instrument flight rules** from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

**Instrument Flight Rules (IFR)** - That portion of the **Federal Aviation Regulations** (14 CFR Part 91) specifying the procedures to be used by aircraft during flight in **Instrument Meteorological Conditions**. These procedures may also be used under visual conditions and provide for **positive control** by **Air Traffic Control**. (See also **Visual Flight Rules**).

**Instrument Landing System (ILS)** - An electronic system installed at some airports which helps to guide pilots to runways for landing during periods of limited visibility or adverse weather.

**Instrument Meteorological Conditions (IMC)** - Weather conditions expressed in terms of visibility, distance from clouds, and cloud ceilings during which all aircraft are required to operate using **Instrument Flight Rules (IFR)**.

**Integrated Noise Model (INM)** - A computer model developed, updated and maintained by the **Federal Aviation Administration** to predict the noise exposure generated by aircraft **operations**.

**Itinerant Operation** - An aircraft flight that ends at an airport different from where the flight began.

**Knots** - Airspeed measured as the distance in **nautical miles** (6,076.1 feet) covered in one hour. (Approximately equal to 1.15 miles per hour.)

**Land Use Compatibility** - The ability of land uses surrounding the airport to coexist with airport-related activities with minimum conflict.

**Landing and Takeoff (LTO) Cycle** - The time that an aircraft is in operation at or near an airport. An LTO cycle begins when an aircraft starts its **final approach** (arrival) and ends after the aircraft has made its climb-out (departure).

**Ldn** - See **DNL**. Ldn is used in place of **DNL** in mathematical equations only.

**Leq** - See **Equivalent Sound Level**.

**Local Operation** - An aircraft flight that begins and ends at the same airport.

**Localizer** - The component of an **Instrument Landing System** that provides lateral course guidance to the runway.

**Loudness** - The subjective assessment of the intensity of **sound**.

**Maximum Noise Level (Lmax)** - The maximum **sound** pressure for a given event adjusted toward the frequency range of human hearing.

**Mean Sea Level (MSL)** - The average height of the surface of the sea for all stages of the tide; used as a reference for elevations; also called sea level datum.

**Military Operations Area** - Airspace established to separate or segregate certain non-hazardous military activities from **Instrument Flight Rules** traffic and to identify for **Visual Flight Rules** traffic where these activities are conducted.

**Missed Approach** - A maneuver conducted by a pilot when an **instrument approach** cannot be completed for landing at an airport. **Instrument approach** procedure charts show the route of flight and altitude that the pilot must follow in this circumstance.

**National Airspace System (NAS)** - The common network of U.S. airspace, air navigation facilities, equipment, services, airports, or landing areas; aeronautical charts, information, and services; rules, regulations, and procedures; technical information, manpower, and materials, all of which are used in aerial navigation to provide a safe and efficient flying environment.

**National Environmental Policy Act of 1969 (NEPA)** - The original legislation establishing the environmental review process for proposed Federal actions.

**National Pollutant Discharge Elimination System (NPDES):** Federal requirement under the **Clean Water Act (CWA)** that any discharge of a non-point source of pollution into waters of the United States be in conformance with any established water quality management plan developed under the **Clean Water Act**.

**Nautical Mile** - A measure of distance equal to one minute of arc on the earth's surface (6,076.1 feet or 1,852 meters).

**Natural Ambient Noise - Existing Ambient Noise**, minus man made sounds. See **Ambient Noise** and **Existing Ambient Noise**.

**NAVAIDs (Navigational Aids)** - Any facility used by an aircraft for navigation.

**Navigational Fix** - A geographical position determined by reference to one or more radio navigational aids.

**Noise Abatement** - A measure or action that minimizes the amount of impact of noise on the environs of an airport. Noise abatement measures include aircraft operating procedures and use or disuse of certain runways or **flight tracks**.

**Noise Contour** - A map representing average annual noise levels summarized by lines connecting points of equal noise exposure.

**Nondirectional Beacon (NDB)** - A beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine the bearing to and from the station. When the radio beacon is installed in conjunction with the **Instrument Landing System** marker, it is normally called a compass locator.

**Nonprecision Approach** - A standard **instrument approach** procedure providing runway alignment but no **glide slope** or descent information.

**On-Demand** - Generally, U.S. registered civil aircraft of designated size (usually 30 or fewer passenger seats with payload capacity of 7,500 pounds or less) that support on-demand, unscheduled, or infrequently scheduled passenger-carrying or cargo service (including public charters) for compensation or hire, pursuant to a air carrier certificate issued under 14 CFR Parts 119 and 135 of the Federal Aviation Regulations. (See 14 CFR § 119.3, Definitions.) This term includes operations formerly classified as air taxi, a term no longer used by the **Federal Aviation Administration** but still used by the U.S. Department of Transportation (USDOT).

**Precision Approach Path Indicator (PAPI)** - Provides visual approach slope guidance to aircraft during an approach. It is similar to a **Visual Approach Slope Indicator** but provides a sharper transition between the colored indicator lights.

**Precision Approach Procedure** - A standard *instrument approach* procedure in which an electronic *glide slope*/glide path is provided (e.g., *Instrument Landing System* and *Precision Approach Radar*).

**Precision Approach Radar (PAR)** - Navigational equipment located on the ground adjacent to the runway, consisting of one antenna, which scans the vertical plane, and a second antenna, which scans the horizontal plane. The PAR provides the controller with a picture of the descending aircraft in *azimuth*, distance, and elevation, permitting an accurate determination of the aircraft's alignment relative to the runway centerline and the *glide slope*.

**Profile** - The position of the aircraft during an approach or departure in terms of altitude above the runway and distance from the runway end.

**Propagation** - *Sound* propagation is the spreading or radiating of sound energy from the noise source. It usually involves a reduction in sound energy with increased distance from the source. Atmospheric conditions, terrain, natural objects, and manmade objects affect sound propagation.

**Public Use Airport** - An airport open to public use without prior permission, and without restrictions within the physical capabilities of the facility. It may or may not be publicly-owned.

**Record of Decision (ROD)** - As stated in CEQ regulation 40 CFR § 1505.2, the *Federal Aviation Administration's* findings, explanations, and related justifications after review of a Draft Environmental Assessment or *Environmental Impact Statement*. The ROD specifies the environmentally preferred alternative.

**Regional Jet** - A jet aircraft that falls within the air carrier aircraft category because of size and payload. For use in air commerce, the *regional jet* must be operated pursuant to an air carrier certificate pursuant to an air carrier certificate issued under 14 CFR Parts 119 and 121 of the *Federal Aviation Regulations*. (See 14 CFR § 119.3, for Domestic, Flag, and Supplemental operations). *Regional jets* are not operated as commuter aircraft pursuant to 14 CFR Part 135. *Regional jets* are typically jet aircraft, with approximately 35 to 90 seats. The next-generation *regional jets* are expected to seat 100 passengers.

**Reliever Airport** - An airport which, when certain criteria are met, relieves the aeronautical demand on a busier air carrier airport.

**Retrofitted Aircraft** - An aircraft originally certified as *Stage 2* that has been modified to meet *Stage 3* requirements. This includes both modification of engines or the replacement of engines to meet the *Stage 3* standard.

**Run-up** - A routine procedure for testing aircraft systems by running one or more engines at a high power setting. *Engine run-ups* are normally conducted by airline maintenance personnel checking an engine or other on board systems following maintenance.

**Runway End Identifier Lights (REIL)** - Two synchronized flashing lights, one on each side of the *runway threshold*, which identify the approach end of the runway.

**Runway Protection Zone (RPZ)** - An area, trapezoidal in shape and centered about the extended runway centerline, designated to enhance the protection of people and property on the ground. It begins 200 feet (60 M) beyond the end of the area usable for takeoff or landing. The RPZ dimensions are functions of the aircraft, type of operation, and visibility minimums. (Formerly known as the clear zone.)

**Runway Safety Area (RSA)** - A defined surface surrounding the runway prepared or suitable for reducing the risk or damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

**Runway Threshold** - The beginning of that portion of the runway usable for landing.

**Scoping** - Scoping is an early and open process for determining the scope or range of issues to be addressed in the *Environmental Impact Statement* and identifying the significant issues related to a proposed action. Issues important to the public and local, state, and Federal agencies are solicited through direct mailing, public notices, or meetings. Scoping is generally conducted before development of the *Environmental Impact Statement* scope of work.

**Single event** - One noise event. For many kinds of analysis, the *sound* from single events is expressed using the *Sound Exposure Level* metric.

**Slant-range distance** - The distance along a straight line between an aircraft and a point on the ground.

**Sound** - Sound is the result of vibration in the air. The vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward from the source in the same way as ripples do on water after a stone is thrown into it. The result of the movement is fluctuation in the normal atmospheric pressure or sound waves.

**Sound Exposure Level (SEL)** - A standardized measure of a *single (sound) event*, expressed in *A-weighted decibels*, that takes into account all sound above a specified threshold set at least ten *decibels* below the maximum level. All sound energy in the event is integrated over one second.

**Special Use Airspace** - Airspace of defined dimensions identified by an area on the earth's surface wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft *operations*, which are not part of those activities.

**Stage 2 Aircraft** - Aircraft that meet the noise levels prescribed by *Federal Aviation Regulations* 14 CFR Part 36, which are less stringent than those established for the quieter **Stage 3** designation. The Airport Noise and Capacity Act required the phase-out of all Stage 2 aircraft over 75,000 pounds by December 31, 1999, with the potential for case-by-case exceptions through the year 2003.

**Stage 3 Aircraft** - Aircraft that meet the most stringent noise levels set in *Federal Aviation Regulations* 14 CFR Part 36.

**Standard Instrument Departure Procedure (SID)** - A planned *Instrument Flight Rules air traffic control* departure procedure published for pilot use in graphic and textual form. SIDs provide transition from the terminal to the en route *air traffic control* structure.

**Statute Mile** - A measure of distance equal to 5,280 feet.

**Terminal Radar Approach Control (TRACON)** - A *Federal Aviation Administration Air Traffic Control* Facility which uses radar and two-way communication to provide separation of air traffic within a specified geographic area in the vicinity of one or more airports.

**Terminal Radar Service Area (TRSA)** - Airspace surrounding certain airports where *Air Traffic Control* provides radar *vectoring*, sequencing, and separation on a full-time basis for all *Instrument Flight Rules* and participating *Visual Flight Rules* aircraft.

**Time Above (TA)** - The amount of time that *sound* exceeds a given *decibel* level during a 24-hour period (e.g., time in minutes that the sound level is above 75 *decibels*).

**Thrust Settings** – Settings on an aircraft that control the power applied to the engines.

**Traffic Pattern** – The traffic flow prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are *upwind leg, crosswind leg, downwind leg, base leg, and final approach*.

**Turbojet** - An aircraft powered by a jet turbine engine. The term is customarily used in *air traffic control* for all aircraft, without propellers, that are powered by variants of jet engines, including turbofans.

**Turboprop** - Aircraft of this type are typically used by airlines on short routes between two relatively close locations.

**Upwind Leg** - A flight path parallel to the approach runway in the direction of approach.

**Vector** - Compass heading instructions issued by **Air Traffic Control** in providing navigational guidance by radar.

**Very High Frequency Omnidirectional Range (VOR) Station** - A ground-based radio navigation aid transmitting signals in all directions. A VOR provides **azimuth** guidance to pilots by reception of electronic signals.

**Very High Frequency Omnidirectional Range Station with Tactical Air Navigation (VORTAC)** - A navigational aid providing **VOR azimuth** and **Tactical Air Navigation distance measuring equipment** at one site.

**Visual Approach** - An approach conducted on an **Instrument Flight Rules** flight plan, which authorizes the pilot to proceed visually and clear of clouds to the airport.

**Visual Approach Slope Indicator (VASI)** - A visual aid for final approach to the **runway threshold**, consisting of two wing bars of lights on either side of the runway. Each bar produces a split beam of light - the upper segment is white, the lower is red.

**Visual Flight Rules (VFR)** - Rules and procedures specified in **Federal Aviation Regulations** 14 CFR Part 91 for aircraft operations under visual conditions. Aircraft operations under VFR are not generally under **positive control** by **Air Traffic Control**. The term VFR is also used in the U.S. to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate a type of flight plan.

**Visual Meteorological Conditions (VMC)** - Weather conditions expressed in terms of visibility, distance from cloud, and cloud ceiling equal to or greater than those specified in **Federal Aviation Regulations** 14 CFR Part 91.155 for aircraft operations under **Visual Flight Rules**.

**Yearly Day-Night Average Sound Level** - see **DNL**.

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