

Contra  
Costa  
County



**DRAFT  
ENVIRONMENTAL IMPACT REPORT**

**PROPOSED  
EAST CONTRA COSTA COUNTY AIRPORT**

State Clearinghouse #85042304  
County File #PW 85-43

September 1985

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## I - INTRODUCTION

### REPORT SCOPE

This report addresses the environmental impacts associated with the construction and use of a new general aviation airport to serve the people of eastern Contra Costa County, California. The project site is located in the southeastern corner of the county, approximately three miles south of the town of Byron (Figure 1). The plans that have been prepared for this project are designed to meet the aviation needs of the area over the next 20 years and to have a potential for expansion to meet even longer term needs. The County of Contra Costa is the lead agency for the project since it proposes to own and operate the airport.

Federal Aviation Administration criteria for environmental assessment reports, as established in FAA Order 1050.1C, "Policies and Procedures for Considering Environmental Impacts," Appendix 6, and in FAA Order 5050.4, "Airport Environmental Handbook," have been followed in the preparation of this document. Guidelines of the California Environmental Quality Act of 1970, as amended, have also been followed. The Final Environmental Impact Report (this draft document plus comments received and the responses thereto) will become an Environmental Assessment for federal review purposes.

An Initial Study of Environmental Impacts was prepared and circulated through the State Office of Planning and Research together with a Notice of Preparation of this environmental document. The project has been assigned Clearinghouse number 85042304.

A formal scoping meeting open to the public was held on May 2, 1985, to begin the environmental document preparation process. Thirteen people attended. In addition, 12 items of correspondence were received, mostly from public agencies.

## STATUS OF PROJECT

This draft document is the second report prepared for the East Contra Costa County Airport Site Study. The first volume was titled Phase I: Site Identification and Evaluation and dated October 1984.

The study is sponsored by the County of Contra Costa. Funding support has been provided by an airport planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982.

The principal agencies that must review and approve the overall project proposal before it can be implemented include:

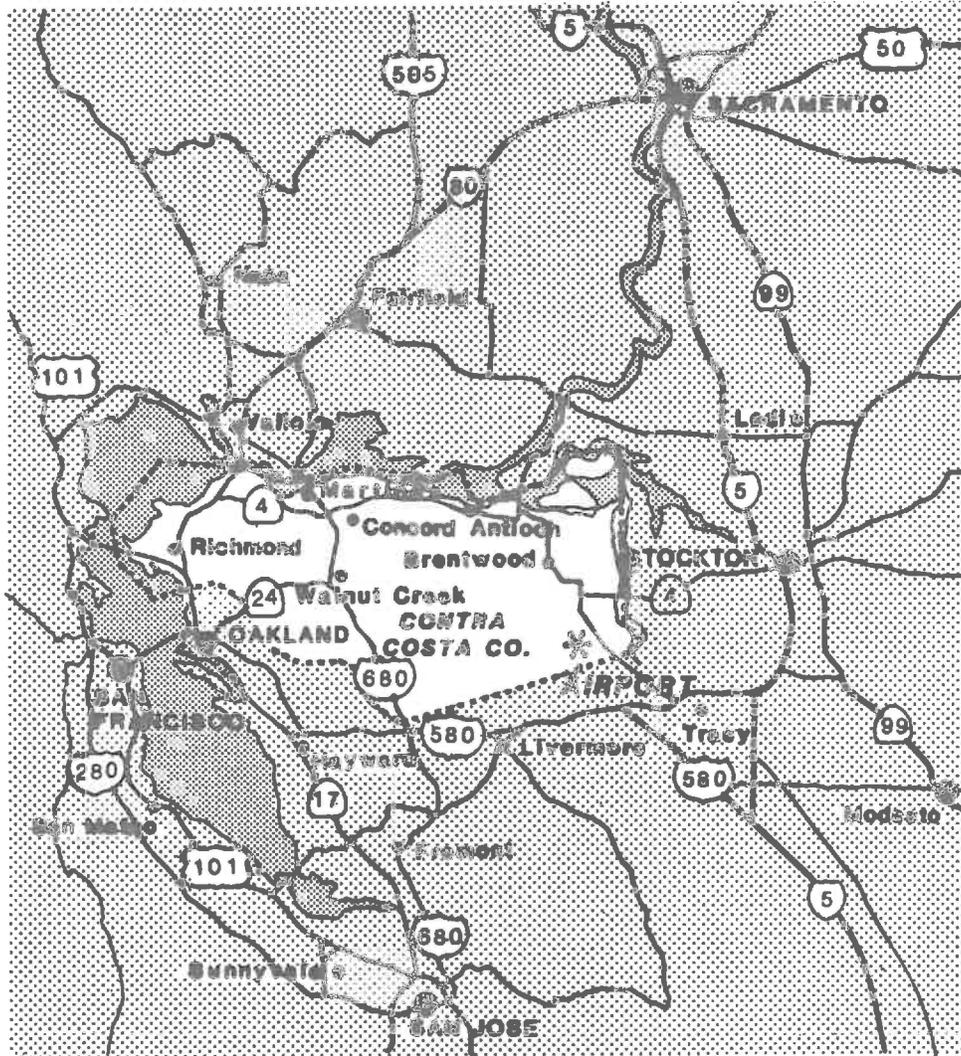
- o County of Contra Costa.
- o Contra Costa County Airport Land Use Commission.
- o California Department of Transportation Division of Aeronautics.
- o Federal Aviation Administration.

## REPORT ORGANIZATION

The content of this report is organized in accordance with federal, state, and county guidelines.

- o A required summary of the proposed project and its impacts is presented in Chapter II.
- o Chapter III provides background setting and historical information regarding the project. It also sets forth the plan drawings and a description of the project and the proposed stages of its implementation.
- o Chapter V contains the environmental impact analysis. The setting, impacts and mitigation measures are described with regard to each major category of environmental impact.

- o Other environmental issues required to be considered, including the issue of growth inducement, are assessed in Chapter VI.
- o Project alternatives are discussed in Chapter VII. Reference is made to the Phase One report for a more complete evaluation of alternative sites. This report is hereby incorporated by reference.
- o Report references and individuals contacted during the environmental study are listed in Chapter VIII along with the report authors.
- o Miscellaneous detailed information pertinent to the project is located in the appendices.



AVIATION PLANNING SERVICES



HODGES & SHUTT

**SITE LOCATION MAP**

**Figure 1**

## II - SUMMARY

### PROJECT PURPOSE AND DESCRIPTION

The proposed project is the development of a new full-service general aviation airport at a site adjacent to the existing Byron Airpark located in southeastern Contra Costa County. The new airport would be owned and operated by the County. The Byron site was selected for further evaluation by the County Board of Supervisors at the conclusion of the site identification and evaluation phase of the present study. No further commitment has been made to the Byron site or the proposed plan beyond the effort associated with the site planning and environmental assessment.

A master plan, including a set of plan drawings, has been prepared for the proposed airport. These drawings are presented in Chapter III. Implementation of the plan is proposed to take place in stages over the next 20 years as the need arises for additional facilities to serve the East County. The potential for expansion of the airport beyond the projected 20-year needs is accommodated in the plan.

The airport boundaries would encompass some 1,270 acres to be acquired in fee. This property would include the Byron Airpark (2 parcels) plus all or part of 10 other parcels. The development portion of the site would cover only some 230 acres of the total. The remainder would include runway clear zones, nature preserve areas (to protect vernal pools situated on the site), and excess lands acquired to minimize the splitting of parcels.

Because of wind conditions, two new runways would be required on the site. The longer one would be 4,350-feet long and oriented northwest - southeast; it would have an instrument approach from the southeast. The secondary runway, 3,750-feet long, is proposed to be aligned east-northeast - west-southwest. Both runways would be lighted for nighttime use.

Aircraft parking and related building area facilities (e.g., airport terminal building and fixed base operations facilities) are proposed to be located in the center of the "V" formed by the two runways. Space to accommodate some 170 based aircraft would be provided initially. The planned capacity is approximately 540 based aircraft. About 40% of the total spaces would be hangar units. The planned capacity would provide more than the projected 20-year needs; a maximum demand of 400-based aircraft is forecasted for 2005.

In addition to the airport site proper, easements would be obtained on adjoining land to protect against the development of land uses incompatible with airport activities. Conservation easements, encompassing some 1,720 acres located primarily within the runway approach zones, would preclude additional residential development and also contain other provisions regarding noise impacts, the acceptable height of structures, etc. The latter provisions would constitute the basis of aviation easements proposed to be obtained on other property within about two miles of the airport boundaries. The aviation easements are considered comparatively low priority and generally would be sought only in conjunction with proposed subdivision or development of the properties involved.

#### SIGNIFICANT ENVIRONMENTAL IMPACTS

A major objective of the site planning process was to minimize the adverse environmental impacts of the project. Certain impacts would nevertheless be unavoidable if the project is to be implemented. Measures intended to mitigate these impacts are incorporated into the project to the extent practical. The most significant impacts would potentially occur with regard to the following environmental categories listed below. Additional recommended mitigation measures are noted.

#### Geology and Soils

Impacts: Full development of the airport over a 20-year time span would entail moving some 500,000 cubic yards of dirt. The initial phase of construction would involve nearly half of the total, including lowering of the hill in the

center of the site by as much as 25 feet. The engineering design of the project is expected to balance the cut and fill volumes. An unknown potential for liquefaction resulting from seismic shaking exists at the site.

Mitigation:

- o All fill areas would be compacted as required by federal, state, and local standards to prevent slippage and erosion.
- o Because of the clayey nature of the soils on much of the site, special design measures may be required to avoid shrink-swell damage to the pavement. The engineer should work with a soils and materials expert when designing the project.

Hydrology

Impacts: Construction of the project would necessitate changes to both the natural and man-made hydrological features on the site. By shifting the major development area of the airport southeastward from the present Byron Airpark site, the project minimizes the disruption to Brushy Creek and the vernal pools. The tradeoff to this layout is the requirement that some 2,800 feet of the Byron-Bethany Irrigation District 45 Canal be placed in an underground pipe beneath the runways. The project will result in increased runoff of rain water.

Mitigation:

- o Construction work should be coordinated with the Irrigation District to avoid impairment of the canal's function or capacity.
- o Establishment of on-site ponds to hold excess runoff water should be considered.
- o Final project designs should be submitted to the Army Corps of Engineers for review to assure that any concerns it may have regarding Brushy Creek are satisfied.

## Public Utilities and Services

Impacts: Adequate systems for water supply and wastewater disposal are currently not available on or close to the site. The project proposes that water be obtained from the Byron-Bethany Irrigation District canal and treated on site. Wastewater also is proposed to be treated on site. Fire protection at the airport would be within the jurisdiction of the Byron Fire Protection District.

### Mitigation:

- o When warranted by airport activity levels, establishment of an airport-operated fire station on the airport should be considered.

## Noise

Impacts: No existing residences are located within the 55-dBA Community Noise Equivalent Level (CNEL) contour projected for either 1990 or 2005. This, however, does not imply that the airport would have no noise impacts even though 55-CNEL is quite conservative as a noise compatibility standard. If the airport is built, aircraft would overfly many of the approximately 20 residences located within a mile of the site. How often these events would occur and how loud they would be would vary from place to place. Also, the extent to which people are annoyed by these noise events would vary from individual to individual.

By means of the proposed conservation and aviation easements, the project seeks to keep particularly noise-sensitive land uses and people from locating in the area in the future.

### Mitigation:

- o Implementation of the land use compatibility measures listed above should be considered.

## Health and Safety

Impacts: Potential hazards to aircraft in flight were carefully considered in the planning of the proposed airport. Specific concerns are the high terrain and major transmission lines west of the site. An analysis conducted as part of the present study indicates that these obstacles are located far enough from the airport that they would not constitute major hazards, but that installation of obstruction lights may be required. Also, the need to eliminate some of the wind turbines proposed for land adjoining the airport site arises because of the airspace hazards they would constitute.

The airport would pose insignificant hazards to people on the ground in the area. No development presently exists in the most critical areas, the runway approach zones. The extensive property acquisition plus the proposed conservation easements would preclude future development in these areas.

### Mitigation:

- o Consideration should be given to implementation of the compatibility measures listed in the land use section above.

## Construction Activities

Impacts: In addition to the above long-term impacts of the proposed project, short-term impacts would occur while construction is in progress. These impacts potentially include: erosion, blowing dust, noise, safety hazards, traffic disruption, and effects on the irrigation canal service.

### Mitigation:

- o Construction should be undertaken during the dry season.
- o All cut and fill areas should be compacted according to applicable standards.

- o Vegetation should promptly be reestablished on areas of exposed soil.
- o Exposed soil areas should frequently be moistened during construction.
- o To the extent feasible, work should be done during daytime on weekdays.
- o Coordination should be established with the operators of pipelines across the site so that the pipe locations can be adequately marked.
- o Flagmen should be stationed at critical points on haul routes.
- o Temporary closure of the existing airport runways should be clearly marked with X's.

#### OTHER ISSUES

##### Growth-Inducing Impacts

The proposed airport has the potential for becoming a focal point that would attract unwanted development in the surrounding area. This growth-inducing tendency is expected to be small and can be held in check by:

- o Acquisition of conservation easements on nearby land.
- o Not allowing nonaviation uses on the site that would in turn attract other development nearby.
- o Providing water and wastewater system capacity for aviation-related uses only.
- o Adherence to or strengthening of present land use development controls.
- o Adoption of an Airport Land Use Compatibility Plan by the ALUC.

### Areas of Controversy

The project has generated limited controversy. During the site selection process, opposition was expressed to all three sites strongly considered -- East Oakley, Hillside, and Byron. The Hillside site was the most strongly opposed. Only the Byron site received significant support.

The major concerns raised about the Byron site have been with regard to the vernal pools, the proposed wind farms, and the possible need to acquire residences. These concerns have been taken into account in the proposed plan. A small percentage owners of land adjacent to the Byron site continue to oppose development of a county airport there.

### III - PROJECT DESCRIPTION

#### GENERAL DESCRIPTION

The project is the proposed construction over the next 20 years of a new public-use, general aviation airport to be located in the southeastern part of Contra Costa County. The airport would be developed, owned, and operated by the county. The airport's principal role would be to provide general aviation services to the growing population of eastern Contra Costa County.

Fee simple acquisition of approximately 1,270 acres of land would be required. This land would encompass the planned airfield, clear zones, aircraft parking aprons, and building areas, plus provide space for expansion beyond the 20-year time frame. Additional land would be affected by approach protection easements that would restrict certain land uses and limit the heights of structures.

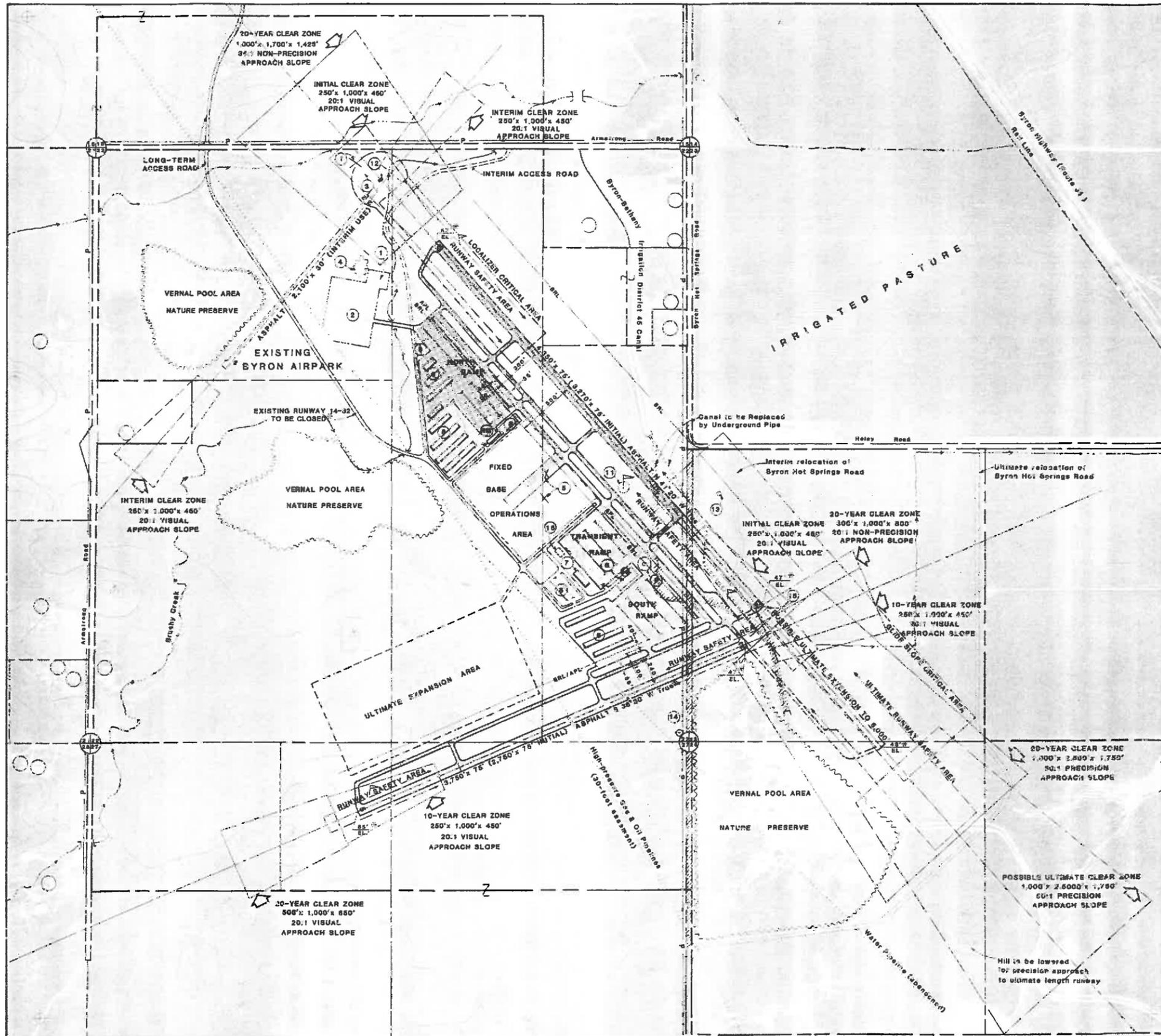
Two intersecting runways would be built, the longer one 4,350 feet long. Initial development would provide space for about 150 based aircraft. The potential demand in 20 years is projected at 400 based aircraft.

Figure 2 illustrates the proposed Airport Layout Plan. The Approach Protection Plan and data regarding the airport are presented in Figure 3. Details of the airport airspace, including profile views of the approaches, are depicted in Figure 4.

#### REGIONAL SETTING

##### Topography

Topography divides Contra Costa County into three sections: the western portion along San Pablo and San Francisco Bays with Richmond as the major city; the central area including the cities of Martinez (the County Seat), Concord, Walnut Creek, Orinda, and San Ramon among others; and the eastern part extending from the Mount Diablo Range to the San Joaquin Delta country including the



DRAWING LEGEND	
AIRFIELD PAVEMENT	---
INITIAL DEVELOPMENT	---
10 - YEAR DEVELOPMENT	---
20 - YEAR DEVELOPMENT	---
ULTIMATE DEVELOPMENT	---
OTHER PAVEMENT	---
INITIAL DEVELOPMENT	---
10 - YEAR DEVELOPMENT	---
20 - YEAR DEVELOPMENT	---
INTERIM USE PAVEMENT	---
AIRPORT PROPERTY LINE	---
EXISTING PARCEL LINES	---
LEASE LINES	---
BUILDING RESTRICTION LINE	BRL
AIRCRAFT PARKING LIMIT	APL
EXISTING TOPOGRAPHIC CONTOURS	100
EXISTING WATER COURSE	---
UNDERGROUND PIPE	---
LOCAL POWER LINE	---
FUTURE BUILDINGS	---
EXISTING BUILDINGS TO BE REMOVED	---
OTHER EXISTING FACILITIES TO BE REMOVED	---
EXISTING RESIDENCES	---
VEHICLE GATE	---
WIND CONES	---
AIRPORT REFERENCE POINT	---
SECTION CORNER	---

BUILDING AND FACILITY LEGEND	
1	LARGE HANGAR (EXISTING)
2	INDIVIDUAL T-HANGARS (EXISTING)
3	FUEL ISLAND (EXISTING - TO BE REMOVED)
4	POND (EXISTING)
5	BARN (EXISTING - TO BE REMOVED)
6	T-HANGARS
7	TERMINAL BUILDING
8	AUTO PARKING
9	FUEL ISLAND
10	WASH RACK & MAINTENANCE SHELTER
11	SEGMENTED CIRCLE
12	LOCALIZER ANTENNA
13	GLIDE SLOPE ANTENNA
14	POSSIBLE VOR LOCATION
15	RUNWAY END IDENTIFIER LIGHTS
16	AIR TRAFFIC CONTROL TOWER SITE

SEE NOTE ON SHEET 2

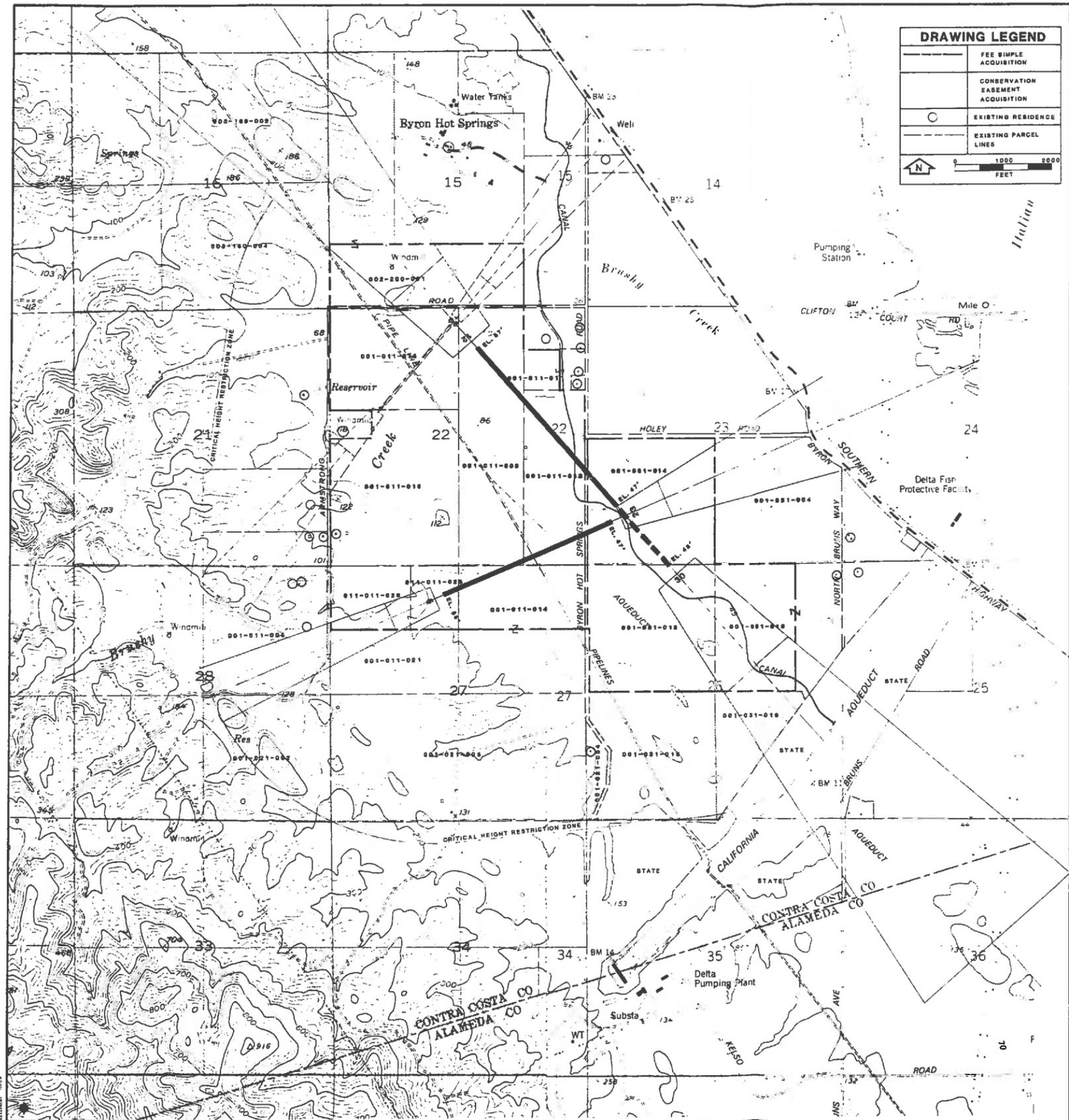
0 400 800 FEET

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL AVIATION ADMINISTRATION  
 WESTERN DIVISION

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 SUBMITTED BY:  
 COUNTY OF CONTRA COSTA  
 DTP/RC/ED DATE: \_\_\_\_\_

NO.	REVISION	BY	APP'D	DATE	MARKS
<b>EAST CONTRA COSTA COUNTY AIRPORT</b>					
<b>BYRON, CALIFORNIA</b>					
<b>AIRPORT LAYOUT PLAN</b>					
<b>HODGES &amp; SHUTT</b>			AIRPORT CONSULTANTS & ENGINEERS		
AVIATION PLANNING SERVICES			Santa Rosa, California		
DESIGNED BY: KAS	APPROVED BY:			DATE: SEPT 1988	
DRAWN BY: SJC	CHECKED BY:	SCALE: 1" = 400'			SHEET: 1 OF 3

Figure 2



### RUNWAY DATA

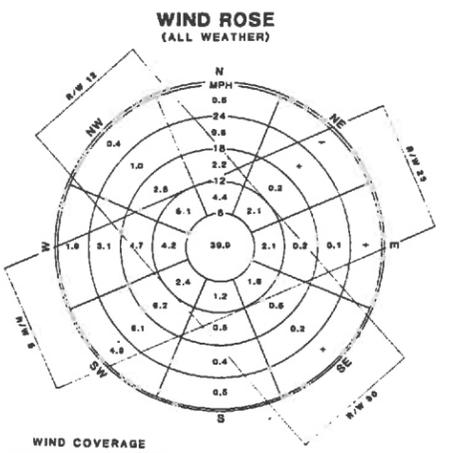
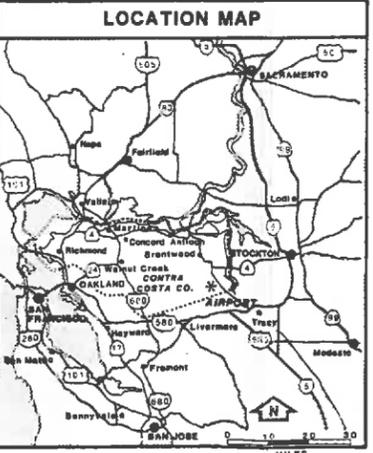
	RUNWAY 12 - 30			RUNWAY 5 - 23		RUNWAY 4 - 22	
	INITIAL	20-YEAR	ULTIMATE	10-YEAR	20-YEAR	INITIAL	10-YEAR
PHYSICAL LENGTH AND WIDTH	3270' x 76'	4880' x 75'	6000' x 74'	2760' x 76'	3780' x 78'	3100' x 80'	
EFFECTIVE GRADIENT	0.2%	0.2%	0.2%	0.3%	1.0%	0.8%	
PAVEMENT STRENGTH (1000psi)	12.8/-	12.8/-	48/80	12.8/-	12.8/-	12.8/-	
INSTRUMENT RUNWAY	NO	YES	YES	NO	YES	NO	
RUNWAY CLASSIFICATION	SAB. UTILITY I	GEN. UTILITY II	TRANSPORT	SAB. UTILITY I	GEN. UTILITY I	SAB. UTILITY I	
APPROACHES	Type	VIS/VIS	NON-PREC/PREC	NON-PREC/PREC	VIS/VIS	VIS/NO-PREC	VIS/VIS
	Required Slope	20:1/20:1	20:1/24:1	24:1/20:1	20:1/20:1	20:1/20:1	20:1/20:1
LANDING AIDS	Clear Slope	30:1/20:1	30:1/24:1	28:1/25:1	28:1/25:1	20:1/25:1	
	12/5/4	NONE	REIL/LOC/SS	REIL/LOC/SS	NONE	NONE	NONE
CRITICAL AIRCRAFT	Runway Length	LT. TWIN	SM. BIZJET	LG. BIZJET	LT. TWIN	LT. TWIN	LT. TWIN
	Pavement Strength	LT. TWIN	SM. BIZJET	LG. BIZJET	LT. TWIN	LT. TWIN	LT. TWIN
RUNWAY LIGHTING	MED. INTENSITY			MED. INTENSITY		REFLECTORS	
TAXIWAY LIGHTING	REFLECTORS			MED. INTENSITY		REFLECTORS	
RUNWAY MARKING	SABIC			PRECISION		SABIC	

\*After obstructions are removed

### AIRPORT DATA

	INITIAL	20-YEAR	ULTIMATE	
AIRPORT ELEVATION (MSL)	67'	88'	88'	
AIRPORT REFERENCE POINT	Lat.	37°48'41" N	SAME	SAME
	Long.	122°27'28" W	SAME	SAME
MEAN MAX. TEMP., HOTTEST MONTH	88°	SAME	SAME	
AIRPORT ROLE ACREAGE	UTILITY	UTILITY	TRANSPORT	
NAVIGATIONAL AIDS	NONE	VOR	VOR	
AIRPORT ACREAGE	Fee	1,870	SAME	SAME
	Easement	1,720	SAME	SAME
BASED AIRCRAFT SPACES	County Tie-downs	90	240	240*
	County Hanger Units	90	200	200*
	FBO Area	20	100	100*
TRANSIENT AIRCRAFT SPACES	20	80	80	

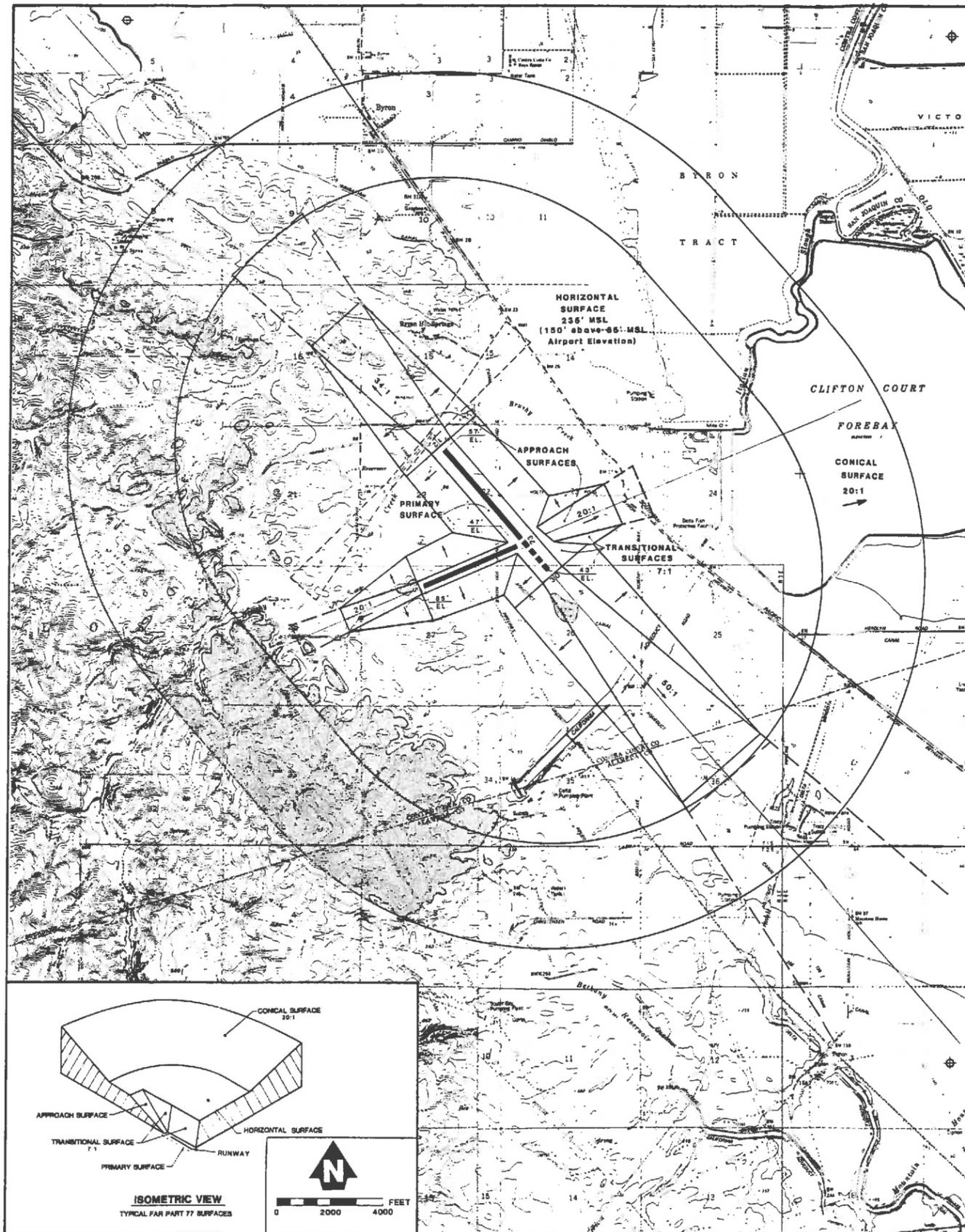
\*Including existing individual units



- ### NOTES
- The alignment of runway 5-23 could be altered slightly based upon wind data to be gathered on site.
  - Runway and elevations are estimated and may change when engineering design of the project is completed.
  - Critical Height Restriction Zone: The height of structures shall not exceed FAR Part 77 limits within the approach zone and indicated portion of the horizontal zone.
  - Conservation Easements: No additional residential development shall be permitted in these areas.
  - On an interim basis, existing Runway 12-30 would be used as a taxiway connecting the existing Runway 4-22 and hanger area with the new facilities. In the long term it would become part of the airport access road.

NO.	REVISION	BY	APP'D	DATE	MARKS
<b>EAST CONTRA COSTA COUNTY AIRPORT</b>					
<b>BYRON, CALIFORNIA</b>					
<b>APPROACH PROTECTION PLAN AND AIRPORT DATA SHEET</b>					
<b>HODGES &amp; SHUTT</b>			AIRPORT CONSULTANTS & ENGINEERS		
AVIATION PLANNING SERVICES			Santa Rosa, California		
DESIGNED BY: KAS	APPROVED BY:		DATE: SEPT 1986		
DRAWN BY: BJD	CHECKED BY:	SCALE: AS SHOWN	SHEET 2 OF 3		

Figure 3

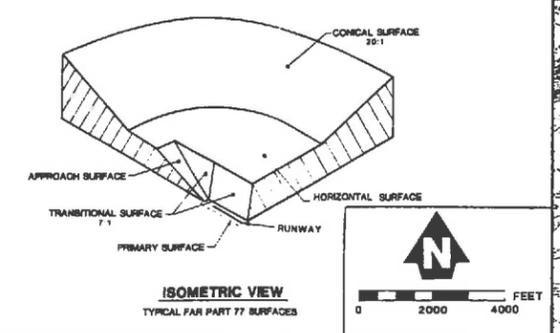
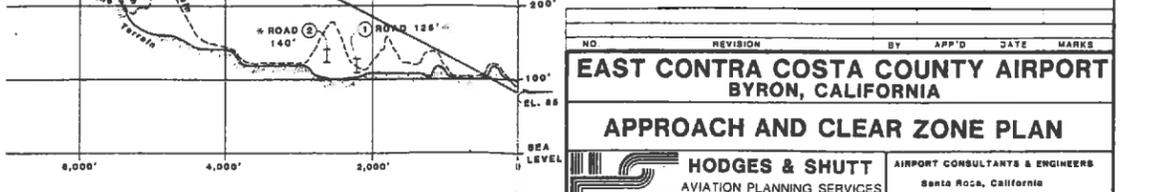
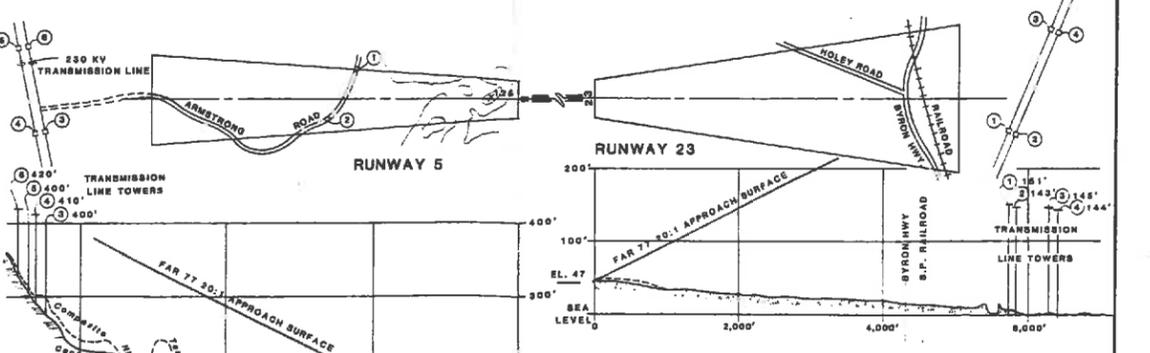
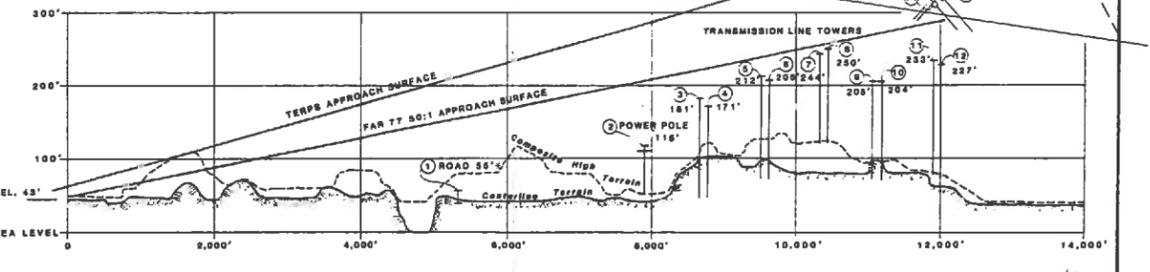
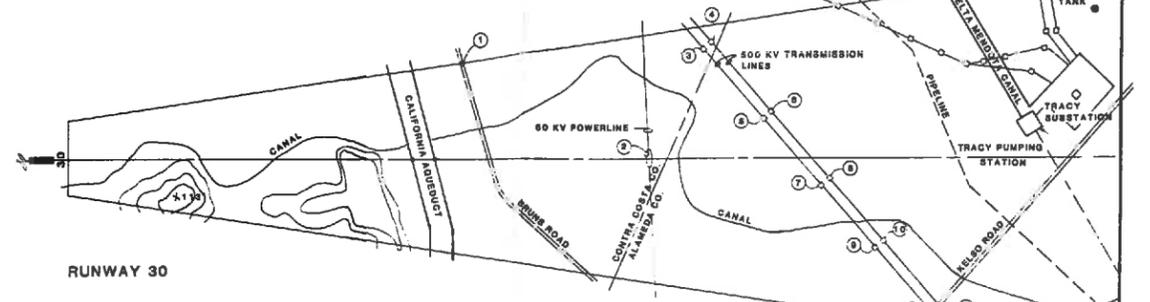
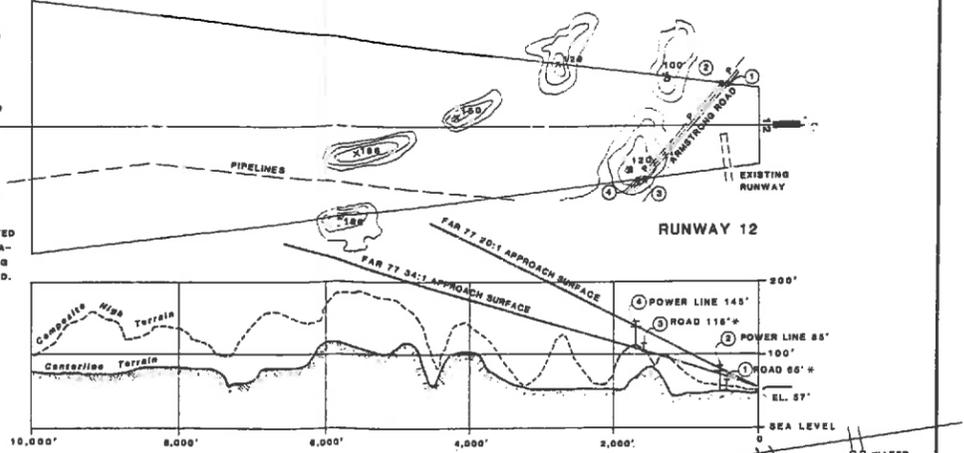


**LEGEND**

- GROUND PENETRATES INDICATED FAR PART 77 SURFACE
- OBJECT PENETRATES INDICATED FAR PART 77 SURFACE
- OBJECT FALLS BELOW INDICATED FAR PART 77 SURFACE
- + 16 FEET VERTICAL CLEARANCE ADDED TO ROAD ELEVATION

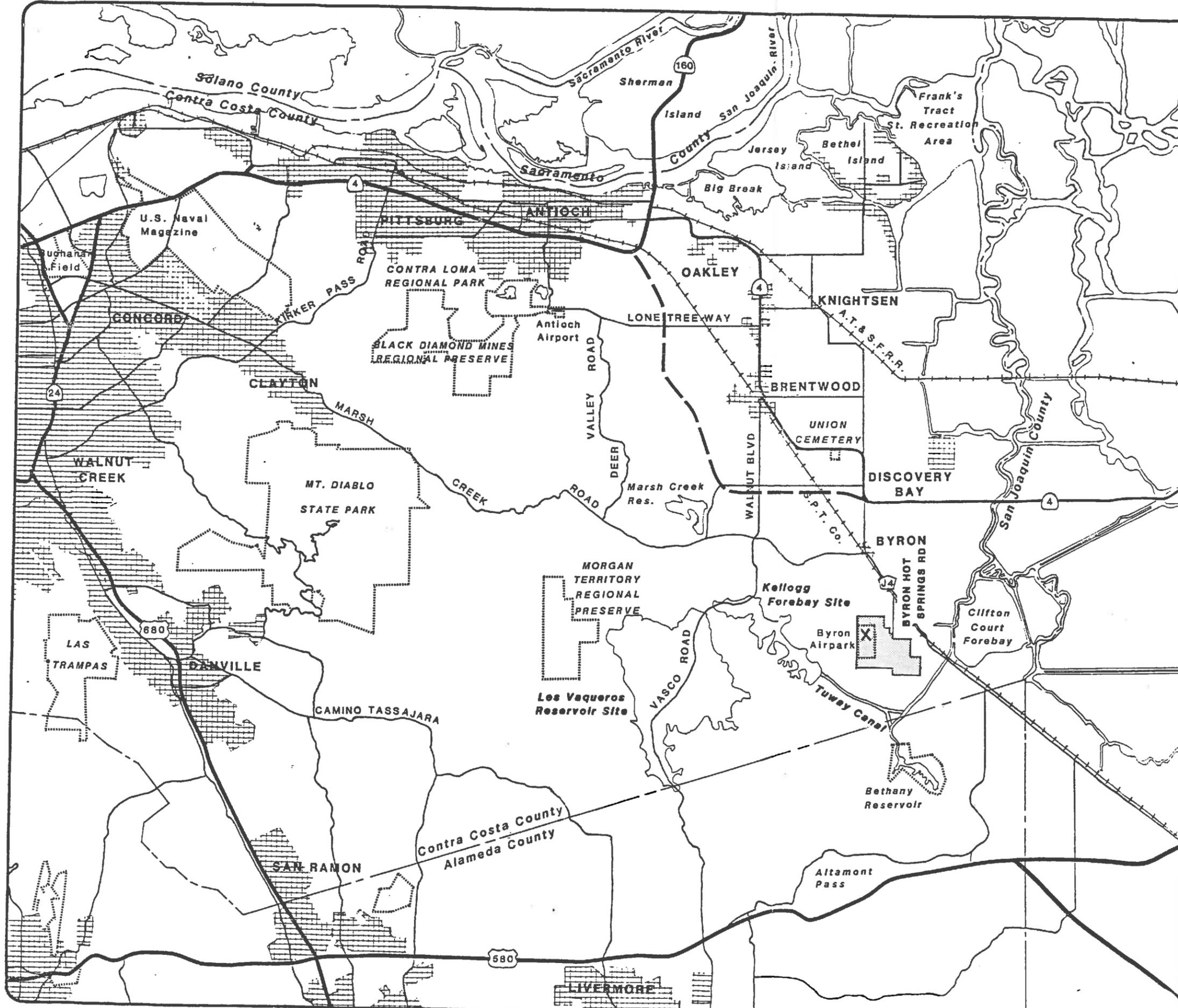
**NOTES:**

- \* ALL ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (MSL)
- \* ALL SURFACES ARE BASED ON ESTIMATED RUNWAY END ELEVATIONS. THESE ELEVATIONS MAY CHANGE WHEN ENGINEERING DESIGN OF THE PROJECT IS COMPLETED.



NO.	REVISION	BY	APP'D	DATE	MARKS
<b>EAST CONTRA COSTA COUNTY AIRPORT BYRON, CALIFORNIA</b>					
<b>APPROACH AND CLEAR ZONE PLAN</b>					
<b>HODGES &amp; SHUTT</b> AVIATION PLANNING SERVICES			AIRPORT CONSULTANTS & ENGINEERS Santa Rosa, California		
DESIGNED BY: KAS		APPROVED BY:		DATE: SEPT 1988	
DRAWN BY: BW/SJC		CHECKED BY:		SCALE: AS SHOWN	
				SHEET 3 OF 3	

Figure 4



**LEGEND**

-  PROPOSED AIRPORT SITE
-  POTENTIAL ROUTE 4 FREEWAY EXTENSION



**PROJECT AREA MAP**



Figure 5

communities of Pittsburg, Antioch, Brentwood, and Byron. Although most of the county's population is currently concentrated in the western and central sectors, the eastern section comprises nearly half of the county's land area. The east county comprises the study area for the present project (Figure 5).

Elevations in the eastern portion of the county range from 3,849-feet atop Mount Diablo to as much as 20-feet below sea level on some of the delta islands protected by levees. The highest point in the southeastern area is approximately 1,300-feet MSL just under 5 miles southwest of the airport site.

### Land Use

Although heavy industry has long been established in the Pittsburg-Antioch area along the San Joaquin River, most of the rest of eastern Contra Costa County has historically been agricultural in character. Intensively farmed cropland covers the flat delta area while open grazing land prevails among the hills farther along the county's eastern edge and south. Changes are occurring, however. Although agriculture continues to cover a wide area, urbanization is rapidly moving eastward from Concord, along the Highway 4 corridor on the county's northern edge to Antioch, Oakley, and Brentwood. In time, most of the northeastern portion of the county north of Brentwood (except flood-prone areas) is expected to be urban.

The southeastern corner of the county likely will remain mostly rural for the foreseeable future. Currently the major land use trend in this area is the development of numerous wind-turbine farms among the hills along the southern county boundary. Two potential future developments also could greatly affect the entire southeast county: extension of the freeway portion of Highway 4 along a new alignment from Antioch to the Byron Highway intersection southeast of Brentwood (a distinct possibility, but probably not until the end of the century); and construction of a major reservoir -- Los Vaqueros -- and related facilities in the hills along Vasco Road (still a much debated subject).

## Population

The estimated population of Contra Costa County as of January 1, 1985, was 703,400 (DOF-1985). The proportion in the eastern section has been gradually increasing and as of 1980 had surpassed 17%. The majority of this population resides in the incorporated cities of Antioch and Pittsburg on the county's north side. Other population centers include the city of Brentwood, and the unincorporated communities of Oakley and Discovery Bay.

The eastern section will grow more rapidly than other parts of the county according to Association of Bay Area Governments forecasts. The data indicates that 24% of the population -- 203,700 people -- will reside east of Mount Diablo by the year 2000. Antioch and Pittsburg are projected to have a combined population of 136,400 by then. The city of Brentwood with 23,600 people (compared to only 5,200 in 1985) and the unincorporated east county with 43,700 account for the remainder.

## Climate

The climate of eastern Contra Costa County consists of summers that are typically hot and dry, and winters that are mild with occasional rain. The southeastern area is generally hotter and drier than the other areas. July and August are the hottest months with a mean-maximum temperature of 95°F. around Byron. Freezing temperatures in winter are infrequent. Rainfall varies from area to area and is estimated to average about 11-inches annually in the project site vicinity.

Summer stratus and winter fog are common phenomena, although the occurrence is somewhat less in the southeast than in the northeast. The southeastern area is noted for strong winds spilling over from the Altamont Pass (see Chapter IV for further discussion).

## AVIATION ACTIVITY

### Historical

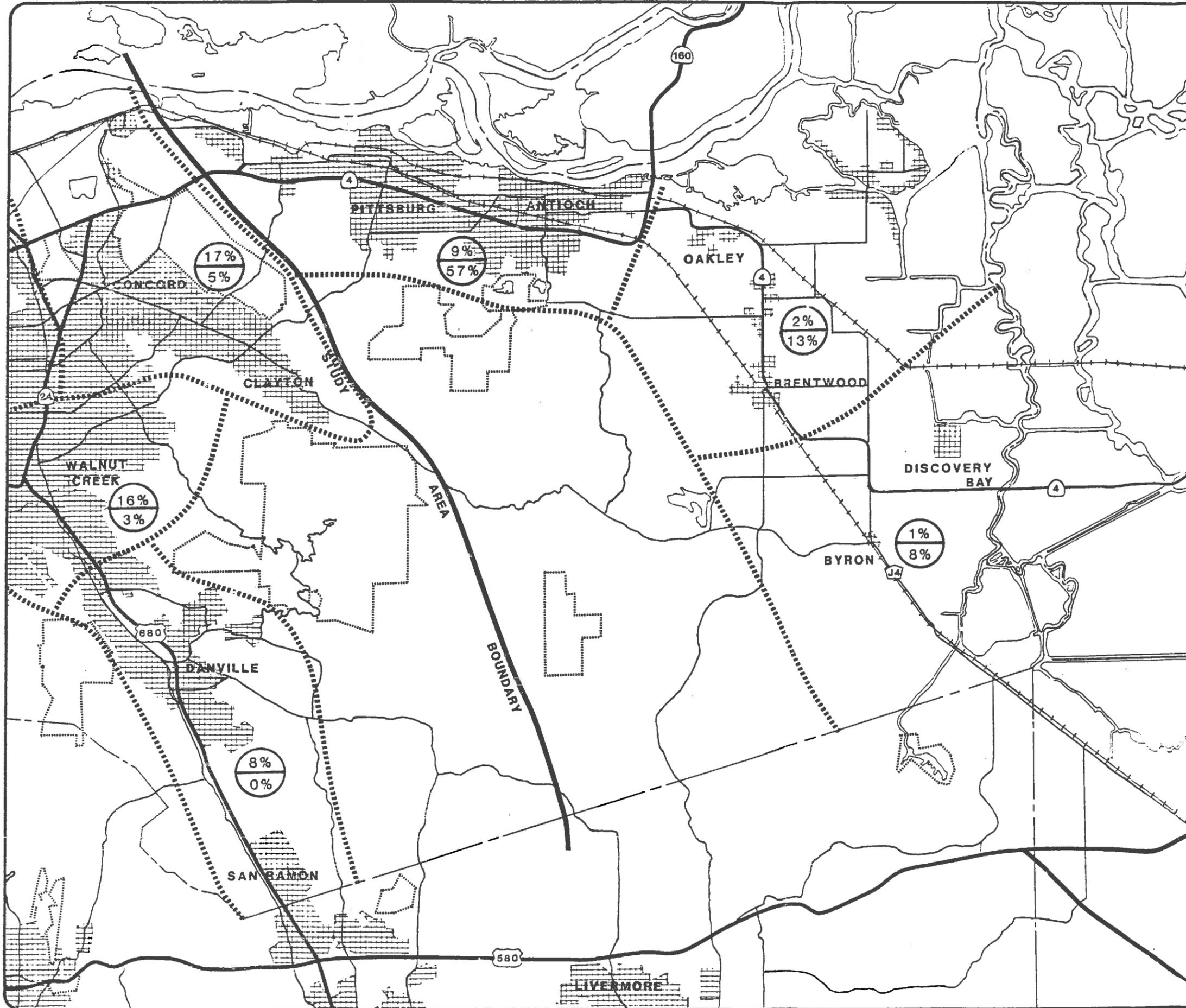
Contra Costa County airports, as with airports throughout the Bay Area, have historically followed a pattern of continuous growth. Twenty years ago, the county's two principal airports, privately-owned Antioch Airport and county-owned Buchanan Field, were home for about 40 and 220 aircraft, respectively. Today the figures are about 75 and 620; some 75 more aircraft are based at Byron Airpark and the smaller landing strips in the east county.

As might be expected, the predominance of Buchanan Field is reflected in the distribution of aircraft owners (Figure 6). Most people owning an aircraft based in the county, reside or work in the central county. Antioch and Byron airports draw their users most heavily from Antioch and Pittsburg. Only some 3% of Buchanan's airport owners come from the east county.

### Projected

The population of the area an airport serves is a principal indicator of the number of aircraft likely to be based there. Other factors include the community's remoteness, the nature of its economy, and the facilities and services available at the airport compared to other nearby airports. For all of Contra Costa County, there currently are about 1.07 based aircraft per 1,000 people. Counting only east county airports and population, the ratio is estimated to be a bit less, about 1.01. By comparison, the ratio in the nine-county Bay Area region was 1.25 in 1980 (California Division of Aeronautics - 1981).

Division of Aeronautics (1981) and Metropolitan Transportation Commission (1984) forecasts anticipate the regional ratios to increase to about 1.7 to 1.9 by the year 2000. Applying these ratios to the projected eastern Contra Costa County population indicates that in excess of 350 aircraft could be based in the area if facilities are provided. Maintenance of the current ownership ratio would result in about 210 based aircraft. In either case, a few of these aircraft would probably remain at private strips.



### LEGEND

**OTHER AREAS:**

MARTINEZ/PLEASANT HILL	13%/5%
LAFAYETTE/ORINDA/MORAGA	12%/2%
WESTERN CONTRA COSTA COUNTY	6%/0%
OAKLAND/BERKELEY	6%/0%
OTHER ALAMEDA COUNTY	1%/2%
SOLANO COUNTY	2%/0%
SAN FRANCISCO/SAN JOSE	3%/3%
OTHER CALIFORNIA	2%/2%
OUT OF STATE	2%/0%

**SOURCE:** Data based on 665 owner addresses listed in Contra Costa County Assessor's records for aircraft based in the county as of April 1984.

**KEY:**

-  — All aircraft based in county.
-  — Aircraft based at Antioch Airport or Byron Airpark.



### AIRCRAFT OWNERS DISTRIBUTION



Figure 6

For the near-term development needs, it is more realistic to consider the number of aircraft that would need to be accommodated if all the planes from Antioch and Byron airports plus a few from Buchanan and private strips were to be based at the new facility. This assumption equates to about 150 aircraft, including some increment of near-term growth.

Although these based aircraft forecasts provide the starting point for design of the airport, their accuracy over the long run is not particularly important. It can be assumed that, even if the forecasted activity levels are not reached in the year stated, they would be at some later date.

For the purposes of environmental impact assessment, the highest reasonably likely activity levels are used. These high-forecast based aircraft numbers and the corresponding aircraft operations projections are as follows:

	<u>1990</u>	<u>2005</u>
Based Aircraft	150	400
Aircraft Operations	45,000	160,000

#### THE SITE

The site for the proposed airport is located in the southeastern corner of Contra Costa County, 3.0 miles south of the town of Byron and 2.5 miles north of the Alameda County line. The nearest major road, the Byron Highway (County Route J4) passes 1.0 mile northeast. Byron Hot Springs Road runs through the site on a north-south alignment and Armstrong Road skirts the northern and western edges. The existing small, privately-owned Byron Airpark occupies the site's northwest corner.

Most of the area is open grassland. Some 20 rural residences are spread around the perimeter of the site. Other significant development in the immediate vicinity includes: a major irrigation canal flowing northward across the eastern part of the site; high-pressure gas and petroleum pipelines running diagonally

through the middle of the site; several high-voltage transmission lines within 3.0 miles east, west, and south; Clifton Court Forebay, the beginning point of the California State Water Project, 2.0 miles east; and a railroad line running parallel to the Byron Highway. Also of major significance to the area are numerous wind turbines situated among the hills as close as 1 mile south of the site. Proposals for development of additional wind turbines within 1 mile to the southeast and west have been important considerations in planning of the airport layout.

Lying on the eastern edge of the Diablo Range, the site's topography consists of low rolling hills, leveling out into flat, irrigated pastures on the east side. Elevations range from 40 feet to 140 feet above mean sea level, averaging about 50 feet. The hills, 2.5 miles to the west, range from 400 feet to above 900 feet elevation. One of the transmission lines runs along the top of the ridge at about this distance from the site.

#### STAGES OF DEVELOPMENT

The project as described and analysed herein covers the development of the airport that is anticipated to take place over the next 20 years. Development would occur in stages throughout this time period. The initial construction period is considered to extend over approximately five years. Certain elements of the airport's potential ultimate expansion, beyond the 20-year time frame, are indicated on the proposed plan, but the impacts of this expansion are not assessed in this report.

Initially and throughout the 20-year planning period, the airport would be a general utility facility. It would be used predominantly by light, single-engine, propeller-driven airplanes, with some twin-engine aircraft plus occasional use by small business jets. The ultimate development potential outlined on the plan would place the airport at the lower end of the transport class. This expansion would enable the airport to be used by somewhat larger business jets, but still would not be sufficient for large, airline-type jet aircraft.

### Short Term

The first phase of work would involve construction of the northwestern three-quarters of the primary runway (12-30), parking for up to 170 aircraft (including the existing individual hangars and some FBO area spaces), and an access road. Space for a fixed base operation leasehold would be established. The existing northeast - southwest runway (4-22) at the Byron Airpark would remain in use during this initial development period. The existing northwest - southeast runway (14-32) would serve as an interim taxiway connecting to the new facilities.

### Intermediate

During the next stage of development extending roughly from 1990 to 1995, a new northeast - southwest runway (5-23), initially 2,750 feet in length, would be constructed. The actual orientation of this runway could vary slightly from that shown on the plan, depending upon the outcome of wind studies to be conducted prior to this phase of construction. With opening of the new secondary runway, the existing Runway 4-22 would be abandoned. Other work anticipated during this time period would include extension of the access road and construction of additional based aircraft tiedowns and T-hangars, the first increment of transient aircraft parking apron, and perhaps a terminal building. Additional fixed base operations facilities might be developed at this time as well.

### Long Term

Over the long term, between 10 and 20 years in the future or extending to at least 2005, the airport could reach the full development shown on the Master Plan. During this period, it is anticipated that the primary runway would be extended to 4,350 feet and a nonprecision, or a precision, instrument approach would be established from the southeast. The secondary runway would be lengthened to 3,750 feet. Parking could be provided for over 500 based aircraft and up to 60 transient aircraft. If found to be feasible with regard to land uses north of the airport, a new access road, entering the airport along the alignment of existing Runway 14-32, could be built.

## Ultimate

The potential ultimate development of the airport is depicted on the plan in less detail than other development. The major change would be the extension of the primary runway to 6,000 feet in length and establishment of a precision instrument approach. Parking for as many as 600 based aircraft could be provided.

## DESIGN CONSTRAINTS

Despite the fact that the site is located in generally open land, a variety of physical features in the area constrain the ways in which the airport facilities can be layed out. Among these constraints are the following:

### Terrain

Two hills occupy the center of the site, extending 30 to 50 feet above the site's base level. To minimize the expense of earthwork, the proposed plan avoids the taller hill altogether and requires removal of less than 20 feet from the highest point of the lower hill.

Other hills on all but the east and northeast sides of the site lie along the potential approach paths and limit the choices for positioning of the runway. Federal Aviation Regulations (Part 77) establish imaginary surfaces in the air-space around an airport which are used as the basis for assessing potential hazards to flight. If terrain or other obstacles penetrate any of these surfaces, the Federal Aviation Administration conducts a careful analysis to determine whether a hazardous condition exists and, if so, what mitigation measures should be taken.

The proposed plan positions the runways in a manner that, at least initially, would not result in terrain penetrations of the approach surfaces. Long-term extension of the secondary runway would require lowering of a hill located in the southwest part of the site. Also, if the primary runway is ultimately extended to 6,000 feet, a hill in the southeast corner of the site and possibly

two on the northern edge would have to be lowered. Beyond these close-in obstacles, the runway approaches would be free of terrain penetrations. The terrain to the southwest, however, does rise rapidly beyond the end of the approach surface (a mile from the end of the runway), resulting in penetrations of the horizontal surface.

### Wind

The wind conditions at Byron have been a significant concern in both the selection and the planning of the site. The speed and the direction of the wind have both been issues. Recent analyses of the wind energy potential on lands to the west and south have provided a source of data about the wind in the area. The usefulness of this data is somewhat limited, however, both because the measurements were not gathered on the actual airport site and because the data format was not set up for aeronautical study purposes. Wind data will need to be gathered on the site.

By all accounts, the location is windy, although probably not any more so than at San Francisco International Airport or Travis Air Force Base. The annual average is estimated to be about 11 miles per hour. The strongest winds occur in the late spring and summer and peak at an estimated average of about 25 to 30 mph during the middle of the night. Mid-day winds average about 10 to 15 mph at this time of year. The winds are strongest in the hills west and southwest of the site and tend to become milder as the terrain flattens out. There is some indication that the wind continues to blow more strongly above the site and is only milder near ground level; this condition could lead to the occurrence of wind shear. Calm or light winds (below 6 mph) are estimated to occur during about 40% of the annual hours.

With regard to wind direction, the available data indicates that strong winds (above 12 mph) blow most frequently from the southwest or west-southwest. It appears, however, that the lighter winds most commonly come from the northwest. Overall, the occurrence of northwest and southwest winds seems to be roughly equal. Winds from other directions are comparatively infrequent and mostly light.

Given these wind conditions, it is clear that the airport will require two runways. There might be some advantage in orienting the primary runway in a northeast - southwest direction; however, the high terrain to the southwest precludes this alignment. The proposed plan therefore maintains the primary runway alignment in a northwest - southeast direction similar to that of the longer existing runway at the Byron Airpark. The secondary runway would be rotated to more of a east-northeast - west-southwest direction than currently exists at Byron Airpark.

### Land Uses

Existing development on and near the site has influenced the layout of the proposed facilities.

Existing Airport Facilities: The existing Byron Airpark consists of: approximately 300 acres of land; two paved runways, 2,800 feet and 2,100 feet long; two large, nearly new maintenance hangars; and 23 individual T-hangar units, each on its own concrete slab. The facilities are considered to have primarily short-term value. Over the long term, they would represent only a small fraction of the total investment in airport development. The Master Plan therefore proposes that some be phased out in favor of an ultimately more efficient layout. Similarly, the boundaries of the existing airport property contain land that would be of marginal value to the long range development of the new airport and, although initial acquisition of this land is expected to be necessary, it possibly could later be sold or leased for compatible nonaviation uses.

Existing Residences and Other Structures: In the development and evaluation of alternative airport layouts, plans that would avoid the necessity of acquiring existing dwellings were considered to have an advantage. The proposed plan would require no residential acquisition other than one house located on the existing Byron Airpark property. Removal of only two nonaviation structures (two barns) would be necessary. The proposed plan also reflects an effort to locate the flight paths so as to minimize the number of dwellings that would be overflown at low altitude.

Wind Turbine Proposals: Although there are no existing wind turbines close enough to the site to be a factor in the layout plan, two proposed wind farms, one to the southeast and one to the west have been a significant concern. These developments would lie along the approach paths to some of the possible runway alignments and could penetrate the approach surfaces. This conflict would either constrain the ultimate development potential of the airport or preclude construction of some of the wind turbines. The proposed airport plan minimizes the conflict as much as practical.

Roads: Armstrong Road on the north side of the site and Byron Hot Springs Road on the east were not deemed absolute boundaries for potential airport facility development. Any severed road would have to be replaced, however, and the impacts and added cost were considered in evaluation of the layout alternatives. The proposed plan would require severing of Byron Hot Springs Road south of Holey Road. A replacement road would be constructed farther to the east.

Irrigation Canal: The Byron-Bethany Irrigation District 45 Canal was treated in a manner similar to the roads near the site. The added cost of a layout that would necessitate crossing or relocation of the canal was considered as a disadvantage to be weighed against the greater overall efficiency and other advantages that could be attained. The proposed plan requires undercircling some 2,800 feet of the canal.

High-Pressure Pipelines: Any pavement above these underground gas and oil lines would be subject to being torn up with little or no advance notice if necessary for emergency repair of the pipes. Also, alignment of a runway adjacent to the pipelines could require closure of the runway to allow work to be done on the pipes. Relocation of the lines is judged to be impractical. The proposed airport plan minimizes the amount of pavement over the pipelines and aligns the primary runway some distance away.

High-Voltage Power Transmission Lines: These powerlines, the towers for which are as much as 175 feet tall, constrain the possible runway locations by potentially penetrating the approach surfaces. Relocation or undercircling of the lines would be prohibitively expensive. In the proposed plan, as much distance

as possible is maintained between the powerlines and the runway ends. The powerline west of the site would penetrate the proposed airport's conical surface and may need to be obstruction lighted. This could represent a significant expense as usable power is not readily available along the corridor.

#### Environmentally Sensitive Areas

Several parts of the site were found to contain habitat types that are unusual and/or particularly sensitive to disruption. Of greatest concern is a series of vernal pools that are spread diagonally across the site. Also considered significant is the wetland environs of the stream, Brushy Creek, that traverses the area. Although mitigation for minor disruption of these habitats would be reasonable, a major degree of impact was deemed to be a substantial disadvantage for any associated layout alternative. The proposed plan places development where it avoids the most environmentally sensitive areas.

#### LAND REQUIREMENTS

The land acquisition requirements for the proposed airport include not only the area where the runways and other facilities would be developed, but also the areas beneath the runway approaches where incompatible land uses could pose future problems. It is proposed that property for the airport be acquired both in fee simple and in the form of easements. Table 1 lists the parcels involved.

#### Fee Simple Acquisition

The proposed Airport Master Plan would entail fee simple, i.e. outright, acquisition of some 1,270 acres of land including 5 acres of county road right-of-way. This acquisition would include land for the airfield, aircraft parking and building area facilities, and the runway clear zones. Sufficient land would be obtained for future expansion; specifically, to encompass the clear zones associated with instrument approaches to the ultimate potential primary runway length of 6,000 feet.

Table 1  
PROPOSED PROPERTY ACQUISITION

Parcel No.	Owner	Acreage		Existing Land Use
		In Parcel	Acquired	
<b>FEE SIMPLE ACQUISITION</b>				
001-011-009	Souza, A	158	158	Dry pasture
001-011-011	Caldera, F	24	14	Irrigated pasture*
001-011-013	Souza, A	101	101	Dry pasture
001-011-014	Riggio, B	160	80	Dry pasture
001-011-015	River Purchasing & Holding Co.	126	126	Airfield
001-011-016	River Purchasing & Holding Co.	178	178	Airfield/residence/vacant
001-011-025	Hernak, M	30	30	Dry pasture
001-011-026	Hernak, M	50	50	Dry pasture
001-031-013	Hannum, J	151	151	Dry pasture/vacant
001-031-014	Souza, J	157	157	Irrigated pasture
001-031-016	Schlies, E	131	100	Irrigated pasture*
002-200-001	Coelho, M	240	<u>120</u>	Dry pasture
			1,265	
Road R.O.W.			<u>5</u>	
Total Fee Simple			1,270	

\*Residence and farm buildings on portion not to be acquired.

**CONSERVATION EASEMENTS**

001-011-005	Lopez, D	158	158	Dry pasture/residences
001-011-014	Riggio, B	160	80	Dry pasture
001-011-021	Hernak, M	80	80	Dry pasture
001-021-002	Lopez, D	158	158	Dry pasture
001-021-003	Steward, S	320	320	Dry pasture
001-021-004	Gray,	13	13	Dry pasture/residence
001-031-004	Hannum, J	136	136	Irrigated pasture
001-031-016	Schlies, E	131	31	Irrigated pasture/ residence/farm bldgs.
001-031-018	Ralph, W	147	147	Dry pasture/proposed wind farm
001-031-019	Ralph, W	59	59	Dry pasture/proposed wind farm
002-200-001	Coelho, M	240	120	Dry pasture
003-160-002	Coelho, F	207	207	Dry pasture
003-160-004	Coelho, F	211	<u>211</u>	Dry pasture
Total Conservation Easements			1,720	

The illustrated acquisition lines generally follow existing parcel lines or fractional section lines. This results in proposed acquisition of some property not needed for aviation purposes. Much of the half section of land on which the existing Byron Airpark is located falls into this classification. Such land could either be leased out by the county for agricultural or other compatible uses or possibly be resold with attached conditions restricting the type of land use. Also, some of the land contained within the proposed airport boundaries would be designated as nature reserves to protect the sensitive habitat located there.

### Easements

To protect the runway approach paths from incompatible development, acquisition of two forms of easements, conservation easements and aviation easements are proposed. Easements are a form of less-than-fee interest in real property. They would convey to the county certain rights limiting the prospective use of the underlying property. The easements would run with the land; that is, they would apply to subsequent as well as current owners of the land.

The Master Plan calls for approximately 1,720 acres of conservation easements affecting 13 parcels plus an indefinite area of aviation easements to be obtained.

### Conservation Easements

In addition to the rights associated with aviation easements as outlined below, this form of easement involves the purchase of development rights on the subject property. Conservation easements would preclude residential or other land uses incompatible with airport operations, but would leave the landowner the right to use the land for agricultural or other open space activities specified in the easement agreement. Other property rights including the rights to keep others off the land, to sell or lease the property, etc. would be retained by the landowner.

The conservation easements would be used in locations where the noise or safety impacts of airport activity would be a concern. Primarily, these are areas along the runway approach and departure corridors. If the cost of a conservation on any parcel is found to be more than approximately 25% of the fee simple price, the county would consider fee simple acquisition.

Within the proposed conservation easement area there are three parcels that presently have a total of five dwellings on them. Although no additional residences would be permitted on these parcels, it is the conclusion of the Master Plan that the impacts would not be severe enough to warrant fee simple acquisition of the property. If the judgment of any of these landowners is that they would prefer to sell their property rather than live with the impacts, the county would offer to acquire the property. Consideration also would be given to acquiring other parcels adjoining the airport if the owners choose to sell. Any property so acquired could be resold by the county with conservation easements attached.

#### Aviation Easements

Aviation easements firmly establish with the airport owner certain rights pertaining to aircraft overflight. Specifically, these property rights include:

- o A right-of-way for free and unobstructed passage of aircraft through the airspace over the property at any altitude above a surface specified in the easement.
- o A right to subject the property to noise, vibration, fumes, dust, and fuel particle emissions associated with normal airport activity.
- o A right to prohibit the erection or growth of any structure, tree or other object that would enter the acquired airspace.
- o A right-of-entry onto the property, with appropriate advance notice, for the purpose of removing, marking, or lighting any structure or other object that enters the acquired airspace.

- o A right to prohibit electrical interference, glare, misleading light visual impairments, and other hazards to aircraft from being created on the property.

In areas proposed for aviation easements, the primary issues are the height of structures and trees and the nuisance impacts of aircraft overflights. Aviation easements are suggested for the portions of the airport environs that would regularly be subjected to overflights by aircraft in the traffic pattern. Typically, the height limits that would be specified in the aviation easements would be those specified in Part 77 of the Federal Aviation Regulations, "Obstructions to Navigable Airspace." Depending upon their locations, however, objects can penetrate the Part 77 surfaces without constituting hazards to flight. Because the Part 77 standards would preclude development of wind turbines in areas where they would be aeronautically acceptable, further analysis has been done using instrument approach procedures (as defined in Terminal Instrument Procedures Standards -- TERPS) and other criteria. The proposed aviation easement height limits are indicated on the Approach Protection Plan.

At many airports aviation easements are obtained as a condition of approval of development in the airport vicinity rather than by direct purchase by the airport owner. It is proposed that this approach be taken to the extent possible with regard to aviation easements in the vicinity of the East Contra Costa County Airport. Unlike the fee simple and conservation easement acquisition, aviation easements would thus be obtained over a more extended period of time. Where no new development is occurring, aviation easements would not be needed.

#### RUNWAY AND TAXIWAY SYSTEM

Included in the airfield portion of the proposed airport are the two future runways, interim use of one existing runway, the major taxiways, and the runway approaches and clear zones.

#### Runway Length Criteria

The required runway length at an airport is dependent upon the elevation of the airport, the mean-maximum temperature of the hottest month, and the type of

aircraft that will use the runway. The East Contra Costa County Airport would have an elevation of approximately 85°feet MSL and a mean-maximum hottest-month temperature of 85°F. Initially, the airport would be used almost totally by small, single-engine planes, with a few twin-engine aircraft, and an occasional business jet. Later, the proportion of twins and business jets probably would increase as indicated in the forecasts presented in the previous chapter. This usage would place the airport in the Utility category. There are four levels of utility airport, each requiring an increasingly longer runway:

Basic Utility, Stage I: Accommodates about 75% of the single-engine and small, twin-engine airplanes used for personal and business purposes. Requires 2,550 feet runway length at East Contra Costa.

Basic Utility, Stage II: Serves essentially all single-engine airplanes plus some small business and air taxi-type twin-engine planes. Requires 3,200 feet of runway at East Contra Costa.

General Utility, Stage I: Accommodates all airplanes weighing up to 12,500 pounds, including small business jets. Requires 3,750 feet runway length at East Contra Costa.

General Utility, Stage II: Accommodates all of the Stage I airplanes plus larger or heavier planes that have approach speeds below 121 knots, including many business jets. Usually is capable of having a precision instrument approach. Requires 4,350 feet of runway at East Contra Costa.

Looking beyond the 20-year planning time frame, the potential need for the airport to handle a greater variety of business jets, some on relatively long flights, can be anticipated. Transport runway length requirements vary depending upon the percentage of the fleet and the percentage of the useful load to be accommodated:

- o 75% of fleet, 60% of useful load -- 4,750 feet
- o 100% of fleet, 60% of useful load -- 5,650 feet
- o 75% of fleet, 90% of useful load -- 7,100 feet

Alternatively, the runway length can be based upon the requirements of specific types of aircraft intended to be accommodated. Combining these various considerations, a 6,000-foot runway length should be adequate for the foreseeable usage of the East Contra County Airport and accordingly is outlined on the Airport Layout Plan.

Because the airport would not be used by large, airline-type transport aircraft, use of Transport category setback standards is not considered to be necessary. General Utility, Stage II, standards are all that would be required. The proposed plan exceeds the latter standards.

### Primary Runway

For reasons discussed above with regard to wind and terrain conditions, the primary runway is proposed to be aligned northwest - southeast; specifically, N 41° 20' W. It would be numbered Runway 12-30.

Given the anticipated nature of use of the airport during the latter part of the planning period, the runway is proposed to be constructed to General Utility, Stage II, standards for length, setback distances, etc. Initially, however, only a General Utility, Stage I, length would be provided. Because of the frequent strong, gusty winds, a width of 75 feet rather than the standard 60 feet is planned. A setback of 300 feet to the parallel taxiway and 500 feet to the nearest buildings is required. Medium-intensity runway edge lighting is proposed.

The potential for ultimate extension of the primary runway to a 6,000-foot long Transport category is preserved on the proposed Master Plan. This extension is shown as occurring to the southeast. A northwesterly extension would be possible, however, if a long-term new access road as described below is constructed. In terms of the efficiency of runway utilization, the northwesterly extension would be preferable; the disadvantages would be a greater amount of required earthwork and the necessity of relocating Armstrong Road. A final decision between these choices would be a subject of future planning analysis. Until then, preserving both possibilities would be desirable.

A precision instrument approach to Runway 30 is planned for the long term. Initially, the approach would be visual and a nonprecision approach is a possibility for some intermediate development stage. The Runway 12 approach is planned to be nonprecision in the long term, visual over the short term. Installation of runway-end identifier lights (REIL's) is recommended for the approach end of Runway 30 in conjunction with establishment of a precision approach to that runway.

Part 77 standards call for a clear 20:1 approach surface slope (1-foot vertically to 20-feet horizontally) for a visual approach, 34:1 for a nonprecision approach, and 50:1 for a precision approach. The associated clear zones extend 1,200 feet, 1,900 feet, and 2,700 feet from the runway end. A precision approach can, however, be established with a clear approach surface slope of as little as 34:1.

#### Secondary Runway

The available wind data indicates that a secondary runway will be needed to provide adequate wind coverage at the airport. Given the proposed alignment of the primary runway, the secondary runway would mostly be needed for the frequent strong west-southwest winds. As noted above, however, the plan recommends that the precise alignment of this runway not be determined until detailed wind data can be gathered on the site. For basic planning purposes, a runway aligned S 66 30'W and numbered 5-23 is depicted on the Master Plan.

The secondary runway need not be as long as the primary runway. The larger, faster aircraft that would use the airport (business jets, for example), can tolerate more of a crosswind than light, single-engine planes. Under most circumstances these bigger planes would be expected to use the primary runway, especially once it has an instrument approach. The secondary runway thus is planned to have a General Utility, Stage I length of 3,750 feet with an initial length of approximately 2,750 feet. As with the primary runway, a width of 75 feet is proposed because of the wind conditions. Also, lighting of this runway is expected to be necessary because the west-southwest winds are strongest during the 6:00 p.m. to 6:00 a.m. period.

No instrument approaches to this runway are proposed initially; however, the plan indicates a long-term potential for a nonprecision approach to Runway 23.

No improvements to the existing Runway 4-22 are proposed to be made during the interim period when it is in use as the airport's secondary runway. The runway was paved relatively recently (about 1980) and, although only 2,100 feet long and 30 feet wide, is in good condition. The access road that now crosses within a few feet of the runway end would be relocated, however, in order to provide the required approach slope clearance.

### Taxiway System

Both new runways would have full-length parallel taxiways (no parallel taxiway is proposed for Runway 4-22 for the interim period when it is in use). Also, a major taxiway would be established along the runway sides of the building areas, thus in effect providing a dual parallel taxiway system. The runway exit taxiways would continue across the parallel taxiways and provide direct access to the aircraft ramps and the fixed base operations area.

### Runway Capacity

A decided advantage of the overall runway configuration depicted in the Master Plan is that it would have a significantly higher operational capacity than other configurations. Although runway capacity is not expected to be an important concern during the basic 20-year time frame of the plan, it could be an issue ultimately. With aircraft operations at a level sufficient to have warranted an Air Traffic Control Tower at the airport, the proposed 'Open V' runway configuration would allow simultaneous use of runways 23 and 30 when the winds are calm or blowing lightly from the west or northwest as they often do.

The proposed plan has a runway capacity of approximately 350,000 aircraft operations annually. A 'Closed V' or an 'X' configuration, by comparison, would accommodate only about 220,000 annual operations.

### Pavement Design

A Utility category airport is intended primarily to serve aircraft weighing less than 12,500 pounds and most of the planes that would use the East Contra Costa County Airport would weigh considerably less. The proposed runway pavement section therefore is designed for 12,500-pound aircraft. Occasional use by heavier aircraft would not damage the pavement. With consideration for the apparent types of soil at the site, the pavement section would consist of 2 inches of asphalt over 8 inches of aggregate base rock over 6 inches of compacted native soil. If the airport is ultimately upgraded to a Transport category, an overlay of the pavement would be required to increase its design strength.

### Navigational Aids

Several navigational aids would be required on the airport in order for the proposed instrument approach procedures to be established.

A localizer would be needed for either a precision or a straight-in nonprecision approach to Runway 30. This equipment would be located a short distance beyond the northwest end of the runway. The location of the interim access road in this area is such that relocation of the road is proposed to occur before the localizer is installed. If the road were to remain, the localizer would have to be sited in a less than optimum position.

Establishment of a precision approach to Runway 30 would also require a glide slope antenna to be situated adjacent to the runway and approximately 1,000 feet from its southeast end.

A VOR (Very-High-Frequency Omnidirectional Range) established on the airport would enable nonprecision approaches to Runways 12 and 23. An optimum location for this equipment appears to be south of Runway 5-23.

Except for an outer marker required for a precision approach to Runway 30, no new off-airport navigational aids appear to be necessary to support the proposed and ultimate potential instrument approaches. Existing VOR's in the

area, including ones at Stockton, Sacramento, and Linden, would be utilized. The outer marker would be located along the extended runway centerline about 5 miles southeast of the runway approach end.

#### BUILDING AREA

The proposed plan locates the airport's building area west of Runway 12-30 in the middle of the 'V' formed by the two runways. Facilities found here would include tiedown and hangar parking for based aircraft, a terminal area including transient aircraft parking, fixed base operations, and other miscellaneous uses. A total of some 75 acres would be set aside to accommodate the building area and access road needs projected to exist over the next 20 years. An additional area encompassing approximately 40 acres would be reserved for expansion beyond the 20-year planning period.

#### Based Aircraft Parking

Some 540 based aircraft, well in excess of the maximum projected 20-year demand of 400, could be parked within the building area depicted on the layout plan. Of these, approximately 400 would be accommodated on the north and south ramps and remainder would be parked within the fixed base operations leaseholds and in the existing Bryon Airpark hangar area. About 160 spaces would be provided in conventional T-hangar units and up to 40 additional planes could be housed in the existing T-hangar area. In total, about 35% of the based aircraft would be stored in hangars (the general range for airports in Northern California is between 25% and 40%).

Automobile parking lots are proposed to be located conveniently close to each of the tiedown aprons. This arrangement would enable vehicle travel within aircraft parking areas to be reduced or, if eventually necessary, prohibited.

#### Terminal Area

The terminal area would be centrally located within the building area. Terminal area facilities are anticipated to become the focal point for visitor

traffic at the airport. A terminal building, planned for construction late in the intermediate phase of airport development, would house airport offices, a pilots' lounge, restrooms, perhaps a coffee shop, and other related uses. Parking areas for up to 70 automobiles and 60 transient aircraft would be located on either side of the terminal building. Additional space would be set aside for expansion of auto parking and the terminal building. If, at some future time, an air traffic control tower is required at the airport, it tentatively would be located adjacent to the terminal building.

### Fixed Base Operations

The fixed base operations (FBO) area would constitute the commercial business part of the airport. FBO's provide such aviation services as aircraft sales, rental, charter, and repair, fuel sales, and flight instruction. A typical building used by a full-service FBO would be about 80 feet by 100 feet and include an aircraft maintenance hangar and an office area. Buildings used by special service FBO's (e.g., aircraft painting or upholstery) are usually smaller. A total of some 16 acres, sufficient to meet the demand beyond the 20-year planning period, are proposed to be designated for FBO leaseholds. The FBO area would be located around a central taxiway spine, thus giving flexibility in the size of each leasehold (a typical leasehold for a full-service FBO at this type of airport is 3 to 5 acres in size) and enabling the aircraft access to each plot to be as simple as possible. Road access would be located around the periphery of the area. As noted above, it is anticipated that up to 100 based aircraft, including rental and charter planes, would eventually be parked within the FBO area.

Two large hangars suitable for FBO use are located on the existing Byron Airport property. The building near the existing T-hangar complex could be used for a special-function type of FBO (e.g., aircraft painting) or as an aircraft storage hangar much as it is now. The hangar adjacent to Armstrong Road would be within a runway clear and is proposed to be removed. Potentially, the structure could be disassembled and then reconstructed within the new building area.

### Miscellaneous Uses

Fuel sales at the airport could be provided either by the county or by the FBO's. If provided by FBO's, the storage tanks and pumps could be located within the FBO lease area. More likely, a separate fueling area would be constructed regardless of who does the fueling. A location near the transient ramp is depicted on the Airport Layout Plan. The storage tanks would be underground.

Other miscellaneous facilities at the airport would include an aircraft wash rack and possibly a pilots' aircraft maintenance shelter. The latter would be a place where pilots can do oil changes and other minor work on their own aircraft. The proposed site for these facilities is on the edge of the north ramp.

### ROADS AND UTILITIES

Road and utility construction associated with the project would include new facilities needed to serve the airport and modifications to existing systems that would be disrupted by the airport.

#### Roads

Byron Highway, the nearest major road to the site, would be adequate for the future ground travel to the airport. Other improvements would be required, however, including widening of Byron Hot Springs and Armstrong Roads, reconstructing the railroad grade crossing on Byron Hot Springs Road, and constructing a new access road onto the site.

The widening would bring the roads up to the county standard of 28 feet. No additional right-of-way is expected to be necessary. Pavement section deficiencies would also be corrected.

The railroad tracks run parallel to and about 50 feet southwest of the highway edge, but are some 5 feet higher than the road level. Byron Hot Springs Road

not only humps up and over the tracks, but crosses them at a diagonal. This configuration is less than ideal and would be inadequate for any significant amount of traffic to and from the airport. The plan proposes that Byron Hot Springs Road south of the crossing be raised; this would reduce the sharpness of the hump and improve the line of sight.

The interim access road onto the airport would extend from Armstrong Road, approximately 0.75 mile west of Byron Hot Springs Road, around the end of Runway 17, and then along the southwestern side of the building area. Although passing through the Runway 12 clear zone, the road would be slightly lower than the runway end and would have adequate clearance beneath the approach surface. Aligning the road in the proposed manner also provides the necessary clearance past the end of interim Runway 22.

The one existing road that would be disrupted in order to enable construction of the airport would be Byron Hot Springs Road south of Holey Road. This road serves a very low traffic volume; but, because it dead-ends a short distance to the south, replacement access to the severed end would be required. On an interim basis, before Runway 12-30 is extended beyond its initial 3,270-foot length, a gravel surfaced road is proposed to loop around the southeast end of the runway. In the longer term, a new road, a half mile to the east, extending south from Holey Road then back to Byron Hot Springs Road is proposed. This road would be gravel surfaced and as little as 24 feet wide until such time as traffic warrants a higher standard.

### Utilities

The proposed airport would require electric, telephone, water, and wastewater facilities. The electric and telephone service would be provided from existing lines in the area. Water supply is anticipated to be available from the Byron-Bethany Irrigation District 45 Canal although alternatives are possible. On-site treatment is proposed. Wastewater treatment is also proposed to be handled on the site.

## COSTS

Table 2 itemizes the estimated development costs for the proposed East Contra Costa County Airport. Property acquisition costs plus the construction costs for each of the three development phases are noted.

Under current federal legislation, the Airport and Airway Improvement Act of 1982, 90% of the cost of eligible items can be funded through the Airport Improvement Program. Other funds are available from the California Aid to Airports Program. Land acquisition and most of the construction are eligible. Major ineligible items include:

- o T-hangars.
- o Terminal building.
- o Fixed base operations and other private facilities.
- o Auto parking.
- o Fuel system.

The cost of T-hangars, a terminal building, and private facilities are not included in Table 2.

This cost data is provided here primarily as an indication of the magnitude of the project. A financial analysis of the project will be set forth in another report.

Table 2

## ESTIMATED DEVELOPMENT COSTS

	<u>In Millions</u>
<u>Property Acquisition</u>	
Fee Simple (1986-1988)	\$ 2.30
Conservation Easements (1986-1990)	0.60
Administration and Contingencies	<u>0.30</u>
Total	\$ 3.20
<u>Phase I Construction* (1987-1990)</u>	
Airfield (initial phase Runway 12-30)	\$ 0.78
Aircraft Aprons (excluding hangars)	1.50
Roads (on- and off-site) and Parking	0.28
Irrigation Canal Undergrounding	0.22
Miscellaneous	0.40
Engineering and Contingencies	<u>0.80</u>
Total	\$ 3.98
<u>Phase II Construction* (1990-1995)</u>	
Airfield (initial phase Runway 5-23)	\$ 0.86
Aircraft Aprons	1.24
Roads and Parking	0.17
Engineering and Contingencies	<u>0.57</u>
Total	\$ 2.84
<u>Phase III Construction* (1995-2005)</u>	
Airfield (runway extensions)	\$ 0.91
Aircraft Aprons	0.84
Roads and Parking	0.27
Engineering and Contingencies	<u>0.50</u>
Total	<u>\$ 2.52</u>
20-Year Total	\$12.54

\* Earthwork is included in each sub-element

## IV - PLANNING AND POLICY FRAMEWORK

### COUNTY OF CONTRA COSTA

#### Plans and Zoning

The official land use plan for the area is set forth in the East County Area General Plan adopted in 1978. The airport site and all of the nearby land except for Byron Hot Springs are shown as Agricultural Residential on the plan (Figure 7). The plan does not mention the possibility of locating an airport in the area.

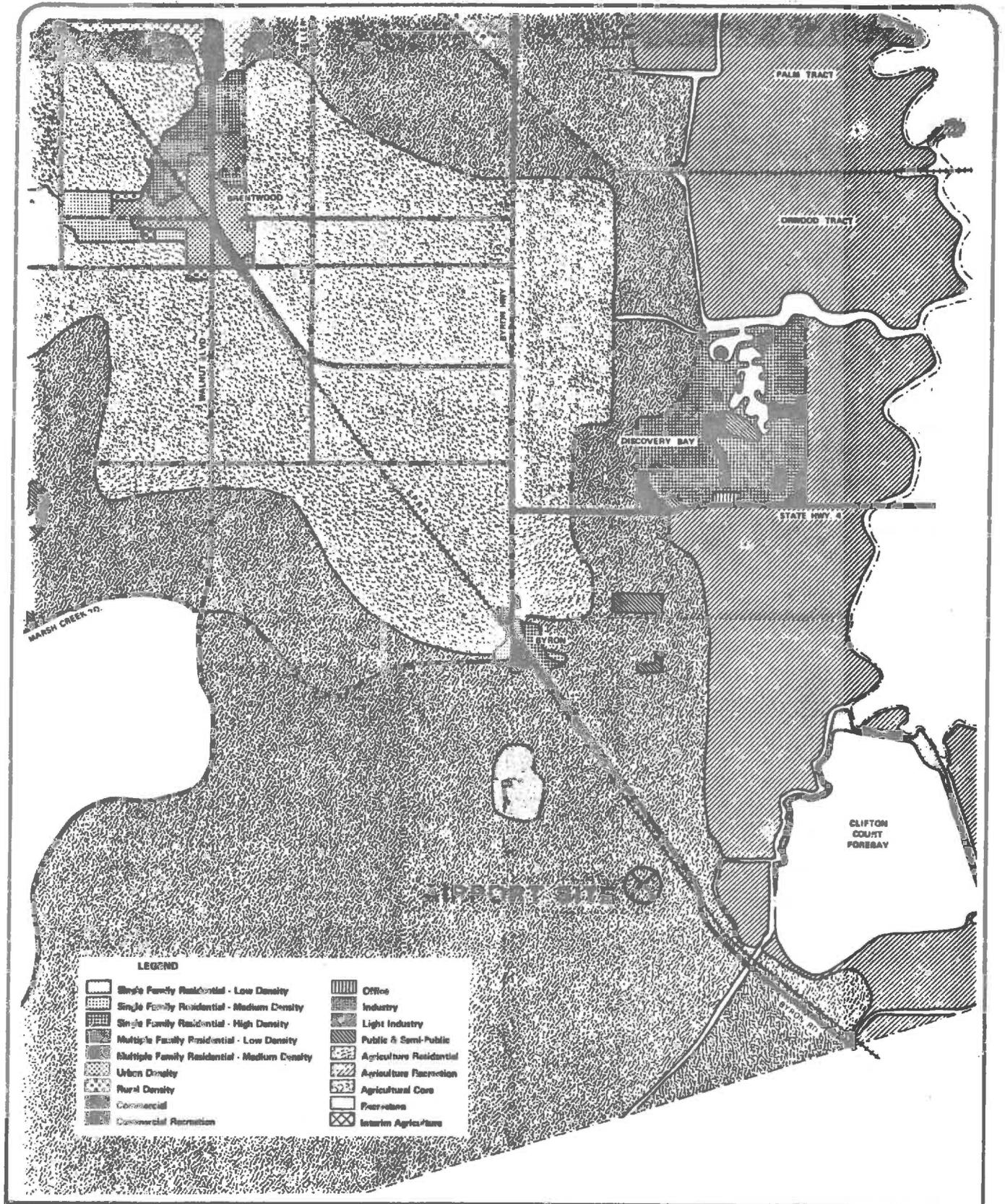
Zoning for the area shows the airport site and surrounding land in one of three Agricultural districts (Figure 8):

<u>Symbol</u>	<u>Districts</u>	<u>Minimum Lot Size</u>
A-2	General Agriculture	5.0 acres
A-3	Heavy Agriculture	10.0 acres
A-4	Agricultural Preserve	20.0 acres

Most of the existing parcels in the area exceed the above minimum sizes. Although subdivision into smaller lots is technically possible without rezoning, approval is discretionary. Factors that are taken into consideration include road access, slopes, water availability, and wastewater disposal limitations.

#### Aviation Policies

Aviation policies in Contra Costa County are made by the Board of Supervisors. An Airport Advisory Committee has been established to make recommendations to the Board on aviation matters. The eleven committee members include representatives of the five supervisors, the cities of Concord and Pleasant Hill, Diablo Valley College, the County Airport Land Use Commission, the Buchanan Field



**LEGEND**

	Single Family Residential - Low Density		Office
	Single Family Residential - Medium Density		Industry
	Single Family Residential - High Density		Light Industry
	Multiple Family Residential - Low Density		Public & Semi-Public
	Multiple Family Residential - Medium Density		Agriculture Residential
	Urban Density		Agriculture Recreation
	Rural Density		Agricultural Core
	Commercial		Preserves
	Commercial Recreation		Interim Agriculture

AVIATION PLANNING SERVICES

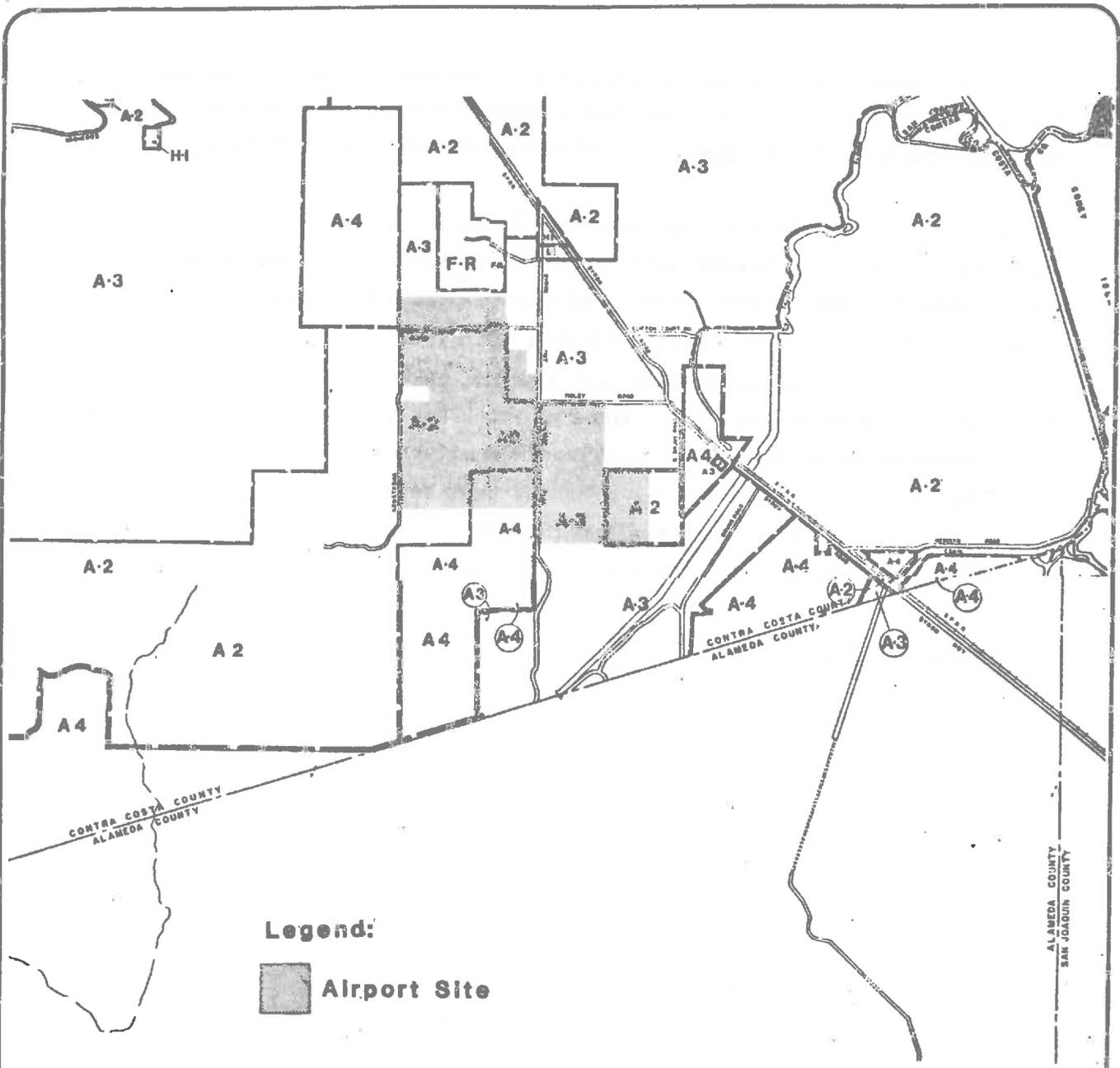
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**EAST COUNTY AREA  
GENERAL PLAN**

Figure 7



**Legend:**  
 Airport Site

**Source: Contra Costa County Community Development Dept.**



**PROJECT AREA ZONING MAP**

**Figure 8**

fixed base operators, and homeowners residing in the vicinity of Buchanan Field. The Airport Advisory Committee's responsibility has included regular review of the progress of the East Contra Costa County Airport Study.

The need to find an airport site to serve the east county has long been established in Contra Costa County policy. Several efforts have been made in the past to select a new airport site. The County Board of Supervisors initiated and participated with the Federal Aviation Administration in funding the present study. The Site Identification and Evaluation report, Phase I of the study, was reviewed by the board, the committee and the public. Supported by the recommendation of the Airport Advisory Committee, the Board of Supervisors, at its December 18, 1984, meeting, directed that detailed plans and environmental impact analysis be prepared for the Byron site. No other commitment to implementation of an airport project at this location has been made.

#### OTHER LOCAL JURISDICTIONS

The project site does not fall within the limits or sphere of influence of any city.

The site does, however, lie within the boundaries of two special districts that potentially would provide services to the airport: the Byron Fire Protection District and the Byron-Bethany Irrigation District. The Fire District's responsibility would include providing protection for the airport. Approval of the Irrigation District Board of Directors would be necessary for the airport to use its facilities as a source of water supply.

The Local Agency Formation Commission of Contra Costa County (LAFCO) is responsible for approving the spheres of influence and jurisdiction boundaries of local governmental bodies and service districts in the county. The project is not anticipated to require any changes to such boundaries.

The Contra Costa County Airport Land Use Commission (ALUC) has the responsibility of assuring compatibility with regard to noise and safety, between airports in the county and future land uses in the vicinity of such airports. The Com-

mission has adopted compatibility plans for Buchanan Field and Antioch airports. A new public-use airport would come within the realm of its jurisdiction.

Establishment of funding priorities for airport projects is a responsibility of the Metropolitan Transportation Commission. These priorities serve as recommendations to federal and state agencies that issue grants for airport development.

#### FEDERAL AND STATE AVIATION AGENCIES

The Federal Aviation Administration (FAA) establishes design, operation, and safety standards for airports, airspace, and aircraft. The FAA reviews and approves plans for airport development. It also provides grants for construction of airport facilities. To be eligible for funding, an existing or proposed new airport must have an approved airport layout plan included in the National Airport System Plan (NASP). The most recently published NASP (FAA - 1980) lists a new airport for Contra Costa County as a replacement for Antioch and a reliever for Buchanan Field. An updated version of the NASP is scheduled to be available early in 1986.

The California Department of Transportation Division of Aeronautics has permitting authority for airports in the state. The Division has adopted FAA standards and regulations and enforces these through permits and annual inspection of facilities. Although the Division does not have an active role in planning airport facilities and does not officially approve airport master plans, the office is interested in reviewing new or updated master plans.

## V - ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

### OVERVIEW

This chapter presents the environmental setting, impacts, and mitigation measures pertaining to each major category of environmental impact. Cross references are noted where there is an overlap in the discussion and analysis from one section to another.

The focus of the discussion is on the long-term permanent physical changes that would result from the project's construction and on the impacts that would be generated by use of the new facilities. An assessment of the short-term impacts that would occur during the construction phase of the project is presented in the final section of the chapter.

The analysis of the project alternatives described in Chapter VII is comparatively brief. The emphasis is on the basic ways in which the environmental impacts of the alternatives would differ from those of the proposed project.

## GEOLOGY AND SOILS

### Setting

#### Geology

According to the East County Area General Plan, two major earthquake fault zones bisect the area. The Antioch-Davis fault zone trends northerly through the hilly western portion of the area. This fault is considered active. The Midland fault zone, considered by some geologists to be potentially active, is believed to run from the southeasterly corner of Contra Costa County north-northeastward along the eastern county boundary to the Yolo-Solano County lines near Winters.

Neither of these fault lines cross the site itself, although the Midland fault line is less than two miles to the west. A short, unnamed fault that is considered inactive crosses the site roughly beneath Brushy Creek. The site is classified by the County Community Development Department as having low to moderate liquefaction potential.

#### Soils

U.S. Soil Conservation Service mapping of the project area (1977) indicates that the soil types on the site are in the Linne "LbD", Solano "Sk", San Ysidro "Sc", Shima "Sh", and Sehorn "Sd" series. Linne soils are limited to the higher hills; the Solano series is contained within the vernal pool areas; and the other types mostly cover flat areas within the eastern and southern portions of the site. All are clayey types of soils -- clay loam, silty clay, or clayey silt. The Solano soils are strongly alkali. With regard to agricultural value, all of these soils are classified as Class IV -- fairly good land, but with major limitations and only occasional use for cultivation.

The clayey nature of the soils makes them impervious to water. This both enables the vernal pools to exist and creates drainage problems in flat areas.

It also gives the soil relatively poor structural strength. Construction Bearing Ratio (CBR) values are anticipated to be in the 3 to 7 range.

### Impacts

Development and operation of an airport at the proposed site would be unlikely to be affected by the presence of earthquake faults in the area. Paved areas would comprise the bulk of the development. A liquefaction analysis may indicate that the site's true liquefaction potential is higher or lower than the predicted low-to-moderate classification. At worst, following a major nearby earthquake, it may be necessary to temporarily suspend operation of parts of the airfield until damage due either to ground shaking or liquefaction could be repaired. Aircraft hangars and other structures would be designed to withstand earthquakes in accordance with applicable local building codes. Building codes, however, do not yet recognize liquefaction.

Initial construction would require an estimated 230,000 cubic yards of earthwork. Earthwork requirements over the 20-year time span of the plan would amount to some 500,000 cubic yards. Major areas of earthwork include: lowering the hill in the center of the site by as much as 25 feet; lowering the hill at the southwest end of Runway 5-23 by about 25 feet to provide a clear runway approach; and general excavation or fill within all development areas as necessary to provide a compact, level base for construction. Cut material would be used for fill on other parts of the site. An overall balance of cut and fill within the project area is anticipated. Fill slopes would be limited as required by Federal Aviation Administration, as well as Contra Costa County, standards. Final grades within paved areas will generally be no greater than 2%.

Little hard rock is expected to be found within the areas to be graded. The earthwork should be able to be accomplished by large earthmoving equipment with relative ease.

Because of the low CBR value of the soil, the structural section of pavement would have to be slightly thicker than often can be used elsewhere. Also, measures would have to be taken to prevent shrink-swell cracking of the pave-

ment as the underlying soil becomes saturated and then dries up. These steps could include excavation of additional native material where the pavement would be placed and replacing it with a subbase and/or some type of moisture barrier.

### Alternatives

The impacts associated with other layouts of this site would be largely the same as those of the proposed project. Development of an alternative site would have significantly different impacts. At the East Oakley site, no grading of hills would be involved, but the below water level of the ground would create construction difficulties as well as require construction of stronger levees. Construction of an airport at the Hillside site would entail substantially more earthwork than at Byron.

### Mitigation Measures

Excavation of the hill and other earthwork on the site would be unavoidable elements of the project. Because of the cost of moving dirt, an objective of the engineering design of the facility would be to keep quantities as low as possible.

The engineer should work with soils and materials experts during design of the project to assure that liquefaction potential and other geologic and soils conditions of the site are properly taken into account.

Standard construction techniques would be used to prepare the surfaces to be filled and to compact the fill material.

## HYDROLOGY

### Setting

#### Drainage

Drainage from the site flows in a generally west to east direction into one of three different water courses. The largest of these is Brushy Creek. Extending some seven miles southwest of the site, this stream drains an area of approximately 6,800 acres and crosses the center of the site in a northeasterly direction. Along the north edge of the site is an unnamed tributary of Brushy Creek that has a drainage area of some 2,500 acres extending five miles westward. Only the northwestern corner of the site drains into this waterway. These two creeks merge near the northwest corner of the site. The southwestern part of the site (about 50% of the total area) drains into a small creek that joins Brushy Creek about a mile to the east. Flow from Brushy Creek ultimately empties into the Italian Slough about two miles downstream of the site. The latter water course is a part of the San Joaquin River delta system that laces the entire eastern part of Contra Costa county.

The average flow volumes in these water courses are relatively small, but exhibit significant peak flows during rain storms. Brushy Creek, for example, has an average annual flow of 3 cfs (cubic feet per second), but peaks at around 2,600 cfs. According to U.S. Geological Survey topological maps, both Brushy Creek and its northern tributary are perennial streams (flowing all year around) upstream of the site, but become intermittent (flowing only seasonally or during storms) as they cross the site. The southern tributary is completely intermittent.

The natural courses of these waterways have been extensively altered both on the site and downstream from it. These changes were done at various points in time and for various reasons. Examination of old aerial photographs reveals that very little alteration had been done prior to 1950. Early work on the original airstrip in the 1960's resulted in rerouting of the northerly tributary of Brushy Creek around the northwest end of Runway 14-32. Other work was done on the west side of the airfield including construction of drainage

ditches and moving of dirt to slightly raise the runway elevation. More extensive work, especially the realignment of Brushy Creek, was done in the last few years when Runway 14-32 was paved and extended to the southeast. Downstream of the site, much channel modification has occurred within the last 10 years. In the area between Byron Hot Springs Road and Byron Highway, Brushy Creek and both of its tributaries have been realigned and channelized to allow creation of irrigated fields.

### Flooding

Flooding is a problem in the area, although no flood control plan has been adopted. A strip of land averaging about 600 feet wide along Brushy Creek is indicated as a flood hazard zone on U.S. Department of Housing and Urban Development 1976 Flood Hazard maps as well as on associated county maps. Most of the existing airfield is also within this flood zone. Significant problems have occurred along the north tributary of Brushy Creek where it parallels and then crosses under Armstrong Road. Flooding in this area has blocked the road in recent years. The County Public Works Department has directed the current owners of the airfield property to remedy this situation. Flooding problems also occur slightly downstream of this area where Brushy Creek, joined by its northerly tributary, pass under the Byron-Bethany Irrigation District canal. At peak flow periods, water will back up behind the canal or overflow into it. The Irrigation District has not rectified this situation in large part because of the expense that would be involved.

### Vernal Pools

Relatively rare hydrological features, vernal pools, exist on the site. These pools occur in locations where the topography and the nature of the underlying soil are such that rainwater collects in them during storms and is unable to drain out. Instead, the water slowly evaporates during the spring. The result is a very specialized habitat for certain species of plants. This topic is discussed thoroughly in the Vegetation and Wildlife section.

## Irrigation Canal

A final hydrological feature in the area, mentioned above, is the irrigation canal, the 45 Canal, operated by the Byron-Bethany Irrigation District. Roughly following the 45-foot contour line, the canal flows northward from the California Aqueduct about one mile south of the site. The canal is an open channel having a minimum flow of 100 cfs. For about 2,800 feet south of Armstrong Road it is concrete lined, trapezoidal in cross section with a width of 22 feet across the top; the next section to the south, about one mile in length, has only earthen embankments. The canal primarily serves adjacent agricultural lands, but is under consideration as a source of water for the town of Byron.

## Impacts

### Drainage

Construction of the project would necessitate changes to both the natural and man-made hydrological features on the site. Tradeoffs between impacts on Brushy Creek and the vernal pool system on one hand and the irrigation canal on the other hand were considered in the design of the proposed airport. Compared to other layout alternatives, the proposed design has minimal effect on the natural hydrology.

Alterations to Brushy Creek and its northern tributary would mostly be limited to overcrossings and improvements to correct flooding problems. The overcrossings, for taxiways and an access road, would be accomplished by installation of culverts to accommodate the water flow. Such culverts probably would not exceed 100 feet in length. Aircraft parking and building areas avoid the existing creek beds.

The natural drainage of most of the area proposed for airport facility development is to the southeast into the southern tributary of Brush Creek. Based upon a preliminary engineering evaluation, it is anticipated that this direction of flow would be maintained for most of the paved areas of the airport. Removal of most of the 86-foot hill on the eastern edge of Brushy Creek could

have some impact of drainage flow into the creek and adjacent vernal pools. Depending upon the final engineering design of the facilities, the flow possibly could either increase or decrease, but in either case the change is expected to be small. Provisions would be made both on site and, if necessary, off site to accommodate any additional flow into the southern tributary. Attention would be given in engineering design of the facilities to avoid any significant changes in the drainage into the large vernal pool located in the southeast corner of the site.

#### Water Quality

Water flowing from paved areas of the site would contain minor amounts of rubber, oil, debris, etc. Such deposits would be comparable to those coming from paved roads and, although representing an increase from current conditions, are not expected to have any significant impact on water quality. Runoff from any central fueling facilities on the airport would be run through a clarifier to eliminate the water contamination that might occur from activities in these areas. Vegetation would be reestablished in cut and fill areas to minimize any erosion that might occur.

Existing water supply wells in the area are generally shallow (less than 40-foot deep). Care would need to be taken in the design of an on-site wastewater treatment facility airport to avoid groundwater contamination.

#### Flooding

Construction of the airport can be regarded as an opportunity to reduce or eliminate some of the existing flooding problems in the area, particularly along Armstrong Road. Measures that would be taken could include earthwork to modify existing dikes, enlargement of culverts, and creation of retention ponds.

#### Irrigation Canal

Impacts on the 45 Canal would be extensive, but, with proper design, should not affect its operation. Up to 2,800 feet of the canal in the vicinity of where

it now crosses Byron Hot Springs Road would ultimately need to be placed in a covered pipe. The pipe would be designed to assure that it does not constrain the capacity of the canal. New connections to serve the irrigated pastures east of this section of the canal may be necessary.

#### Mitigation Measures

Measures to mitigate the hydrological impacts of the proposed project would mostly be incorporated into the engineering design of the facilities. These include:

- o Designing drainage from construction areas to avoid significant changes in flow into the vernal pools.
- o Assuring that existing drainage courses are adequate to handle the additional flow from the airport. If necessary, improvements would be made to any man-made channels. Establishment of on-site ponds to hold excess runoff should be considered.
- o Installing a clarifier through which all drainage from around any central fueling facilities would run.
- o Reestablishing vegetation in cut and fill areas to minimize erosion.
- o Designing changes to the 45 Canal so as to avoid impairment of its utility.

Any unanticipated impacts that might arise after construction of the facilities would be dealt with as necessary.

Coordination with other involved agencies has been established as a principal means of avoiding problems. This coordination should be maintained during the engineering and construction phases of the project. The Army Corps of Engineers is one such agency. Projects having significant effects on wetlands or certain streams require that a permit be obtained from the Corps. Correspon-

dence from the Corps, concludes that neither Brushy Creek nor the vernal pools constitute areas of concern to that Agency. Nonetheless, the Corps should be notified regarding the final designs before construction commences.

Another agency with which coordination would continue to be essential is the Byron-Bethany Irrigation District. Initial contact with the District indicates that the proposed changes to the 45 Canal should be possible. A formal request and approval would be necessary during the engineering design, however. The timing of the project construction to avoid disruption of irrigation water service is expected to be important. Coordination should be maintained with the adjacent landowners whose field irrigation may be affected by the project.

## VEGETATION AND WILDLIFE

### Setting

#### Introduction

Information regarding the existing vegetation and wildlife on the site was obtained from several sources. Most significantly, the site was surveyed by a professional biologist familiar with the types of habitats occurring there. The objective of this field reconnaissance was to identify the species of plants and animals established on the site and especially to search for certain rare and endangered species thought possibly to inhabit the area. Herbarium specimens of the plant species of concern were examined to aid in the on-site identification process. The field survey was conducted in early April 1985; this is considered an ideal time to find the local plants in bloom, particularly those of special concern. Other information sources included a literature search and a computerized check of the California Department of Fish and Game Natural Diversity Data Base. Both provide data regarding where different plant and animal species have previously been identified. Also examined were current and historical aerial photographs of the site.

Five generalized habitat types are found on the site: vernal pools, freshwater wetland, introduced annual grassland, cultivated land, and disturbed areas. These are each described below, followed by a discussion of the vegetation and wildlife of special concern. The locations of each habitat type are depicted in Figure 9.

#### Habitat Types

Vernal Pools: The rarest of the habitat types found at the site are vernal pools. Vernal pools are small depressions found in certain grassland areas. Filling with water during winter rains, they slowly evaporate during the spring and in the process they support a unique variety of plant life.

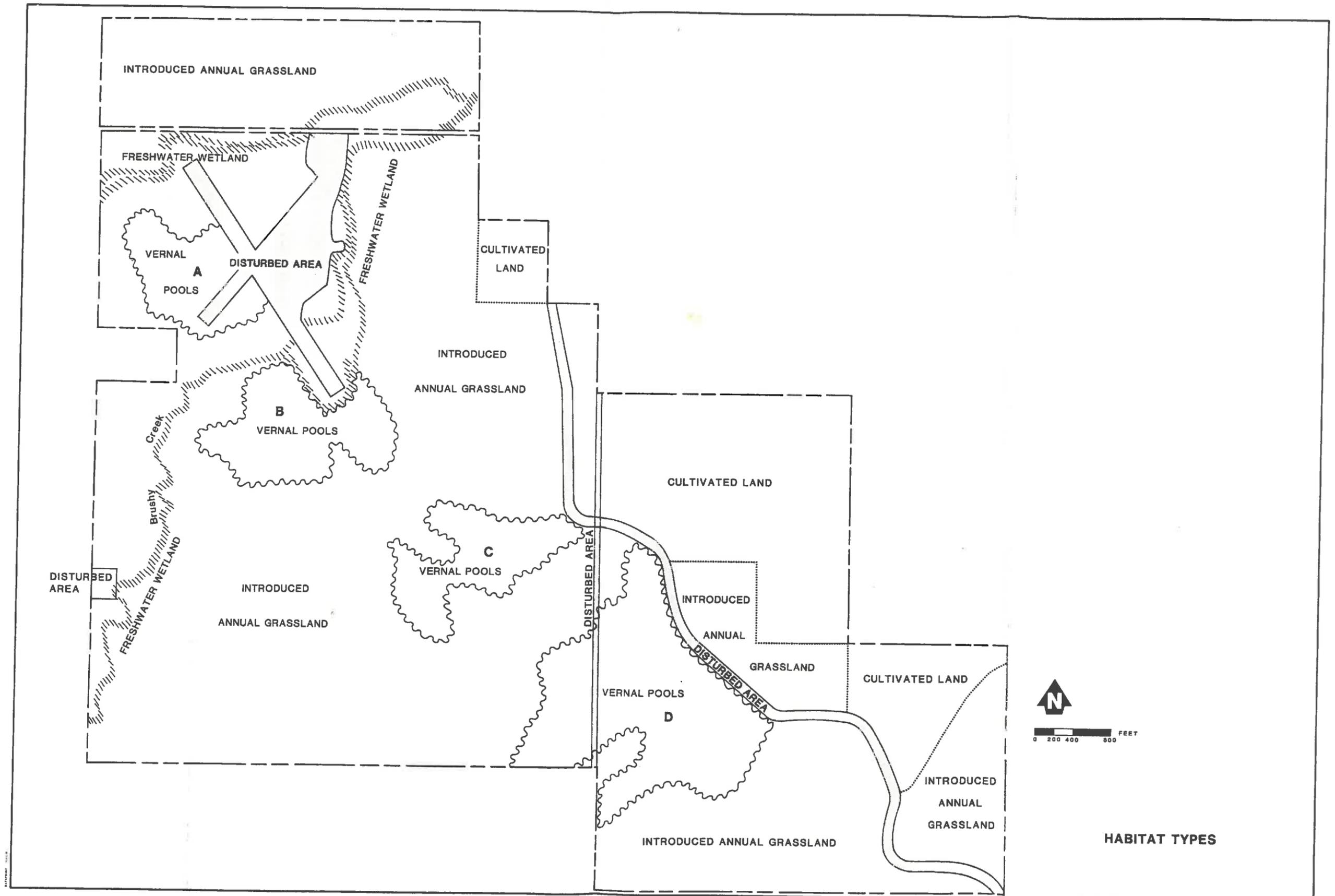


Figure 9

Their existence is dependent upon a particular combination of soil, topographical, and hydrological conditions. The floor of vernal pools is usually composed of an alkaline, hardpan, impervious type of soil that prevents drainage. The topography consists of shallow basins (sometimes called hogwallows) surrounded by distinct hummocks (mima mounds). Hydrologically, the basins must have some inflow of water, but not so much that they lose the opportunity to dry out. The springtime evaporation of water from the pools concentrates ions in the remaining water and in the soil, creating the alkaline conditions and intensifying the hardpan effect.

The vegetation of vernal pools is unique. Plant species have evolved very narrowly to the specific conditions of the pools and most are not found in other types of habitats. Different species have adapted to the varying amounts of inundation associated with the pools. Thus as the water level recedes in the spring, the plants coming into flower often appear in concentric rings of different species and colors around the drying pool margins. Microclimate differences between even adjacent pools is common. Variations in drainage, soil moisture, salinity, seed availability and other factors can result in each pool having a different composition of species than its neighbors. Even within a given pool, the species apparent may vary from year to year depending upon the amount and temporal pattern of rainfall received.

Vernal pools once were much more widespread than they are today. Before European settlement of California, vernal pools are believed to have been relatively common throughout the central valley in low-lying, poorly drained soils. Most have been eliminated by agricultural expansion, water control projects, and urban development. The California Department of Fish and Game classifies vernal pools as rare or endangered habitats. Few vernal pools occur outside of California.

The project site contains four fairly distinct clusters of vernal pools stretching for about 1.5 miles along a northwest - southeast axis (for purposes of discussion, these clusters are labeled pools A, B, C, and D). These clusters vary in size from about 28 to 100 acres. Altogether, some 16% of the site consists of vernal pool type of habitat. Because of differences in natural

conditions as well as man-made changes caused by creek channelization and the construction of levees, the existing airfield runways, and the pipelines, the quality and diversity of the pools vary.

The field survey revealed the northwesternmost of the pool clusters -- pool area A, located west of the intersection of the existing airfield runways -- to have a substantial diversity of species and a high wildlife habitat value despite obvious man-made alterations to its original state. There is evidence of earth removal and grading of the area. Nonetheless, the underlying hardpan remains and the native vegetation has reestablished itself even though the shape of the pools has undoubtedly been changed. The flora of this area (particularly Suaeda fruticosa and Allenrolfia occidentalis) indicates that these pools are more alkaline than the others. The larger pools in area A also may support two uncommon grasses (Orcuttia and Neostapfia) that grow only on the dried bottoms of large vernal pools and vernal lakes; these, however, could not be identified during the April field survey in that the larger pools still contained standing water at the time. The great diversity of wildlife in this area is due in part to the prolonged presence of standing water and probably also partly to the exclusion of cattle because of the proximity of the the existing airfield runways. Birds identified during the April visit included, red-winged blackbird, black-necked stilt, black-shouldered kite, mallard, gull, savannah sparrow, long-billed curlew, and marsh hawk. Also noted were coyote and rabbit or hare tracks around the muddy margins of the pools. The smaller pools, although not used by wildlife to the same extent as the larger pools, contain an unusual and highly specialized animal population that includes amphibian larvae, fairy shrimp, and other small crustaceans.

The pools in area B, situated at the southeast end of the existing Runway 14-32, are comparatively undisturbed. The most significant modifications have been to the drainage patterns along the northern and eastern edges as a result of the runway construction, realignment of Brushy Creek, and construction of the pipelines. Also, the vegetation has been somewhat trampled by cattle. Overall, the diversity of plant species in area B, particularly in the undisturbed western side, was found to be greater than in either area A or C. The pools in this area appeared to be the least alkaline.

Area C, in the southeastern portion of Section 22, was noted to have less diversity of plant species than the preceding areas. In contrast to the other pool areas where each pool is largely unique in its floral composition, those in area C are more homogeneous. Heavier cattle grazing may contribute significantly to this condition.

The largest pool cluster is Area D, nearly 100 acres in size, situated east of Byron Hot Springs Road and south of the 45 Canal. This area was not surveyed during the April reconnaissance. It is known, however, to be one of the best examples of vernal pools in the vicinity of the project.

Freshwater Wetlands: This habitat type occurs in small patches along Brushy Creek west of the existing airfield and the tributary creek to the north. It also includes man-made ponds situated immediately north of the present airfield buildings. In total, wetlands comprise less than 1% of the site. These areas differ from the vernal pools in that the water flow is deeper and more constant. Emergent vegetation consequently is more permanent and includes perennial plants such as cattails, tule, and bulrushes. The wetlands provide a water supply, a rich food resource, and a varied source of cover that together give it a high wildlife habitat value. Moreover, the presence of the wetlands increases the habitat value of the adjacent vernal pools and grassland areas.

Introduced Annual Grassland: Grasslands occupy the bulk of the site (over 60%) and are the most common habitat type in the area. The vegetation includes a high proportion of introduced annual grasses together with a mixture of native and nonnative spring wildflowers. Except near the existing runways, the grasslands on the site have been heavily grazed by cattle. Grasslands have important habitat value for raptorial birds and other animals that hunt by sight. Their prey includes insects and small birds and mammals. The smaller species feed on seeds and other parts of the plants. Wildlife identified during the field survey included golden eagle, marsh hawk, turkey vulture, black-shouldered kite, horned lark, meadowlark, and savannah sparrow; plus pocket gopher, black-tailed jackrabbit (scat), and coyote (tracks).

Cultivated Land: Cultivated land is limited to the eastern edge of the site (totally about 13%), east of the 45 Canal. Agricultural use consists of irrigated pasture; no crops are grown on the land. The area has low wildlife habitat value.

Disturbed Areas: Included in this category are areas (about 8% of the site) occupied by structures or paved for roads or airfield runways and taxiways. The vegetation and wildlife value is minimal.

#### Plant and Animal Species of Concern

This discussion focuses on specific rare or endangered species of plants and animals which literature sources and other data indicates could be present at the site. A special effort was made during the field survey to look for these species. A listing of all species identified at the site is included in Appendix B.

Plants: Species of concern in the area include Amsinckia grandiflora, Lasthenia conjugens, Eschscholtzia rhombipetala, and Tropidocarpum capparideum. None of these were found at the site in the habitats suitable for their existence. A variety of Lasthenia, L. fremontii, was noted in several of the vernal pools on the southern and western parts of the site, but this variety is not classified as rare or endangered.

Animals: The animal species of greatest concern in the project area is the San Joaquin kit fox. This species is classified as rare on the California Endangered Species List and as endangered on the Federal Endangered Species List. The site lies about five miles northwest of the Bethany Reservoir and a similar distance east of the Los Vaqueros region, two of the known habitats of the kit fox, and has been thought to be on the edge of their territory. Typical signs of kit fox presence in an area include mounded sprays of freshly dug dirt outside oval holes, trails beaten through the grass converging on holes, and scat and remains of prey.

No such signs were found on the site during the April field survey. No holes suitable for dens were noted. Equally importantly, there was almost no evidence of ground squirrels or badgers, favorite prey of the kit fox. Pocket gophers are common on the site, but there was no indication of canine digging around their burrows. Canine footprints found in the mud around the vernal pools were determined to be coyote. Given these findings, it is concluded that, if kit fox ever are present on the site, their use of the area is limited to occasional hunting of casual territorial movements.

Another species of concern in the area, according to the California Department of Fish and Game, is the prairie falcon. Nests have been reported within five miles of the site. This bird probably includes the airport area in its hunting territory, but none were spotted during the reconnaissance.

#### Alternatives

No detailed study or field investigation of the vegetation and wildlife on the alternative sites has been conducted. The principal habitat types of these sites can be generally characterized, however. East Oakley is rich pasture land for cattle; it is mostly within the natural inundation area of the San Joaquin/Sacramento River Delta and is kept from flooding by levees. The Hillside site is primarily open rangeland on rolling hills. The Southeast Brentwood site is composed of intensively cultivated crop land and orchards.

#### Impacts

##### Habitats

A major design criterion in the layout of the proposed airport was to avoid elimination or disturbance of the most critical habitats. The habitats most impacted by the project would be grasslands and vernal pool area C.

Vernal pool area A would remain unchanged by the project, except for the minimum amount of alterations that might be necessary to correct the flooding problems along Armstrong Road. Area C would also be left mostly undisturbed.

Impacts would be limited to construction of the airport access road across its northeast corner and the possibility that removal of the hill to the east could somewhat affect the drainage flow into the area. Area C, identified as the least significant of the vernal pool areas, would be eliminated during the mid to long-range phases of airport facility construction. Area D would be impacted only at its northern end, where some of it would be covered by runway construction. In total, approximately 35 acres of the estimated 200 acres of vernal pool habitat on the site would be eliminated by the project. Alternative layouts for the airport all would have substantially greater impact on the vernal pools.

The freshwater wetlands along Brushy Creek and its northern tributary are similarly proposed to be disturbed as little as possible by the proposed project. The northwestern end of the airport building area, for example, stops at the creek boundary. Impacts on the creek are expected to be limited to minor drainage changes resulting from grading of the area to the east, flood control measures, and new crossings for the airport access road and a taxiway. The greatest impact these changes would have on the habitat value would be elimination of some of the animal burrows and other habitat on the eastern side of Brushy Creek where the existing 86-foot hill would be lowered by some 20 feet. Alternative plans would necessitate channelization or piping as much as 6,000 feet of the existing Brushy Creek and northern tributary.

Approximately 175 acres of grassland (open pasture) and 20 acres of cultivated land (irrigated pasture) would be eliminated over the 20-year development of the project. Portions of areas within the runway clear zones could continue to be available for cattle grazing. To the extent possible, water would continue to be supplied to the remainder of irrigated pastures partially taken by the project, although the configuration of the irrigation system could need to be changed. Other possible layouts of the airport would have somewhat less of an impact on grasslands and generally none on cultivated areas.

Some disturbed areas would be reused as part of the proposed airport. Other areas would be abandoned. A total of approximately 230 acres not now covered by development would be disturbed by completion of the project.

### Species of Concern

No rare or endangered species of plants or animals were determined to exist on the site and the project is designed to minimize or altogether avoid disturbance of the habitats where they would have most likely been found. The project would not affect the existence of any species of plant or animal. The project would eliminate grassland and the associated vegetation that provides habitat for small mammals and other common wildlife. These animals would be displaced by the project.

### Alternatives

No comprehensive investigation has been done of the impacts that would occur if another airport site was developed instead of the one proposed. Considering the vastly different types of habitats on each of the sites, the impacts would obviously be substantially different as well.

### Mitigation Measures

It is anticipated that most of the impacts that would require special mitigation measures have been avoided or minimized by the proposed design of the project. However, the specific areas to be disturbed by the project should again be surveyed by a biologist prior to when construction of major new phases of work commences. If any species of concern are discovered at that time or even after work is in progress, efforts would be made to find the most suitable mitigation measures.

As mitigation for elimination of one area of vernal pools, the bulk of the other vernal pool areas on the site are proposed to be dedicated as nature preserves. Oversight of these areas perhaps could be delegated to a public or private entity specifically concerned with their ecological importance.

The possibility of creating new vernal pools in another location has been considered as an additional mitigation measure. Vernal pools, however, are a complex mosaic of soils and plants. Evidence from biologists indicates that ver-

nal pools probably cannot be created by man. Nonetheless, it may be possible to recreate a vernal pool that has disappeared as a result of manmade drainage changes. There are places on the site where vernal pools may once have existed before levees were constructed, altering the natural drainage pattern. The possibility that removal of some of these levees could reestablish vernal pools without disrupting areas proposed for aviation uses should be investigated. Removal of levees also may allow Brushy Creek to follow more of its natural course, thus allowing any former freshwater wetland areas to be reestablished.

Drainage patterns from the proposed construction areas should be designed to minimize changes in the flow of water into vernal pool areas unless such changes would be beneficial to the vernal pool habitat. When the project is being engineered, biologists should be consulted regarding vernal pool drainage needs.

As a replacement for the removal of irrigated pasture, the possibility that irrigation water can be supplied to nonaviation, currently dry pasture, portions of the site should be investigated.

## ARCHAEOLOGY

### Setting

A review of literature and other data has revealed no recorded prehistoric or historic archaeological sites within the proposed project area. One historic site is located nearby, however, and there is some indication that historic artifacts could be found within the project boundaries. No field reconnaissance of the area has been conducted as part of the current study and there is no record of any past surveys.

The one nearby site is Byron Hot Springs. It is included on the county list of historic places. The Hot Springs Hotel was a popular recreation and health spa for prominent citizens of the San Francisco Bay Area from the 1880's until the early 1900's when the natural hot springs dried up. The facilities were used as a Japanese prisoner of war camp during World War II. Several major historically significant structures and other smaller ones still stand, including the hotel, baths, manager's house, and cottages. All are in dilapidated condition. There is evidence that some of the smaller buildings are occupied. A possibility exists that a public park could be established on the site (see Recreation section).

An historic map of Contra Costa County depicts some settlement in the project vicinity (McMahon - 1885). Extensive agricultural activities and, to a lesser extent, other development have greatly disturbed the natural surface of the earth in the area and probably would have covered any artifacts that may be there. Nevertheless, it is possible that artifacts associated with early farmsteads could be found on the project site.

Other than the hangars on the existing Byron Airpark, the only buildings within the development area of the proposed project are two barns located adjacent to each other about 1,300 feet west of Byron Hot Springs Road and Holey Road. According to the property owner, both were built in the 1940's and primarily are used for storage of hay.

### Impacts

The project would have no direct impact on any known archaeologically significant features. The only structures that would need to be removed as a result of the project are the two barns and one hangar building.

An indirect impact of the project would be an increase of already existing aircraft overflights of Byron Hot Springs. A minor amount of noise impact would result, but the historic value of the site would not be degraded.

### Mitigation Measures

A field survey of the project area should be conducted by a qualified archaeologist during the initial engineering design phase of the project.

If any artifacts are found during construction activities, work in that area should cease until an archaeologist can investigate and determine the possible archaeological value. This provision should be stated in the project construction specifications.

## LAND USE

### Setting

#### Existing Land Uses

Southeastern Contra Costa County is a rural area characterized by primarily low-intensity agricultural activities. Cattle grazing is the most common land use, some on irrigated pasture, but mostly on open rangeland. The soils, especially those near the project site, generally are inadequate to support crop production.

The small unincorporated community of Byron, population under 1,000, and the growing resort community of Discovery Bay with presently over 3,000 residents, are the only areas of concentrated development within six miles of the proposed airport. Within a mile of the site, residential development is limited to a total of about 20 dwellings mostly located to the west along Armstrong Road and to the east along Byron Hot Springs Road. The age of these dwellings ranges from less than 5 to more than 40 years and the quality also varies greatly. Three of the dwellings are mobile homes. The nearest school to the airport site is the Byron Elementary School located 2.5 miles north.

The location of most of these land uses are depicted on the Approach Protection Plan (Figure 3).

#### Future Land Use

For the most part, land uses in the area have historically changed very slowly. The one major exception to this pattern has been the rapid spread of wind farm development during the past five years. Beginning in the windiest locations of the Altamont Pass in adjacent Alameda County, construction of new wind turbines has moved northward to within 1.0 miles south of the airport site and, as noted in Chapter IV and elsewhere in this chapter, is now proposed for two properties immediately adjacent to the site. This trend is significant in several respects:

- o Wind farms are highly compatible with the cattle grazing for which the land has been used.
- o The wind farms effectively preclude extensive residential development on the properties involved.
- o The value of lands suitable for wind farm development has risen substantially. Although it is too early to accurately predict the effect, early estimates are that the land values have about tripled. Soon to be implemented changes in the tax structure involving wind turbines (see Socioeconomics and Housing section) also could affect the land values, probably in a downward direction.

A potential development that could have even more significant consequences for the southeastern part of the county is the Los Vaqueros Reservoir. This project, known formally as the Los Vaqueros Offstream Storage Unit, has been proposed by the California Department of Water Resources to augment the yield of the State Water Project. It would consist of two large reservoirs in the vicinity of Vasco Road southwest of Byron. The main reservoir would cover an area of up to 7.5 square miles and would require relocation of the road. A secondary reservoir, the Kellogg Forebay, would cover nearly 0.9 square miles extending up a narrow valley to about one mile west of the present Byron Airport. If the water project is built, much of the adjacent land could be developed as a park and the reservoir itself could be open to recreational use. The impacts of such a development undoubtedly would extend to the land uses and road system throughout the area.

### Impacts

Implementation of the proposed project would permanently change the land use of the site and could also affect the future uses of surrounding lands.

### On Site

The most substantial land use change would be the conversion of a small, privately owned airport plus nearly 1,000 acres of adjacent land into what ulti-

mately would become a full-fledged, public airport. A total of some 12 parcels with six different owners are included within the proposed 1,270-acre fee simple acquisition area. Table 2 in Chapter III lists the parcels involved. The distribution of different types of land uses within the acquisition area is summarized in the Vegetation and Wildlife section.

Other than the existing Byron Airpark facilities, improvements on the affected property are minimal. Two barns, described in the Archaeology section, are situated within the building area of the proposed airport and would have to be removed. An irrigation system has been installed on some 170 acres of pasture land located within the acquisition area mostly east of Byron Hot Springs Road. A portion of this acreage would be encompassed by the runway system, but the remainder could be leased from the county and remain in use as agricultural land. Other improvements on the site include the previously described irrigation canal and high-pressure gas and oil pipelines. Although undergrounding of a portion of the canal would be required, its use as well as that of the pipelines would not be impaired by the project.

Only one dwelling is located within the proposed fee simple acquisition area of the airport. This house is situated in the southwestern corner of the Byron Airpark property. Although it would be acquired as part of the acquisition of the Airpark, it is not in an area needed for aviation-related uses and its removal would not be necessary.

#### Airport Environs

The project would have three types of potential effects on land use near the airport site proper. In simplest terms, these impacts can respectively be described as proscriptive, indirect, and qualitative in character.

Proscriptive: The proposed conservation and aviation easements would prohibit certain types of land uses in the airport environs. Only those land uses compatible with airport activities would be permitted. Noise-sensitive uses (such as residential development) and other uses (such as schools or shopping centers, however unlikely they may be) that would have high concentrations of

people would not be acceptable for areas beneath the runway approaches. Restrictions would also be necessary on the height of structures and on other conditions (e.g. production of smoke or glare) that might create hazards to aircraft in flight. There is little pressure for development in the airport vicinity other than wind farms and perhaps some additional residences; consequently, these types of potential land uses are the ones most likely to be affected by the proposed restrictions.

Wind farms would be a problem close to the planned runways because of the height of the turbines (ones proposed for the area are up to 145 feet high). Of the two wind farms proposed for development adjacent to the airport, construction would be restricted on a fourth to a third of the property as indicated on the Approach Protection Plan. Other wind farms that may in the future be proposed for the airport vicinity would have to be evaluated on a case-by-case basis with the height of the turbines being the primary consideration.

Residential development is proposed to be precluded from areas that would regularly be subjected to low-altitude aircraft overflights (below about 400 feet AGL). Noise, safety, and nuisance impacts are all concerns. Based on a density of one dwelling units per existing parcel, potential construction of up to 11 residences would be precluded. If the property could be subdivided to the maximum extent allowed under current zoning (an improbable prospect because of various requirements), a total of some 183 possible dwellings would be affected.

There is no conflict between the proposed airport plan and the preliminary plan for Los Vaqueros Reservoir and associated facilities. The Tuway Canal would be about 1.0 mile southwest of the approach end of Runway 5.

Indirect: The possible indirect land use impact of the proposed airport is that it could stimulate a demand for other development in the vicinity. This growth inducement issue is discussed in the following chapter.

Qualitative: The third kind of land use impact that the project would have on the surrounding area is a difficult one to assess. It concerns the quality of

life that the areas's residents enjoy. The assessment is difficult because to a great extent this factor depends on each individual's perception of the area's character and what elements of it are most important. Many people undoubtedly value the area's quiet, rural atmosphere and would object to any type of development that would give a sense of more "hustle and bustle." The project would affect the character of the area -- there would be more aircraft overflights and vehicle traffic and just a generally higher level of activity. How much this change would disturb people would vary from individual to individual.

### Alternatives

The land uses differ among each of the alternative airport sites and the impacts would vary accordingly. The East Oakley site would primarily affect pasture land of an operating dairy. Land uses on and around the Hillside site are similar to those at Byron -- grazing land on the site with scattered rural residences around the periphery. The Southeast Brentwood site is in intensive agricultural production plus some dwellings would be encompassed within the site boundaries.

The land use impacts of alternative layouts for the Byron site would differ from those of the proposed project mostly in a matter of degree. The total acreage to be acquired would vary to some extent depending upon the configuration of the runways and their relationship to existing parcel lines. The proposed wind farms would be more severely restricted by those alternatives in which the primary runway would be west of the proposed alignment. Also, acquisition of dwellings would be necessary with some layouts.

### Mitigation Measures

#### Acquisition

The removal of land from agricultural production is the principal impact the project would have on existing land uses. This impact can partially be mitigated by allowing land not needed for development of airfield facilities to be

leased out for compatible agricultural uses. In places closest to the runway, the use would be limited to growing and cutting of grass or hay; in locations far enough away for a fence to be constructed around the runway, cattle could be allowed to graze. The land could be leased to adjacent landowners or as a plot (or plots) independent of the adjoining parcels. The possibility that some of this land could be irrigated should be investigated. Agricultural uses would continue to be acceptable on all property proposed to be covered by conservation or aviation easements.

A possible expansion of this purchase-and-lease-back arrangement would be for the county to acquire conservation easements rather than fee simple on certain portions of the proposed airport site. The proposed acquisition boundary generally follows existing parcel lines (only three of the 12 parcels in the fee simple acquisition area would be split). The result is that some land would be acquired that is not essential to airport needs. There may be advantages to trimming off some of the edges of the acquisition area illustrated in the proposed plan. Similarly, much of the land within the clear zones might not need to be purchased in fee if it could be assured that only compatible agricultural uses would take place there (the FAA, however, may require the fee simple purchase). These means of mitigating the impacts of land acquisition should be examined when the property purchases are being negotiated. It could be found that they would both reduce the acquisition costs and be beneficial to the landowners.

#### Incompatible Uses

A potentially more significant land use impact associated with the project is the possibility that development incompatible with airport activities could occur around the site. The project proposes two major measures to mitigate against this possibility.

- o The fee simple acquisition area would extend beyond the projected 20-year needs of the airport to protect for the ultimate foreseeable development. The ultimate runway clear zones are included within the proposed property line.

- o Proposed conservation and aviation easements would permanently assure land use compatibility in areas extending more than a mile from the airport while allowing the underlying ownership of the land to remain private.

In addition to these actions, other land use controls that should be considered include:

Airport-Vicinity Height Limit Zoning Ordinance: Such an ordinance would generally parallel the limits set by the aviation easements, but could be implemented prior to when the easements would be obtained on some properties. Also, it would cover a broader area than the aviation easements.

County Land Use Zoning: The County could modify the current land use zoning for the airport vicinity as appropriate to assure that only those uses compatible with the airport would be permitted. Given the predominantly agricultural zoning of the area, few changes would likely be necessary.

Buyer Awareness Program: The County could institute a program requiring that prospective buyers of property in the airport vicinity be notified by their real estate agent and/or title company regarding the proximity of the airport and the type and level of activity anticipated to occur there. Such a program could reduce the nuisance impact of the airport by eliminating the surprise factor and enabling individuals who might be most annoyed by aircraft overflights to avoid moving to the area.

Airport Land Use Commission Plan: The new airport would come under the jurisdiction of the Contra Costa County Airport Land Use Commission (ALUC) and the commission would probably adopt a land use compatibility plan for the airport environs. Such a plan would address the noise, safety, and height limit aspects of compatibility between the airport and its surroundings. Moreover, state law requires that the local land use plan and zoning designations be consistent with the ALUC plan unless specific steps are taken to override the commission's plan.

## NATURAL RESOURCES

### Setting

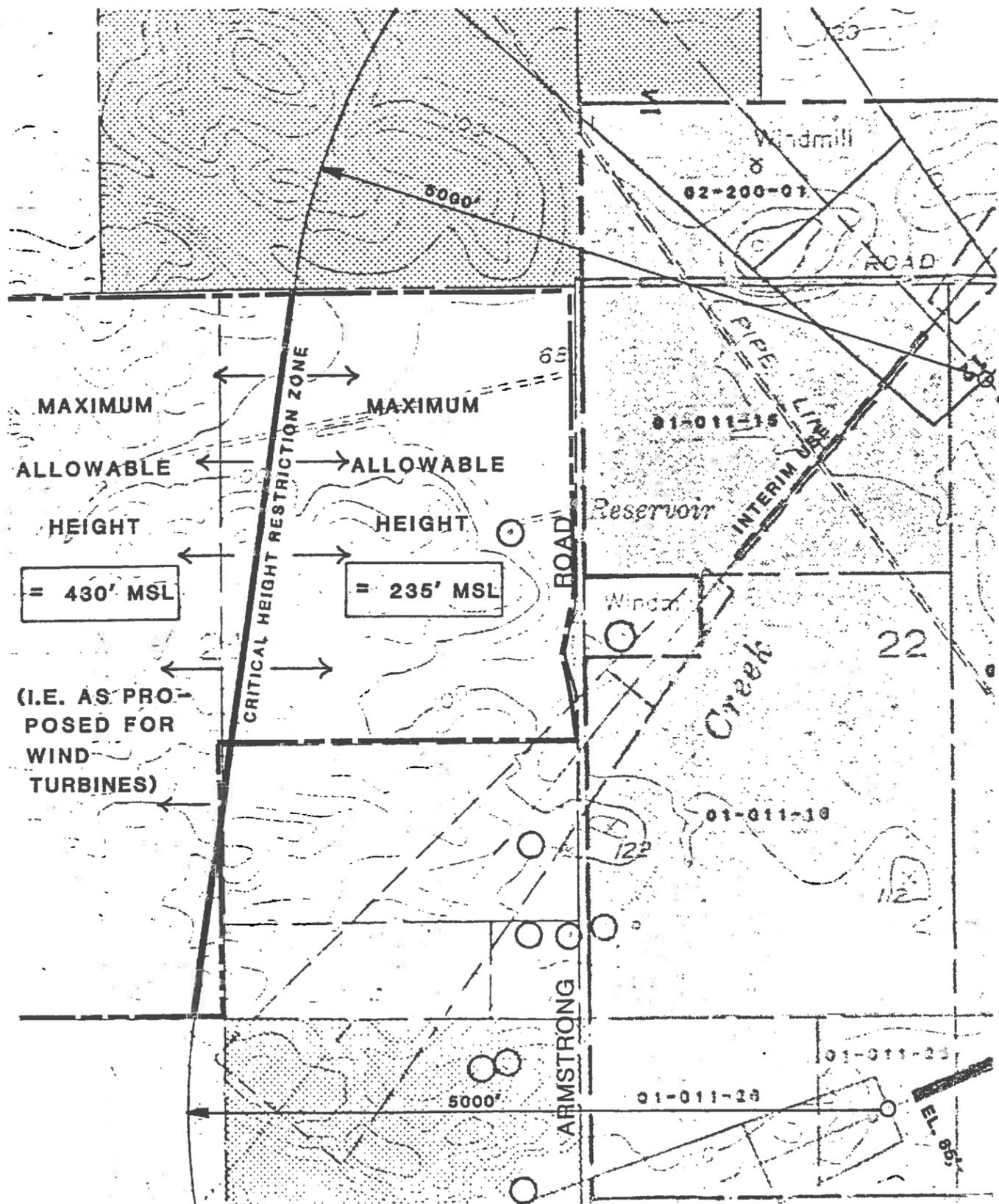
The natural resource in the area that is most significant to the project is wind energy. The extent of local wind energy development is described in the Land Use section. Nearly 5,000 wind turbines of various designs and sizes have been erected in and around the Altamont Pass to take advantage of the strong and consistent winds. The best wind conditions are found on the hills bordering the pass. Farther north, in the vicinity of the proposed airport, the hills are lower and the wind conditions are more marginal. With present technology, an average wind speed of about 11 mph is considered necessary for a wind farm to be practical. A discussion of the economics of wind farms follows in the Socioeconomics and Housing section.

The agricultural value of the land is low. This topic is discussed in the Vegetation and Wildlife and the Land Use sections.

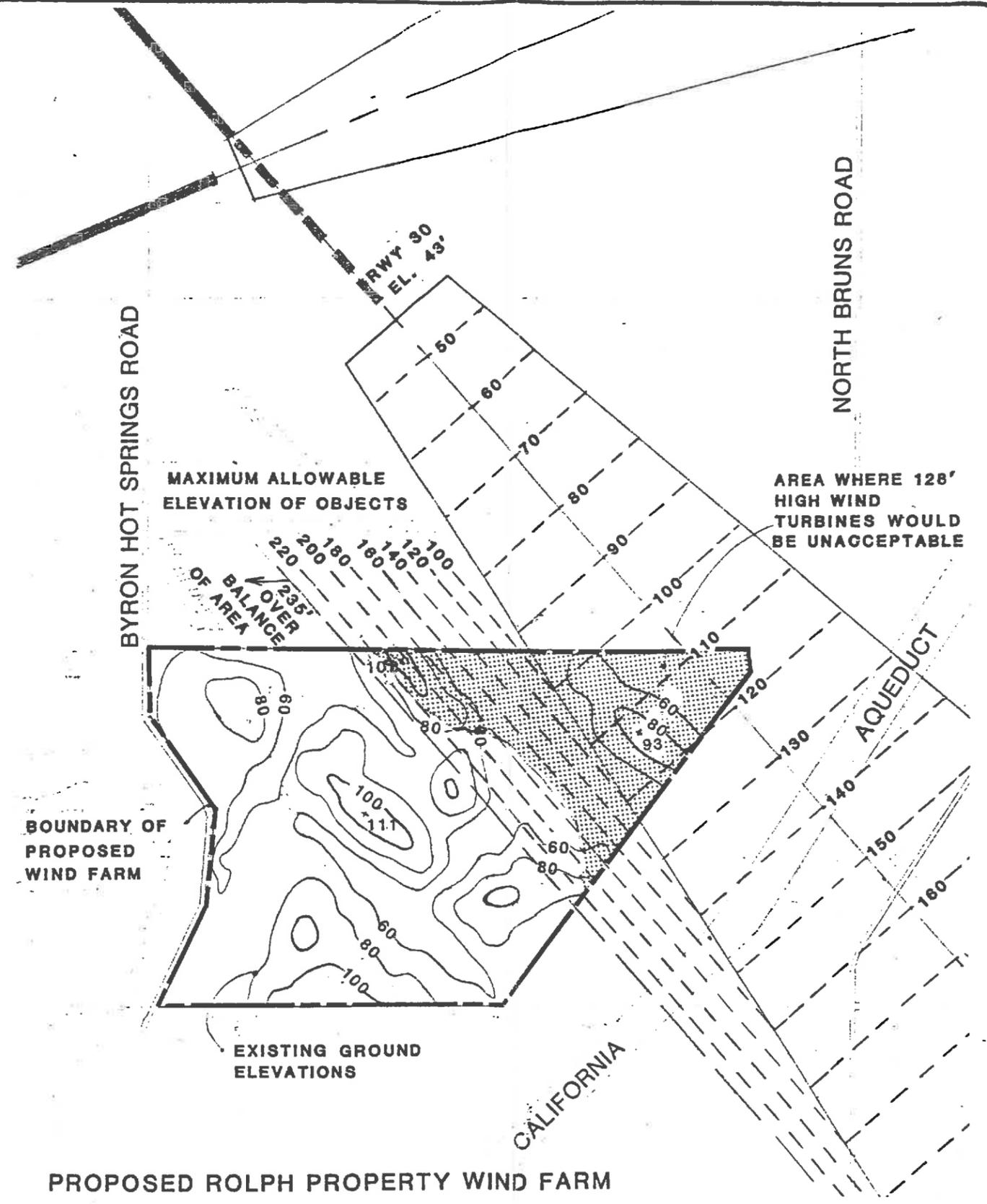
### Impacts

If the airport is to be built, construction of wind turbines in certain areas close to the airport would have to be prohibited or restricted as described and illustrated in Figure 10 in the Airspace analysis. Approximately 25% to 33% of the machines proposed for installation west and southeast of the site would be affected. Although the differences may be slight, the portion of each of the wind farms that would be precluded represents generally the poorer part in terms of wind energy potential.

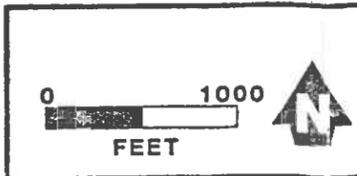
Another type of impact that the project would have on natural resources is the consumption of materials for construction of the airport pavement and other facilities. Base rock and asphalt would be the two major construction components. No particular difficulty in locally obtaining these materials is anticipated.



PROPOSED SOUZA PROPERTY WIND FARM



PROPOSED ROLPH PROPERTY WIND FARM



REQUIRED RESTRICTIONS  
ON WIND FARM DEVELOPMENT

Figure 10

## Alternatives

Evaluation of the alternatives conducted during the site selection phase of the project indicated that the most significant natural resources existing on those sites are good agricultural soils on the East Oakley and Southeast Brentwood sites and sand at the Hillside site. Development of these sites would limit the future use of the soils, but would have potentially allowed or even increased the rate of sand extraction. Each of the alternative sites would consume somewhat less natural resources for construction materials because of the lack of a need for a second runway.

Alternative layouts of the Byron site, as noted in the Airspace section, would have a more significant impact on wind turbine development than the proposed plan has. Similar amounts of construction materials would be used in each plan.

## Mitigation Measures

The project was designed to minimize the necessary restrictions on proposed wind farm sites. Short of not building a new airport at the Byron site, no other mitigation measures are suggested.

Efforts should be made to avoid wastage of natural resources used in construction of the project.

## SOCIOECONOMICS AND HOUSING

### Setting

Eastern Contra Costa County is socioeconomically an area of generally modest incomes. The characteristics of the area differ from north to south, however. The northern part, around Oakley, is experiencing rapid growth in part because the homes in the new subdivisions there are among the least expensive in the San Francisco Bay Area. Brentwood and vicinity, in the central part of the East County, is also increasing in population; however, intensive agricultural production, including various types of orchards and other crops, is still the economic mainstay of the community. Agricultural activities, primarily centered around cattle raising, are also the principal sources of income in the southeastern corner of the county surrounding Byron and the project site. The recent spread of wind turbine development in the hills near the county line has provided a new source of income for some of the area's landowners.

Wind farms typically are developed by wind energy companies that obtain investment money from private parties, lease the land from local landowners, and then install and maintain the wind turbines. A typical wind turbine costs about \$150,000 to install. The annual revenue to the landowner can average about \$1,000 per machine; at 2 to 5 acres per machine the resulting \$200 to \$500 per acre income is significantly more than the typical \$115 per acre that can be obtained from cattle grazing (San Francisco Chronicle - 1985). Local governments also benefit financially from wind farm development. Property tax revenues can amount to about \$1,900 per turbine initially, but this figure decreases rapidly as the equipment is depreciated. Over a 20-year lifespan of a wind turbine that was worth \$150,000 new, the total personal property tax assessment would be approximately \$20,000.

A major incentive to investment in wind farm development in recent years has been the federal and state tax credits given for alternative energy sources. The intention behind these programs has been to help the get industry past the initial expense of developing a new technology. Now, though, the credits are

scheduled to expire (federal at the end of 1985, state within three years) and are not expected to be renewed. What affect this expiration will have upon future wind farm development in the area is still uncertain.

As noted in the Land Use section, some 20 dwellings are located within a mile of the proposed airport. These dwellings vary from modern, large homes to older farm house to mobile homes.

Grants for airport development are available from the Federal Aviation Administration and the California Division of Aeronautics. Approximately 90% of the construction costs are eligible for federal and state funding.

### Impacts

Except for the restrictions that would be posed on wind farm development, the project's impacts on socioeconomic and housing conditions in the east county are anticipated to be relatively minor. The airport itself would be a small additional source of employment in the area. Additionally, to the extent that it would attract visitors, it would bring outside income to the area.

Employment generated by the airport would not have any significant effect on the demand for housing in the area. The project does not necessitate the removal of any dwellings from the existing housing stock. It would, however, preclude development of new residences in certain areas bordering upon the site.

The project would have an adverse impact on income that local landowners potentially could obtain from wind turbine development on their property. As noted in the Natural Resources and Airspace sections, portions of two proposed wind farms would need to be prohibited to prevent conflict with the airport.

Local government also would lose approximately \$13,000 per year currently obtained from taxes on the property that would be removed from the tax rolls as a result of county acquisition of the airport site. Partially offsetting this loss would be the additional taxes that would be paid on the increased number

of aircraft that would be expected to be based in the county. Increased aviation fuel sites would also generate more taxes. New aviation businesses at the airport would pay taxes as well.

Construction of the airport would cost the county as much as \$1.2 million over the next five years and perhaps \$2 million through 20 years. These estimates are based on a county share of 10% of the eligible project costs as established in current FAA grant guidelines plus various costs from noneligible items: project start-up and administration, etc. It is expected that the county funds would mostly be obtained from revenues generated by Buchanan Field and later by the new airport. This subject will be further addressed in another study report.

#### Mitigation Measures

These impacts are minor. No mitigation measures are suggested.

## AIRSPACE

### Setting

Airspace is a category of environmental impact unique to projects involving airports. It is concerned with the interaction between airports, the effects of a project upon the airway system, and the existence of obstructions to the navigable airspace around an airport.

### Airports

Except for the Byron Airpark itself, all of the existing airports within 10 miles of the proposed East Contra Costa County Airport are private-use facilities. Most are used primarily for agricultural activities. The nearest are: Baldwin Strip, 4 miles northeast; T's Nectarine Ranch, 5 miles north-northwest; and Pilati Strip, 5 miles north. All have very low activity and operate only under daylight, visual flight rules conditions.

### Airways

The nation's airspace is divided into controlled and uncontrolled areas. Aircraft operations conducted within controlled airspace must meet more stringent standards with regard to visibility, distance from clouds, etc., than those in uncontrolled airspace. All aircraft operating in controlled airspace do not necessarily need to be in contact with FAA air traffic controllers, however; the requirements vary depending upon the type of controlled airspace involved. The airspace above the Byron site is controlled beginning at 1,200 feet above ground level. The site is located beyond the boundaries of the San Francisco Terminal Control Area wherein all aircraft must be in contact with traffic controllers.

Within the low-altitude (from 3,000 feet AGL up to 18,000 feet MSL) portion of the controlled airspace a series of routes called Victor Airways have been established. A half dozen airways pass through the airspace within 5 miles of the

Byron site converging at an intersection 6 miles to the west. Aircraft following these airways navigate by means of radio signals from various navigational aids called VOR's (Very-High-Frequency Omnidirectional Range). The VOR's nearest the proposed airport are located southeast of Stockton, at Linden (north-east of Stockton), south of Sacramento, at Oakland, and at Concord.

### Obstructions

Obstructions to the navigable airspace are defined by Part 77 of the Federal Aviation Regulations, "Obstructions to Navigable Airspace," and by U.S. Terminal Instrument Procedures Standards (TERPS). Each establishes imaginary surfaces in the airspace around an airport. If the height of an object (high terrain, trees, structures, etc.) exceeds a Part 77 surface, an evaluation is conducted by the FAA to determine if a hazard results. Often the only requirement is installation of obstruction lighting on the object so that it can be more easily seen at night or when visibility is poor. More serious obstructions, if they cannot be removed or prevented from being constructed, can result in restrictions on use of the airport (e.g. where traffic patterns are located, how instrument procedures are designed, or when the airport can be used). In the most extreme cases, an airport can be restricted to private use or even forced to close.

TERPS surfaces supplement the Part 77 surfaces and are used specifically in the design of instrument approach procedures. The height of objects that penetrate the TERPS surfaces determines first whether an instrument approach procedure can be established and, if so, the minimums (cloud ceiling height and horizontal visibility) required for an aircraft to be able to land.

There are various potential obstructions in the vicinity of the proposed East Contra Costa County Airport. These include: high terrain to the northwest, west, southwest, and south; powerlines in the hills to the west and others to the south and east; and existing and proposed wind turbines west, southwest, and southeast of the site.

## Impacts

### Airports

None of the existing airports near the proposed East County facility are close enough or busy enough for any significant airspace conflicts to result.

### Airways

The abundance of airways near the proposed airport is both an advantage and a disadvantage. The advantage is that they would enhance navigation to the airport and simplify the establishment of instrument procedures. The disadvantage, a minor one, is that more aircraft are flying over this area than perhaps over other locations. This is not regarded as a significant factor, however, because such aircraft are at a minimum altitude of 3,000 feet and usually are much higher.

### Obstructions

The obstruction issue has been analyzed in considerable detail during the course of the project planning and environmental impact analysis.

Terrain and Power Lines: The high terrain to the west and southwest penetrates the Part 77 surfaces associated with the proposed airport. The location of the northeast - southwest runway was dictated in part by the terrain in this area. A hill on the site near the runway end would need to be lowered to provide a clear approach surface. (See Approach and Clear Zone Plan, Figure 3). Beyond this, the nearest penetrations are nearly 5,000 feet from the runway (beyond the normal traffic pattern limits). It is concluded that, although the high terrain would affect some of the potential instrument approach procedures and could necessitate certain constraints on visual flight rules operations, the overall impact is not serious. A similar conclusion has been reached with regard to the power lines, particularly those east and south of the site. Those to the west are more significant because of their location near the ridge tops. Obstruction lighting of some of the towers may be necessary and could be expen-

sive. (A major portion of the cost would result from the need to get continuous power to the lights; power in the transmission lines is not continuous). A determination on this matter will be made by the Federal Aviation Administration.

Wind Turbines: The wind turbines are a more difficult issue. The concern is with the new wind farms proposed to be located within a mile southeast and west of the airport (existing wind turbines farther away present no problem). The fact that the anticipated sequence of events requires county action regarding the wind farm proposals before final decisions can be made on the airport plan precludes the normal analysis by the FAA. Although it is anticipated that the FAA, when reviewing the proposed airport plans, would concur with the analyses conducted for the present study, the possibility remains that the future development of the airport could in some manner be constrained.

The easterly portion of the development to the southeast would lie on the extended runway centerline within 4,800 feet of the planned end of Runway 30 and within 3,200 feet if the runway is ultimately extended to 6,000 feet. The proposed turbines, 128 feet high to the top of the rotor blade arc, would penetrate both the Part 77 and the TERPS surfaces for a precision approach to the extended runway. Although nearly three-quarters of the wind farm development is concluded to pose no significant problem, construction of the turbines in and near the runway approach zone would conflict with the ultimate development potential of the airport.

Analyzing the potential impact of the wind farm proposed on the property west of the airport site is, in certain respects, more complex than the above analysis. Because the terrain in this location is higher than that to the southeast, wind turbines of almost any height (the proposed ones would be 145 feet) would penetrate the airport's Part 77 horizontal surface. This surface would be established at an elevation of approximately 235 feet MSL, 150 feet above the highest point on the airport runways and would extend approximately 10,000 feet from the ends of Runways 12 and 30. As noted above, however, penetration of a Part 77 surface does not necessarily constitute a hazard. The present

analysis concludes that no significant hazard would be presented if wind turbines of the 145-foot height proposed are constructed on the western three-quarters of the wind farm site lying more than about 5,000 feet from the nearest planned runway ends. This conclusion is based in part upon the following considerations: the normal traffic patterns would be within this distance from the runways; aircraft entering and leaving the traffic pattern would be at an altitude adequately above the proposed wind turbines; and only visual operations would occur over this area because the higher terrain farther to the west requires that instrument operations be restricted to east of Runway 12-30.

If other wind farms are proposed near the airport site, they would have to be examined on a case-by-case basis to determine if they would conflict with development or use of the airport.

#### Alternatives

As mentioned in Chapter III, the locations of existing and proposed objects that could constitute airspace obstructions were major design constraints. Alternative plans in which the primary runway would be aligned close to the existing Runway 14-32 would conflict with the wind farm development more seriously than the proposed plan does. The critical height limit areas for the alternative plans are indicated in Chapter VII. Moving the runways northward would create more terrain obstructions although the significant ones could be removed with a feasible amount of earthwork. A shift toward the east would result in the transmission lines in that area becoming critical obstructions.

Each of the alternative sites would have some airspace constraints. The extensive network of high-voltage transmission lines in eastern Contra Costa County is a factor at almost any potential airport site. The wind turbine issue, however, is not present at the alternative sites.

#### Mitigation Measures

The only significant airspace impacts associated with the proposed project are the potential airspace obstructions. As suggested previously, the first meas-

are usually taken to mitigate any hazards that cannot be avoided is to install obstruction lights. Smaller electric lines close to the site would be undergrounded as part of the project if they pose conflicts.

As a means of assuring that unacceptably tall structures are not erected in the airport vicinity, the Master Plan proposes that aviation easements be obtained on nearby property. These easements would set the allowable height limits and permit the county to install obstruction lights where necessary.

Once the airport plans have been approved by the Federal Aviation Administration, proposals for construction of tall objects in the vicinity would have to be submitted to that agency for evaluation of potential conflict with the airport.

## ROAD SYSTEM AND TRAFFIC CIRCULATION

### Setting

#### Current Conditions

The major access routes to the site for most of the potential airport users would be via State Route 4 and County Route J4 (Byron Highway). Both are currently two-lane roads.

The existing local roads serving the site are Byron Hot Springs Road, Armstrong Road, and Holey Road (see Figure 2). These are each substandard two-lane roads with pavement in generally poor condition. Right-of-way widths are 50 or 60 feet. Byron Hot Springs Road intersects with Byron Highway at a 45° angle complicated by an adjacent railroad grade crossing that necessitates an approximately 5-foot hump in Hot Springs Road.

Current traffic volumes on most of the roads in the area are low. Average weekday two-way traffic counts in early 1985 were as follows (Contra Costa Public Works Department - 1985):

o Route J4	-- between airport site and Byron	-- 5,353
o Route J4	-- north of Byron	-- 6,534
o Route 4	-- west of Discovery Bay	-- 8,657
o Route 4	-- south of Brentwood	-- not measured estimated at 10,000
o Route 4	-- 3 miles north of Brentwood	-- 16,074

Peak hour traffic volumes on these roads are generally less than 10% of the daily two-way totals and under 15% of the daily one-way totals. No counts have

been conducted on the local roads adjacent to the site. The estimated counts, though, are less than 500 vehicles per day.

#### Future Conditions

The need for future improvements on major roads in the area has been evaluated in a series of Route Concept Reports prepared by the California Department of Transportation. The report on Route 4 proposes that the route be relocated and constructed as a four-lane freeway extending from about the present junction with Route 160 to near the junction with County Route J4. No specific alignment is suggested. The cities of Antioch and Brentwood, however, have adopted a corridor that they want the freeway to follow. County staff indicates that construction of this freeway is probably at least 15 to 20 years away.

Two other highway routes in the area do not presently exist as state roads. One route basically follows the same corridor as Highway J4 from Route 4 north of Byron to Interstate 580 near Tracy.. This road would be constructed as a two-lane conventional highway with provisions for widening to four lanes. The other unconstructed highway in the airport site vicinity is Route 84. If built, this road would run from near the present junction of Interstate 580 and Route 84 close to Livermore to Route 4 between Byron and Brentwood. The concept for this route is a four-lane freeway. No specific alignment has been adopted.

Projections of future traffic volumes on these roads are not available. Considering the continuing land use development in the area, however, the traffic will certainly increase substantially, especially north of Brentwood. The nearest major traffic generator to the airport site is the community of Discovery Bay; its continued expansion will add considerable traffic to Highway 4 and, to a lesser extent to Highway J4 as well. Possible construction of Los Vaqueros Reservoir would have major impacts on traffic throughout the area as well.

No public transportation serves the airport area. Dial-a-ride service is available with prior arrangement; without an advance call, a 2-hour wait is common. Taxi service and rental cars are currently unavailable in the area; the nearest taxi service or rental car agency is in Antioch or Tracy.

Impacts

Traffic Generation

The airport would generate additional vehicle traffic on roads in eastern Contra Costa County. The impact would be significant on the roads immediately adjacent to the site, but minor with respect to Byron Highway or Route 4. The five- and twenty-year projections for total traffic to and from the airport are as follows:

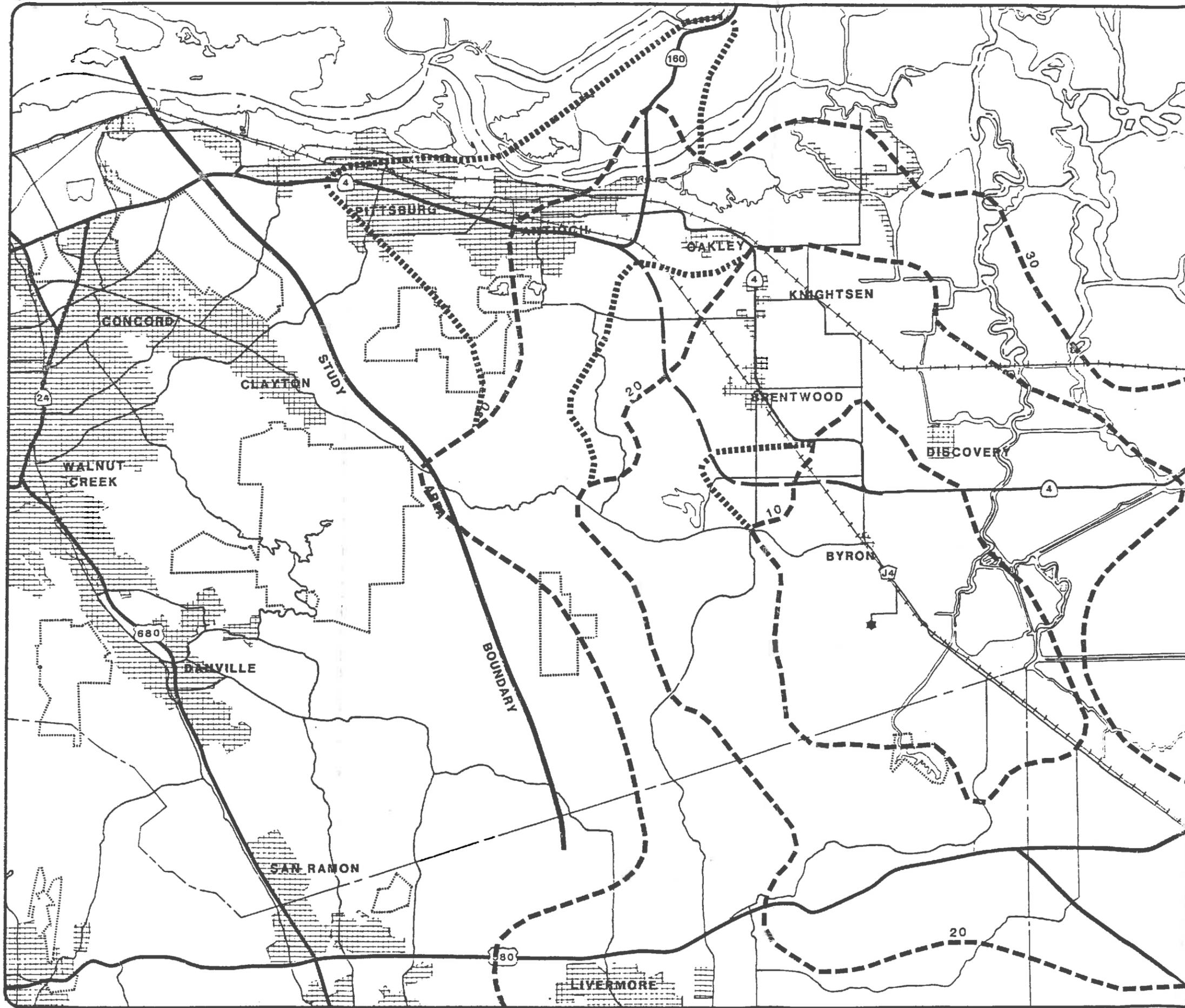
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<u>Year</u>	<u>Aircraft Operations</u>		<u>Estimated Total Vehicle Trips</u>		
	<u>Annual</u>	<u>Average Day</u>	<u>Average Day</u>	<u>Peak Day</u>	<u>Peak Hour</u>
1990	45,000	125	250	600	100
2005	160,000	450	900	1,600	200

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These projections of airport-related traffic include trips generated by aircraft pilots and passengers, employees of the airport and airport businesses, and other people who visit the airport for miscellaneous reasons. At general aviation airports not having commuter airline activity, the number of airport-related trips has been found to correlate most closely with the number of aircraft operations. The above traffic projections are data from existing airports that provide similar services.

The 1990 peak-hour airport traffic would represent less than 20% of the current average day, peak hour traffic on Byron Highway. Moreover, the peak-period



**LEGEND**

- ★ AIRPORT SITE
- ZONE OF EQUAL DRIVING TIME (IN MINUTES) FROM SITE - CURRENT CONDITIONS
- POTENTIAL FREEWAY EXTENSION
- ZONE OF EQUAL DRIVING TIME (IN MINUTES) FROM SITE - FREEWAY EXTENSION CONSTRUCTED



**GROUND ACCESS TIME  
PROPOSED AIRPORT SITE**



Figure 11

traffic to the airport would normally occur on weekends; the highway traffic is probably lighter than average on such days. Even with the airport traffic, the highway capacity appears unlikely to be strained any time in the near future.

At greater distances from the airport, traffic will have dispersed onto a variety of routes. Although Highway 4 can be expected to handle the majority of airport-bound traffic, the airport's proportion of the total on this road would be small and the airport peak-period traffic would not coincide with the overall peak-traffic on the road.

The traffic that the airport would add to Byron Hot Springs and Armstrong Roads would be significant not so much because the volumes would be particularly high, but because these roads cannot safely accommodate any notable traffic increase. The problems of the narrow pavement width and poor grade crossing were cited above. Improvements to both roads are included as part of the proposed project. In accordance with County standards, the pavement would be strengthened and widened to 28 feet from Byron Highway to the airport. The existing right-of-way should be adequate. Proposed improvements at the grade crossing would increase the sight distance over the hump and reduce the grade on the Byron Hot Springs Road side of the crossing.

#### Access Time

As noted in Chapter III, the bulk of the airport users are expected to come from the Antioch, Oakley, and Brentwood areas. The present average travel time from central Antioch to the airport site is approximately 30 minutes. Since the Oakley and Brentwood areas are closer to the site, the airport access time for the average user is estimated to be slightly less, about 25 minutes. This time is expected to stay about the same in the longer term -- the centroid of the user population would move closer to Brentwood and to the airport, but overall traffic increases would probably reduce the average speed. The one significant development that could reduce the access time would be extension of the Route 4 freeway. Construction of the westerly access route onto the site also would save a minute or two.

Figure 11 depicts the access times to the Byron site from throughout the east county and surrounding areas. The estimated 1980 and projected 2000 total population within 20 and 30 minutes of the site are as noted below:

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<u>Year</u>	<u>Access Time</u>	<u>Area</u>	<u>Total Market Area Population</u>
1980	20 Minutes	Within Contra Costa County	15,000
		All Areas*	40,000
1980	30 Minutes	Within Contra Costa County	65,000
		All Areas*	130,000
2000	20 Minutes without freeway	Within Contra Costa County	45,000
2000	20 Minutes with freeway	Within Contra Costa County	60,000
2000	30 Minutes without freeway	Within Contra Costa County	125,000
2000	30 Minutes with freeway	Within Contra Costa County	180,000

\* Including adjacent portions of Alameda and San Joaquin Counties

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#### Road Closures

Another impact of the proposed airport would be the need to sever Byron Hot Springs Road south of Holey Road. All parcels now served by this road must

continue to have access. The road presently becomes a private road at a wind farm about 1.5 miles south of Holey Road. Five large parcels -- one with a single residence on it, one with the wind farm, and three that are undeveloped, including the one proposed for development of a wind farm -- have access from the road. The State Department of Water Resources does not normally use Byron Hot Springs Road for access to the Aqueduct or the Delta Pumping Plant (the regular access is from the south).

The proposed project would maintain access to all parcels now having access from Byron Hot Springs Road. However, because the traffic on this portion of the road is extremely light and expected to remain so (except possibly during construction of the wind farm), the replacement road is proposed to be a minimal facility. On an interim basis, a short, unpaved road would be constructed around the southeast end of the runway. Later, a longer new road would be necessary. This road, about 1.3 miles in length, also would be gravel surfaced until such time as traffic volume would warrant a heavier construction. Both the interim and the later roads would be on the proposed airport property.

#### Alternatives

Several access road alternatives have been considered.

A more extensive reconstruction of the grade crossing would perhaps enhance safety to some extent, but would be substantially more expensive and would disrupt both the adjacent properties and traffic on Byron Highway; the volume of traffic involved does not warrant this level of effort.

- o Establishing Holey Road as the major access route to the airport would increase the access distance for most users and undoubtedly would not be used unless the existing connection at Byron Hot Springs road and Byron Highway was severed.
- o With regard to replacing the severed portion of Byron Hot Springs Road south of Holey Road, the principal alternative would be a new road extending running along the north side of the California Aqueduct from

the south end of North Bruns Way to Byron Hot Springs Road. This alternative would be advantageous if a road could be built on state lands or a public easement across the property proposed for wind turbine development. Its disadvantages would be that some additional right-of-way would be required and it would not as readily provide emergency access to the south side of the airport.

Another type of alternative to be considered is with regard to the mode of access to the airport. It is assumed here that the private automobile would be the means of access for essentially all airport users. Although it is unlikely that any other mode could account for any substantial percentage of the access trips, the availability of other choices would be desirable. The demand, however, would be insufficient to support modes such as scheduled bus service or local rental car service except in conjunction with overall improvement of services within the southeastern part of the county. Possibly, as airport traffic increases, better dial-a-ride service would be possible or some loaner cars might be made available at the airport.

Alternative layouts of the Byron site would generate similar amounts of vehicle traffic as the proposed plan, but would have different impacts on some of the immediately surrounding roads. Neither of the alternative plans would require severing of Byron Hot Springs Road, although Plan B would involve rerouting a portion of Armstrong Road. Widening of the northerly segment of Byron Hot Springs Road and improvement of the grade crossing would be necessary in any case.

Each of the alternative airport sites would have its own distinct impacts on local roads. Aside from the differences in which roads would require improvements, probably the most significant difference is that the average access distance to the alternative sites would be less than to Byron. The East Oakley site would be particularly advantageous in this regard in that it lies within 15 minutes access time from most of the potential airport users. A full evaluation of this issue is contained in the Site Identification and Evaluation report.

### Mitigation Measures

Measures to mitigate the anticipated ground traffic and circulation system impacts of the proposed airport are incorporated into the project. These include:

- o Widening and strengthening of Byron Hot Springs and Armstrong Roads.
- o Improving the grade crossing on Byron Hot Springs Road near the intersection with Byron Highway.
- o Replacing the severed portion of Byron Hot Springs Road with a new road on the proposed airport property.

As long-term mitigation for the grade crossing problem, construction of a new access route to the airport should be considered. A preferred alignment for this road, from an airport access standpoint, would be from Byron Highway about a mile south of the town of Byron and along the west side of the Byron Hot Springs property. Approximately 1.4 miles of new right-of-way would be required. If this new road is constructed, the access road onto the airport should be relocated to run along the alignment of the existing Runway 14-32, crossing Brushy Creek near the edge of the building area as depicted on the Airport Layout Plan. Relocation of the access road also would be necessary before the localizer needed for instrument approach capability to Runway 30 could be installed.

## PUBLIC UTILITIES AND SERVICES

### Setting

#### Utilities

The existing utilities serving the area are limited to electric and telephone systems. Pacific Gas & Electric Company provides electrical service. Low-voltage overhead lines run along west side of Byron Hot Springs road and north and west sides of Armstrong Road. The telephone service is operated by Pacific Bell.

Domestic water in the area is obtained from wells on the individual properties. Both the flow rates and the quality are generally poor. Nitrate contamination is the principal quality problem.

As of mid 1985, efforts are under way to determine the feasibility of installing a community water system for Byron. The preliminary boundaries for this system are those of the Byron Sanitary District; that is, encompassing the built-up part of the community. The potential sources of water are the Byron-Bethany Irrigation District's 45 Canal or deep wells. Funding remains the major question; if the need for a system can be adequately documented, application will be made for State Safe Drinking Water bond funds and construction could be underway in two or three years.

Septic systems are used for wastewater disposal in the vicinity of the site. Percolation rates in much of the area are poor because of the clayey soils. The Byron Sanitary District provides wastewater treatment for some 300 mostly residential connections within the Byron community. The system's capacity is adequate for the current and projected needs.

As noted in Chapter III, in addition to the local service systems, several major utility distribution lines pass through the project area. These include

six PG&E electric transmission lines within two miles of the site and two high-pressure pipelines that cross the site. The precise locations of the transmission lines can be seen on the Approach and Clear Zone Plan (Figure 4).

The two pipelines run about 12 feet from each other in a northwest - southeast direction across the center of the site within the same 30-foot right-of-way. The westerly pipe is operated by Chevron USA/Standard Oil and transports crude oil at a pressure of 400-500 psi. The pipe is 18 inches in diameter, constructed of steel. The second pipe is owned by Standard Pacific Gas Line, Inc. and used by PG&E for transmission of natural gas. It is a 26-inch diameter line with pressures of about 450 psi. In conjunction with this pipe, PG&E also has a telecommunications line (used to relay data regarding flows, pressures, etc.) that runs through the area underground near the existing airport and overhead in other areas.

A third line, now abandoned, parallels these two through the northern part of the site, then diverges slightly to the east. Its most recent use apparently was for transporting water northward to the Ridgemoor sand-extraction facility.

#### Services

The site falls within the jurisdiction of the Contra Costa County Sheriff's Department. The nearest station is located in Oakley, but regular patrols cover the Byron area. Typical response time to the site vicinity is 7 to 10 minutes.

Fire protection in the area is the responsibility of the Byron Fire Protection District. A station is located in Byron about 3 miles from the airport site. Four to five volunteers are usually available to respond to a call within five minutes. Fire fighting equipment includes a truck with foam spreading capabilities.

## Impacts

### Utilities

The proposed airport would require electric and telephone, water, and wastewater facilities.

General aviation airports typically are not large consumers of electricity. The principal power uses at the East Contra Costa County Airport would be for runway lighting, a rotating beacon, security lighting, and functions within buildings, air conditioning being the major one. These power requirements probably can be met with 220 volt, 300 amp (3-phase, 4-wire) service. Annual power consumption is estimated to be about 60,000 kwh initially, increasing to perhaps 300,000 kwh in 20 years. Fixed base operations and other private facilities on the airport (e.g., private airport hangars) would have additional requirements at about the same order of magnitude. The existing service lines within the immediate vicinity of the site would need to be upgraded to accommodate these needs, but the overall capacity in the area is adequate.

Telephone system requirements at the airport would be limited to a few lines -- perhaps as many as a couple of dozen -- serving the terminal building and fixed base operations.

The principal water uses at the airport would be for drinking and restroom functions, aircraft washing, and fire protection. Total water consumption would be relatively low. Potable water would be needed for at least the first of these uses. Also, for fire protection, local flow rate and pressure requirements must be met. The anticipated source of water for the airport is the Byron-Bethany Irrigation District 45 Canal. Preliminary discussion with the District management indicate that such a proposal would be given serious consideration. On-site treatment of the water would be necessary, with the capacity limited to that required for airport-related uses.

Alternative water sources include deep wells on site or a connection to the proposed Byron community system. Major shortcomings of a well are uncertainty

of adequate volume and the possible need for added treatment because of nitrates in the groundwater. Connection to the community system would require installation of some 2.225 miles of pipe from where the system would otherwise end. Approval of the County Local Agency Formation Commission (LAFCO) also would be needed for service to be provided to the airport. Although the LAFCO has not yet adopted a sphere of influence for this proposed system, the boundary likely will be contiguous with those of the Byron Sanitary District. This option would have greater growth-inducing effects than the proposed plan and would likely be more costly as well. Its advantage would be avoidance of the need for on-site treatment and pumping facilities.

Disposal of wastewater is also proposed to be done with on-site facilities. The estimated average flow ranges from 1,250 gallons per day initially to 4,500 gallons per day in 2005 provided that no restaurant is located at the airport. Finding a location on the site where an adequate percolation rate for a septic system could be obtained may not be possible. Some type of mechanically aerated system installed on the site would therefore be necessary.

The alternative form of wastewater would be to run a small diameter, low-pressure force main northward to Byron Sanitary District system. This alternative would require LAFCO approval since the district's sphere of influence is limited to its current service area. It also would have a growth-inducing potential similar to that of a water line extension.

In addition to the utility usage generated by the proposed airport, the project would affect or be affected by the major power and pipe lines in the area. The issue with regard to the power transmission lines is one of possible airspace obstructions and safety hazards as discussed in those sections of this chapter. No need for relocation, undergrounding, or other major modification of these lines is contemplated. Installation of obstruction lights on the towers and marker balls on the lines may, however, be necessary in some locations. The pipelines likewise would not need to be altered by the project. The proposed plan limits construction over the lines to a minimum area of pavement. If any significant change in the depth of earth cover over the pipes would be necessary, appropriate measures would be taken to protect the pipes and allow them to be accessible.

## Services

The airport would not place any significant demand on local police or fire services. The need for emergency services is expected to be infrequent and no additional manpower would be required. The initial response to most incidents at the airport normally would be made by airport and fixed base operations personnel. Sheriff's officers may be called for occasional security problems. Calls to the Byron Fire Protection District could be necessitated by structural fires or aircraft accidents. The type of equipment currently operated by the Fire District should be adequate for the kind of incidents likely to occur at the airport.

An agency that would be more significantly impacted by the project is the County Public Works Department. The East Contra Costa County Airport would be owned by the county with maintenance and operations being the responsibility of Public Works, probably in a manner similar to that employed for Buchanan Field Airport. Additional county personnel would be needed to handle the day-to-day duties at the new airport.

## Mitigation Measures

Preliminary contact has been made with the major agencies involved. Further coordination should be established with all affected agencies during the engineering phase of the project. These agencies include:

- o Pacific Gas & Electric Company electric and pipeline divisions.
- o Pacific Bell Telephone Company.
- o Standard Pacific Gas Line, Inc.
- o Chevron USA
- o Byron-Bethany Irrigation district.
- o Contra Costa County Health Department.
- o Byron Fire Protection District.

Early consultation with local fire authorities during the engineering design of the project should be used to determine what fire flow requirements, if any,

should be met. Pressure pumps or on-site storage should be considered, if necessary, to meet such requirements.

When warranted by the volume of aircraft activity, consideration should be given to establishing a fire station on the airport, owned and operated under airport auspices.

## NOISE

### Setting

Southeastern Contra Costa County, including the environs of the project site, is basically a quiet, rural area. The primary existing noise sources are: local traffic; the nearby rail line; farm equipment; animals; aircraft overflights both from the existing airport and from in-route flights; and wind. Ambient daytime noise levels in the area were measured at 35 to 45 dBA with wind noise being the major variable. Presently, the only noise-sensitive land uses in the vicinity are residences. If the Byron Hot Springs property is developed as a park, noise impacts upon it could be a concern there as well.

### Impacts

Noise can be described as an unwanted or disruptive sound. Two basic elements determine whether a sound is perceived as disruptive: (1) characteristics of the sound itself and (2) the human activity taking place when the sound occurs.

### Measurement

Sound is measured primarily in terms of its intensity or loudness as indicated on the decibel (dB) scale. In order to measure the noise value of a sound, however, it has been found that other factors also must be considered. To take such factors into account, various composite noise descriptors have been devised. The descriptor most commonly used in California to measure noise generated by aircraft operations at an airport is the Community Noise Equivalent Level (CNEL). Inputs to the calculation of CNEL contours include the sound level transmitted by individual operations of each aircraft type using the airport, the time of day when the operations occur, runway utilization and aircraft flight track geometry, and the takeoff and landing profiles of each aircraft type.

The projected short-term (1990) and long-term (2005) CNEL contours for the East Contra Costa County Airport are depicted in Figures 12 and 13, respectively. These contours are based upon forecasts of 45,000 and 160,000 annual operations for the respective time periods. Additional data used to calculate the contours is summarized in Appendix C.

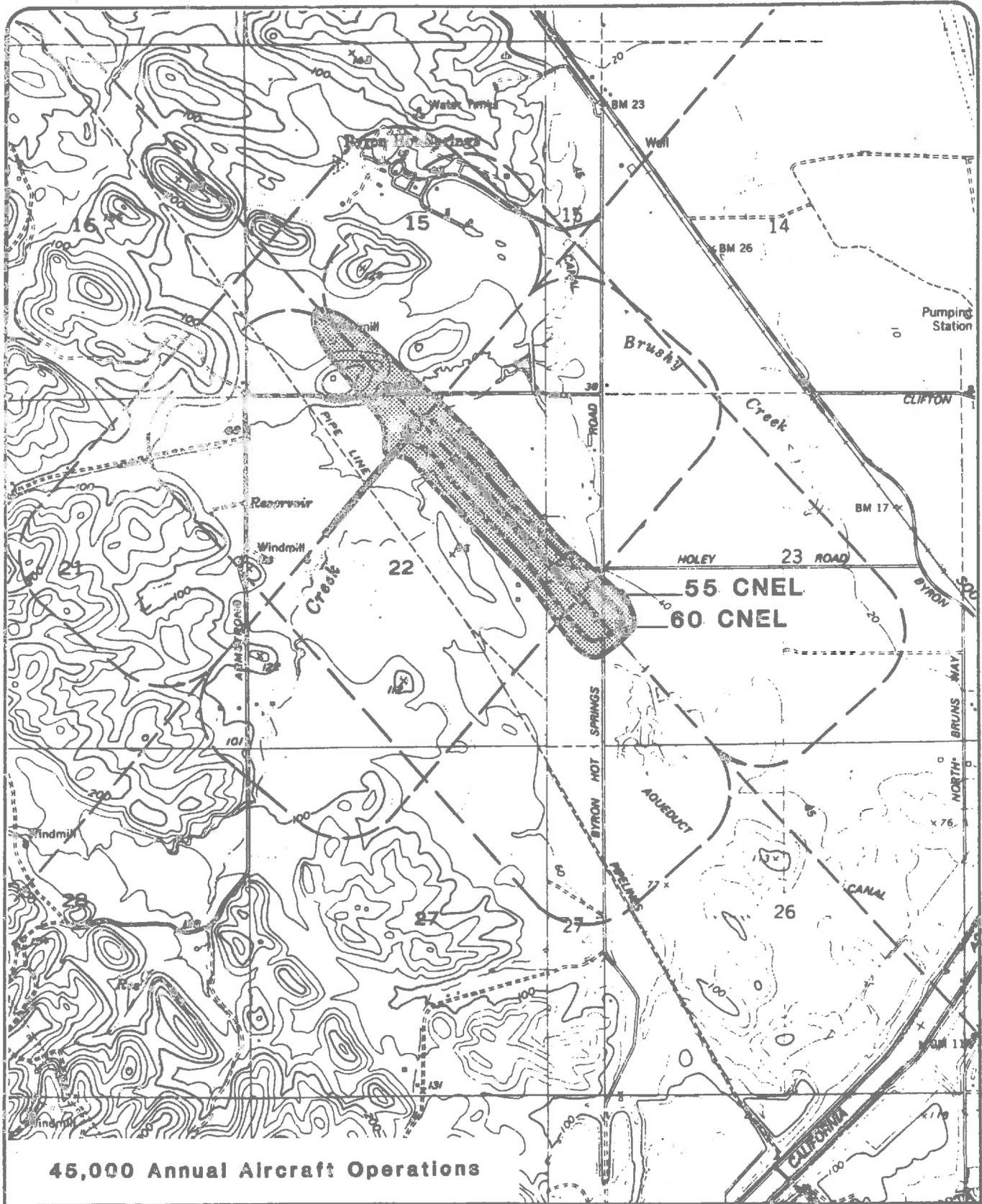
### Significance

The type of human activity is a factor in determining the disruptiveness of a noise because a noise level that may be disruptive to one type of activity may be acceptable with respect to another. Various studies have been done to ascertain the decibel level at which noise will interfere with a given activity. These data in turn have been used to establish relationships between acceptable composite noise levels and specific types of land uses.

State of California airport noise standards as well as Federal Aviation Regulations (Part 150) establish a CNEL of 65 dBA as the maximum acceptable noise exposure for residential land uses. This criterion, however, is set primarily with regard to air carrier airports in urban locations. For typical general aviation airports in suburban or rural settings, a 60-CNEL or even a 55-CNEL standard is more applicable.

The latter is suggested as the appropriate basis for evaluation of noise impacts of the proposed East Contra Costa County Airport, at least for the foreseeable future. Two considerations support this recommendation:

- o Ambient noise levels in the project area are very low and there has been little experience with the impacts of aircraft noise. Although the Byron Airpark is already established at the site, it has so little activity that its impact is nearly insignificant compared to a more typical general aviation facility.
- o Because very little residential development exists in the area, a 55-CNEL standard can realistically be achieved. Moreover, by adhering to this standard with regard to any future residential development proposals in the



AVIATION PLANNING SERVICES

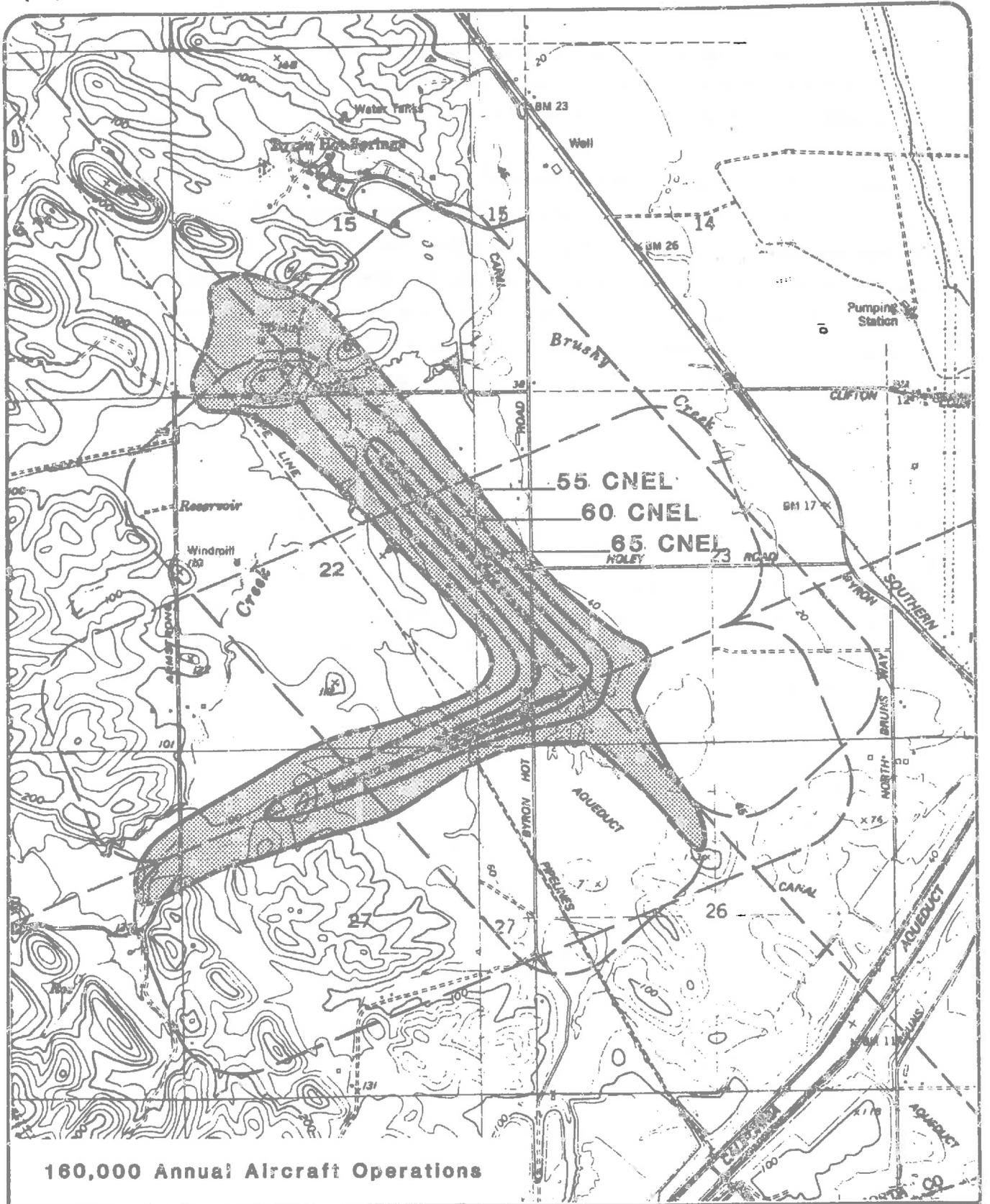
HODGES & SHUTT

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NOISE IMPACTS - 1990

Figure 12



160,000 Annual Aircraft Operations



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NOISE IMPACTS - 2005

Figure 13

area, a very high degree of land use compatibility can be maintained. At some point in the future, if the area develops and ambient noise levels increase, this standard can be reconsidered.

An examination of the contours presented in Figures 12 and 13 shows that there would be no existing residences within the 55-CNEL contour in 1990 or 2005. The nearest dwellings to the runway are 1,000 feet to the side and, along the takeoff flight tracks, the nearest that might commonly be overflown are 3,000 feet from the closest end of a runway. The proposed limits of conservation easement acquisition include the projected 55-CNEL contour for 2005, thus no future residential development should be able to take place within this impact area.

Even though a CNEL of 55 dBA is quite conservative as a land use compatibility standard, it does not totally mark the limit of the noise impacts that would be generated by the proposed airport. In circumstances where the ambient noise level is low and the airport has a small volume of activity, composite noise levels are often not as significant as individual event noise levels as a measure of noise impact. Loud overflights can be particularly intrusive even though infrequently occurring.

#### Alternatives

Each of the alternative airport sites would have some degree of noise impact on surrounding land uses. The extent of the impact depends largely upon how much residential development already exists in the respective environs. The East Oakley site is perhaps best in this regard, although the Byron and Hillside sites would not be appreciably different in the most affected areas.

Alternative layouts of the Byron site would distribute the noise impacts differently, but the same group of residences would be affected in some degree. The proposed plan has comparatively about as little noise impact as is possible at this site.

### Mitigation Measures

An airport's noise impacts can be mitigated both by removing or preventing development of noise-sensitive land uses in the airport environs and by reducing the noise that the airport generates. The proposed project takes the former approach; there appears to be little need to constrain the use of the airport because of the noise it would create and it would be poor planning for a new airport to be in that position from the very start unless absolutely necessary. The acquisition of conservation easements on the most impacted land would preclude new incompatible uses. Avigation easements would establish the right of aircraft to overfly a property and make a normal amount of noise. The buyer awareness program discussed in the Land Use section would further help minimize problems of incompatibility and should be considered.

If, when the airport begins operations, specific compatibility problems are found to exist with regard to individual existing residences, available options that should be considered include adding sound insulation to the building (probably not a very effective solution considering the low noise levels) or acquiring the property outright. Unless it is concluded that the noise level would be annoying to most people, any residential property acquired under these circumstances could be resold with a conservation or avigation easement attached.

## HEALTH AND SAFETY

### Setting

The principal health and safety issue associated with the proposed project concerns the safety of aircraft operations. There are two aspects to aviation safety: hazards to aircraft and their occupants and hazards to people on the ground in the vicinity of an airport. Some relevant points can be drawn by examining nationwide statistics on general aviation accidents assembled by the National Transportation Safety Board.

- o During the period from 1972 through 1981, general aviation aircraft accidents occurred at a rate of approximately 2.6 per 100,000 operations. About one-third of these took place beyond the influence area of an airport; thus about 1.8 accidents have occurred on or near an airport for every 100,000 aircraft operations.
- o Of the airport-related accidents, about 71% occurred within airport boundaries.
- o Landings accounted for 63% of airport-related accidents; take-off and taxi/static accidents comprised 30% and 7% of the total.
- o Two-thirds of airport-related accidents historically have involved no injuries.
- o Historically, less than one general aviation accident in 150 nationwide has involved an aircraft collision with a building. Over a 16-year period ending 1979, only 27 such accidents resulted in an injury to an occupant of the building.

(Sources: NTSB - various years; AOPA - 1983)

Because of the very low level of activity at the existing Byron Airpark, the facility has not developed much of an accident history. A review of NTSB records from the mid 1970's to 1984 does not reveal any accidents associated with the airport.

Another facet of the safety issue as it involves the proposed airport is ground transportation safety. The inadequacy of local roads, as noted in the Ground Transportation and Circulation discussion, represents a safety concern. Byron Highway has had serious accidents due at least in part to the high speed of travel on it and the insufficient shoulders. Byron Hot Springs and Armstrong Roads, although narrow, have low traffic volumes and normally low-speed travel. There is no record of any unusual number of traffic accidents on these roads.

### Impacts

#### Airport Design Standards

Federal and state design standards for airports have been established with safety as a primary concern. These standards specify such things as: runway length and width; setback distances from runways and taxiways to aircraft parking areas and buildings; surface gradients, both on paved areas and adjacent to them; and clear zone sizes and approach surface slopes. The proposed airport design meets or exceeds all of the appropriate standards.

#### Hazards to Flight

With regard to the safety of aircraft in flight near the airport, two matters are of specific concern: wind conditions and nearby obstructions to the airspace.

The fact that strong and sometimes turbulent winds occur in the vicinity of the proposed airport was noted in Chapter IV. This fact was considered carefully during the site selection process. The conclusion reached was that the wind conditions, although far from ideal, are not inherently unsafe. Strong winds

pose the greatest problem when crosswind operations are necessary. The proposed airport would alleviate this problem by having two runways. The recommended 75-foot width of both runways further provides pilots with some leeway in operation of the aircraft, particularly during landings.

High terrain, power transmission lines, and wind turbines discussed previously constitute the most significant potential airspace hazards near the airport site. Except for some small close-in hills on the site that may need to be graded down, the high terrain would not be a major factor. It lies far enough from the proposed airport that it would not constrain normal traffic patterns or other flight procedures. Power lines are more of a concern in that they are not as visible as terrain and other obstacles. Further analysis will be required to determine whether any of the power lines should be obstruction lighted as a safety precaution. The existing wind turbines are far enough from the airport site to pose no problem. New wind farms proposed for closer to the airport would partially conflict with the airport's airspace as explained in the Airspace analysis in this chapter. For safety reasons, some of the turbines should not be permitted if the future development potential of the airport is to be preserved. Also, obstruction lighting of some of the turbines may be necessary.

The net effect of these potential obstructions is that they would not be allowed to represent significant hazards: either they would have to be eliminated or lighted or the operation of the airport would have to be restricted (e.g. by raising the instrument approach minimums).

#### Hazards on the Ground

Potential hazards to people on the ground would result from the many aircraft overflights of the area. Statistically, however, as the above cited data suggests, the risk would be extremely small. Moreover, the development density in the airport environs is very low. The extensive open space surrounding the site would enhance the airport's margin of safety. In the great majority of off-airport accidents, the pilot has substantial discretion regarding where to

attempt an emergency landing. Given any reasonable choice of a flat, open area, the pilot will head for that spot and try to avoid any structures or other obstacles that would increase the likelihood of injury to the aircraft occupants.

#### Ground Traffic Hazards

Another potentially adverse safety impact of the proposed airport would arise from the motor vehicle traffic it would generate. As described in the Ground Transportation and Circulation section, however, the amount of traffic generated would be small. The proposed improvements to bring the local airport access roads up to county standards should reduce the risks associated with airport-generated traffic to a negligible level. The airport may contribute in a minor way to the eventual need to upgrade Byron Highway.

#### Mitigation Measures

The principal measures intended to mitigate potential safety impacts of the proposed airport are designed into the project. These include:

- o Adherence to Federal and State airport design standards
- o Providing wider than normal width runways to compensate for the area's strong, gusty winds.
- o Undergrounding of local power distribution lines that cross the runway approaches.
- o Obstruction lighting of hazards to the airport's airspace.
- o Establishment of easements to assure the maintenance of compatible land uses in the vicinity.
- o Upgrading Byron Hot Springs and Armstrong Roads and the railroad grade crossing.

- o Other safety mitigation measure that should be considered include land use compatibility measures adopted in the form of local land use zoning and an Airport Land Use Commission plan, as described in the Land Use section.

A final consideration, although not one that directly enhances safety, is that airport tenants would be required to carry property and liability insurance.

## ENERGY CONSUMPTION

### Setting

Energy consumption at a typical general aviation airport results primarily from three different types of activities: aircraft operations, access trips, and lighting and other electrical uses. Light, single-engine planes consume on the order of 10 to 15 gallons per hour while cruising. This equates to about 15 miles per gallon. Although this mileage is less than that achieved by most recent model automobiles, aircraft gain from generally being able to travel a more straight-line distance between two points. Uses of electricity are noted in the discussion of Public Utilities and Services.

The current consumption of energy at the site is negligible. The level of aircraft operations at Byron Airpark is small. Electricity usage is limited mostly to interior lighting and miscellaneous equipment in the two large hangar buildings.

### Impacts

The project probably would contribute to an increase in energy consumption for transportation purposes to, from, and within eastern Contra Costa County. The more extensive facilities that would be available at the new airport would be conducive to an increase in aviation activity compared to what does or could occur at Byron Airpark and Antioch Airport. A corresponding increase in airport access trips would result as well. Assuming that a full range of general aviation services would be offered at the airport, the total amount of fuel sold could be on the order of 75,000 to 100,000 gallons per year in 1990 and 300,000 to 500,000 gallons in 2005.

Nighttime lighting of runways, air conditioning in buildings, and other uses of electricity would consume additional energy. Total annual consumption for both public and private facilities on the airport is projected at up to 120,000 kwh initially and 600,000 kwh in 20 years (see Utility section).

## Alternatives

The alternative airport sites would consume a similar amount of energy as the Byron site. Being located closer to the potential airport user than the Byron site is, these sites would generate less access trip mileage and fuel use than Byron; this effect, though, probably would be slightly reduced by more usage of the facility resulting from the more convenient location. All sites would be about the same with regard to other forms of energy usage. Also, there would be no appreciable differences in energy consumption among the alternative layouts of the Byron site.

## Mitigation Measures

Design of the airport has taken into account minimizing taxiing distances, thus saving fuel consumed during that phase of activity. The proposed runway layout also would minimize delays to airborne aircraft by enabling both runways to be used simultaneously under certain conditions.

No feasible means of reducing access trip energy consumption are apparent (see Ground Traffic and Circulation section).

Installation of a radio controlled switch enabling pilots to turn on the lights as needed should be considered as a means of reducing energy consumption.

The design of the airport buildings should include means such as added insulation to make them as energy-efficient as practical.

## AIR QUALITY

### Setting

The airport site is situated at the eastern edge of the San Francisco Bay Area Air Basin less than 4 miles from the boundary of the San Joaquin Valley Air Basin. The boundary between these two basins follows the county line; all of Contra Costa County is within the San Francisco Bay Area Air Basin.

Despite the formal air basin boundaries in this area, the air quality in the vicinity of the site is probably more similar to that of the San Joaquin Valley Air Basin than it is to the more urban San Francisco Bay Area. No air quality monitoring stations are located sufficiently nearby to offer data representative of the air quality at the site. Given the lack of population in the area, the agricultural activities, and the strong winds, it is probable that suspended particulates constitute the major air quality problem.

### Impacts

The project would create air quality impacts as a result primarily of aircraft operations at the airport and motor vehicle trips to and from the facility. Some emissions may also occur during fueling activities. Estimates of emissions generated by airport-related activities are summarized in Table 3. These estimates are calculated from emissions data for individual aircraft landing and takeoff cycles provided by the Bay Area Quality Management District.

This emissions total is considered relatively small even in the long range and would be unlikely to have any significant effect on the area's air quality. Data from Federal Aviation Administration guidelines (FAA - 1982) indicate that non-air carrier airports having less than 180,000 annual operations normally do not create significant air quality impacts. Carbon Monoxide (CO) is the critical pollutant in determining this threshold: this level of annual activity corresponds to the number of peak-hour general aviation operations (about 50) that would produce off-site concentrations of CO approaching 10% of the national one-hour standard (40 micrograms per cubic meter).

Aircraft emissions associated with the airport are calculated on the basis of the average time required for various types of aircraft to complete each phase of a normal landing and take-off cycle (LTO cycle). The cycle begins at the point when an aircraft descends through an altitude of 3,000 feet on its approach and ends when it reaches this altitude on departure. This altitude is considered to represent the upper boundary of the surface layer of air wherein surface features (e.g. trees and structures) affect atmospheric turbulence and diffusion. The full LTO cycle is divided into five phases of aircraft operations: (1) approach and landing; (2) taxi-idle in; (3) taxi-idle out; (4) takeoff; and (5) climbout.

Automobile emissions estimates are for the portion of the access trip within five miles of the airport. This represents the area within which most trips would be on the same roads. The number of access trips are as noted in the Ground Traffic and Circulation section.

The figures are calculated on the basis of a typical aircraft or automobile in use in 1985. As technology improves and older planes and vehicles are retired, the average emissions per LTO cycle or per mile will decrease. No estimate of the percentage reduction in emissions has been made here; thus, the totals in Table 3 reflect a greater impact than that expected to occur.

#### Alternatives

Other airport layout alternatives would have fairly similar air quality impacts. Minor differences would occur depending on such factors as taxi distances to and from the runway.

The impacts associated with alternative airport sites would be similar with regard to aircraft emissions. There would be differences, however, with respect to total access trip emissions because of the varying trip distances involved. Because the Byron site is farther from where most airport users reside, it would generate more total emissions than the other sites; this difference, though, would be slightly offset by the probably greater usage a closer site would receive.

Table 3

## AIRPORT-RELATED AIR POLLUTANTS

YEAR - 1990					
45,000 Annual Aircraft Operations					
	<u>CO</u>	<u>HC</u>	Pounds Per Day <u>NOx</u>	<u>SOx</u>	<u>TSP</u>
Aircraft					
Single-Engine	777	15.0	1.2	*	*
Twin-Engine	82	2.8	0.3	*	*
Business Jets	<u>2</u>	<u>0.7</u>	<u>0.4</u>	<u>0.1</u>	<u>*</u>
Sub-Total	861	18.5	1.9	0.1	*
Automobiles**	<u>62</u>	<u>6.2</u>	<u>8.8</u>	<u>0.6</u>	<u>1.6</u>
Total Emissions	923	24.7	10.7	0.7	1.6
YEAR - 2005***					
169,000 Annual Aircraft Operations					
Aircraft					
Single-Engine	2,650	51.2	4.0	*	*
Twin-Engine	510	17.6	2.0	*	*
Business Jets	<u>35</u>	<u>11.5</u>	<u>6.3</u>	<u>1.5</u>	<u>*</u>
Sub-Total	3,195	80.3	12.3	1.5	*
Automobiles**	<u>222</u>	<u>22.2</u>	<u>31.4</u>	<u>2.2</u>	<u>6.0</u>
Total Emissions	3,417	102.5	43.7	3.7	6.0

\* Less than 0.05 pounds per day.

\*\* Emissions within 5 miles of airport.

\*\*\* No allowance for improvements in emissions technology.

CO = Carbon Monoxide

HC = Hydrocarbons

NOx = Oxides of Nitrogen

SOx = Sulfur Oxides

TSP = Total Suspended Particulates

Sources: Hodges and Shutt

Bay Area Air Quality Management District - 1982

Emissions associated with the No Project alternative would be less than those of the proposed project to the extent that the air and ground trips involved are not made. If the trips are made, the principal difference would be a shift of the impact area from the Byron vicinity to the vicinity of Buchanan Field or to some other airport or, if the trip is made on the ground, to the areas along roads that might be used.

#### Mitigation Measures

The measures capable of having perhaps the most significant effect on reducing aircraft and vehicle emissions are not ones that can be taken at the project or local level. Continued efforts on the part of the state and federal governments as well as manufacturers can be anticipated to reduce emissions levels of new planes and autos. These improvements would have a long-term benefit with regard to the proposed project. Any circumstances that would speed up the retirement of older aircraft and vehicles also would produce a local benefit.

At the airport itself, the most effective means of reducing pollution is to reduce delay. This applies to aircraft waiting their turn for landing or takeoff and also to the distance that aircraft must taxi to and from the runway. Although some short-term inefficiencies are inherent in the plan, the long-range "open Y" layout is designed to maximize the efficiency of operations at the airport. When warranted by the volume of aircraft traffic (typically a minimum of 160,000 general aviation operations), establishment of an air traffic control tower should be pursued with the Federal Aviation Administration.

With regard to motor vehicle emissions, one mitigation measure often considered is greater use of public transportation. This would be impractical with regard to the project, however, both because airport trips would not be concentrated enough within any period of time and because the overall demand at the airport and in the vicinity would be low.

## RECREATION

### Setting

Existing recreational opportunities in the vicinity of the proposed airport are relatively limited. The water-oriented, recreational community of Discovery Bay, located 5 miles northeast, is perhaps the most substantial recreational development. Additionally, several navigable waterways come within two miles east of the site, providing access to the greater San Joaquin River Delta system. The nearest parkland is the Bethany Reservoir State Recreational Area, located 3 miles south of the site in the northeast corner of Alameda County.

Another recreational facility in the area is the existing Byron Airpark. The majority of the current flight activity is recreation oriented. In addition to standard light aircraft, experimental and ultralight aircraft also are based at the field.

Other major recreational developments have been suggested as future possibilities for the area. Closest to the airport site is the Byron Hot Springs less than one mile north. As a result of the recent annexation of eastern Contra Costa County to the East Bay Regional Parks District, the Hot Springs has been among a number of sites in the area considered for public acquisition and development as parkland. Current indications are that the District will not presently pursue acquisition and development of the Byron Hot Springs. Private development of some sort could be a possibility, however. The property is shown as planned recreational use on the East County General Plan.

Another interest of the East Bay Regional Parks District in the area is the preservation of vernal pools. As previously noted, several clusters of these features are found on the airport site. At the present time, no plans for acquisition or other means of protection have been pursued by the district.

One further recreational possibility in the area is associated with the proposed Los Vaqueros Reservoir previously described in the Land Use section. If this project is built, the County of Contra Costa has requested that the state acquire much of the surrounding land for development as a park.

## Impacts

Development of the airport would expand the opportunities for recreational flying. Although much (perhaps even the majority) of the future activity at the airport would be for business purposes, recreational use would continue be significant. The new airport would offer greater capacity and safer flying conditions than now exist in the area; both factors which could be conducive to recreational use. It also is possible that an area could be set aside especially for sailplane and ultralight aircraft use if conflicts with other aircraft can be avoided.

The proposed airport could have both positive and negative effects on possible development of recreational facilities at Byron Hot Springs. On the positive side are the proposed access improvements -- an improved grade crossing at the Byron Hot Springs Road and Byron Highway intersection and, in the long term, a possible new road on the west side of the Hot Springs property. The airport would also provide air access to a Hot Springs park; a campground for people who fly in might be a possibility. The negative aspect is that aircraft using the airport would regularly either overfly the Hot Springs or come close enough to be audible. Whether such noise would be disruptive would largely be dependent upon the types of activities that would be established at the Hot Springs.

The project would not have any impacts relative to Section 4(f) of the U.S. Department of Transportation Act. This section declares that it shall be a national policy "that special effort should be made to preserve the natural beauty of the countryside and public park and recreational lands, wildlife and waterfowl refuges, and historic sites." The act further states that federal approval shall not be given to any transportation project which requires the use of any publicly-owned land of this type unless "there is no feasible and prudent alternative to the use of such land" and the project "includes all possible planning to minimize harm" to such areas.

Mitigation Measures

If the Byron Hot Springs is some day developed as a recreational facility, efforts should be made to minimize the airport's noise impact on it and to promote types of activities there that would be compatible with the noise levels.

No need for other types of mitigation measures are currently apparent.

## VISUAL

### Setting

The predominant visual character of the area around the proposed airport is one of low rolling hills, green in the winter and spring, golden in the summer and fall. Scattered among the hills, groups of rural residences, farm buildings, trees, and cattle can be seen. To the west, the hills become steeper and many are topped by wind turbine machines. Eastward, the hills flatten out into irrigated agricultural lands spreading toward the Byron Highway, the Clifton Court Forebay, and the San Joaquin River delta.

From the Byron Highway, the nearest major road, the buildings of the existing airfield can barely be seen. Most passers-by probably become aware of the field's presence only when aircraft are seen taking off or landing.

### Impacts

The proposed project would not significantly change the visual character of the area. Topographic changes necessitated on the site by the project probably would be noticeable mostly just by people familiar with the area. New airport structures would be low to the ground (typically 25 feet or less in height) and generally not very visible except from the immediately adjacent roads. Arriving and departing aircraft would be the principal sights marking the airport's presence.

At night, the rotating airport beacon would be visible from surrounding areas. The light beams of the beacon, which alternate green and white, would be angled upward so as to be more visible from the air and to avoid shining on structures on the ground. Runway lights and other lights on the airport would be apparent mostly only from locations to the west which would overlook the field. None of the airport lighting is expected to be disruptive to residents of the area.

The most apparent visual changes produced by the project would be ones seen from the air by occupants of aircraft landing at and departing from the airport or flying over the area. Large scale features such as the runway system, aircraft aprons, clusters of hangar buildings would be the most apparent by day. At night, the rotating airport beacon would be visible from miles away; the runway lights becoming noticeable at closer distances. For a pilot looking for the airport, the high visibility of these features would be a positive visual impact.

#### Mitigation Measures

Design standards should be established for the airport to assure the attractiveness of hangar buildings and other structures. Landscaping should be installed in major public areas. Vegetation should be reestablished in earthwork areas both for aesthetic reasons and to reduce erosion.

Although an unlikely prospect to occur, measures should be taken to assure that the rotating airport beacon does not shine directly on nearby structures in the hills west of the site or otherwise become unnecessarily annoying.

## CONSTRUCTION ACTIVITIES

### Setting

The impacts addressed in the preceding sections either involve permanent physical changes to the site or are continuous effects associated with use of the proposed airport facilities. The impacts of construction activities, by comparison, are short-term in duration; they end as each phase of development is completed.

Construction of the project as laid out in the master plan would take place in increments over a 20-year time span. The proposed development staging is outlined in Chapter III. The first couple of years would be occupied with property acquisition. A major spurt of activity would follow with construction of the first segment of the primary runway and the initial portion of the building area. This work would be accomplished over one or perhaps two construction seasons. About half of the total earthwork in the project would be done during this time period. Another major construction year would probably occur in the 1990-to-1995 time frame when the secondary runway would be built. During other years, various pieces of the building area would be developed as dictated by the demand for additional facilities.

### Impacts

Erosion: Removal of the existing ground cover plus the large amount of earthwork involved in the project presents the potential for significant erosion problems. This in turn could lead to siltation and other water quality impacts on Brushy Creek and other downstream waterways.

Air Quality: Blowing dust from the construction site could be a significant problem, especially considering the strong winds in the area. Some increase in dust levels at nearby homes, particularly those downwind of the construction area may be unavoidable.

Noise: Large construction equipment -- including heavy graders, earth movers, trucks, and other diesel equipment -- are relatively noisy. The nearly 1,000-foot distance from the airfield construction area to the nearest homes should help keep this impact to a tolerable level. The noise of truck traffic on adjacent roads may be the more significant impact.

Safety: Safety would be a major concern during the construction period. The concern is for not only the construction crew, but also for the general public and the users of aircraft operating at Byron Airpark.

- o The operation of heavy construction equipment inherently involves some degree of risk. The existence of high-pressure gas and oil pipelines across the site is a particular concern.
- o The general public would not be allowed on the construction site for reasons of safety. The heavy truck traffic to and from the site would present some unavoidable dangers, however. It is estimated that at least 2,200 truckloads would be required to haul base rock, asphalt, and other materials to the site during the initial phase of development.
- o Because most of the proposed new facilities would be located some distance from the existing Byron Airpark runways, it is anticipated that the present airport could remain open during the construction period. Temporary closure of one or both runways may nonetheless be necessary while certain items of work are accomplished.

Road System and Traffic Circulation: Reconstruction of portions of Byron Hot Springs and Armstrong Roads are included as elements of the proposed project. Temporary closure of these roads probably would be necessary while the work is being done. The improvements probably would be done in two stages with widening of the roadbed done early on in the construction sequence, but resurfacing waiting until after most of the heavy truck traffic is finished. The type and quantity of truck traffic associated with the project construction would cause little, if any, deterioration of roads, such as Byron Highway, that are designed for such traffic.

Irrigation System: Construction of an underground pipe to replace a portion of the 45 Canal may necessitate brief disruptions in irrigation water supplied by the canal.

Energy Consumption: Consumption of energy, primarily in the form of diesel fuel, would be an unavoidable effect of the project's implementation. Because of variations in types of equipment used by contractors, no estimate has been made of the total consumption that would result.

Archaeology: As noted in the discussion of this topic earlier in this chapter, it is possible although unlikely that artifacts could be uncovered on the site during construction.

#### Mitigation Measures

Erosion: Good engineering and construction practices should be followed to minimize erosion problems. These should include:

- o Undertaking construction during the dry season not only to minimize erosion but to keep construction equipment from becoming mired in the mud.
- o Compacting fill areas to reduce the erosion potential as required by Federal, State and local standards.
- o Planting new vegetation on all exposed cut and fill surfaces.

Air Quality: Special efforts, including frequent moistening of exposed soil, should be taken to keep blowing dust in check.

Noise: To the extent feasible, construction work should be done between 7:00 a.m. and 6:00 p.m. on weekdays so as to avoid the more noise-sensitive nighttime and weekend periods.

Safety: Precautions should be taken to assure the safety of the construction crew, the general public, and airport users.

- o All safety precautions required by law should be adhered to during the construction.
- o Coordination should be established with the pipeline operators so that the lines can be accurately located and adequately marked.
- o Haul routes should be located so as to minimize the potential safety impacts. If deemed to be an appropriate precaution, flagmen should be stationed at key points of potential traffic conflicts.
- o During periods when temporary closure of one or both runways is necessary, the runways should be clearly marked with X's to indicate their closure.

Road System and Traffic Circulation: Temporary closure of local roads while construction is done on them should be kept to as short a time as practical or temporary alternate routes should be established.

Irrigation System: Coordination with the Byron-Bethany Irrigation District should be maintained to assure a minimum amount of disruption of irrigation water supply.

Archaeology: If artifacts are found on the site during construction, work in that area should cease until a qualified archaeologist can investigate the significance of the findings.

The above provisions should be included in the engineering specifications for the job. Detailed arrangements would be worked out through consultation between the contractors, the on-site engineering inspector, the design engineer, the county, and other involved parties. Additional measures should be taken to the extent practical to minimize other impacts that may arise.

## VI - OTHER ENVIRONMENTAL CONSIDERATIONS

### SIGNIFICANT IRREVERSIBLE CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The most substantial irreversible change that would result from the project would be to the topography of the site. Over the 20-year time span of the plan implementation, two hills on the site would be lowered and some 500,000 cubic yards of earth would be moved. The physical placement of new pavement and other materials on the site would also, for most practical purposes, be irreversible; they could be removed if necessitated by some later, higher priority, development plans for the area, but probably would not be if the airport was merely abandoned.

The commitment of materials, energy, manpower, and money to development of the airport would be irreversible.

Because of these expenditures, the commitment to use of the site for an airport would certainly be a long-term one. This commitment could be reversed, though, if unanticipated future conditions should so warrant.

As long as the airport remains in operation, the proposed closure of local roads would be permanent.

### GROWTH-INDUCING IMPACT OF THE PROPOSED ACTION

The potential for the proposed airport development to induce growth in southeastern Contra Costa County is perhaps one of the most significant impacts that the project could have. County policies call for minimizing growth in this area and for maintaining agricultural activities to the greatest practical extent. Placement of a major node of activity in this area could foster demands on the part of nearby landowners to be allowed to develop or sell their property for airport-related or other uses that would be more profitable than cattle grazing.

In evaluating this issue, it is concluded that the growth-inducement impacts of the project can be held to an insignificant level. The following reasons support this conclusion.

- o The type of airport that is proposed is not inherently growth inducing. Unlike airline airports or major general aviation airports, the proposed East Contra Costa County Airport would be a relatively quiet place. Pilots and others would go to and from the airport and conduct aviation-related business there, but would have little reason to remain in the immediate area. Many general aviation airports, even ones with a couple of hundred airplanes, exist in relatively isolated locations with little other development around them.
- o No non-aviation related development is proposed to be accommodated on the airport site. Once the airport plans have been adopted by the county and approved by the Federal Aviation Administration, a change in county policy and concurrence by the FAA would be necessary to allow such uses. The sizing of on-site water and wastewater facilities for aviation uses only would also effectively preclude other types of development.
- o The area currently lacks the conditions -- including nearby population or economic base and existing infrastructure -- that would be conducive to growth. The airport by itself would not change these conditions. Policy changes and other actions would be necessary to create these conditions. If and when growth does occur in this area, it would much more likely come as an expansion of the growth now occurring in the Oakley and Brentwood areas to the north or possibly from the Livermore area to the southwest than it would be to develop first around the airport.
- o The water and wastewater systems that would be constructed to serve the airport, whether self-contained on the airport property or extended from systems serving the community of Byron, are proposed to be sized only to meet the needs of the airport. By limiting the capacities and not allowing connections to the systems from surrounding properties, the infrastructure necessary to support significant future development in the area would not

be provided as a direct result of the project. If construction of the systems is funded by Federal Aviation Administration grants, the FAA would expect the capacity to remain available solely for airport-related uses.

- o It would not be in the best interests of the airport for many possible types of development to be allowed to occur in the vicinity. Residential development would be particularly incompatible with the airport for reasons of noise, safety, and general nuisance. The proposed project includes not only the fee simple acquisition of a substantial amount of property, but also the acquisition of conservation easements designed to preclude incompatible development from surrounding lands. Additionally, it is anticipated that an Airport Land Use Commission plan would be adopted for the airport area and that this plan would not allow incompatible development.

The type of growth that the project clearly would induce would be in aviation activity. The facilities proposed to be provided would be far superior to those now available at the Byron Airpark or elsewhere in eastern Contra Costa County. The airport is expected to attract most of the aircraft owners and pilots from this area, plus perhaps some that now use the more crowded Buchanan Field and Livermore airports. The overall level of aviation activity in the region would probably be slightly higher with creation of the East Contra Costa County Airport than if the demand is constrained by lack of airport capacity.

#### RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Implementation of the project would represent a long-term commitment on the part of Contra Costa County to this particular site as the means of serving local aviation demands. For the foreseeable future, it would foreclose the option of developing a public airport at a different location.

The proposed acquisition of more property than is expected to be needed for aviation purposes in even 20 years enhances the long-term viability of this airport site. The establishment of conservation and aviation easements on adjacent property is a further step in this direction. An approach that would

be less expensive in the short term would be to acquire a smaller amount of land initially and then add to the property as needed. The long-term costs of such an approach could be significantly higher, however; for one, the cost of the raw land could go up even if growth is held in check and, secondly, incompatible development including wind farms or residences could occur in locations that would be critical to future expansion of the airport.

## VII - PROJECT ALTERNATIVES

### INTRODUCTION

There are three basic alternatives to the proposed project:

- o No Project -- A new airport would not be built in the east county.
- o Alternative Site -- A new airport would be built at a different location in the east county.
- o Alternative Layout -- new airport would be built of the Byron site, but a different plan would be followed.

The following discussion describes the major features of these alternatives. Also indicated are the reasons why the proposed project is preferred over each of the alternatives.

### NO PROJECT

The premise of the "No Project" alternative is that Contra Costa County would not build a new general aviation airport to serve the east county. Such a decision, though, would not necessarily mean that the status quo would be maintained. The demand for aviation facilities would continue to grow, although it would be somewhat constrained by a lack of facilities.

Under the "No Project" scenario, some or all of the following events could occur:

- o Privately-owned Antioch Airport would eventually close as it becomes enveloped by urban expansion. Most of the 75+ aircraft based there would be moved to Buchanan Field if space can be found for them. Other planes might be relocated to Rio Vista Municipal Airport or private airports in the east county; a few may go to more distant airports or be sold to owners in other areas.

- o Buchanan Field would continue to be the only full-service or publicly-owned general aviation airport in Contra Costa County. Aircraft activity at the airport would increase more rapidly than if an east county airport is built.
- o Byron Airpark would be further developed as a private airport. Development, however, would be much less extensive than if the proposed publicly-owned airport is constructed. Expansion of aircraft parking areas and, possibly, addition of new taxiways would be the most likely improvements.

#### ALTERNATIVE SITE

The process of identifying and evaluating a site for an east county airport was presented in detail in the Phase 1: Site Identification and Evaluation report. The report conclusions were considered by the County Airport Advisory Committee and the Board of Supervisors and were addressed by the public at hearings held by these two bodies. The Airport Advisory Committee recommended to the Board of Supervisors that detailed plans be prepared for the Byron site and the Board concurred in this selection.

Figure 14 maps the locations of the various possible sites originally identified and also shows the top candidates. Layout concept plans of the three sites that were the primary alternatives to Byron are presented in Figures 15, 16, and 17. Reference is made to the Phase 1 report for descriptions of these sites.

Chapter V of this environmental document only briefly notes the general character of the impacts that development of these sites would generate. A more thorough evaluation is contained in the Phase 1 report.

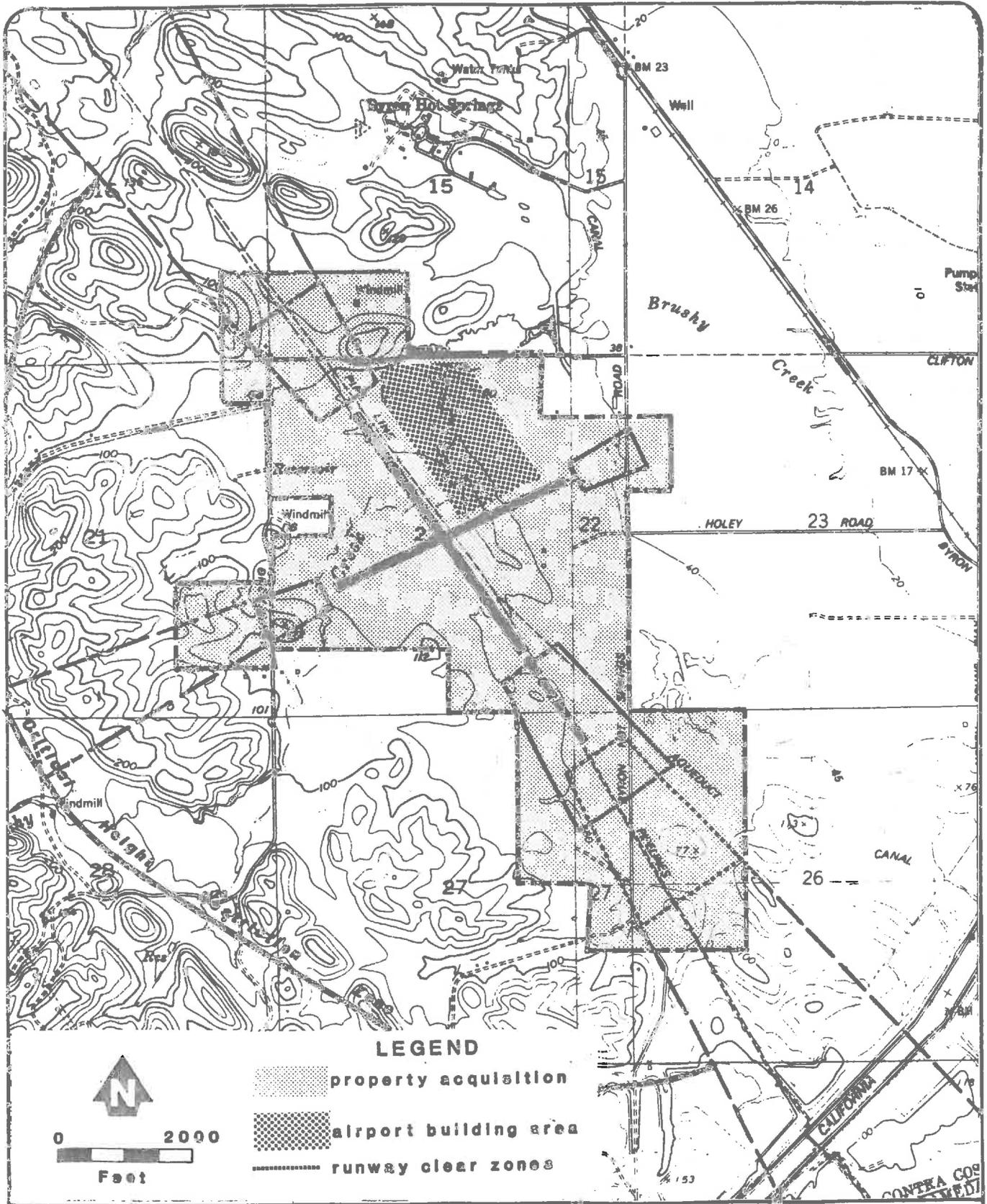
#### ALTERNATIVE LAYOUTS

There are numerous possible variations with respect to the design of an airport for the Byron site. Three concept plans were prepared and presented to the Airport Advisory Committee for consideration. One plan was determined to be

superior to the others in several important respects as discussed in the Design Constraints Section of Chapter III. The other two are illustrated in Figures 18 and 19.

Various minor modifications to the basic proposed plan are expected. Some of these are noted in Chapter III. It is anticipated that certain changes will occur as the detailed engineering analyses are accomplished. Other changes probably would be made in later phases of the airport's development as needed in response to the actual conditions that evolve. Changes to the indicated sequence of development also could happen.

Another type of layout alternative would be development of a scaled-down airport at the Byron site. No plan for such a facility has been prepared. The clear direction given by both the Airport Advisory Committee and the Board of Supervisors has been that the airport should not be unnecessarily constrained - it should have the potential to serve the county's need for well beyond 20 years. Preserving this capability has meant that substantially more property is proposed for acquisition than would be needed for many years. It is uncertain what sort of plan or acquisition boundaries would be appropriate for a more limited airport.

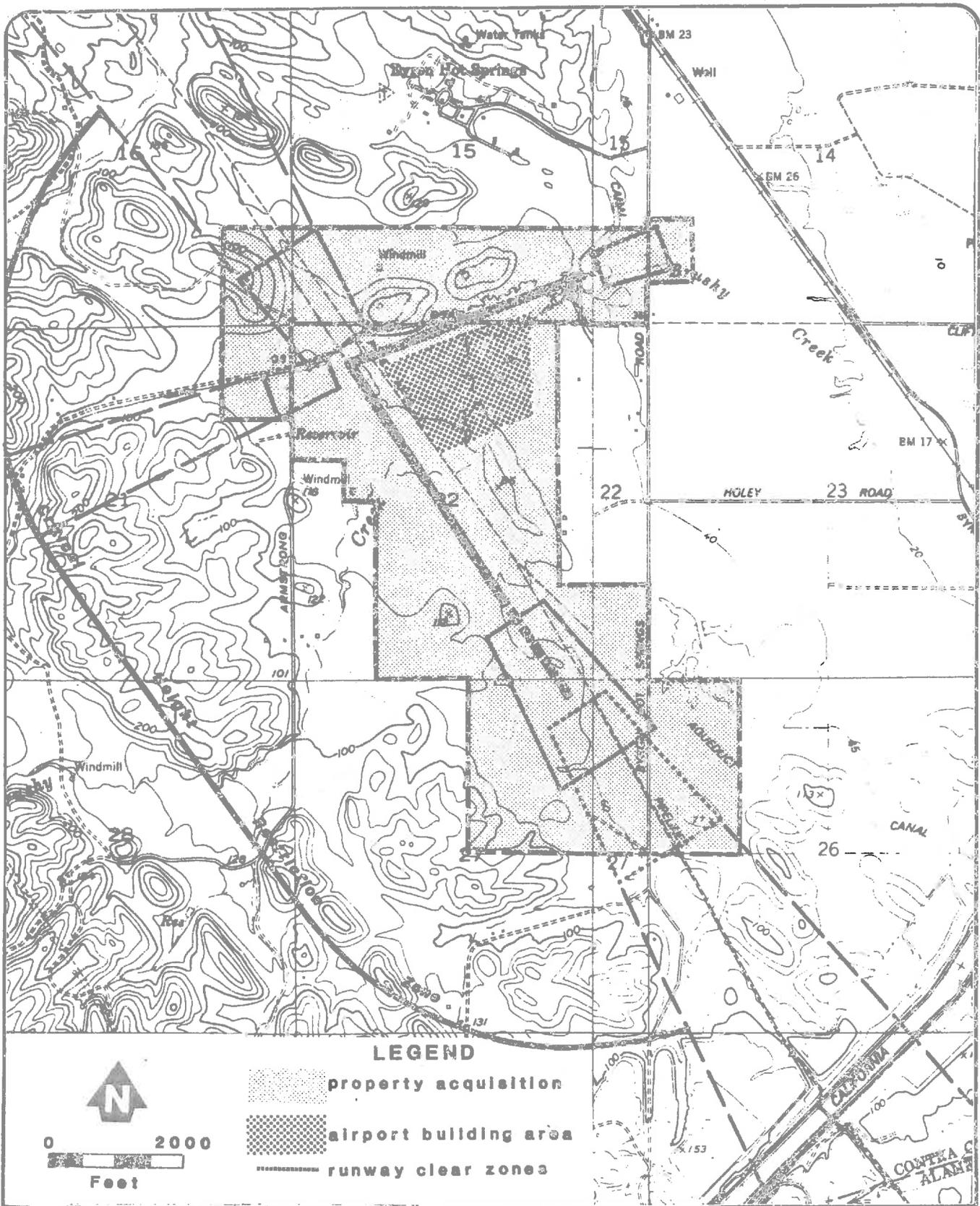


**ALTERNATIVE LAYOUT CONCEPT 1**

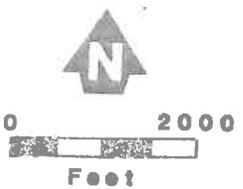
**Figure 18**

AVIATION PLANNING SERVICES

8111 HODGES & SHUTT



**LEGEND**



-  property acquisition
-  airport building area
-  runway clear zones



**ALTERNATIVE LAYOUT CONCEPT 2**

**Figure 19**

## VIII - REPORT RESOURCES

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## INDIVIDUALS CONTACTED

During the course of the study, contact was made with the following individuals in person, by telephone, and/or via correspondence.

### Contra Costa County

#### Assessor's Office

Al Lagorio

#### Community Development Department

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Dennis Berry

James M. Cutler, Chief, Comprehensive Planning

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#### Health Services Department

Jim Blake

#### Local Agency Formation Commission

Dewey Mansfield, Executive Officer

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Paul E. Kilkenny, Assistant Director, Environmental Control

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Harold E. Wight, Manager of Airports

### Other Local Agencies

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Fred K. Specht, Manager

#### Byron Fire District

Nick Papadakos, Fire Chief

#### Byron Sanitary District

Jim Flder, Consulting Engineer

#### Contra Costa Water District

Austin Nelson, Chief of Water Supply

East Bay Regional Parks District

Rosemary Camarron

Thomas H. Lindenmeyer, Environmental Coordinator, Planning and Design

Metropolitan Transportation Commission

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State of California

Air Resources Board

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Energy Commission

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Army Corps of Engineers, Sacramento

Art Champ, Regulation Section

Tom Coe, Environmentalist

Fred Mueller, Engineering Technician

**Federal Aviation Administration**

Nick Krull, Air Quality Division, Washington, D.C.

John Pheifer, Airport Planner, San Francisco Airports District Office

**Fish and Wildlife Service, Sacramento**

Jim McKeveitt, Field Supervisor, Division of Ecological Services

**Others**

**Byron Airpark**

Don Stiles, Owner

**California Archaeological Inventory**

Christian Gerike, Assistant Coordinator, Northwest

Information Center, Department of Anthropology, Sonoma State  
University

**Chevron USA**

Larry Beadle, Pipeline Department, District Superintendent, Tracy

**Local Landowners**

William F. Ralph

Anthony F. Souza

**Pacific Gas & Electric Company**

Fred Bowles

Bruce C. Ghiseilli, Antioch Division

Gerritt Orton, Land Right Agent, Land Department, San Francisco

**Realtor**

Ron Enos, Brentwood

**Wind Farm Developers**

Logan Belton, Project Coordinator, Wind Energy Specialties, Inc.,

Livermore

Kenneth F. Cohn, Altamont Energy Corporation, San Rafael

Gary Wayne, Engineer, Construction Services Corporation, San Rafael

REPORT AUTHORS

This environmental document, as well as other elements of the East Contra Costa County Airport Site Study, have been prepared for the County of Contra Costa by the consulting firm of Hodges & Shutt/Aviation Planning Services, Santa Rosa, California. The individuals principally involved have been:

David E. Hodges - principal in charge.  
Kenneth A. Brody, senior planner - project manager.  
Henry S. Fultz, civil engineer.  
Robert J. Rebuschatis, airspace specialist.

Additional environmental data was provided under contract to the consultant by the following:

Richard L. Simon, consulting meteorologist, Corte Madera.  
Diane L. Renshaw, consulting ecologist, Montara.

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Martinez, California 94553-0095

Anthony A. Dehaesus Director of Planning

Phone: 372-2035

Contra  
Costa  
County



Appendix A

## NOTICE OF PREPARATION AND SCOPING SESSION

**ENVIRONMENTAL IMPACT REPORT FOR EAST CONTRA COSTA COUNTY AIRPORT**  
County File #PW 85-43: The project is the proposed construction of a new public use, general aviation airport to serve eastern Contra Costa County. Approximately 500 to 700 acres would be acquired for airfield, aircraft parking and runway approach protection purposes. Two intersecting runways would be required; the longer one having an initial length of 3,800 feet with potential extension to 6,000 feet. Initial development would provide space for about 150 based aircraft with potential demand of 400 based aircraft in 20 years.

The proposed site is in southeast Contra Costa County, 2.5 miles south of Byron and 1.0 miles west of County Route J4, bounded roughly by Armstrong Road and Byron Hot Springs Road. An existing privately owned airport, Byron Airpark, occupies part of the site. Brushy Creek traverses the site.

As the owner of abutting property, or as an otherwise interested person or organization, you are invited to submit any comments you may have on this project, and raise any significant environmental issues of which you are aware so they can be considered in the environmental review process.

This letter plus enclosures will constitute a Notice of Preparation. Please circulate this information to the appropriate persons and agencies as soon as possible. I would encourage those interested to contact me directly by phone or letter to convey any concerns they may have. We have selected a consulting firm to prepare an EIR; therefore, the earliest contact will ensure the best coverage of any concerns. It is hoped that the Draft EIR will be brought to public hearing at the earliest possible date. Additionally, our office will conduct a scoping session on this project for those that wish to attend. It will be held at the Delta Community Services Center (730 Third Street, Brentwood) on May 2nd at 2:00 p.m.

If you have any comments on this Notice of Preparation, please contact me by

May 20, 1985.

Sincerely yours,

Anthony A. Dehaesus  
Director of Planning

James W. Cutler, Chief  
Comprehensive Planning

JWC/mb5a

cc: File No. PW 85-43



Initial Study

OF ENVIRONMENTAL SIGNIFICANCE

April 20 1985

File# PW 85-43  
Project Name East Contra Costa County Airport

Public Works Department  
Administration Building,  
Pine & Escobar Streets  
Martinez, California 94553

Prepared by Jim Cutler

Date April 8, 1985

Reviewed by Dennis M. Barry

Date April 10, 1985

*Dennis M. Barry*

RECOMMENDATIONS:

( ) Categorical Exemption (Class ) ( ) Negative Declaration (X) Environment Impact Report Required  
( ) Conditional Neg. Declaration

The Project (May) ~~(Not) (X)~~ Have A Significant Effect On The Environment

The recommendation is based on the following (List all items identified as significant):

The project will have various significant impacts (see attached checklist and discussion) and may also be controversial in nature.

What Changes To The Project Would Mitigate The Identified Impacts (List mitigation measures for any significant impacts and Conditional Negative Declaration).

Some mitigation will be accomplished by the way in which the site development is planned. To the extent possible, the most significant natural habitats will be avoided and the need to acquire existing residences will be minimized. Mitigation of environmental impacts also will be considered in the engineering design of the proposed facilities.

USGS Quad Sheet Byron Hot Springs Base Map Sheet# None Parcel# \_\_\_\_\_  
& Clifton Court Forebay

GENERAL CONSIDERATIONS:

1. Location The proposed site is in southeast Contra Costa County, 2.5 miles south of Byron and 1.0 miles west of County Route J4, bounded roughly by Armstrong Road and Byron Hot Springs Road. An existing privately owned airport, Byron Airpark, occupies part of the site. Brushy Creek traverses the site.
2. Project Description The project is the proposed construction of a new public use, general aviation airport to serve eastern Contra Costa County. Approximately 500 to 700 acres would be acquired for airfield, aircraft parking and runway approach protection purposes. Two intersecting runways would be required; the longer one having an initial length of 3,800 feet with potential extension to 6,000 feet. Initial development would provide space for about 150 based aircraft potential demand of 400 based aircraft in 20 years.
3. Does it appear that any feature of the project will generate significant public concern? (Nature of concern):  yes  no  maybe  
Noise, possible relocation of residents, impacts on natural environment
4. Will the project require approval or permits by other than a County agency? Agency names(s)  yes  no  
Airport Land Use Commission
5. Is the project within the Sphere of Influence of any city? (Name) No

**ENVIRONMENTAL IMPACTS ANALYSIS:**

S=Significant N=Negligible C=Cumulative No=None U=Unknown

1. Water. Will the project result in:

- |    |   |   |                                     |                          |                                     |
|----|---|---|-------------------------------------|--------------------------|-------------------------------------|
| a) | Is any portion of the project within a <u>Flood Hazard Area</u> ?       | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO         |                          |                                     |
|    |   | S                                       | N                                   | C                        | NO                                  |
| b) | Reduction of surface or ground water quality or quantity?               | <input type="checkbox"/>                | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) | <u>Increased runoff</u> or alteration to drainage patterns and streams? | <input type="checkbox"/>                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| d) | Erosion of or sedimentation in a body of water?                         | <input type="checkbox"/>                | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

2. Earth. (Consider the Seismic Safety Element) Will the proposal result in or be subject to:

- |    |   |                                     |  |                          |                          |
|----|---|-------------------------------------|--|--------------------------|--------------------------|
| a) | Is any portion of the project within an Alquist-Priolo Act Special Studies Zone? (if yes, date County Geologist notified _____)   | <input type="checkbox"/> YES        | <input checked="" type="checkbox"/> NO |                          |                          |
| b) | Potentially hazardous geologic or soils conditions on or immediately adjoining the site? (slides, springs, erosions, liquefaction, earthquake faults; consider prime soils, slope, septic tank limitations). Cite any geologic or engineering reports. (County Geologist consulted?) <u>No.</u> | S                                   | N                                      | C                        | NO                       |
|    |   | <input type="checkbox"/>            | <input checked="" type="checkbox"/>    | <input type="checkbox"/> | <input type="checkbox"/> |
| c) | Grading (consider height amount, steepness and visibility of proposed slopes; consider effect of grading on trees, creek channels and ridge tops)(Are there any grading plans?)   | <input checked="" type="checkbox"/> | <input type="checkbox"/>               | <input type="checkbox"/> | <input type="checkbox"/> |
|    |   | <input type="checkbox"/> YES        | <input checked="" type="checkbox"/> NO |                          |                          |

3. Plant/Animal Life.

- |    |  |                                     |                          |                          |                          |  |
|----|--|-------------------------------------|--------------------------|--------------------------|--------------------------|--|
| a) | Will there be a reduction or disturbance to any habitat for plants and animals? (including removal or disturbance of trees)  | S                                   | N                        | C                        | NO                       |  |
|    |  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| b) | Will the Project affect the habitat of any rare, endangered or unique species located on or near the site? See Discussion.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| c) | What vegetation (habitat) types exist on the site (give relative % or proportions if significant)? List habitat types. _____ | See Discussion                      |                          |                          |                          |  |

- |    |   |                          |                                     |                          |                          |
|----|---|--------------------------|-------------------------------------|--------------------------|--------------------------|
| 4. | <u>Air.</u> Will the Project result in deterioration of existing air quality, including creation of objectionable odors, or will future project residents be subjected to significant pollution levels? | S                        | N                                   | C                        | NO                       |
|    |   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

5. Noise. Will the project result in:

- |    |  |                                     |  |                          |                          |
|----|--|-------------------------------------|--|--------------------------|--------------------------|
| a) | Is any portions of the project within the 1990, 60 dBA Noise Contour? (check Noise Element at 1000 scale maps) | <input type="checkbox"/> YES        | <input checked="" type="checkbox"/> NO |                          |                          |
| b) | Increases from existing noise levels?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>               | <input type="checkbox"/> | <input type="checkbox"/> |

6. Energy/Natural Resources/Hazards (Consider General Plan, Safety and Seismic Safety Elements). Will the projects result in:

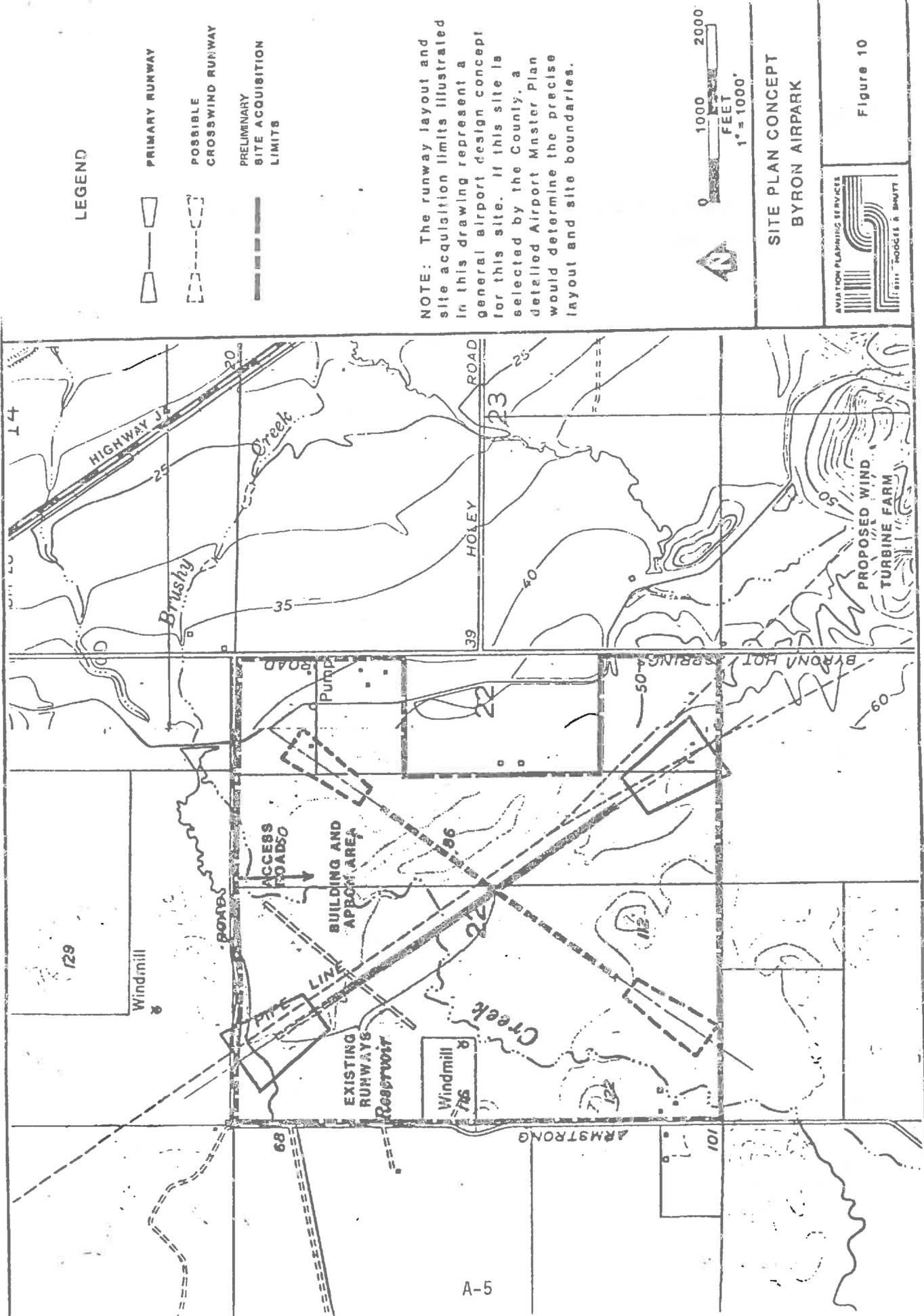
- |    |   |                          |                                     |                          |                                     |
|----|---|--------------------------|-------------------------------------|--------------------------|-------------------------------------|
| a) | Any additional consumption of energy?   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| b) | Affect the potential use, extraction, conservation or depletion of a natural resource?                    | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) | Increase risk of explosion, release of hazardous substances or other dangers to public health and safety? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

7. Utilities and Public Service. Will the project:

- |    |   |   |                             |
|----|---|---|-----------------------------|
| a) | Require alteration or addition to or the need for new utility systems (including sphere of influence or district boundary change; water, sewer, solid waste)? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
|----|---|---|-----------------------------|

- |   | S                                       | N                                   | C                                      | NO                                  | U                        |
|---|---|-------------------------------------|--|-------------------------------------|--------------------------|
| b) Result in the need for new or expansion of the following services: fire and police protection, schools, parks and recreation, roads, flood control or other public works facilities, public transit or governmental services (include changes to sphere of influence)? | <input type="checkbox"/>                | <input checked="" type="checkbox"/> | <input type="checkbox"/>               | <input type="checkbox"/>            | <input type="checkbox"/> |
| c) Affect recreational opportunities (consider General Plan Recreation Element-Trails Plans)?   | <input type="checkbox"/>                | <input type="checkbox"/>            | <input type="checkbox"/>               | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. <u>Transportation/Circulation.</u> (Consider the Major Roads Plan) Will the project result in:   |   |                                     |  |                                     |                          |
| a) Additional traffic generation or increase in circulation problems (consider road design, access, congestion, parking and accident potential)?  | <input checked="" type="checkbox"/>     | <input type="checkbox"/>            | <input type="checkbox"/>               | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Special transportation considerations (waterborne, rail, air or public transportation systems and parking facilities)?   | Yes _____                               |                                     |  |                                     |                          |
| c) Increase in commuting to and from local community?   | <input type="checkbox"/>                | <input checked="" type="checkbox"/> | <input type="checkbox"/>               | <input type="checkbox"/>            | <input type="checkbox"/> |
| 9. <u>Housing and Community Development.</u> (Consider Housing Element). Is the project:  |   |                                     |  |                                     |                          |
| a) Located within a Neighborhood Preservation Area?   | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |
| b) Is there an opportunity for construction of low and moderate income housing?   | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |
| 10. <u>Cultural Resources.</u>  |   |                                     |  |                                     |                          |
| a) Review by the Regional Clearinghouse? (their recommendation)? _____  | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |
|   | Date _____                              |                                     |  |                                     |                          |
| b) Any nearby County Historic Sites (Consider Historical Resources Inventory) _____   | Yes _____                               |                                     |  |                                     |                          |
| 11. <u>Aesthetics.</u> (Consider the Scenic Routes Element) Will the project obstruct any public scenic vista or view, create an aesthetically offensive site open to public view, or produce new light or glare?   |   |                                     |  |                                     |                          |
|   | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |
| 12. Is this project a growth-inducing action (encourage additional requests for similar uses) or set a precedent in the area?   |   |                                     |  |                                     |                          |
|   | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |
| 13. <u>Mandatory Findings of Significance.</u> (A "yes" answer on any of the following questions requires preparation of an EIR)  |   |                                     |  |                                     |                          |
| a) Does the project have the potential to degrade the quality of the environment, or curtail the diversity in the environment?  | <input checked="" type="checkbox"/> YES |                                     | <input type="checkbox"/> NO            |                                     |                          |
| b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?  | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |
| c) Does the project have impacts which are individually limited, but cumulatively considerable?   | <input checked="" type="checkbox"/> YES |                                     | <input type="checkbox"/> NO            |                                     |                          |
| d) Does the project have environmental impacts which will cause substantial adverse effects on human beings, either directly or indirectly?   | <input type="checkbox"/> YES            |                                     | <input checked="" type="checkbox"/> NO |                                     |                          |

Discussion:



**LEGEND**

- PRIMARY RUNWAY
- POSSIBLE CROSSWIND RUNWAY
- PRELIMINARY SITE ACQUISITION LIMITS

NOTE: The runway layout and site acquisition limits illustrated in this drawing represent a general airport design concept for this site. If this site is selected by the County, a detailed Airport Master Plan would determine the precise layout and site boundaries.



**SITE PLAN CONCEPT  
BYRON AIRPARK**

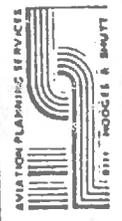


Figure 10

DISCUSSION

- 1a. Brushy Creek crosses site. Creek flow volumes will be considered in engineering design.
- c. New pavement will increase local runoff. Effects will be accounted for in project engineering.
- 2b. Site is in an area of low to moderate liquefaction potential.
- c. Extensive grading will be required. Quantities will be estimated and impacts assessed.
- 3a. New pavement will eliminate vegetation presently growing in the affected locations.
- b. A unique plant species--*Lasthenia conjugens*--is found along the edges of vernal pools on the site. Some of these areas would be significantly affected by the project. No tracks, dens, or other signs of the San Joaquin kit fox (an endangered species) have been found on the site, although the area may be on the edge of the animal's range.
- c. The proportions of different habitat types on the site are estimated as follows:

Introduced annual grassland	- 55 percent
Vernal pool systems	- 25 percent
Djsturbed areas	- 15 percent
Freshwater wetland	- 5 percent
- 4. Aircraft operations and vehicle access trips will contribute small amounts of air pollution emissions.
- 5b. Aircraft operations will increase existing noise levels. The extent of the <sup>impacts</sup>~~inputs~~ will be assessed.

- 6a. Airport facilities and aircraft operations will consume energy in relatively small amounts.
- c. The probability of an aircraft accident off the airport will increase as activity increases, but the risks will be negligible because of the minimal nearby development.
- 7a. Additional electrical and telephone lines may need to be extended to the site. Water and sewage requirements will be met by facilities to be developed on site.
- b. Some additional county staff may be needed to operate the airport.
- 8a. Airport traffic will require that Armstrong and Byron Hot Springs Roads be improved.
- b. The project will change the air transportation system in the county.
- c. For most users, the access trip distance to the new airport will be greater to the Antioch Airport, which is expected to close.
- 10b. Byron Hot Springs is located about 0.6 miles north of the site.
- 12. The project is expected to have negligible growth inducing impacts. The issue will be assessed nonetheless.
- 13a. The potential for significant adverse impacts exists. Most impacts are expected to be minor, however, and mitigation measures will be incorporated into the design.
- c. The cumulative impacts of the airport's long-term development will be more significant than the short-term impacts. A 20-year master plan for airport development will be prepared and the environmental analysis will address the impacts expected over this complete period.
- d. The project's major effects on human beings would be upon those households that may need to be relocated off the project site. The total number of residences affected is expected to be less than five and could be zero.

RESPONSES TO NOTICE OF PREPARATION

- o California Department of Transportation, District 4  
Wallace J. Rothbart, District CEQA Coordinator  
April 30, 1985
- o California Office of Historic Preservation  
Marion Mitchell-Wilson, Deputy State Historic Preservation Officer  
May 1, 1985
- o Francis M. Scott  
undated (received May 9, 1985)
- o Local Agency Formation Commission of Contra Costa County  
Dewey Mansfield, Executive Officer  
May 10, 1985
- o Contra Costa County Community Development Department, Transportation  
Planning Division  
Maurice Shiu, Acting Assistant Director  
May 16, 1985
- o William E. Ralph  
May 16, 1985
- o Wind Energy Specialties, Inc.  
Logan Belton, Project Coordinator  
May 21, 1985
- o California Air Resources Board, Local Projects Support Branch,  
Technical Support Division  
Gary Agid, Chief  
May 24, 1985
- o East Bay Regional Park District  
T.H. Lindenmeyer, Project Coordinator, Planning and Design  
May 28, 1985
- o Army Corps of Engineers, Sacramento District  
Robert Clark, Chief, Unit 1 Regulatory Section
- o California Department of Transportation, Division of Aeronautics  
F.G. Lernke, Chief, Technical Services Branch  
June 5, 1985
- o California Department of Fish and Game, Region 3  
Brian Hunter, Regional Manager  
July 5, 1985

PLANT AND ANIMAL SPECIES IDENTIFIED  
BYRON AIRPARK RECONNAISSANCE, APRIL 6, 1985

PLANTS

<i>Achyrachena mollis</i>	blow-wives
<i>Alopecurus saccatus</i> *	
<i>Allenrolfia occidentalis</i> *	iodine bush
<i>Amsinckia intermedia</i>	fiddleneck
<i>Avena barbata</i>	
<i>A. fatua</i>	wild oats
<i>Brodiaea laxa</i>	
<i>B. pulchella</i>	blue dicks
<i>Bromus mollis</i>	soft chess
<i>B. diandrus</i>	ripgut brome
<i>Cotula coronopifolia</i>	brass buttons
<i>Cryptantha</i> sp. *	
<i>Distichilis spicata</i>	salt grass
<i>Downingia elegans</i> *	
<i>Eleocharis acicularis</i>	
<i>Erodium</i> spp.	filaree
<i>Eryngium vaseyi</i> *	
<i>Festuca</i> sp.	
<i>Frankenia grandiflora</i> *	
<i>Grindelia camporum</i>	gum plant
<i>Hemizonia pungens</i>	common spikeweed
<i>Hordeum leporinum</i>	farmer's foxtail
<i>Juncus bufonius</i>	toad rush
<i>Juncus</i> sp.	
<i>Lasthenia chrysostoma</i>	goldfields
<i>L. fremontii</i>	
<i>L. sp.</i>	
<i>Layia</i> sp.	tidy tips
<i>Lepidium dictyotum</i>	peppergrass
<i>L. latipes</i> *	
<i>Lolium multiflorum</i>	rye grass
<i>Lupinus</i> cf. <i>bicolor</i>	
<i>L. cf. micranthus</i>	lupine
<i>Myosurus minimus</i> *	mouse tails
<i>Navarettia</i> sp.	skunkweed
<i>Orthocarpus campestris</i>	field owl clover
<i>O. purpurascens</i>	red owl clover
<i>Plagiobothrys</i> sp. *	popcorn flower
<i>Pogogyne</i> sp. *	
<i>Polypogon monspeliensis</i>	rabbit's foot grass
<i>Psilocarphus</i> cf. <i>brevissimus</i> *	wooly marbles
<i>Ranunculus californica</i>	buttercup
<i>Rorippa nasturtium-aquaticum</i>	watercress
<i>Rumex</i> sp.	dock
<i>Scirpus</i> cf. <i>californicum</i>	tules
<i>S. cf. robustus</i>	bulrush
<i>Silybum marianum</i>	milk thistle
<i>Spergularia media</i> *	spurrey
<i>Suaeda fruticosa</i> *	seep weed
<i>Typha</i> sp.	cattails

ANIMALS

Mammals

Lepus californicus  
Thomomys bottae  
Canis latrans

black-tailed hare  
Botta's pocket gopher  
coyote

Amphibians

Hyla regilla

Pacific treefrog

Birds

Anas platyrhynchos  
Cathartes aura  
Elanus leucurus  
Aquila chrysaetos  
Circus cyaneus  
Numenius americanus  
Eremophila alpestris  
Hirundo rustica  
Sturnella neglecta  
Agelaius phoeniceus  
Passerculus sandwichensis

mallard  
turkey vulture  
black-shouldered kite  
golden eagle  
northern harrier  
long-billed curlew  
horned lark  
barn swallow  
meadowlark  
red-winged blackbird  
savannah sparrow

\* denotes vernal pool species

NOISE IMPACT CALCULATIONS INPUTS

\*\*\*\*\*  
AIRCRAFT MIX

	1990 Projection Total Operations		
	Annual	Avg Day	Percentage
Single Engine	43,100	118	95.8%
Twin Engine	1,800	5	4.0%
Business Jets	100	0.3	0.2%
<b>total</b>	<b>45,000</b>	<b>123.3</b>	<b>100 %</b>

\*\*\*\*\*  
TIME OF DAY

	1990 Projection Percent of All Operations		
	Day 7 a.m. 7 p.m.	Evening 7 p.m. 10 p.m.	Night 10 p.m. 7 a.m.
Single Engine	96.0%	3.0%	1.0%
Twin Engine	97.0%	2.3%	0.7%
Business Jets	97.0%	2.3%	0.7%

\*\*\*\*\*  
RUNWAY UTILIZATION TABLE

	1990 Projection Percentage of Takeoffs			
	RUNWAY 4	RUNWAY 22	RUNWAY 12	RUNWAY 30
Single Engine				
Day	0.0%	3.0%	12.0%	85.0%
Evening	0.0%	1.5%	23.5%	75.0%
Night	0.0%	0.0%	35.0%	65.0%
Twin Engine				
Day	0.0%	1.0%	13.4%	85.6%
Evening	0.0%	0.5%	24.2%	75.3%
Night	0.0%	0.0%	35.0%	65.0%
Business Jets				
Day	0.0%	0.0%	14.0%	86.0%
Evening	0.0%	0.0%	24.5%	75.5%
Night	0.0%	0.0%	35.0%	65.0%

\*\*\*\*\*  
1990 Projection

	Percentage of Landings			
	RUNWAY 4	RUNWAY 22	RUNWAY 12	RUNWAY 30
Single Engine				
Day	1.0%	10.0%	10.0%	79.0%
Evening	0.5%	5.0%	22.5%	72.0%
Night	0.0%	0.0%	35.0%	65.0%
Twin Engine				
Day	0.3%	3.0%	13.5%	83.2%
Evening	0.2%	1.5%	24.2%	74.1%
Night	0.0%	0.0%	35.0%	65.0%
Business Jets				
Day	0.0%	0.0%	15.0%	85.0%
Evening	0.0%	0.0%	25.0%	75.0%
Night	0.0%	0.0%	35.0%	65.0%

\*\*\*\*\*  
AIRCRAFT MIX

	2005 Projection Total Operations		
	Annual	Avg Day	Percentage
Single Engine	147,200	403	92.0%
Twin Engine	11,200	31	7.0%
Business Jet	1,600	4.4	1.0%
<b>total</b>	<b>160,000</b>	<b>438.4</b>	<b>100 %</b>

\*\*\*\*\*  
TIME OF DAY

	2005 Projection Percent of All Operations		
	Day 7 a.m. 7 p.m.	Evening 7 p.m. 10 p.m.	Night 10 p.m. 7 a.m.
Single Engine	92.0%	6.0%	2.0%
Twin Engine	93.5%	5.0%	1.5%
Business Jet	93.5%	5.0%	1.5%

\*\*\*\*\*  
RUNWAY UTILIZATION TABLE

	2005 Projection Percentage of Takeoffs			
	RUNWAY 5	RUNWAY 23	RUNWAY 12	RUNWAY 30
Single Engine				
Day	1.0%	27.0%	8.0%	64.0%
Evening	0.6%	32.4%	11.0%	56.0%
Night	0.2%	37.8%	14.0%	48.0%
Twin Engine				
Day	0.7%	21.0%	8.8%	69.5%
Evening	0.4%	25.0%	12.9%	61.7%
Night	0.1%	28.9%	17.0%	54.0%
Business Jets				
Day	0.4%	15.0%	9.6%	75.0%
Evening	0.2%	17.5%	14.8%	67.5%
Night	0.1%	20.0%	19.9%	60.0%

\*\*\*\*\*  
2005 Projection

	Percentage of Landings			
	RUNWAY 5	RUNWAY 23	RUNWAY 12	RUNWAY 30
Single Engine				
Day	3.0%	30.0%	5.0%	62.0%
Evening	2.0%	35.0%	7.5%	55.5%
Night	1.0%	40.0%	10.0%	49.0%
Twin Engine				
Day	2.0%	25.0%	7.5%	65.5%
Evening	1.4%	30.0%	10.0%	58.6%
Night	0.8%	35.0%	12.5%	51.7%
Business Jets				
Day	1.0%	20.0%	10.0%	69.0%
Evening	0.8%	25.0%	12.5%	61.7%
Night	0.5%	30.0%	15.0%	54.5%

# California Environmental Quality Act

## NOTICE OF

- Completion of Environmental Impact Report
- Negative Declaration of Environmental Significance

CONTRA COSTA COUNTY COMMUNITY DEVELOPMENT DEPARTMENT  
651 PINE STREET P.O. BOX 951 MARTINEZ, CALIFORNIA 94553-0095

Telephone: (415) 372- 2035 Contact Person Jim Cutler

### Project Description and Location:

EAST CONTRA COSTA COUNTY AIRPORT County File #PW 85-43: The project is the proposed construction of a new public use, general aviation airport to serve eastern Contra Costa County. Approximately 500 to 700 acres would be acquired for airfield, aircraft parking and runway approach protection purposes. Two intersecting runways would be required; the longer one having an initial length of 3,800 feet with potential extension to 6,000 feet. Initial development would provide space for about 150 based aircraft with potential demand of 400 based aircraft in 20 years. The proposed site is in southeast Contra Costa County, 2.5 miles south of Byron and 1.0 miles west of County Route J4, bounded roughly by Armstrong Road and Byron Hot Springs Road. An existing privately owned airport, Byron Airpark, occupies part of the site. Brushy Creek traverses the site.

- Justification for Negative Declaration is attached.
- The Environmental Impact Report is available for review at the address below:

Contra Costa County Community Development Department  
4th Floor, North Wing, Administration Building  
Pine & Escobar Streets  
Martinez, California

Review Period for Environmental Impact Report or Negative Declaration: October 7, 1985  
thru November 21, 1985

AP 9 R 6/85

By James W. Cutler  
Community Development Department Representative