

Master Plan

Nephi

Municipal Airport

Barnard Dunkelberg Company | Creamer & Noble Engineers



Master Plan

SEPTEMBER 2011

Nephi Municipal Airport

Barnard Dunkelberg Company
Tulsa, OK & Denver, CO

Creamer & Noble Engineers
St. George, UT

FAA Project No. 3-49-0023-10-2007

"The preparation of this document may have been supported, in part, with financial assistance from the Federal Aviation Administration through the Airport Improvement Program. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of these documents by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public law."

Contents

Contents iii
Tables vi
Illustrations vii
Executive Summary ix

A. Inventory of Existing Conditions

Introduction A.1
Airport Role and Facilities A.3
Airside Facilities A.5
Landside Facilities A.6
Existing Airport Utilities and Services A.12
Airspace System/Navigation and Communication Aids A.15
Airports Inventory A.21
Airport Environs A.25
Environmental Review Inventory A.29
Financial Inventory A.35

B. Forecasts of Aviation Activity

Introduction B.1
Forecast Assumptions and Conditions B.1
Historical and Existing Aviation Activity B.6
Aviation Activity Forecasts B.9
Based Aircraft Forecasts B.14
Summary B.16

C. Capacity Analysis and Facility Requirements

Introduction C.1
Airport Role C.1
Facility Requirements C.8
Instrument Approach Screening Criteria C.20
Landside Requirements C.32
Planning Issues Identification/Verification C.36
Summary C.37

Contents (Continued)

D. Development Concepts and Alternatives Analysis

Introduction	D.1
Development Assumptions	D.1
Goals for Development	D.2
Airside & Landside Development Concepts	D.3
Landside Planning Issues	D.12
Landside Alternatives	D.13
Property/Easement Acquisition	D.20
Aviation Support Facilities	D.20
Aviation-Related Development	D.21
Potential Environmental Impacts	D.22
Development Projects & Phasing	D.32
Alternatives Summary	D.33

E. Airport Plans

Introduction	E.1
Airport Layout Plan	E.2
Airspace Plan	E.5
Inner Portion of the Approach Surface Plans	E.12
Departure Surface Plans	E.18
Terminal Area Plan	E.20
Land Use Drawing	E.23
Airport Property Map	E.27

F. Implementation Plan

Introduction	F.1
Project List and Implementation Schedule	F.1
Cost Estimates	F.2
Capital Improvement Program (CIP)	F.3
Phasing Plan	F.3
Sources of Capital Funding	F.3
Implementation Strategy	F.6
Summary	F.12

Contents (Continued)

Appendix One

Existing Nephi Municipal Airport Height Hazard Zoning Map (To be included in Final Report) ---

Juab County Land Use Code/Airport Protection ---

Appendix Two

1997 Environmental Assessment Wetland Mapping for New Runway 16/34 at Nephi Municipal Airport ---

Natural Resources Conservation Service Soils Mapping ---

Appendix Three

Capital Improvement Program (CIP), November 2010 ---

Appendix Four

Nephi Municipal Airport Instrument Approach Feasibility Analysis (2002) ---

Appendix Five

Nephi Municipal Airport – 2008 and 2028 Integrated Noise Model (INM) Noise Contour Data ---

Tables

Table	A1	AIRPORT BUILDING & HANGAR FACILITIES	A.6
Table	A2	AIRPORT FUEL SALES, 2004-2008	A.8
Table	A3	PUBLIC USE AIRPORTS WITHIN A 30-MILE RADIUS	A.24
Table	A4	JUAB COUNTY FEDERALLY LISTED WILDLIFE SPECIES OR SPECIES OF SPECIAL CONCERN	A.33
Table	A5	REVENUE AND EXPENSE SUMMARY, 2004-2008	A.36
Table	B1	HISTORICAL AVIATION ACTIVITY, 1998-2008	B.6
Table	B2	EXISTING OPERATIONS BY AIRCRAFT TYPE, 2008	B.8
Table	B3	SUMMARY OF BASED AIRCRAFT, 1998-2008	B.9
Table	B4	GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2008-2028	B.11
Table	B5	MILITARY OPERATIONS FORECAST, 2008-2028	B.12
Table	B6	SUMMARY OF LOCAL AND ITINERANT GA OPERATIONS, 2008-2028	B.13
Table	B7	SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2008-2028	B.14
Table	B8	BASED AIRCRAFT FORECAST, 2008-2028	B.15
Table	B9	BASED AIRCRAFT FORECAST BY TYPE, 2008-2028	B.16
Table	B10	SUMMARY OF AVIATION ACTIVITY FORECASTS, 2008-2028	B.17
Table	B11	SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE (ARC), 2008-2028	B.19
Table	B12	SUMMARY OF MASTER PLAN & TAF FORECAST COMPARISON, 2008-2023	B.20
Table	C1	ALL WEATHER WIND COVERAGE SUMMARY	C.6
Table	C2	ARC C-II DIMENSIONAL STANDARDS FOR RUNWAY 17/35 (IN FEET)	C.10
Table	C3	RUNWAY 17/35 TAKEOFF LENGTH REQUIREMENTS	C.14
Table	C4	RUNWAY 17/35 THRESHOLD SITING APPROACH & DEPARTURE SURFACE CRITERIA	C.17
Table	C5	RUNWAY 17/35 GLIDEPATH QUALIFICATION SURFACE (GQS) EVALUATION	C.21
Table	C6	FINAL & STRAIGHT MISSED APPROACH SEGMENT OBSTACLE ASSESSMENT (200-FOOT DA)	C.26
Table	C7	RUNWAY PROTECTION ZONE DIMENSIONS	C.31
Table	C8	GENERAL AVIATION FACILITY REQUIREMENTS, 2008-2028	C.33
Table	C9	FUEL STORAGE REQUIREMENTS, 2008-2028	C.35
Table	C10	FACILITY REQUIREMENTS SUMMARY, 2008-2028	C.38
Table	D1	EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE, 2008 & 2028	D.25
Table	D2	RUNWAY 17/35 AIRSIDE & LANDSIDE DEVELOPMENT SUMMARY	D.34
Table	F1	PHASE I (0-5 YEARS) DEVELOPMENT PLAN PROJECT COSTS	F.7
Table	F2	PHASE II (6-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS	F.8
Table	F3	PHASE III (11-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS	F.9
Table	F4	POST PLANNING PERIOD (BEYOND 20 YEARS) DEVELOPMENT PLAN PROJECTS	F.10

Illustrations

Figure A1	AIRPORT LOCATION MAP	A.2
Figure A2	AIRPORT VICINITY MAP	A.4
Figure A3	EXISTING AIRPORT LAYOUT	A.7
Figure A4	EXISTING LANDSIDE DEVELOPMENT AREA DETAIL	A.9
Figure A5	EXISTING AIRPORT UTILITY SYSTEM LAYOUT	A.14
Figure A6	AIRSPACE/NAVAIDS SUMMARY	A.18
Figure A7	EXISTING AIRPORT TRAFFIC PATTERNS	A.20
Figure A8	SURROUNDING AIRPORTS INVENTORY (30-MILE RADIUS)	A.22
Figure A9	GENERALIZED EXISTING LAND USE	A.26
Figure A10	GENERALIZED EXISTING ZONING	A.28
Figure A11	HAZARDOUS WILDLIFE ATTRACTANT BOUNDARY MAP	A.31
Figure C1	REPRESENTATIVE AIRCRAFT BY AIRPORT REFERENCE CODE (ARC) DESIGNATION	C.4
Figure C2	ALL WEATHER WIND ROSE: 16-, 13-, & 10.5-KNOT CROSSWIND COMPONENTS	C.7
Figure C3	EXISTING ARC C-II DIMENSIONAL CRITERIA MAP (VISUAL AND NOT LOWER THAN ¾-MILE VISIBILITY MINIMUMS)	C.11
Figure C4	RUNWAY 17/35 THRESHOLD SITING AND DEPARTURE SURFACES	C.18
Figure C5	RUNWAY 17/35 GLIDEPATH QUALIFICATION SURFACE (GQS)	C.22
Figure C6	LPV FINAL APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES	C.23
Figure C7	LPV SECTION 1 MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES	C.24
Figure C8	LPV SECTION 2 MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES	C.25
Figure C9	RUNWAY 17/35 FINAL APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES (OCS)	C.27
Figure C10	RUNWAY 17/35 STRAIGHT MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES (OCS)	C.28
Figure D1	OPTION ONE & TWO TAXIWAY "A" EXTENSION	D.6
Figure D2	OPTION ONE/WEST SIDE TAXIWAY CONNECTOR	D.7
Figure D3	OPTION TWO/WEST SIDE PARTIAL PARALLEL TAXIWAY	D.8
Figure D4	OPTION ONE/RUNWAY 17 & 35 INSTRUMENT APPROACH PROCEDURE DEVELOPMENT (¾-MILE VISIBILITY MINIMUMS)	D.10
Figure D5	OPTION TWO/RUNWAY 17 & 35 INSTRUMENT APPROACH PROCEDURE DEVELOPMENT (½ -MILE VISIBILITY MINIMUMS)	D.11
Figure D6	LANDSIDE ALTERNATIVE ONE	D.15
Figure D7	LANDSIDE ALTERNATIVE TWO	D.17
Figure D8	LANDSIDE ALTERNATIVE THREE	D.19
Figure D9	LAND USE COMPATIBILITY MATRIX	D.24
Figure D10	2008 EXISTING DNL NOISE CONTOURS WITH GENERALIZED EXISTING ZONING	D.26
Figure D11	2028 FUTURE DNL NOISE CONTOURS WITH GENERALIZED EXISTING ZONING	D.28
Figure D12	CONCEPTUAL DEVELOPMENT PLAN	D.35

Illustrations (Continued)

Figure	**E1**	**AIRPORT LAYOUT DRAWING**	E.3
Figure	**E2**	**AIRPORT AIRSPACE DRAWING CONICAL SURFACE (PLAN VIEW)**	E.7
Figure	**E3**	**AIRPORT AIRSPACE DRAWING RUNWAY 17 EXTENDED APPROACH (PLAN VIEW)**	E.8
Figure	**E4**	**AIRPORT AIRSPACE DRAWING RUNWAY 35 EXTENDED APPROACH (PLAN VIEW)**	E.9
Figure	**E5**	**AIRPORT AIRSPACE DRAWING RUNWAY 17 APPROACH PROFILES**	E.10
Figure	**E6**	**AIRPORT AIRSPACE DRAWING RUNWAY 35 APPROACH PROFILES**	E.11
Figure	**E7**	**INNER PORTION OF THE APPROACH SURFACE RUNWAY 17 (PLAN VIEW)**	E.14
Figure	**E8**	**INNER PORTION OF THE APPROACH SURFACE RUNWAY 17 (PROFILE VIEW)**	E.15
Figure	**E9**	**INNER PORTION OF THE APPROACH SURFACE RUNWAY 35 (PLAN VIEW)**	E.16
Figure	**E10**	**INNER PORTION OF THE APPROACH SURFACE RUNWAY 35 (PROFILE VIEW)**	E.17
Figure	**E11**	**DEPARTURE SURFACE DRAWING**	E.19
Figure	**E12**	**TERMINAL AREA PLAN**	E.22
Figure	**E13**	**LAND USE DRAWING**	E.25
Figure	**E14**	**REVISED NEPHI MUNICIPAL AIRPORT ZONING MAP**	E.26
Figure	**E15**	**AIRPORT PROPERTY MAP**	E.28
Figure	**F1**	**PHASING PLAN**	F.11

Executive Summary
Nephi Municipal Airport Master Plan Update

Nephi Municipal Airport is a vital part of the national airport system, as well as an integral component of the Utah Continuous Airport System Plan (UCASP) within the State of Utah. According to the UCASP, the Airport is a designated General Aviation Regional Airport, and represents a vital and significant regional economic asset. Since the last master planning study of airport facilities was completed in 1995, aviation issues on a local, regional, and national level have changed dramatically. The re-evaluation of these issues in the current Master Plan Update requires a thorough understanding of existing regional aviation needs, and the vision to anticipate how they will continue to evolve moving forward in an ever-changing global economy.

This Airport Master Plan Update is intended to provide a comprehensive evaluation of the Airport and include the formulation of a long-range physical development plan for the facility. The primary goal is the continued improvement of the Airport in a manner that can efficiently accommodate potential demand, is financially attainable, and that is appropriate in consideration of its surroundings.

The preparation of the Master Plan Update has been conducted under the direction of Nephi City staff with financial assistance from the Federal Aviation Administration (FAA) and the Utah Department of Transportation (UDOT) Division of Aeronautics. Like any long-term development plan, the Airport's master plan should reserve space for potential facilities (including industrial development and associated businesses). However, those potential future facilities for which a site has been reserved are only constructed when actual demand occurs. Thus, the Airport Master Plan Update is not a decision document on whether or not an improvement will be built; it is a planning tool that indicates how the property at the Airport might best be used in consideration of anticipated future demand.

The proposed long-term development plan for the Airport is described in the following paragraphs and is graphically depicted in the figure, entitled *CONCEPTUAL AIRPORT DEVELOPMENT PLAN*, at the end of this document.

Development Considerations

The various aircraft types projected to be used at Nephi Municipal Airport, during the next 20 years, are to reflect a growing percentage of turbine-powered aircraft. This category of predominately "business-use" aircraft are projected to grow from the current 44.5% of total general aviation operations to 52.5% by the end of the planning period. In addition, military operations, which are represented by training operations by Utah National Guard Helicopters, are projected to increase from 14.2% to 39.8% of total operations through the planning period. Overall, the number of annual aircraft operations (both landings and takeoffs) at the Airport is forecasted to increase from approximately 7,040 in 2008 to just over 20,112 by the end of the 20-year planning period encompassed in the Master Plan Update. Also of significance is the fact that the number of based aircraft at the Airport is forecasted to double over the next two decades, from a base year count of 10 aircraft in 2008 to 20 aircraft in 2028.

Development Recommendations

Following an examination of several alternatives, a recommended development plan was determined. The recommended plan is illustrated graphically at the end of this Executive Summary, and has the following major features:

Airside Facilities

Building upon the reconstruction of the Airport's runway/taxiway system and apron expansion in recent years, along with on-going efforts to finalize designs for instrument approach procedures, Nephi Municipal Airport is well configured to accommodate forecasted demand. In addition, Nephi City's desire to preserve the long-term expansion capability of the Airport (i.e., runway/taxiway extension and instrument approach upgrades) will ensure the overall operational capabilities of this important transportation facility. The specific airside planning recommendations for the Airport are presented in the following text.

Runway and Taxiway Improvements.

1) Design/publish Runway 17 GPS instrument approach procedure.
2) Design, engineer, & install Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to support Runway 17 GPS approach.
3) Design/publish Runway 35 GPS instrument approach procedure.

4) Design, engineer, & install Medium Intensity Approach Lighting System to support Runway 35 GPS approach.
5) Prepare environmental study for future 900-foot runway/taxiway extension.
6) Conduct Airport Airspace Analysis Survey for Runway 35 instrument approach revision.
7) Design, engineer, & extend runway and parallel taxiway 900 feet to the south.
8) Relocate Runway 35 MALS and Install RAILS to support Runway 35 GPS & RNP approach.
9) Design/publish revised Runway 35 GPS instrument approach procedure.
10) Design/publish new Runway 17 & 35 RNP instrument approach procedures.
11) Implement ongoing runway, taxiway, and apron pavement maintenance projects.

Property/Easement Acquisition or Release

The Airport Sponsor (i.e., Nephi City) presently owns or controls the property associated with the existing RPZs at each runway end. However, approximately 10.1 acres of property acquisition and approximately 22.9 acres of RPZ easement are recommended to control the balance of the future enlarged Runway 17 RPZ following the implementation of instrument approach upgrades.

Landside Facilities

Based upon input received from Nephi City staff and members of the Study Advisory Committee, as well as the projected aircraft storage improvements that were identified in the *Aviation Activity Demand Forecast* chapter, the following landside development improvements (i.e., aviation, aviation-related, and aviation support) have been identified.

Aviation Development

In accordance with the forecast based aircraft counts and facility requirement projections that were generated for this planning effort, it has been concluded that adequate future aviation-use development property is available on the east side of the airport to accommodate this projected aviation demand for the 20-year planning period of this study. It should also be noted that the undeveloped infill areas within the existing aviation development are nearly fully leased, and

future development of aircraft storage facilities at the Airport will be demand driven. Therefore, the number, size, and location of future hangars will vary depending on the demand for specific facilities, and the proposed development plan is flexible to accommodate a variety of user groups.

Aircraft storage facilities, ranging from additional tiedown apron, nested T-hangars, and individual executive hangars, to larger FBO/corporate hangars can be accommodated through long-term expansion of the existing east side general aviation development area. It should also be noted that the future development of aircraft storage facilities will also require the extension of access roadways and utilities (e.g., electricity, natural gas, water, sanitary sewer, etc.).

Aviation-Related Development

The siting requirements for aviation-related facilities can vary significantly, with some facilities requiring large development sites for initial construction and future expansion capability, while others require only small shops or small portions of larger facilities. Depending upon the specific operation, these facilities may, or may not, require direct airside access, but all must be provided convenient landside access and adequate vehicular parking for both customers and employees.

With the balance of the existing east side of the Airport being reserved for future aviation development, Nephi City does own approximately 63.7 acres that abuts existing airport property on the west side of the Airport, which extends southward from the proposed development site of the Utah National Guard Armory. This potential development site would be well suited for light industrial uses, and could be marketed by the City as potential *revenue producing properties*. In addition, the site is currently provided county road access from Meadow Lane, but would require roadway upgrades and the extension of utilities to serve the site.

Aviation Support Development

The support facilities at Nephi Municipal Airport, which require development recommendations, include the existing fuel storage facility, the storage tanks that support the BLM SEAT Firefighting Base, and the airport's new infrastructure development.

Fuel Storage Facility: To better accommodate long-term fuel storage and dispensing requirements, a future development site was identified north of the existing general aviation ramp area. The site can be provided with convenient vehicular access from Airport Road, as well as taxilane and apron expansion from the existing ramp area. Both Jet A and avgas fuel would be offered at the new storage site.

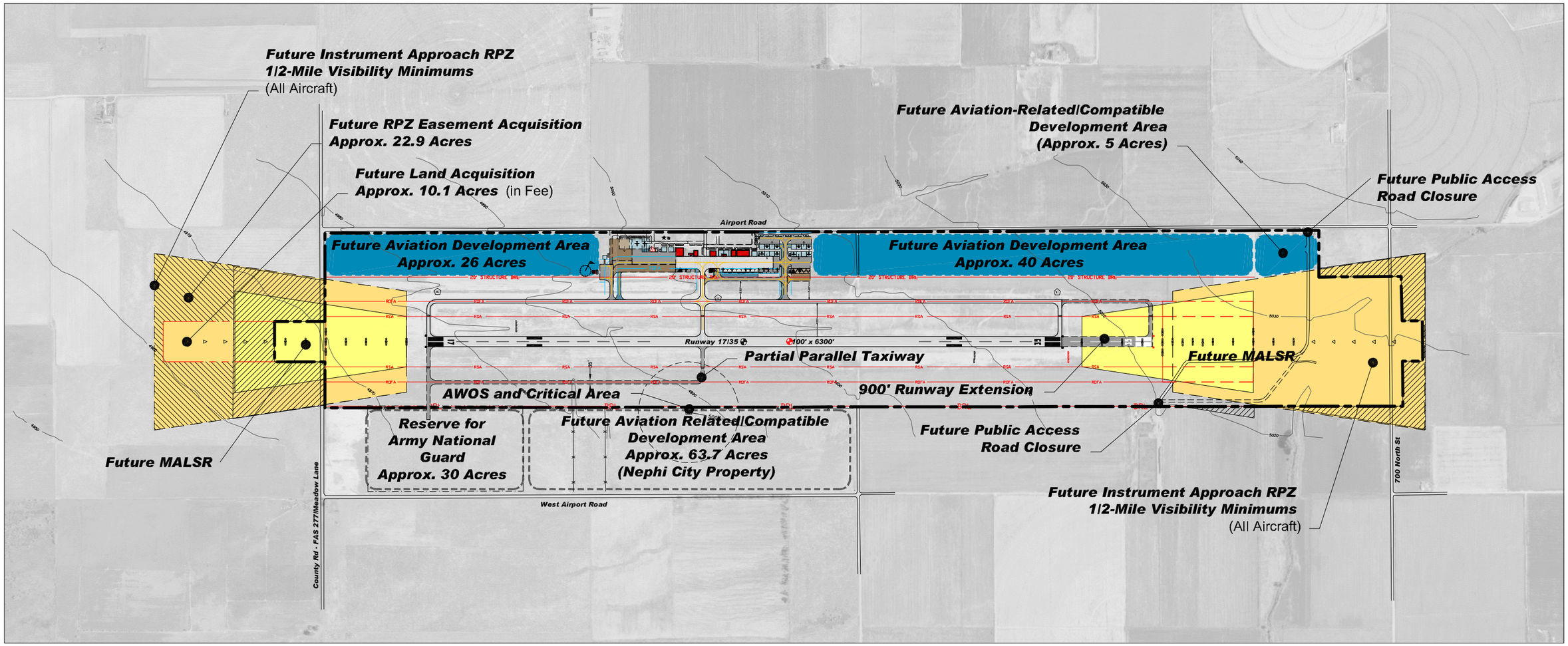
Single Engine Air Tanker (SEAT) Firefighting Base: A potential SEAT Base development area has been identified on the east side of the Airport, just south of the existing lighted wind cone and segmented circle. To accommodate their specified operational requirements, the proposed development site would be provided with vehicular access and auto parking from Airport Road, an office building, storage tank facilities, exclusive-use apron/taxilanes, and a connector taxiway that links to the Airport's parallel taxiway system, Taxiway "A".

Airport Infrastructure Development: The future development of aviation facilities within the east side of the Airport will require the extension of access roadways and utilities (e.g., electricity, water, sanitary sewer, etc.) to serve the expanded development areas within newly defined utility corridors. The most critical of these will be the extension of Nephi City water supply lines to the Airport, and the establishment of sanitary sewer connections to the individual airport tenants.

Summary

The Development Program for Nephi Municipal Airport calls for the expansion of the basic layout of facilities as they presently exist, with programmed improvements to maximize efficient and safe aircraft operational activity, along with providing adequate development area for future landside facilities. This program is a comprehensive proposal. It is intended to establish a strategy for funding airport improvements and maximizing the potential for receiving federal and state matching funds, while also establishing a financially prudent plan for funding at the local level. This programming effort is a critical component of the Master Plan Update for the FAA, the UDOT Division of Aeronautics, and the Airport Sponsor.

If aviation demands continue to indicate that improvements are needed, and, if the proposed improvements prove to be environmentally acceptable, the capital improvement financial implications discussed in the Master Plan Update are likely to be acceptable to the FAA, the State, and the Airport Sponsor. However, it must be recognized that this planning effort reflects only a programming analysis and does not represent a binding financial commitment on the part of the Airport Sponsor or the FAA.



Existing Avigation Easement

Existing Property Line

Existing Fencing

Future Avigation Easement

Future Runway Protection Zone

Existing Runway Protection Zone

N 0 250' 500' 1000' 1500'
GRAPHIC SCALE IN FEET

Nephi Municipal Airport

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

A. Inventory of Existing Conditions

Master Plan

Nephi Municipal Airport

A. Inventory of Existing Conditions

INTRODUCTION. Nephi Municipal Airport is a vital part of the national airport system, as well as an integral component of the Utah Continuous Airport System Plan (UCASP) within the State of Utah. According to the UCASP, the Airport is a designated General Aviation Regional Airport, and represents a vital and significant regional economic asset.

The most recent *Master Planning* effort for Nephi Municipal Airport, in the form of an Airport Layout Plan Update was completed in 1995. During the intervening years, changes within the aviation industry and local conditions necessitate updating the master plan to ensure Nephi Municipal Airport's continued development. The focus of this document will be on the total aviation facility and its environs, with the overall planning goal being the development of an aviation facility that can accommodate future demand and that is not significantly constrained by its environs. This initial *INVENTORY* chapter will examine three basic elements involved with the existing and future development of Nephi Municipal Airport. These elements are: the airport facilities (runways, taxiways, aircraft parking aprons, hangars, maintenance facilities, ground access, etc.); the relationship to the airport/airspace system; and, the airport environs. In addition, the last section in this chapter identifies issues that will influence future activity and facilities at the Airport. Subsequent chapters will detail the Airport's forecasts of aviation activity, the ability of airport facilities to safely and efficiently meet the needs associated with the projected aviation activity, the compatibility of the Airport with surrounding land uses, and recommended future development within and around airport property. This Airport Master Plan is intended to provide a comprehensive evaluation of the Airport, and results in a long-term facilities and operational plan for the Airport.

As illustrated in the following figure, entitled *AIRPORT LOCATION MAP* the Airport is located in central Utah, within the eastern portion of Juab County, approximately eighty-five (85) miles south of Salt Lake City. The topography of Juab County ranges from high mountain peaks to arid desert near the Nevada border, with a combination of fertile valleys and desert lands positioned within the various mountain ranges. The Juab Valley is located between the San Pitch Mountain Range and the West Hills, and includes the fertile farm land in and around Nephi City.



Figure A1 Airport Location Map

Source: Yahoo Maps, April 2008.

Nephi Municipal Airport

The existing north-south runway alignment, which is parallel with the mountains to the east and the hills to the west, is properly oriented to accommodate the stronger winds that are channeled through the Valley. In addition, water run-off/drainage pattern of the Valley is directed to the Mona Reservoir, then to Utah Lake, and finally to the Great Salt Lake.

Airport Role and Facilities

Nephi Municipal Airport currently serves the general aviation needs of the community by providing many aviation-related services, including: business-related flying, recreational flying, flight training, air charters, air ambulance, hangar leasing and sales, and aerial surveillance, along with other aviation–related activities, such as firefighting base for the Bureau of Land Management (BLM).

The Airport, which is owned and operated by Nephi City, is classified as a General Aviation Airport by the FAA's National Plan of Integrated Airport Systems (NPIAS). The day to day operation of the Airport is the responsibility of the City Administrator, who coordinates the management of the Airport with the City Council, and is responsible for compliance with all federal, state, and local regulations that pertain to the operation of the facility. It should also be noted that the management of Nephi Municipal Airport is directly correlated with its designated role, which influences both Capital Improvements Programming and revenue generation opportunities.

As shown in Figure A2, entitled *AIRPORT VICINITY MAP*, Nephi Municipal Airport is located approximately three (3) miles northwest of the City, outside the corporate boundary of the City, and entirely within the jurisdiction of Juab County.

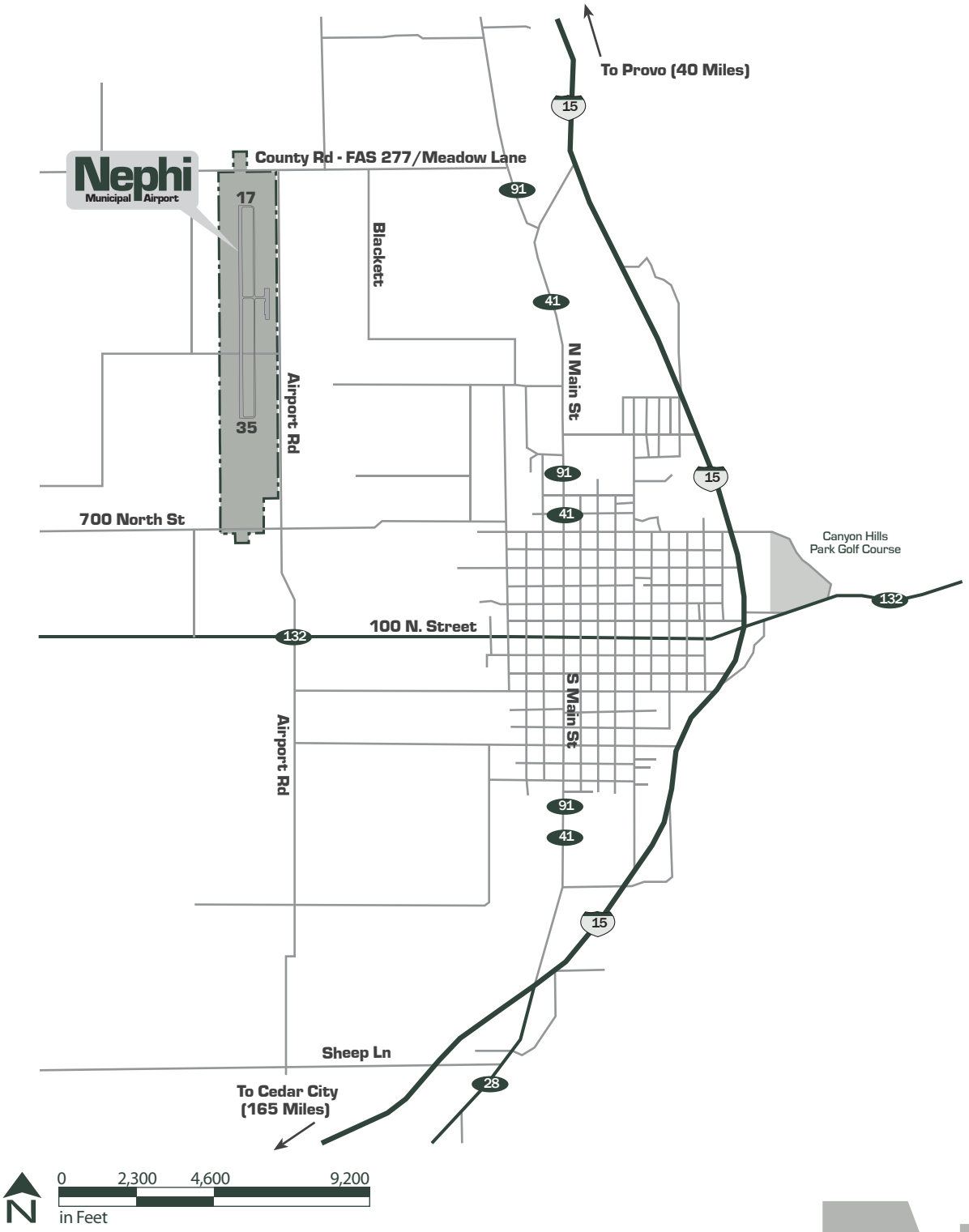


Figure A2 Airport Vicinity Map

Source: Google Maps, March, 2008.

Nephi Municipal Airport

Airside Facilities

Nephi Municipal Airport is operated with a single runway that is oriented in a general north-south direction, and is supported by a system of parallel and connecting taxiways. Figure A3, entitled *EXISTING AIRPORT LAYOUT,* provides a graphic presentation of the existing airport facilities. Additional airport information includes:

- **Airport Reference Point: Latitude N 39° 44′ 11.70″ and Longitude W 111° 52′ 12.20″**
- **FAA Site Number: 25228.A**
- **Airport Elevation: 5,005 feet above mean sea level (AMSL) estimated**
- **Acreage: 428 acres[1]**
- **Mean Normal Temperature of hottest month: 93° F (July)**

Runways

Runway 17/35. The single runway at the Airport, Runway 17/35[2], is 6,298 feet in length and 100 feet in width. The runway is constructed of asphalt[3], considered to be in good condition, and has a gross weight bearing capacity of 21,000 pounds for the single-wheel, and 30,000 pounds for dual-wheel main landing gear configuration. The runway is equipped with pilot-controlled Medium Intensity Runway Lights (MIRL) and two light precision approach path indicators (PAPIs) located on the left-hand side of each runway end. In addition, each runway is also equipped with runway end identifier lights (REILs).

Taxiways

In addition to Runway 17/35, the airside facilities at Nephi Municipal Airport consist of a parallel taxiway system that provides access between the runway surfaces and the landside aviation use areas.

Taxiway "A". Taxiway "A" is the parallel taxiway system serving Runway 17/35 at the Airport. This taxiway, which is constructed of asphalt, is 35 feet in width and has three connector taxiways that link the runway with the existing general aviation facility development on the east side of the Airport. Taxiway "A" is located on the east side of the runway and is separated from the runway by 400 feet (centerline to centerline). For night use, the taxiway system is equipped with a medium intensity taxiway lighting system (MITL). Taxiway "A" is served by a connecting taxiway (i.e., Taxiway "B" located approximately midfield (providing direct access to the aircraft parking apron),

[1] Does not include existing avigation easements.

[2] The runway was previously oriented at 16/34, and updated to 17/35 in 2010.

[3] A runway overlay project was completed in 2003.

and two connecting taxiways located off each runway end. Each connecting taxiway links Taxiway "A" to the landside development area east of Runway 17/35.

Landside Facilities

The primary landside development area at the Airport consists of a linear layout, running north to south along the east side of the Airport. These facilities include Aviation Service Operator (ASO) facilities, aircraft storage hangars, aircraft parking aprons, fuel storage facilities (including Jet A and AvGas sales/dispensing), and access roadways.

Aprons. There is one aircraft parking apron at Nephi Municipal Airport that is located on the east side Runway 17/35, adjacent to Taxiway "A". This public-use general aviation ramp is centrally located with respect to the runway facility and consists of a combination of transient and based aircraft apron. Access to this ramp is provided by one midfield connecting taxiway. This combined apron area has approximately 106,500 square feet of aircraft parking and movement area.

Commercial Aviation & Hangar Facilities. The Airport is served by one Single Activity Service Operator (SASO), which manages the Airport's self-service fueling operation, and provides aircraft ramp parking and hangar leasing/sales. There is also one older Quonset style hangar located directly south the ASO facilities, with two older and two new executive hangars extending down the length of the aircraft apron. The following table, entitled *AIRPORT BUILDING & HANGAR FACILITIES,* provides generalized inventory information about the hangars and associated support buildings located on the Airport.

Table A1
AIRPORT BUILDING & HANGAR FACILITIES

Building #	Building Type	Ownership	Size	Condition
1	Corporate Executive Hangar	Private	80′ x 80′	Very Good
2A	Hangar Restrooms	Sponsor	14′ x 18′	Very Good
2B	Office Trailer/Pilots' Lounge	Sponsor	15′ x 60′	Good
3	Quonset Hangar (Airport Maintenance Building)	Sponsor	40′ x 60′	Fair
4	Executive Hangar	Private	50′ x 60′	Good
5	Executive Hangar	Private	22′ x 40′	Good
6	Executive Hangar	Private	46′ x 60′	Excellent
7	Executive Hangar	Private	60′ x 95′	Excellent

Source: 2006 Aerial Photography and Nephi City Personnel.

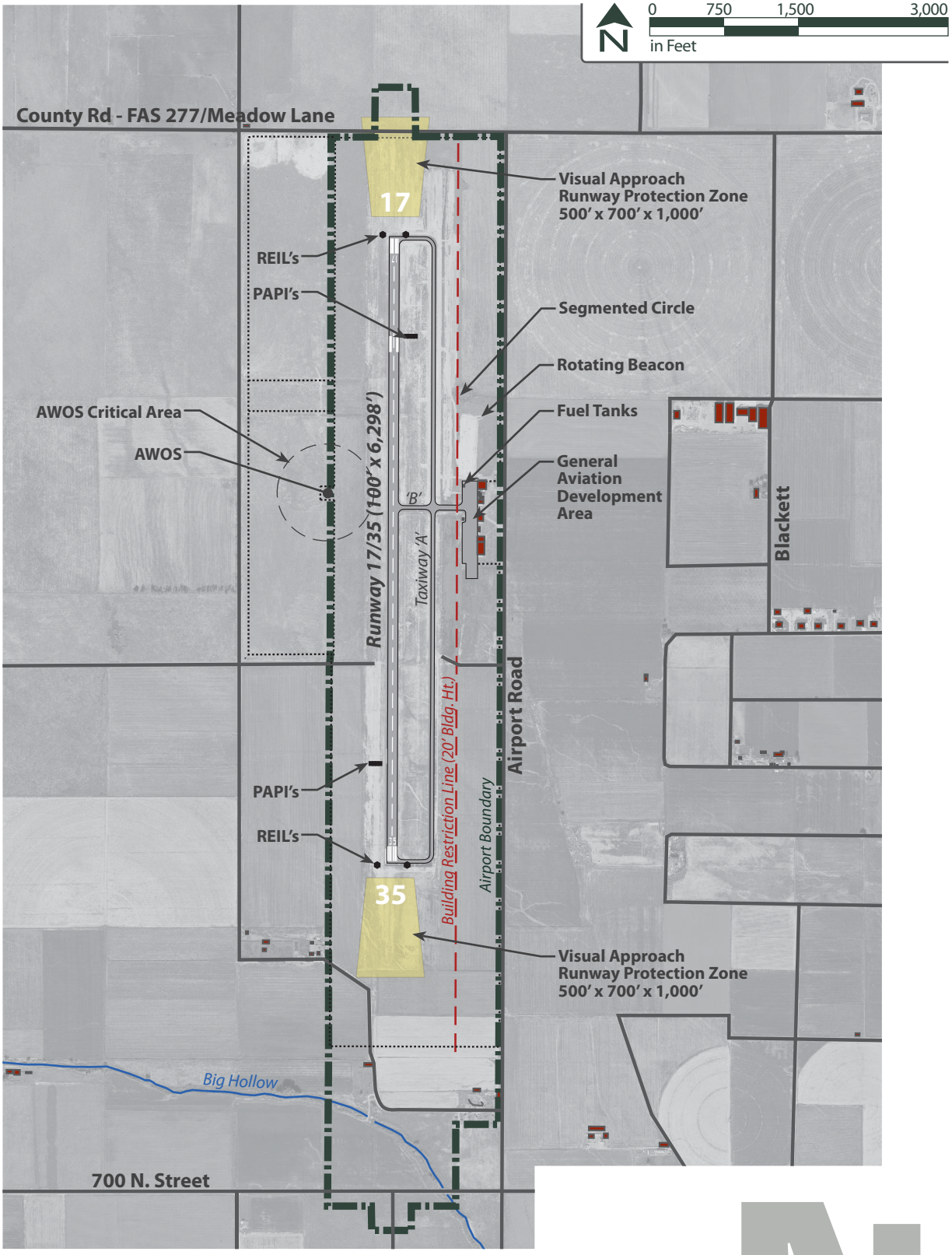


Figure A3 Existing Airport Layout

Nephi Municipal Airport

Source: Airport Layout Drawing, by Barnard Dunkelberg & Co., 1995 & As Built Construction Drawings, by Creamer & Noble Engineers, 2007.

The layout and location of the various airport buildings and hangar types were illustrated in Figure A3, entitled *EXISTING AIRPORT LAYOUT*. A detail view of the terminal/hangar development area, which includes building numbers that are keyed to Table A1, is also presented on the following illustration, entitled *EXISTING LANDSIDE DEVELOPMENT AREA DETAIL.* In addition, according to information obtained from Nephi City, there are approximately six construction requests/inquiries for aircraft storage facilities.

Fuel Storage Facility. Currently, aviation fuels are stored in two above ground storage tanks: one AvGas tank and one Jet A tank, with each having a storage capacity of 6,000 gallons. The SASO is responsible for fuel delivery and maintaining the storage tanks to current Environmental Protection Agency (EPA) standards. Nephi City receives a minimum fuel flowage fee of three cents per gallon of fuel sold, and the fuel sales records for the past five years are presented in the following table, entitled *AIRPORT FUEL SALES, 2004-2008*. As can be noted, there has been a moderate increase in AvGas sales at the Airport over the past five years with a corresponding increase in Jet A fuel sales for the same period. The fuel sales were negatively impacted during 2006-2007 due to the construction of the new runway facility. In addition, overall fuel sales have increased by 56.0% at the Airport since 2004.

Table A2
AIRPORT FUEL SALES, 2004-2008

Year	AvGas	% Increase	Jet A	% Increase	Total Fuel	% Increase
2004	$3,134	---	$1,333	---	$4,467	---
2005	$8,237	62.0%	$18,220	92.7%	$26,457	83.1%
2006	$9,315	11.6%	$32,990	44.8%	$42,305	37.5%
2007	$11,568	19.5%	$22,740	-45.1%	$34,308	-23.3%
2008	$12,440	7.0%	$28,820	21.1%	$41,259	16.8%

Source: Nephi City and Mt. Nebo records.

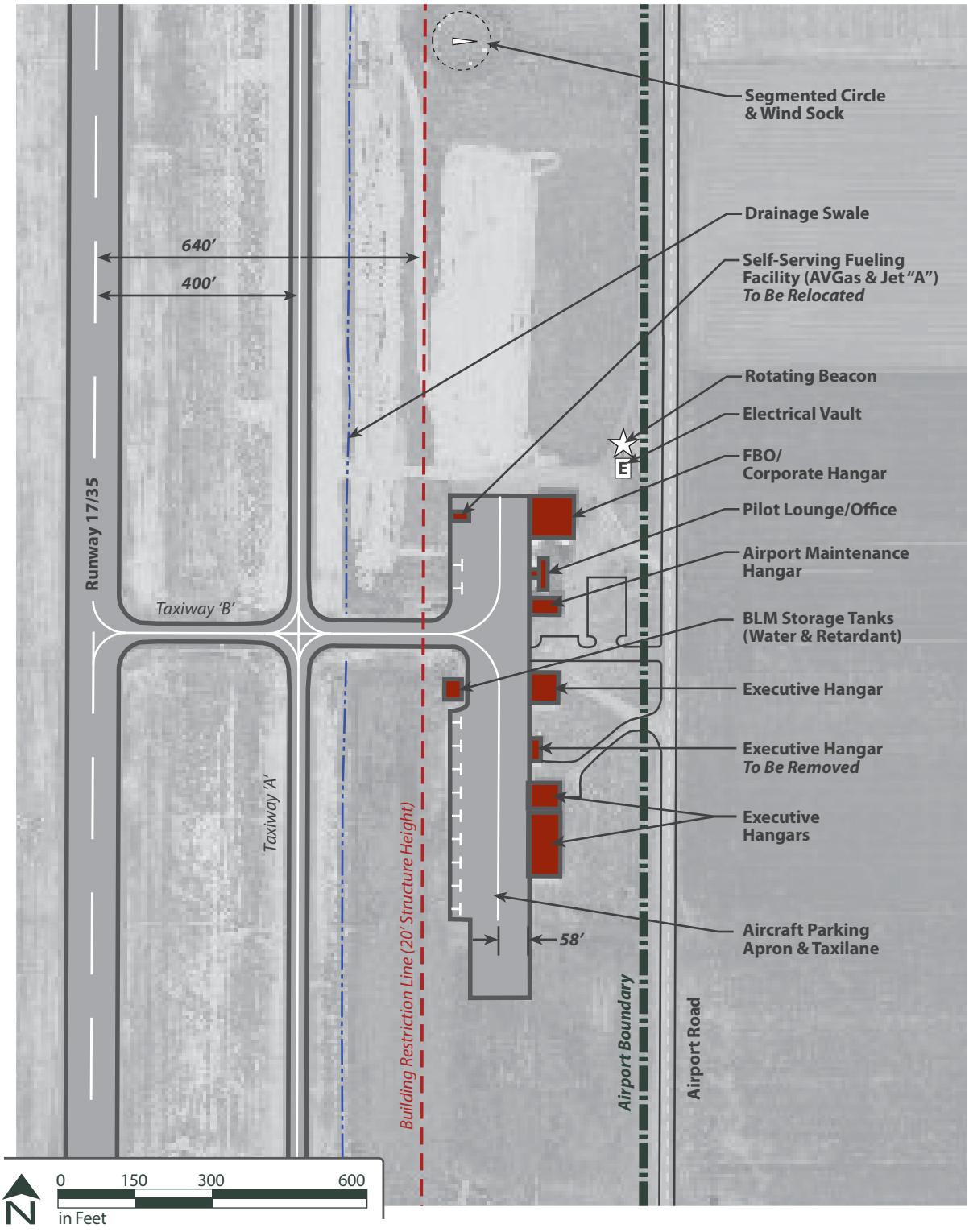


Figure A4 Existing Landside Development Area Detail

Source: Airport Layout Drawing, by Barnard Dunkelberg & Co., 1995 & As Built Construction Drawings, by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

Single-Engine Air Tanker (SEAT) Firefighting Base. At present, Nephi Municipal Airport is designated by the Bureau of Land Management as a temporary location for a Single-Engine Air Tanker (SEAT) firefighting base. Although it is recommended, there is no formal agreement between the BLM and Nephi City for the use of the Airport as a temporary SEAT firefighting base. According to information contained in the *2007 State Aviation Plan*, prepared by the Bureau of Land Management Utah State Office, "temporary bases are sites used on a temporary or intermittent basis. (i.e., heli-spots and remote airstrips). Sites not located on BLM land must be pre-approved by the land owner and appropriate BLM management. Each site should be cataloged as to location, description, local hazards, use procedures, agreements, and contacts. Inspections and maintenance are completed as necessary to meet agency safety standards."

When activated on an as-needed basis during the summer fire season (i.e., June-September), the Nephi SEAT firefighting base operation consists of two to four Air Tractor 802 tanker aircraft that are staged from the existing general aviation apron and managed from the existing office/trailer. The tanker aircraft are refueled on the Airport from the existing self-service fueling facility and re-loaded with water or retardant from two 6,000 gallon above ground storage tanks that are located adjacent to the general aviation apron and central connector taxiway. In addition, the Nephi Volunteer Fire Department currently provides a support role to the SEAT Base when in operation by trucking in water from an offsite location to replenish the water storage supplies. This required fire department support role could be eliminated with the extension of City water service lines to the Airport, which currently relies upon wells for its water supply. The BLM has also expressed some interest in establishing a permanent SEAT Base installation at the Airport that would likely be activated on a seasonal basis, and their proposed facility requirements will be documented in a later chapter of this document.

Aircraft Rescue and Firefighting Facility (ARFF). The Airport does not presently have an Aircraft Rescue and Fire Fighting (ARFF) facility on the field; however, fire protection services for the facility are provided by the Juab County Special Service Fire District from the fire station located in downtown Nephi City.

Automated Weather Observing System (AWOS) III. The Airport is presently served by an Automated Weather Observing System (AWOS) III. The AWOS III facility measures the following weather parameters: wind speed, wind gusts, wind direction, wind variable direction, temperature, dew point, altimeter setting, density altitude, visibility, variable visibility, precipitation, day/night, cloud height, and sky condition. The AWOS III will provide a minute-by-minute update of this weather data to airborne pilots via VHF radio frequency and/or via telephone.

Potential National Guard Armory Facility. South Valley Regional Airport (previously named Salt Lake City Airport II) is home to the Utah National Guard Army Aviation Support Facility, which primarily operates a combination of AH-64 Apache and UH-60 Blackhawk helicopters. This National Guard facility has historically utilized Nephi Municipal Airport for a limited number of annual touch-and-go training operations, that originate from South Valley Regional Airport, but also includes operations to and from the Utah Test and Training Range (UTTR) located in Utah's West Desert.

Preliminary planning is underway between the Utah National Guard and Nephi City for the possible future development of a new National Guard Armory on approximately 30 acres adjacent to the northwest boundary of the Airport. According to Guard personnel, the new Armory could accommodate a variety of aviation and aviation-related support roles for the Utah National Guard and provide an ongoing economic engine for the City and County. A possible development scenario could include the relocation/dispersal of some of the aviation assets (i.e., a percentage of the AH-64 Apache and/or UH-60 Blackhawk helicopters and their associated support functions) from South Valley Regional Airport to Nephi Municipal Airport, which would provide an alternate basing/staging location for response to natural disasters and /or security threats. The new facility would likely necessitate the development of hangars, operations buildings, maintenance facilities, and various support facilities, and vehicular access to the Armory would be provided from the existing county road that parallels the northern boundary of the Airport. In addition, the National Guard would provide security for the Armory, and thus enhance the overall security for the entire Airport.

Existing Ground Access and Parking Facilities

Ground Access. Due to the Airport's generally rural location within Juab County, there are a variety of north-south and east-west county roads that provide easy access to the existing landside facilities located on the east side of the Airport. Airport Road runs in a north-south orientation and provides vehicular access to the main entrance of the Airport and to the existing airport facilities. The newly paved airport entrance road extends westward from Airport Road and terminates at a controlled vehicular access gate and security fencing that surrounds the aircraft parking apron and existing hangar facilities. Airport access from the south is provided by 100 North Street/State Highway (SH) 132, which runs in an east-west orientation, and links Airport Road with the Nephi City downtown area and Interstate 15 (I-15). A county road, with an east-west orientation, borders the Airport to the north, and links Airport Road with SH 41/91/North Main Street and I-15. I-15 is the only north-south interstate highway within the State of Utah, and extends from the Canadian border to Los Angeles, California. In addition, I-15 intersects with both I-70 and I-80, which are the primary east-west vehicular access routes across the State.

Automobile Parking Facilities. There are several informal vehicular parking areas associated with the Airport's landside development (i.e., the ASO hangar and office trailer, and aircraft storage facilities) located on the east side of the Airport.

Existing Airport Utilities and Services

A description of the existing utility infrastructure serving Nephi Municipal Airport was obtained from interviews with the Nephi City Administrator and other utility providers. These services include electric power, standard and cellular telephone communications, fiber optics (west of the Airport), water, sewer, stormwater management, solid waste disposal, natural gas, and Internet. A brief description of these utilities and services is presented in the following text and illustrated in the following figure, *EXISTING AIRPORT UTILITY SYSTEM LAYOUT*.

Electricity. Rocky Mountain Power (RMP) provides electrical service to Juab County (wherein the Airport is located); Nephi City Power provides power within Nephi City limits. RMP is a division of PacifiCorp and serves over 525,000 customers in Utah. The existing electrical service to the Airport is reported to have adequate capacity to serve existing and future loads. Therefore, it is estimated that the distribution lines, which serve the Airport, are of adequate capacity to support additional aviation development demand of the facility.

Telephone. Telephone service to Nephi Municipal Airport and Juab County is provided by Qwest, which is based in Salt Lake City, Utah. In addition to telephone service, Qwest also provides DSL service and Internet services, including private dedicated services to customers throughout the City and County. It is estimated that current telephone services are sufficient to meet the projected growth of the region.

Existing cellular communications providers to Nephi Municipal and Juab County include AT&T Wireless and Air Touch Cellular Communications, Verizon, Qwest and many others. It should be noted that the FAA regulates the siting of towers that exceed 200 feet in height and smaller towers within 20,000 feet of a 3,200-foot runway or longer (i.e., Nephi Municipal Airport) at a 100:1 slope with filing requirements for FAA Form 7460-1 "Notice of Proposed Construction or Alteration."

Water. Currently the only potable water available at the Airport is from a small well near the SASO. This well only has enough capacity to serve the SASO, public restrooms and water the lawn adjacent to the SASO building. Nephi City water terminates approximately 1 to 1 ½ miles from the Airport, depending upon which line would be used. These existing lines are 8" C-900 lines with an estimated pressure of 100 psi. These lines can be extended to the Airport in the future and will be able to

provide the necessary volume and pressure needed for expansion and fire protection. Additional feeder lines will need to be constructed to serve future aviation development areas within airport property.

Sanitary Sewer. Nephi City wastewater system consists of a conveyance system and a total containment system of sewer lagoons. The City is responsible for the main sewer lines (sewers in streets and other public right-of-ways), while the property owners are responsible for the sewer laterals from homes and businesses to the main lines. The conveyance system to the lagoons is an 18" line that crosses the Airport, under the runway.

Currently the public restrooms and the SASO building on the Airport are connected to a septic tank. The restrooms and additional facilities on the Airport could be connected to the sanitary sewer system, although a lift station will have to be installed to move the sewage to the outflow line. It is estimated that the wastewater system has adequate capacity to support additional aviation development demand for the Airport.

Stormwater. Nephi City has recently completed a Watershed Protection and Stormwater Master Plan. Currently, the stormwater drainage system within Nephi City consists of a passive open conveyance accomplished through a system of curb and gutter, flood channels and irrigation ditches. Stormwater at the Airport is currently accommodated by a combination of open ditches and underground piping that ranges in size from 24 to 30 inches. The area between Taxiway "A" and the runway is covered with a system of catch basins and piping that moves the water to the north or the south then onto the west side. Once the water sheet reaches the west side, it then flows into open fields owned by the City. A small detention pond on the northwest corner of the Airport controls the flow of storm water off airport property.

Solid Waste Disposal. Nephi City's solid waste department provides municipal solid waste collection and disposal services to residential and business customers within the existing City limits and at the Airport. In the future as the requirement grows, airport users could be required to contract for solid waste collection with private contractors. Both the City and Juab County haul their solid waste to the local, state-approved landfill, which is located approximately four miles south/southwest of the Airport, and meets the recommended 10,000-foot separation criteria for airport siting, as specified by Advisory Circular (AC) 150/5200-33B, entitled *HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS.* In addition, there is not an approved hazardous waste disposal system in the city or county.

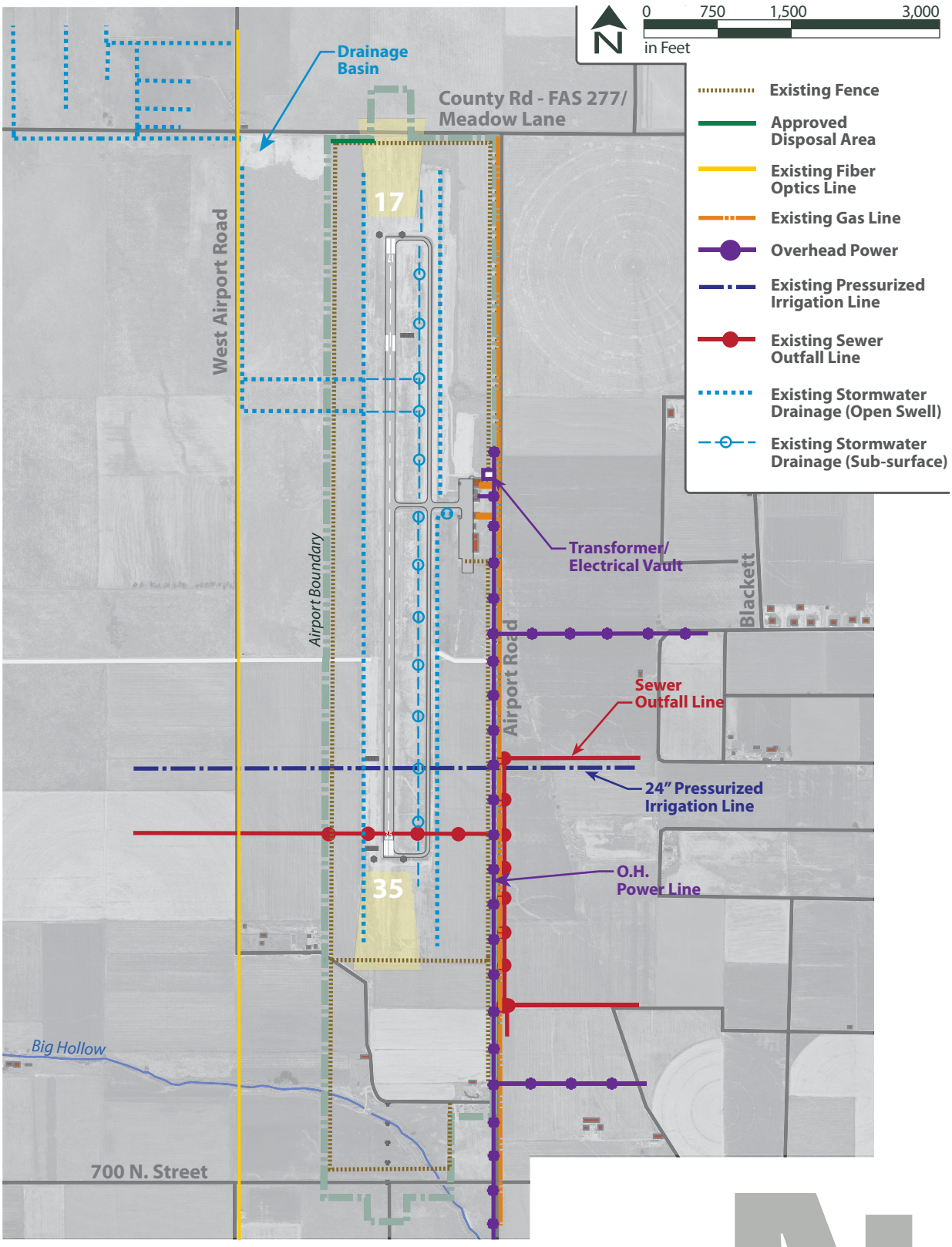


Figure A5 Existing Airport Utility System Layout

Source: Airport Layout Drawing, by Barnard Dunkelberg & Co., 1995 & As Built Construction Drawings, by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

Natural Gas. Natural gas service within Nephi City and a portion of Juab County is provided by the Nephi City Municipal Gas System. A 2-inch line is located along the right-of-way on Airport Road to the east of the Airport. Some of the existing hangars and other facilities at the Airport are currently connected to this line. It is estimated that the existing line will meet the needs of the Airport during the 20-year period of the plan.

Internet/Fiber Optic. Wireless Internet service is offered in Nephi City and the airport area by NeboNet, with headquarters in Nephi, Utah. NeboNet offers speeds up to 8 megabytes (MB) per second. Fiber Optic service is not currently available at the Airport. A long-line fiber optic cable does run along West Airport Road but is only for long line transmission; however, wireless Internet service may be available for airport users in the future.

Airspace System/Navigation and Communication Aids

As with all airports, Nephi Municipal Airport functions within the local, regional, and national system of airports and airspace. The following narrative provides a brief description of the Airport's role as an element within these systems.

Air Traffic Service Areas and Aviation Communications

Within the continental United States, there are some 21 geographic areas that are under Air Traffic Control (ATC) jurisdiction. Air traffic services within each area are provided by air traffic controllers in Air Route Traffic Control Centers (ARTCCs). The ARTCCs provide air traffic service to aircraft operating on IFR flight plans within controlled airspace, and primarily during the en route phase of flight. The airspace overlying Nephi Municipal Airport is contained within the Salt Lake City ARTCC jurisdiction, and this coverage area includes the airspace in portions of Utah, Nevada, Oregon, Idaho, and Wyoming.

Terminal Radar Approach Control (TRACON) facilities utilize air traffic controllers and radar to direct aircraft during the departure, descent, and approach phases of flight that are transitioning to or from the en route phase of flight. Once an arriving aircraft is within the destination airport's airspace, and that airport has an air traffic control tower (ATCT), the aircraft is handed off by the TRACON to the local air traffic controller. Aircraft that are approaching or departing an airport are subject to air space and air traffic control designed to serve one primary purpose, the safe separation of one aircraft from another. There are two basic flight regimes: those operating under Instrument Flight Rules (IFR) that depend on air traffic controllers for separation and those operating under Visual Flight Rules (VFR) that depend primarily on the "see and be seen" principle for separation.

Aircraft operating under VFR conditions may contact the ARTCC, the TRACON, or the local air traffic control tower (ATCT) and request traffic advisory services. Traffic advisory service is used to alert pilots of other air traffic known in the vicinity of or within the flight path of the aircraft. Because Nephi Municipal Airport currently offers only visual approaches to the Airport and does not have an ATCT, VFR traffic operating into and out of Nephi Municipal Airport should broadcast their intentions on the CTAF/UNICOM frequency.

The primary means of controlling aircraft employed by air traffic controllers is computerized radar systems that are supplemented with two-way radio communications. Altitude assignments, speed adjustments, and radar vectors are examples of techniques used by controllers to ensure that aircraft maintain proper separation. The specified lateral and vertical separation criteria for aircraft used by controllers are as follows:

- **Lateral Aircraft Separation: three miles (radar environment)**
- **Lateral Aircraft Separation: five miles (non-radar environment)**
- **Vertical Aircraft Separation: 1,000 feet (below 29,000 feet) and 2,000 feet (29,000 feet and above)**

In early 2008, the FAA authorized the installation of a new air surveillance radar (ASR) system at Provo Municipal Airport. The ASR will allow air traffic controllers in both Provo and Salt Lake City to improve the monitoring of aircraft at each facility by eliminating the exiting radar shadow that exists below 10,000 feet at Provo and southern Utah County for the Salt Lake City controllers. This additional radar coverage will also benefit aircraft operators at Nephi Municipal Airport for both the existing VFR traffic and future approach/departure services.

Nephi Municipal Airport can be found on the Las Vegas sectional aeronautical chart. Aviation communication facilities associated with the Airport include the Common Traffic Advisory Frequency (CTAF)/UNICOM on frequency 122.8.

Airspace

The local airspace surrounding Nephi Municipal Airport is uncontrolled, which is designated as Class G airspace. As a general rule, no air traffic control services are provided; however, traffic advisories may be issued on a workload permitting basis. Based upon the Airport's current efforts to establish an instrument approach procedure (IAP), the existing Class G airspace surrounding the Airport would have to be re-designated to Class E airspace, which applies to general controlled airspace and control zones at airports without air traffic control towers. The Class E Airspace is typically represented as a five (5) statute mile radius circular area around the Airport and includes any extension necessary to include instrument approach and departure paths. Class E Airspace includes the controlled airspace extending upward from 700 feet to 1,200 feet above the airport

elevation. These areas are generally designated at outlying airports with low activity and with non-precision instrument approach procedures.

Navigational Aids

A variety of navigational facilities is currently available to pilots around Nephi Municipal Airport, whether located at the field or at other locations in the region. Many of these navigational aids are available to en-route air traffic as well. The navigational aids (NAVAIDS) available for use by pilots in the vicinity of the Nephi Municipal Airport are VORTAC and VOR/DME facilities.

A VORTAC (VHF Omnidirectional Range/Tactical Air Navigation) is a ground-based electronic navigation aid transmitting very high frequency signals, 360 degrees in azimuth oriented from magnetic north, with equipment used to measure, in nautical miles, the slant range distance of an aircraft from the navigation aid. A VORTAC provides VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site. The Delta VORTAC (116.1) is located approximately 39 nautical miles southwest of the Airport and the Fairfield VORTAC (116.6) is located approximately 31 nautical miles north-northwest of the Airport.

A VOR/DME system is a Very High Frequency Omnidirectional Range Station with Distance Measuring Equipment transmitting very high frequency signals, 360 degrees in azimuth oriented from magnetic north. This DME equipment is used to measure, in nautical miles, the slant range distance of an aircraft from the navigation aid. The Provo Terminal VOR/DME (108.4) is located approximately 30 nautical miles north of the Airport.

There is also a network of low-altitude published federal airways (i.e., Victor airways) in the vicinity of Nephi Municipal Airport, which traverse the area and span between the regional ground-based VOR/DME and VORTAC equipment. Victor airways include the airspace within parallel lines located four NMs on either side of the airway and extend 1,200 feet above the terrain to, but not including, 18,000 feet AMSL. When an aircraft is flying on a federal airway below 18,000 feet AMSL, the aircraft is operating within Class E airspace. In addition, several existing visual navigational aids are located on the Airport and available to pilots. These include a rotating beacon and a lighted wind cone with segmented circle, located on the east side of the Airport and north of the general aviation apron area. Each runway end is also equipped with PAPIs, which provide descent guidance for the visual segment of the approach, and are configured for a 3.0-degree glide path angle.

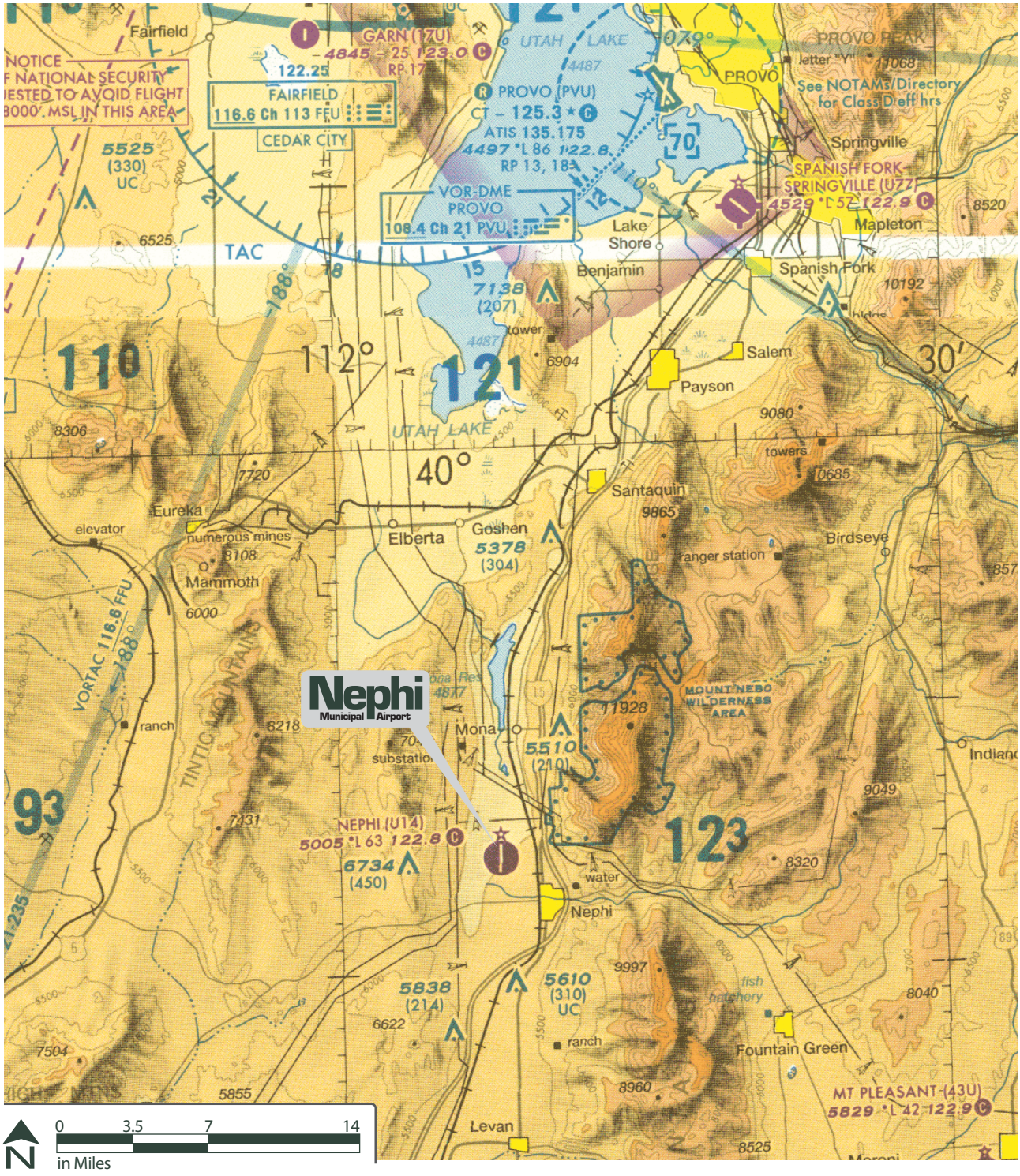


Figure A6 Airspace/NAVAIDS Summary

Source: Sectional Charts, Salt Lake City 79 South & Las Vegas 79 South, Volume 0804, April 2008.

En route VFR traffic operating at Nephi Municipal Airport may utilize all of the previously mentioned en route NAVAIDs in addition to dead reckoning and visual navigation. Upon entering the terminal area the abovementioned visual NAVAIDs provide additional guidance to the runway ends and touchdown zones. Aircraft operating within the airport traffic pattern follow standard left hand traffic patterns for each runway end, and as identified previously, only visual approaches are currently available at the Airport. The approximate boundary location of these established traffic patterns are presented in the following figure, entitled *EXISTING AIRPORT TRAFFIC PATTERNS*.

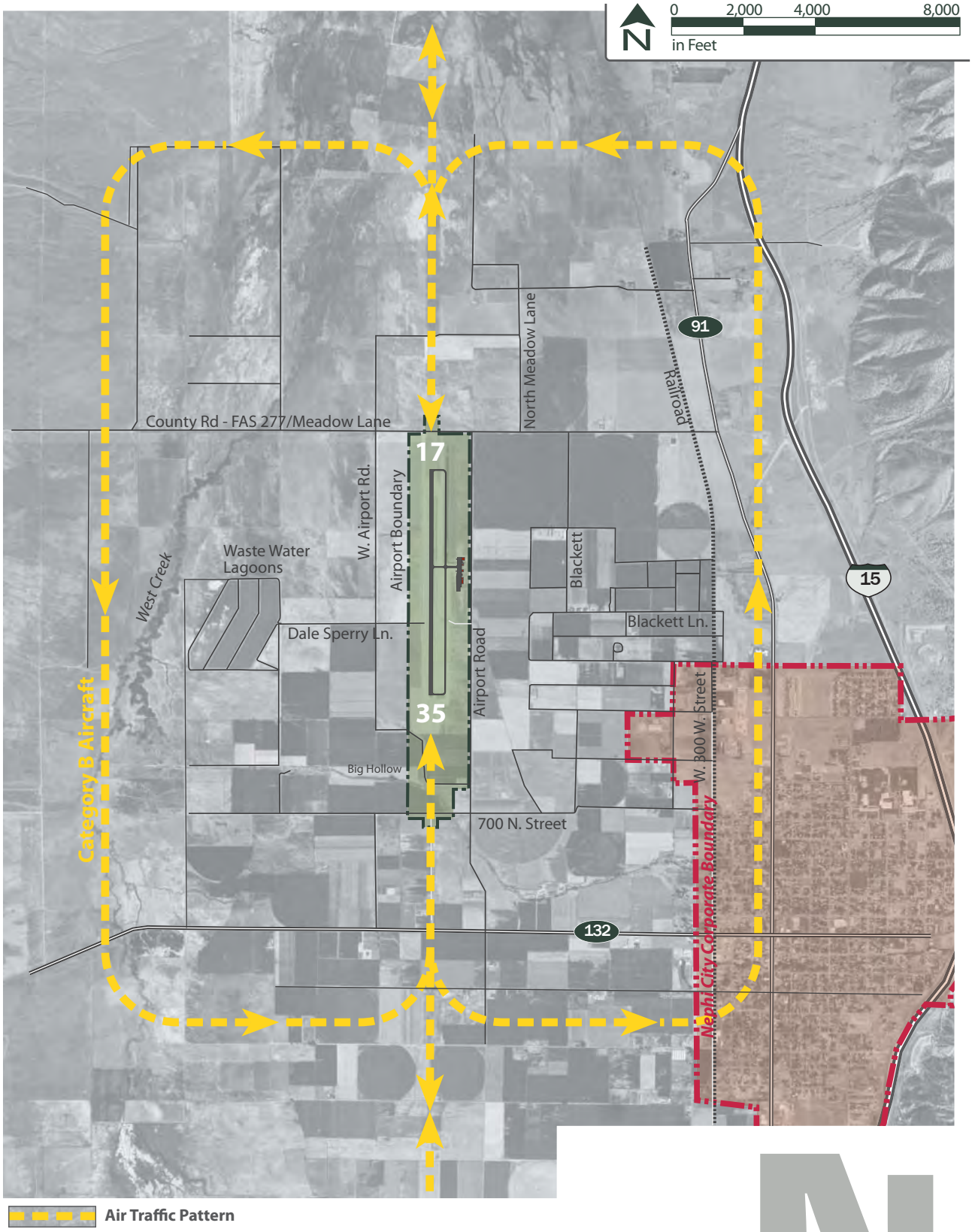


Figure A7 Existing Airport Traffic Patterns

Source: Figure 6-3-11 Traffic Pattern Airspace from Order JO 7400.26, Procedures for Handling Airspace Matters.

Nephi Municipal Airport

Airports Inventory

An airport service area evaluation has been prepared, which identifies surrounding airports relative to Nephi Municipal Airport (within an approximate 30-mile radius) and assesses their existing role, airside facilities/services, and operational data. Four public-use airports[4] (Manti-Ephraim Airport, Mount Pleasant Airport, Spanish Fork-Springville Airport, and Provo Municipal Airport) have been identified for analysis and are presented in Figure A6, entitled *SURROUNDING AIRPORTS INVENTORY (30-MILE RADIUS).* The following table, entitled *PUBLIC USE AIRPORTS WITHIN A 30-MILE RADIUS,* summarizes and compares the information compiled for the four surrounding public use airports with the existing data for Nephi Municipal Airport. This information will be utilized to assess the varying degrees of influence that surrounding airports have on Nephi Municipal Airport's demand for aviation-related services.

The four public-use airports are described as follows:

Manti-Ephraim Airport (41U). Elevation of 5,500 feet AMSL and coordinates of 39° 19' 44.86" N, 111° 36' 52.70" W. The Airport consists of one paved runway. Runway 3/21 is 4,584 feet long, 75 feet wide, constructed of asphalt with a porous friction course surface treatment and equipped with MIRLs. This airport does not have any published instrument approaches. Manti-Ephraim Airport recorded approximately 900 aircraft operations in 2004, and currently has three based single-engine aircraft. The airport services include hangar and tiedown storage for transient aircraft.

The available facilities include a rotating airport beacon, CTAF/Unicom, and segmented circle. Manti-Ephraim Airport is located approximately 27 NMs southeast of Nephi Municipal Airport.

Mount Pleasant Airport (43U). Elevation of 5,829 feet AMSL and coordinates of 39° 28' 28.86" N, 111° 28' 30.67" W. The Airport consists of one paved runway, Runway 2/20. Runway 2/20 is 4,260 feet long, 60 feet wide, constructed of asphalt and equipped with MIRLs. This airport currently does not have any published instrument approaches. For 2006, 43N recorded approximately 2,275 operations and currently has nine single-engine based aircraft and two ultra-lights (11 total based aircraft). The airport services include tiedown storage for transient aircraft. The available facilities include a rotating airport beacon, CTAF, and a lighted wind indicator. Mount Pleasant Airport is located approximately 22 NMs southeast of Nephi Municipal Airport.

[4] There were no military or private-use airports located within the 30-mile radius.

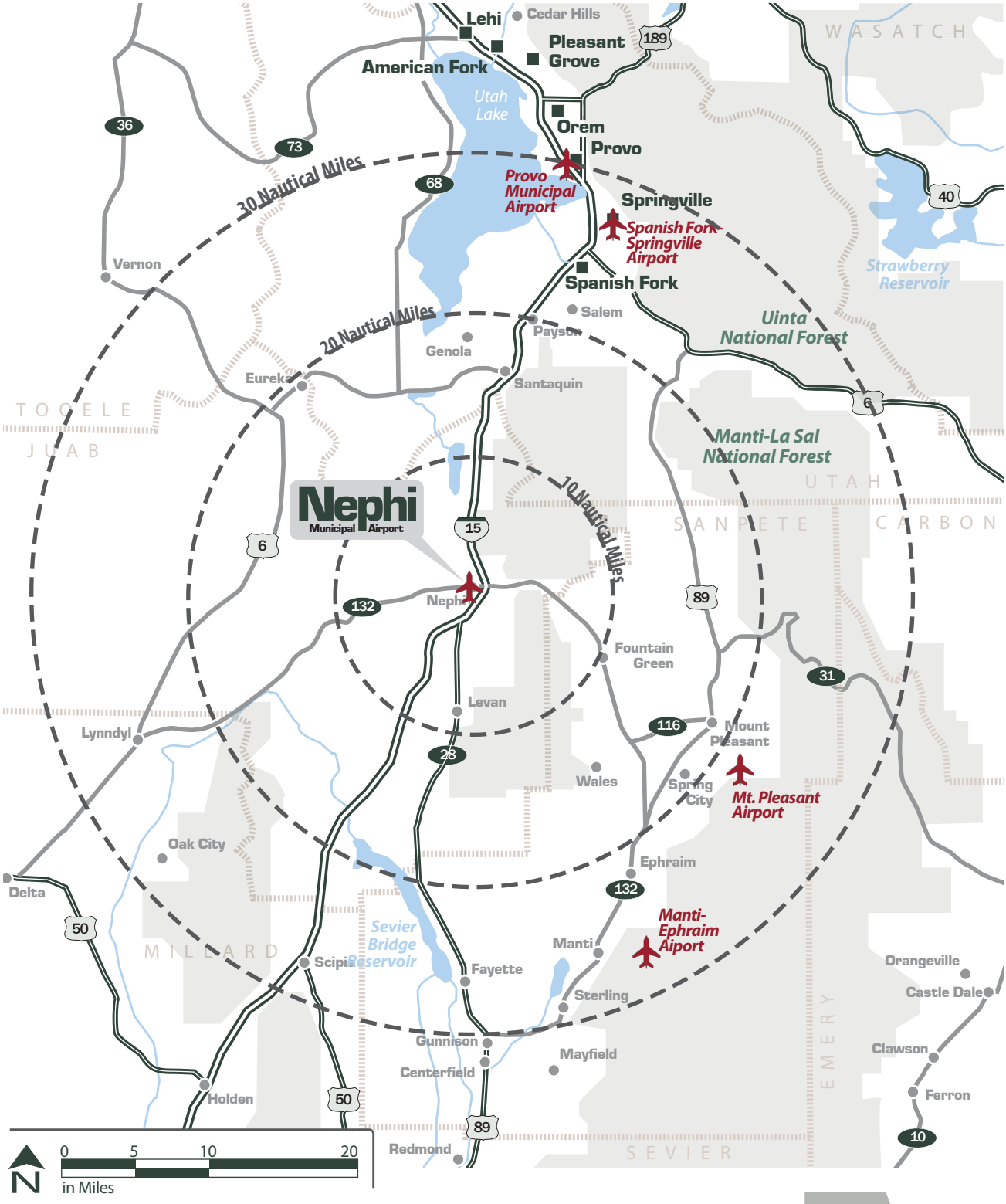


Figure A8 Surrounding Airports Inventory (30-Mile Radius)

Source: Google Earth, April 2008.

Nephi Municipal Airport

Spanish Fork-Springville Airport (U77). Elevation of 4,529 feet AMSL and coordinates of 40° 08' 29.83" N, 111° 39' 40.72" W. The Airport consists of one paved runway, Runway 12/30. Runway 12/30 is 5,700 feet long, 100 feet wide, constructed of asphalt and equipped with MIRLs. This airport currently does not have any published instrument approaches. For 2005, U77 recorded approximately 52,700 aircraft operations and currently has 111 based aircraft (86 single-engine, 15 multi-engine, five helicopters, three gliders, and two ultra-light aircraft). The airport services include fuel sales, tiedown and hangar storage for transient aircraft, major airframe and powerplant service, and bulk oxygen. The available facilities include a rotating airport beacon, CTAF, lighted wind indicator, and a segmented circle. Spanish Fork-Springville Airport is located approximately 26 NMs north of Nephi Municipal Airport.

Provo Municipal Airport (PVU). Elevation of 4,497 feet AMSL and coordinates of 40° 13' 09.10" N, 111° 43' 24.10" W. The Airport consists of two paved runways, Runway 13/31 and Runway 18/36, and one helipad, Helipad H1. Runway 13/31 is 8,599 feet long, 150 feet wide, constructed of asphalt with a porous friction course surface treatment and is equipped with HIRLs and PAPIs. Runway 18/36 is 6,614 feet long and is 150 feet wide, constructed of asphalt and is equipped with MIRLs and PAPIs. Helipad H1 is 40 feet long by 40 feet wide, and is constructed of concrete. Runway 13 has four published instrument approaches (Runway 13 ILS or LOC/DME, RNAV (GPS), VOR/DME, VOR). For 2007, Provo Municipal Airport recorded approximately 172,000 aircraft operations and currently has 166 based aircraft (120 single-engine, 25 multi-engine, four jets, and 17 helicopters). The airport services include fuel sales, tiedown and hangar storage for transient aircraft, major airframe and powerplant service, bottled and bulk oxygen, air ambulance, charter, flight instruction, aircraft rentals, and aerial surveillance. The available facilities include a rotating airport beacon, CTAF, AWOS, lighted wind indicator, segmented circle, and a control tower. Provo Municipal Airport is located approximately 30 NMs north of Nephi Municipal Airport.

Table A3
PUBLIC USE AIRPORTS WITHIN A 30-MILE RADIUS

Airport Name	City	Airport Identifier	Distance To U14	Transient Aircraft Storage	Total Based Aircraft	SE	ME	Jet	HC	UL	GL	Average Operations Per Day	Airport Ownership	Airport Use	ATCT	IAP
Nephi Municipal Airport	Nephi	U14	---	Tiedowns & Hangars	**10***	7	1	0	2	0	0	17	Nephi City	Public	No	No
Manti-Ephraim Airport	Manti	41U	27NMs SE	Tiedowns & Hangars	**3**	3	0	0	0	0	0	2	Manti City & Ephraim City	Public	No	No
Mount Pleasant Airport	Mount Pleasant	43U	22 NMs SE	Tiedowns	**11**	9	0	0	0	2	0	6	Mt Pleasant City	Public	No	No
Spanish Fork-Springville Airport	Spanish Fork	U77	26 NMs N	Tiedowns & Hangars	**111**	86	15	0	5	2	3	144	Spanish Fork City & Springville City	Public	No	No
Provo Municipal Airport	Provo	PVU	30 NMs N	Tiedowns & Hangars	**166**	120	25	4	17	0	0	471	Provo City	Public	Yes	Yes

Sources: Website airnav.com, FAA Form 5010-1, *Airport Master Record*, and Nephi Municipal Airport Staff.
* FAA National Based Aircraft Inventory Program, 2007.

Notes: SE: Single-Engine (piston and turboprop)
ME: Multi-Engine (piston and turboprop)
Jet: Business Jet
HC: Helicopter
UL: Ultralight
GL: Glider
ATCT: Airport Traffic Control Tower
IAP: Instrument Approach Procedure

Airport Environs

Nephi Municipal Airport is located outside the city limits of Nephi and is entirely within the Juab County jurisdiction. Because the operation of an airport influences surrounding land use, and surrounding land use has an influence on the operation of an airport, it is critical to document the existing and proposed land use types in the area near the Airport. The following text and illustrations describe existing land use and existing zoning within the Nephi Municipal Airport environs.

Existing Land Use

The existing land uses in the general vicinity of the Airport primarily follow the existing zoning patterns of Juab County and Nephi City, and are illustrated on Figure A9 entitled *GENERALIZED EXISTING LAND USE*. The existing land use for airport property is categorized as Industrial, with primarily agricultural uses surrounding the Airport that include scattered rural residential development located north, northeast, east, southeast, and south of the Airport. There are no noise sensitive land uses (e.g., churches, schools, or hospitals) located within the immediate environs of the Airport, and the City's existing waste water treatment plant is located less than one mile west of the Airport.

Additionally, two small Wildlife Management Areas (WMAs), which are the Burraston Ponds WMA and Nephi WMA, are located within the airport vicinity. The Burraston Ponds WMA, located within Juab County, approximately one mile south of the Mona Reservoir (approximately six miles north of the Airport) contains approximately 180 acres, with three ponds within the center of the Juab Valley that discharge flows intercepted by nearby springs into Currant Creek. The Nephi WMA located less than two miles northwest of the Airport, contains approximately 152 acres, supporting emergent marsh along West Creek, an extensive wet meadow complex, and riparian habitats.

Existing Zoning

Figure A10, *GENERALIZED EXISTING ZONING,* provides a graphic summary of the land use zoning pattern in the area surrounding the Airport. The area illustrated encompasses portions of Juab County and Nephi City, with the map depicting the generalized zoning for each jurisdiction.

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. Each district will allow a certain use of land within that zone, such as residential, commercial, and industrial (and many others). Typical zoning regulations address things such as the height of a building, number of people that can occupy a building, lot area, setbacks, parking, signage, and density.

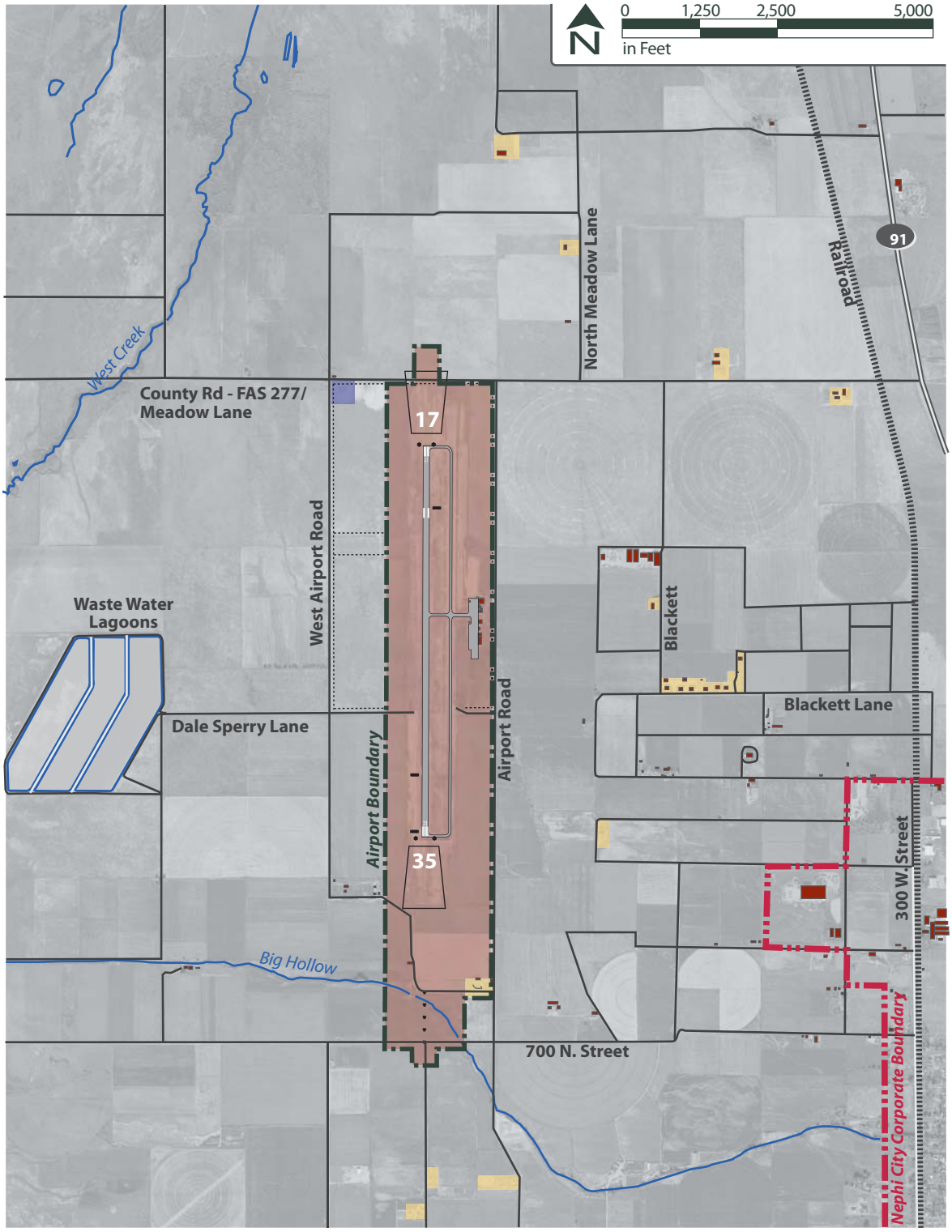


Figure A9 Generalized Existing Land Use

Source: Juab County Planning Department & Nephi City.

Nephi Municipal Airport

Reviews of the existing zoning designations in the vicinity of the Airport reflect a combination of Industrial and Agricultural districts for airport property. The Airport itself and land immediately surrounding the Airport to the east, south, and west are zoned as Industrial. The majority of the land surrounding the Airport is generally categorized as Agricultural with development density requirements for single family residential uses that range from one lot of 50 to 160 acres. Residential zoning occurs to the northeast and southeast of the Airport. There is also an area of Highway Commercial zoning south of the Airport, with a portion of the Nephi City corporate boundary located southeast of the Airport and represented by a combination of three city zoning districts.

In addition, Juab County has established an airport overlay zoning regulation that limits the height of objects within the area surrounding the Airport in the interest of the health, safety, and general welfare of the County, and to promote and preserve the function and utility of airport and aircraft activities within appropriate areas. The use of the land within an airport overlay zone affects the safe and efficient operation of the Airport and aircraft that use the Airport, as well as affects the influences from airport operations such as noise, vibrations, fumes, dust, smoke, fuel particles, and other annoyances. These overlay zoning guidelines are specified within the Juab County Land Use Code, Section 12-1-27 Airport Protection.

The Airport Height Zoning Map for Nephi Municipal, which will be included in Appendix One for reference, is made up of five (5) zones (i.e., *Runway Non-Precision Instrument Approach Zone, Runway Precision Instrument Approach Zone, Transition Zone, Horizontal Zone, and Conical Zone)*. In addition, an excerpt from the Juab County Land Use Code, describing the height limitations within each zone, is also included in Appendix One.

It should also be noted that the Wasatch Front Regional Council has published a guide, entitled *Compatible Land Use Planning Guide for Utah Airports*, to provide airport sponsors with a quick reference resource for land use compatibility issues, and to ensure FAA grant-in-aid program compliance (i.e., grant assurances) regarding the compatible use of land adjacent to, or in the vicinity of, the Airport. This planning guide utilizes a series of "planning templates" that have been established to identify development guidelines (i.e., No Development, Limited Development, and Controlled Development) within the defined airport influence area. These guidelines also provide recommendations for development densities that are designed to balance the need for protection of the Airport and the safety, including the quality of life, for property owners within the airport influence area. At present, the underlying county zoning in the vicinity of the Airport does a reasonable job in protecting the facility from the encroachment of incompatible land uses.

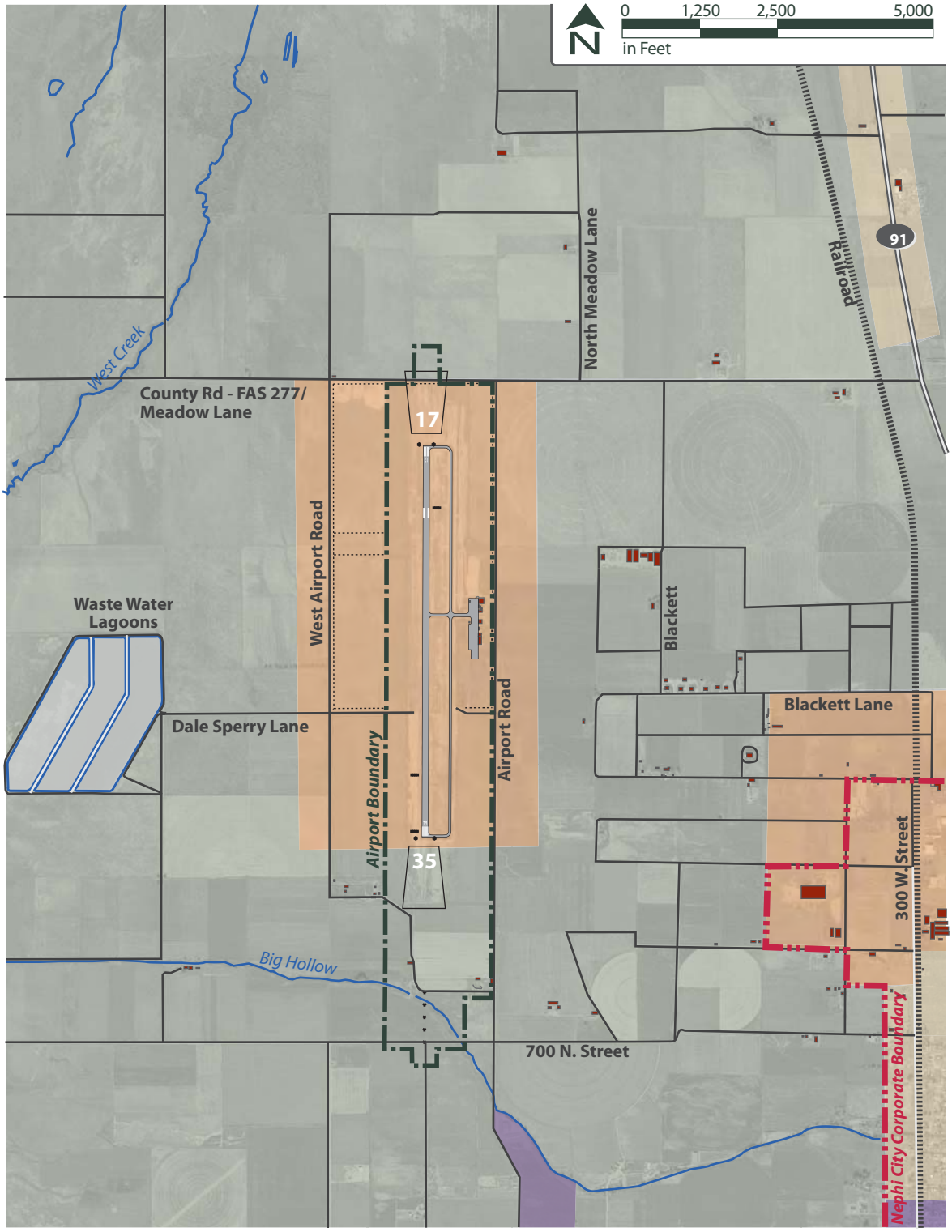


Figure A10 Generalized Existing Zoning

Source: Juab County Planning Department & Nephi City.

Nephi Municipal Airport

Environmental Review Inventory

The consideration of environmental factors during the airport planning process is necessary to provide the airport sponsor with enough information to help expedite any subsequent environmental processing that may be required in support of airport development projects. A brief description of the various impact categories is identified in the text below.

Noise and Compatible Land Use

Noise is generally defined as unwanted sound, and, as such, the determination of acceptable levels is subjective. The basic unit in the computation of day-night sound level (DNL) is the Sound Exposure Level (SEL). An SEL is computed by adding the decibels adjusted dB(A) level for each second of a noise event above a certain threshold. For example, a noise monitor located in a quiet residential area [40 dB(A)] receives the sound impulses of an approaching aircraft and records the highest dB(A) reading for each second of the event as the aircraft approaches and departs the site. Each of these one-second readings is then added logarithmically to compute the SEL.

The computation of DNL involves the adding, weighting, and averaging of each SEL to achieve the DNL level in a particular location. The SEL of any single noise event occurring between the hours of 10:00 p.m. and 7:00 a.m. is automatically weighted by adding 10 dB(A) to the SEL to account for the assumed additional irritation perceived during that time period. All SELs are then averaged over a given time period (day, week, year) to achieve a level characteristic of the total noise environment. DNL levels usually are depicted as grid cells or contours. Grid cells are squares of land of a specific size that are entirely characterized by a noise level. Contours are interpolations of noise levels based on the centroid of a grid cell and drawn to connect all points of similar level. Contours appear similar to topographical contours and form concentric "footprints" about a noise source. These footprints of DNL contours drawn about an airport are used to predict community response to the noise from aircraft using that airport.

Hazardous Wildlife Attractants

As mentioned previously, the City's existing waste water treatment plant is located less than one mile west of the Airport. The Burraston Ponds WMA is located approximately six miles north of the Airport, and the Nephi WMA is located less than two miles northwest of the Airport. Retention and settling ponds, recreational use ponds, wastewater and storm water treatment facilities, ponds resulting from mining activities, and drinking water intake and treatment facilities can frequently attract large numbers of potentially hazardous wildlife, such as birds.

According to FAA Advisory Circular 150/5200-33-B, *Hazardous Wildlife Attractants On or Near Airports,* the FAA recommends that minimum separation criteria be established between the air operations area (AOA) and certain land uses that can potentially attract hazardous wildlife. Any solid waste disposal facility (i.e. sanitary landfill) or water management facility (i.e. wastewater treatment facilities, storm water management facilities, etc.) located within 5,000 feet of all runways planned to be used by piston-powered aircraft, or within 10,000 feet of all runways planned to be used by turbine aircraft, is considered by the FAA to be an incompatible land use because of the potential for conflicts between bird habitat and low-flying aircraft.

For Nephi Municipal Airport, the 10,000-foot separation criteria would be applicable, and this criterion is presented on the following illustration, entitled *HAZARDOUS WILDLIFE ATTRACTANT BOUNDARY MAP*. However, the 1996 Environmental Assessment (EA) concluded that since the Airport is not located directly between the waste water treatment plant and the existing wildlife areas northwest of the Airport, and the fact that no bird strikes have been reported in the vicinity of the Airport, the existing less-than-standard separation criteria was determined to be not significant. In addition, it was concluded that the Airport's location would not impact Nephi City's future ability to expand the existing waste water treatment facility in the future; however, the City should incorporate measures, developed in consultation with a wildlife damage management biologist, to minimize hazardous wildlife attractants.

Air and Water Quality

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), ozone (O_3), particulate matter (PM_{10}), sulfur dioxide (SO_2), oxides of nitrogen (NO_x), and lead (Pb). According to the EPA, the area is currently in compliance with all National Ambient Air Quality Standards (NAAQS). The closest non-attainment area is Provo, Utah, which is approximately 42 miles from the Airport. Generally, the FAA uses the number of passengers and number of aviation operations as an indicator of potential air quality concerns. These numbers help decide whether the project requires further air quality analysis. Federal Aviation Administration Order 5050.4A states, "No air quality analysis is needed if the Airport is a commercial service airport and has less than 1.3 million passengers and less than 180,000 general aviation operations forecasts annually." The forecast operations by the end of the 20-year planning period (20,112) are far below the threshold required to do an air quality analysis. Short-term air quality impacts may be expected from temporary construction activities such as heavy equipment pollutant emissions, fugitive dust resulting from cut and fill activities, and the operation of portable concrete batch plants. Compliance with all applicable local, state, and federal air quality regulations and permitting requirements will be the responsibility of all contractors.

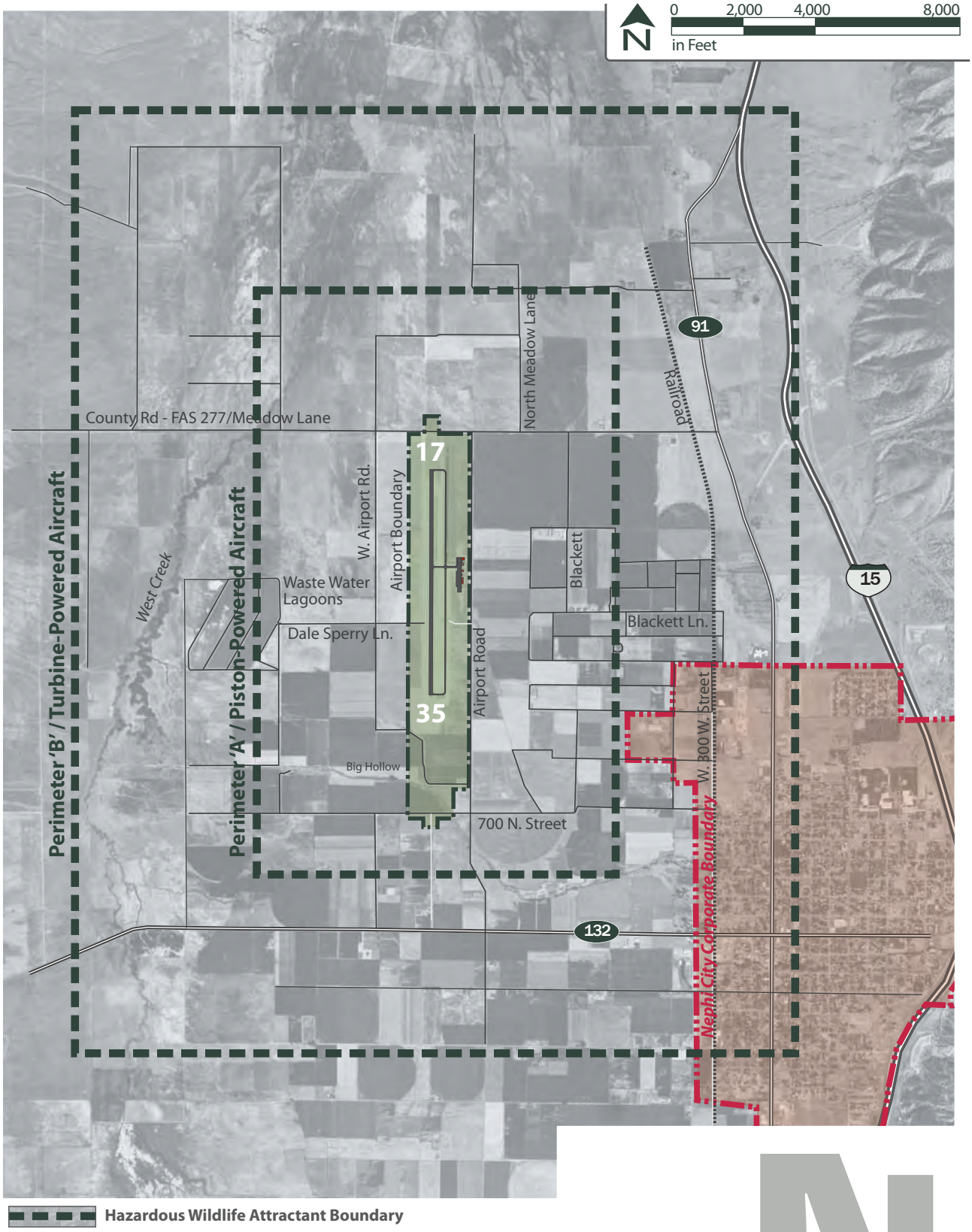


Figure A11 Hazardous Wildlife Attractant Boundary Map

Source: "Hazardous Wildlife Attractants On or Near Airports", AC No. 150/5200-33B, dated 8/28/2007.

Nephi Municipal Airport

Contractors doing work at the Airport will be required to follow guidelines outlined in the Federal Aviation Administration's Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports*, which is the FAA's guidance to airport sponsors concerning protection of the environment during construction. The final plans and specifications for any project will incorporate the provisions of AC 150/5370-10A to ensure minimal impact due to erosion, air pollution, sanitary waste, and the use of chemicals. Additionally, a National Pollutant Discharge Elimination System (NPDES) permit, administered by the Utah Department of Environmental Quality, may be required for construction projects.

Historical, Architectural, Archaeological, and Cultural Resources

Section 106 of the National Historic Preservation Act requires federal agencies, or their designated representatives, to take into account the effects of their undertakings on historic properties, which include archaeological sites, buildings, structures, objects, or districts. Several sites in Nephi are listed on the National Register of Historic Places (NRHP). None of these sites is close to airport property. The National Register lists one restricted site in Nephi, which could potentially be located within the airport vicinity. In addition, a cultural resource survey was conducted as an element of the 1996 Environmental Assessment (EA). Two archaeological sites, a prehistoric lithic and ground stone scatter and a historic trash scatter were located during the survey, but none of the sites were found to meet the eligibility requirements of the NRHP.

Prior to any major airport projects in the future, the Utah Division of State History, Historic Preservation Office will need to be contacted. Additionally, should any construction activity expose buried archaeological material, work would stop in that area, and both the FAA and the Utah Division of State History will be contacted.

Threatened and Endangered Species

The *Endangered Species Act*, as amended, requires each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. According to the U.S. Fish and Wildlife Service (USFWS), there are 42 threatened and endangered species (plants and animals) located within the state of Utah. Table A5, *JUAB COUNTY FEDERALLY LISTED WILDLIFE SPECIES OR SPECIES OF SPECIAL CONCERN*, lists the candidate species or federally listed species (under the *Endangered Species Act*) and species of concern within Juab County. Before any major projects could be undertaken, the Airport would need to determine if these threatened and endangered species are located on Airport property, within the proposed project area. If the species are found to be present, and depending on potential impact, an

Environmental Assessment or Environmental Impact Statement may have to be prepared prior to project implementation.

Table A4
JUAB COUNTY FEDERALLY LISTED WILDLIFE SPECIES OR SPECIES OF SPECIAL CONCERN

Common Name	Scientific Name	State Status
American White Pelican	*Pelecanus erythrorhynchos*	SPC
Bald Eagle	*Haliaeetus leucocephalus*	S-ESA
Bobolink	*Dolichonyx oryzivorus*	SPC
Burrowing Owl	*Athene cunicularia*	SPC
California Floater	*Anodonta californiensis*	SPC
Dark Kangaroo Mouse	*Microdipodops megacephalus*	SPC
Eureka Mountainsnail	*Oreohelix eurekensis*	SPC
Ferruginous Hawk	*Buteo regalis*	SPC
Fringed Myotis	*Myotis thysanodes*	SPC
Grasshopper Sparrow	*Ammodramus savannarum*	SPC
Greater Sage-Grouse	*Centrocercus urophasianus*	SPC
Kit Fox	*Vulpes macrotis*	SPC
Leatherside Chub	*Gila copei*	SPC
Lewis's Woodpecker	*Melanerpes lewis*	SPC
Long-billed Curlew	*Numenius americanus*	SPC
Pygmy Rabbit	*Brachylagus idahoensis*	SPC
Short-eared Owl	*Asio flammeus*	SPC
Three-toed Woodpecker	*Picoides tridactylus*	SPC
Townsend's Big-eared Bat	*Corynorhinus townsendii*	SPC
Utah Physa	*Physella utahensis*	SPC
Western Toad	*Bufo boreas*	SPC
Yellow-billed Cuckoo	*Coccyzus americanus*	S-ESA

Source: State of Utah Natural Resources, Division of Wildlife Resources – Utah Conservation Data Center.

Wetlands

Wetlands are basically defined as areas inundated by surface or groundwater with a frequency sufficient to support vegetation or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction. The airport terrain generally slopes to the north and northwest. Several drainage swales are located on airport property, west of the runway, with extensive growth which serves as erosion control. Potential wetlands located within the airport vicinity include West Creek, which is located approximately one mile northwest of the Airport, and

Big Hollow channel, which intersects airport property and is approximately 2,500 feet south of the Runway 35 threshold. In 2007, the U.S. Army Corps of Engineers verified jurisdiction of three channels within the Nephi area to be Waters of the U.S., regulated under Section 404 of the *Clean Water Act*[5]. This jurisdiction includes the entirety of the Big Hollow channel.

In addition, the 1996 Environmental Assessment (EA) indicated that a small wet-meadow wetland was identified on the north end of airport property (See Appendix Two for mapping of the wetland from the 1996 EA). This wet-meadow wetland area contains approximately 0.1 acres of wetlands. Additionally, a canal area is located on the south end of the Airport, and is hydrologically supported by water for irrigation purposes. However, the 1996 EA indicated that no channels were identified as waters of the U.S. within the area.

If any proposed projects would impact these wetlands, the Airport will coordinate with the U.S. Army Corps of Engineers, and some further environmental analysis may be necessary. Should there be any mitigation measures identified, contractors would be required to follow guidelines outlined in the FAA's AC 150/5370-10A to minimize the impacts to the environment, including wetlands.

Farmland

According to the National Soil Survey by the National Resources Conservation Service (NRCS), there are several areas of land on and surrounding the Airport that are considered to be prime farmland and farmland of statewide importance.

The north sections of land within airport property are composed of Benjamin silty clay loam, Musinia silty clay loam (moist), zero to two percent slopes, and Hansel silt loam, zero to two percent slopes. The soil types found on the southern area of the Airport are Musinia silty clay loam (moist), zero to two percent slopes, and Juab loam, zero to two percent slopes. Benjamin silty clay loam and Hansel silt loam are considered farmland of statewide importance, and Juab loam and Musinia silty clay loam, if irrigated, are considered to be prime farmland. All of these soils are located on Airport property, and online mapping of the property from the Natural Resources Conservation Service (NRCS) website was generated and is included for reference in Appendix Two.

[5] Letter received from the U.S. Department of the Army, Corps of Engineers, April 13, 2007. Verification of the waters of the U.S. jurisdictional determination is valid for five years. Waters of the United States (below the ordinary high watermark) include the Salt Creek channel (from the headwaters to the Old North Diversion inlet), the Old North Diversion channel, and the entirety of the Big Hollow channel. These waters are tributaries of Utah Lake, which verifies regulation under the *Clean Water Act*, Section 404.

Consultation with the U.S. Department of Agriculture (USDA) and the NRCS is required to determine if the Farmland Protection Policy Act (FPPA) applies to the land or applies to any land to be converted from non-agricultural use as a result of any proposed projects.

Floodplains

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. The Airport is not located within a designated 100-year floodplain.

Section 4(f) Property

Section 4(f) of the Department of Transportation Act (recodified at 49 USC, Subtitle I, Section 303) provides that no publicly-owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site that is of national, state, or local significance will be used, acquired, or affected by programs or projects requiring federal assistance for implementation. Currently, there are no Section 4 (f) potential resources within the immediate vicinity of the Airport.

Financial Inventory

The primary goal of this task is to gather materials that summarize the financial management of the Airport. In addition, it is important to develop an understanding of the financial structure, constraints, requirements and opportunities for airport activities as related to the development of a capital improvement program. The documents that have been gathered and reviewed for this financial inventory will be used to formulate a reasonable and financially sound Capital Improvement Program (CIP) with which to fund projects identified in the master planning process.

An airport is both a public service and a business and must be operated as both. Financial assistance to public airports is often provided by city, county, state, federal, and private sources where available. In return, the Airport provides jobs, promotes development, and supplies economic benefits to the area that it serves, as well as providing a major element of the public transportation system. This is the public service component. From a business standpoint, the Airport has the ability to generate certain revenues and, therefore, the obligation to do so. The most successful and satisfactory method of accomplishing this is through a combination of fair and equitable fees and charges associated with the use of airport facilities. It is a federal requirement that airport-generated revenues be used at the Airport. Airport revenues can be derived from leases, rental rates, airfield fees and charges, airlines, cargo operators, and other operating revenue.

In consideration of these issues, the Airport's financial statements have been gathered for fiscal years 2004 through 2008. An initial review of the financial documentation for the Nephi Municipal Airport (see Table A5 below) indicates that the facility has operated with a mostly positive cash flow, excluding depreciation, for each of the past five years. Major sources of revenue for the Airport include: hangar leases, ground space leases, and fuel flowage royalties.

Table A5
REVENUE AND EXPENSE SUMMARY, 2004-2008

Year	Operating Revenues	Non-Operating Revenues (1)	Operating Expenses (2)	Non-Operating Expenses	Net Income / (Loss)
2004	$10,512	$2,095,084	$5,540	$1,902,348	$197,708
2005	$11,011	$2,403,781	$5,686	$2,623,266	($214,160)
2006	$9,171	$1,684,800	$6,142	$1,655,230	$32,599
2007	$12,333	$2,014,838	$6,455	$1,851,655	$169,061
2008	$13,353	$220,638	$5,133	$291,455	($62,597)

Source: Nephi City financial records.
(1) Total includes both State and Federal grants.
(2) Total does not include depreciation expenses.

In addition, the Airport's current CIP (November 2010) that is on file with the Utah Division of Aeronautics has also been reviewed. The projects, which are detailed in the appendix of this document (see Appendix Three), include:

- **Update Master Plan and Installation of an Automated Weather Reporting System**
- **Various taxilane construction projects**
- **Construction of a Snow Removal Equipment (SRE) building**
- **Acquisition of Snow Removal Equipment**
- **Various runway/taxiway pavement management and maintenance projects**
- **Construct airport entrance road & auto parking**

In consideration of the projects that have been completed to date, the current CIP represents a total estimated expenditure of $1,563,421 that would be shared between federal, state, and local funding sources through the year 2013. Of this total, $1,368, 421 would be eligible for federal funding at a 95% of the total project cost. The remaining State-eligible projects, totaling $195,000 would be funded at 90% of the total project cost by the State.

Forecasts of
B. Aviation Activity

Master
Plan

Nephi
Municipal Airport

B. Forecasts of Aviation Activity

INTRODUCTION. Forecasting is a key element in the master planning process. The forecasts are essential for analyzing existing airport facilities and identifying future needs and requirements for these facilities. Forecasting, by its very nature, is not exact, but it does establish some general parameters for development and, when soundly established, provides a defined rationale for various development activities as demands increase. The amount and kind of aviation activities occurring at an airport are dependent upon many factors but are usually reflective of the services available to aircraft operators, the meteorological conditions under which the Airport operates (daily and seasonally), the businesses located on the Airport or within the community the Airport serves, and the general economic conditions prevalent within the surrounding area.

Forecasting generally commences by obtaining accurate historical and existing data. Utilizing the present time as an initial point, certain quantifiable facts and trends can be identified, along with many intangible factors, which will impact the aviation activity forecasts. This data has evolved from a comprehensive examination of historical airport records and recent planning documents relative to the Airport (i.e., the *FAA Terminal Area Forecasts, 2008-2025* and the *FAA Aerospace Forecasts Fiscal Years 2008-2025*). These documents were assembled in different years, making the data quite variable and emphasizing the need for establishing a well-defined and well-documented set of base information from which to develop aviation activity forecasts.

Forecast Assumptions and Conditions

Prior to an examination of current and future activity levels at the Airport, there are several conditions and assumptions that should be noted that form the basis, or foundation, for the development of the forecasts contained here. These variables represent a variety of physical, operational, and socioeconomic considerations and, to varying degrees, relate to and affect aviation activity at Nephi Municipal Airport.

Weather Conditions

Though tabulated weather from the National Oceanic and Atmospheric Administration, National Climatic Data Center, was unavailable for analysis, the Airport, with the exception of very few days annually, is not adversely affected by poor weather conditions. According to local observations, the Airport rarely fogs-in when valley airports located further north (i.e., Provo Municipal Airport) experience fog. In addition, for comparison, Visual Flight Rules (VFR) meteorological conditions are experienced at South Valley Regional Airport, on average, approximately 96.4% of the time annually. Therefore, aircraft can operate at Nephi Municipal Airport on a regular basis throughout the year, with limited interruption due to weather. The potential negative impact of poor weather conditions on the operational capability of the Airport will be analyzed in the following chapter of this document.

Socioeconomic Conditions

Historically, aviation activity occurring at airports has been directly influenced by regional, state, and national socioeconomic conditions. The most-often analyzed conditions are population, employment, and income.

Population. According to US Census Bureau data, the population of Nephi was approximately 3,515 in 1990. By 2000, the population had increased to 4,733. In 1990, the population of Juab County was 5,817. By 2000, Juab County increased to approximately 8,238. The State of Utah population was 1,722,850 in 1990 and increased to 2,233,169 in 2000. The State of Utah Governor's Office of Planning and Budget, projects that the population of Juab County will increase to 10,112 by the year 2010, which is an increase of 22.7% from 2000, and an average annual growth rate of 2.07%. By comparison, the State of Utah is projected to increase from 2,233,169 (2000 population) to 2,833,337 in 2010, an overall increase of 21.2% and an average annual growth rate of 2.41%. The US Census Bureau estimates that the national population will increase from 281,421,906 in 2000 to some 363,584,435 by the year 2030. This is an approximate increase of 22.6% and an annual growth rate of 0.86%.

Subsequent to publication date of this section of the Master Plan, 2010 US Census data has been published and is included here for reference. Nephi City and Juab County recorded a 2010 population of 5,389 and 10,246 respectively. This resulted in an average annual growth rate of 1.3% for Nephi City and 2.2% for Juab County between 2000 and 2010. These average annual growth rates for population over the past 10 years compare to 2.15% for the State of Utah.

Employment. Nephi and the surrounding area have a diverse and broad range of employment opportunities. According to the US Census Bureau, manufacturing accounted for 17.5% of all nonfarm payroll jobs in 2000 within Juab County. Educational, health, and social services (17.4%); retail trade (11.7%); and, arts, entertainment, recreation, accommodation, and food services (11.7%) follow manufacturing as the leading employment sectors within the County. In 2000, the number of nonfarm payroll jobs was 3,382 in Juab County. Subsequent to publication date of this section of the Master Plan, the projected July 2010 nonfarm payroll statistics show manufacturing increasing to 20.8%; educational, health, and social services declining to 13.6%; retail trade declining to 8.7%; and, arts, entertainment, recreation, accommodation, and food services declining to 8.9% within the County.

According to the Utah Department of Workforce Services, the 2007 unemployment rate was approximately 3.1% for Juab County, and increased to 5.0% in 2008. This compares to the unemployment rate within the State of Utah, which was 2.6% in 2007, and increased to 3.4% by 2008[1]. Nationwide, the unemployment rate was 3.7% in 2000, increasing to 5.1% in 2005 (US Department of Labor, Bureau of Labor Statistics). Subsequent to publication date of this section of the Master Plan, the seasonally adjusted unemployment rate for Juab County was 10.9% in July of 2011. This compares to a rate of 7.5% for the State of Utah and 9.1% Nationwide.

Income. According to the Utah Department of Work Services, the 2004 per capita personal income for Juab County was approximately $20,016; and, the State of Utah was $26,149[2]. By 2007[3], the per capita personal income for Juab County had increased to $22,954, which was overall increase of 3.5%. The 2007 State of Utah per capita personal income was approximately $30,563, representing a 4.0% overall increase from 2004.

Subsequent to publication date of this section of the Master Plan, forecasted per capita personal income for Juab County for 2009 totaled $24,500, which compares to $31,584 for the overall State average.

Community Support

Nephi Municipal Airport benefits from the support of the city and county governments, as well as local industries and citizens. The Airport is recognized as a vital infrastructure asset that contributes to the stability and future expansion of the area's economy. The overall position of the community

[1] Not seasonally adjusted.

[2] 1990 income data for Nephi is currently unavailable.

[3] Forecasted.

is one of continued growth and development, with special focus on the impetus that the Airport can provide to attract additional economic and industrial development to the area. Additionally, many smaller communities surrounding Nephi benefit from a quality general aviation airport. These communities provide an economic base that can attract additional aviation activity, as well as industrial/business development to the area.

Nephi Municipal Airport, which is the "front door" for many business and recreational travelers, is located roughly three (3) miles northwest of the Nephi Central Business District (CBD). The Airport currently consists of 555 acres and offers some vacant property to provide aviation or non-aviation development areas. Currently, the Airport is not constrained by incompatible land uses within the surrounding area.

Regulatory Climate

For purposes of forecasting in this Master Plan, it is assumed that the regulatory climate regarding the general aviation industry will not change dramatically. Specifically, it is assumed that noise and emissions requirements on business aircraft will remain within the bounds prescribed by current rules and regulations. It is also assumed that the general aviation community will not be subject to new user fees, access to airports and airspace will not be limited, and general aviation airports will not be subject to security restrictions that are currently imposed on air carrier airports.

Negative or Neutral Factors

As a general comment, the Airport has very few negative factors and is in an enviable position, due to its many positive features and conditions. However, there are some broad factors that can have a negative impact on the Airport, and the aviation industry, and these are considered in the planning process. The first issue is the overall condition of the general aviation industry in the United States. Beginning in 1978, many sectors of the general aviation industry have been in a recession, and the FAA has identified several factors that precipitated this downturn, including: economic recessions, fuel crises, termination of the GI Bill, and the repeal of the Investment Tax Credit.

More obvious contributing factors include: the rising expense of owning and operating an aircraft (i.e., costs of insurance, fuel, and maintenance), competition from discount air carriers since airline deregulation, changes in disposable discretionary income, increases in air space restrictions affecting fair-weather flying, reductions in personal leisure time, and shifts in personal preference as to how leisure time is spent. These factors have restricted the single-engine light aircraft segment of the industry, in particular.

From a national perspective, one negative trend is the current state of the national economy including record high oil prices, contributing to higher jet and aviation fuel prices. The FAA is also proposing a major change in how the agency is funded. The impacts of this change are dependent on final changes to congressional bills related to FAA reauthorization; however, there is the potential for an increase in either general aviation user fees and/or general aviation fuel taxes, which could negatively affect general aviation activity nationwide.

However, there are a number of bright spots having a positive impact in certain segments of the general aviation industry, including the passage of the General Aviation Revitalization Act (GARA) of 1994. This legislation has caused renewed interest and optimism among US aircraft manufacturers, who are either re-entering the single-engine aircraft market after several years' absence, or are increasing future production schedules to meet expected renewed demand. The growth in the amateur-built aircraft market, and the strength of the used aircraft market, indicate that demand for inexpensive personal aircraft is still relatively strong.

The FAA's efforts to aid general aviation revitalization include streamlining the certification process for new entry-level aircraft and implementing measures to provide regulatory relief and reduce user costs (i.e., reduced rules, improving the delivery of FAA services by decreasing excess layers of management, and the elimination of unneeded programs and processes). Groups such as the Aircraft Owners & Pilots Association (AOPA) are sponsoring programs that aggressively promote the benefits of general aviation and learning to fly.

On a more recent note, since the 9/11 terrorist attacks, Temporary Flight Restrictions (TFRs), and the lingering concerns of some regarding the use of general aviation aircraft in potential future acts of terrorism, have had an added short-term negative impact on the industry. On the positive side for General Aviation (GA), heightened airport security has had a dramatic impact on the "nuisance factor" of commercial air travel; as a result, some travelers have turned to general aviation as a more efficient means of air travel.

An additional factor having a negative impact on Nephi Municipal Airport is the lack of an instrument approach procedure, which inhibits the ability of the more sophisticated general aviation business aircraft to utilize the Airport during adverse weather conditions. This issue is important and requires attention during the preparation of this Master Plan.

Historical and Existing Aviation Activity

A tabulation of historical aviation activity since 1997 at Nephi Municipal Airport is presented in Table B1, entitled *HISTORICAL AVIATION ACTIVITY, 1998-2008*. This table presents the numbers of aircraft operations (an operation is defined as either a takeoff or a landing) in four categories that include air taxi, general aviation, military, and total operations.

Table B1
HISTORICAL AVIATION ACTIVITY, 1998-2008

Year	Air Taxi		General Aviation		Military		Total Operations	
1998	0	---	4,500	0%	1,000	0%	5,500	0%
1999	0	---	4,500	0%	1,000	0%	5,500	0%
2000	0	---	4,500	0%	1,000	0%	5,500	0%
2001	0	---	4,500	0%	1,000	0%	5,500	0%
2002	0	---	4,500	0%	1,000	0%	5,500	0%
2003	0	---	4,500	0%	1,000	0%	5,500	0%
2004[1]	20	100%	9,411	52%	0	---	9,411	52%
2005[2]	20	0%	9,702	3%	0	---	9,702	3%
2006[2]	0	---	6,010	-61%	0	---	6,010	-61%
2007[1]	30	100%	6,040	0.5%	1,000[3]	---	7,040	0.5%
2008[1]	30	0%	6,040	0%	1,000[3]	---	7,040	0%

Sources: Federal Aviation Administration, *Terminal Area Forecasts*, 1998-2025.
[1] FAA Form 5010-1, *Airport master Record*
[2] *Utah Continuous Airport System Plan 2007*.
[3] Estimated following discussions with National Guard Armory personnel.

Accurate counts of airport operations are often unavailable for analysis at non-towered general aviation airports. However, portions of the historical operational data available for Nephi Municipal Airport are represented by reasonably accurate estimates of the actual general aviation activity occurring at the Airport due to the use of acoustical counting equipment that was administered by the UDOT Aviation Division. In addition, the operations estimate during 2006-2007 was negatively impacted due to the construction of the new runway facility. It should be noted that the data for 2008 (i.e., the last row of data in Table B3) will be utilized as the base-line data for the aircraft operations forecast in this document.

Air Taxi Operations. Nephi Municipal Airport does not have scheduled passenger service, but has historically had occasional air taxi service. Air taxi operations consist of any operations by aircraft for commercial or for-hire activity. Historically, the amount of air taxi activity at the Airport has been

estimated to be relatively inconsistent (based upon historic *Utah Continuous Airport System Plan 2007* data), varying from zero to 30 annual operations. Based upon this level and type of activity at the Airport, air taxi operations will be included in the general aviation operations category for purposes of this study.

General Aviation Operations. General aviation aircraft conduct the majority of the aircraft operations at Nephi Municipal Airport. General aviation is the branch of aeronautical activity that is not commercial or military. Thus, general aviation encompasses pleasure flying and flight training, along with business and corporate aviation activity.

Military Operations. The majority of military operations can be attributed to training activity, predominantly helicopters, but also includes small fixed-wing transport aircraft. Due to the presence of the Utah Army National Guard facility located at South Valley Regional Airport, the number of military operations at the Airport has fluctuated over the years in response to variations in training levels. However, the majority of military activity is represented by helicopter touch-and-go and approach training.

Existing Operations by Aircraft Type

The current level of aviation activity by aircraft type is summarized in the following table, entitled *EXISTING OPERATIONS BY AIRCRAFT TYPE, 2008.* This summary indicates that the majority of activity at the Airport is associated with multi-engine turboprop aircraft, accounting for approximately 42% of the general aviation operations. Approximately 31.5% of the general aviation operations can be attributed to single-engine aircraft (including both single-engine piston and turboprop aircraft), with 19% allocated to multi-engine piston aircraft. It is estimated that business jets conduct approximately 2.5% of the operations, while helicopter operations constitute 5%. In addition, military activity represents approximately 14% of the Airport's activity, the majority of which are helicopter operations.

Table B2
EXISTING OPERATIONS BY AIRCRAFT TYPE, 2008

Aircraft Type	Operations	Percent of Category
General Aviation	*6,040*	*85.8%*
Single-Engine [1]	1,903	31.5%
Multi-Engine Piston	1,148	19.0%
Multi-Engine Turboprop	2,537	42.0%
Business Jet	151	2.5%
Helicopter	302	5.0%
Military	*1,000*	*14.2%*
TOTAL	**7,040**	**(100.0%)**

Source: Estimates of operational breakdown were generated by BARNARD DUNKELBERG & COMPANY.
[1] Includes single-engine turboprop operations.

Based Aircraft

Currently, there are ten (10) civilian aircraft based at Nephi Municipal Airport. These include seven (7) single-engine aircraft, one (1) multi-engine turboprop aircraft, and two (2) helicopters. A historical summary of based aircraft is provided in the following table, entitled *SUMMARY OF BASED AIRCRAFT, 1998-2008*. The data were compiled from FAA records, the *Utah Continuous Airport System Plan 2007*, and airport tabulations.

Table B3
SUMMARY OF BASED AIRCRAFT, 1998-2008

Year	Single Engine	Multi-Engine Piston and Turbine	Business Jet	Helicopters	Total
1998[(1)]	---	---	---	---	9
1999[(1)]	---	---	---	---	9
2000[(1)]	---	---	---	---	9
2001[(1)]	---	---	---	---	9
2002[(1)]	---	---	---	---	9
2003[(1)]	---	---	---	---	9
2004[(1)]	---	---	---	---	9
2005[(1)]	---	---	---	---	9
2006[(2)]	6	2	1	---	9
2007[(3)]	7	1	0	2	10
2008[(3)*]	7	1	0	2	10

Sources:
[(1)] FAA *Terminal Area Forecasts*, 1998– 2025.
[(2)] *Utah Continuous Airport System Plan 2007*.
[(3)] FAA National Based Aircraft Inventory Program.

Aviation Activity Forecasts

Using the historical data and incorporating the previously stated assumptions and conditions, aviation forecasts can be developed. Several forecasting elements are pertinent to this planning effort: general aviation operations, local and itinerant operations, operations by aircraft type, and based aircraft. According to forecasts contained in the FAA *Aerospace Forecasts Fiscal Years 2008-2025*, nationwide general aviation operations are projected to grow at approximately 1.3% annually[4].

General Aviation Activity Forecast

As discussed earlier, fluctuations within the country's economic cycle historically impact general aviation operations more severely than air carrier operations. However, with more of the general aviation aircraft fleet being used for business purposes now than it was in the past, the economy should have somewhat less of an effect upon overall general aviation activity. Because of the prevailing economic conditions in Nephi and the surrounding area, it is anticipated that itinerant traffic will become an integral part of the aviation activity at the Airport. These factors, combined

[4] 1.3% increase at towered airports.

with the previously mentioned GARA legislative action, should have a positive impact on general aviation activity.

In developing the aviation activity forecasts, several general aviation forecasts and national trends were reviewed. Included in this assessment, and, as presented in the following table, entitled *GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2008-2028*, is a straight line trend projection (TP) based on historical data and three forecast scenarios developed for this Master Plan. As can be noted, the trend projection shows minimal growth throughout the planning period.

Scenario One. This forecast scenario illustrates an average annual growth rate of 0.8%, which is the average annual growth rate of the FAA Terminal Area Forecasts (TAF) itinerant general aviation operations from 2008 to 2025, nationally.

Scenario Two. This forecast postulates an average annual growth rate of 1.5%, which is the average annual rate of change of forecasted general aviation operations from 2006-2026 at Nephi Municipal Airport as indicated in the *Utah Continuous Airport System Plan*, 2007.

Scenario Three. This scenario utilizes a 3.54% average annual growth rate, which is the average annual growth rate of Juab County population from 1990 to 2000. ***This is the selected operations forecast scenario for the Master Plan.***

Scenario Three was selected as the operations forecast scenario in part to reflect the sharp increase in overall fuel sales at the Airport over the last five years. It is anticipated that, with additional facilities (hangars, fuel storage capabilities, etc.) and the recent airside improvements (runway extension), operations could double over the existing level during the 20-year planning period. Additionally, it is also assumed that the ability to accommodate instrument operations at some point will attract individuals who would otherwise use surrounding airports for training and/or storage of aircraft.

Table B4
GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2008-2028

Year	Historical TP 0.90%	Scenario One 0.80%	Scenario Two 1.50%	Scenario Three 3.54%
2008[1]	6,040	6,040	6,040	6,040
2009	6,094	6,088	6,131	6,254
2010	6,149	6,137	6,223	6,475
2011	6,205	6,186	6,316	6,704
2012	6,260	6,236	6,411	6,942
2013	6,317	6,285	6,507	7,187
2018	6,606	6,541	7,010	8,553
2023	6,909	6,807	7,551	10,178
2028	7,225	7,083	8,135	12,112

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
TP = Trend Projection.

Military Activity Forecast

There are generally three components in determining military aircraft use at an airport. The first is Department of Defense (DOD) funding, which has been increasing in recent years. The second is a fueling contract the Airport or FBO may have with the DOD. The third is the location, or proximity to the Airport with adjacent aviation-related military bases or training areas. As identified in the previously, South Valley Regional Airport is home to the Utah National Guard Army Aviation Support Facility, which primarily operates a combination of AH-64 Apache and UH-60 Blackhawk helicopters. This National Guard facility has historically utilized Nephi Municipal Airport for a limited amount of touch-and-go training operations, estimated at 1,000 annual operations, which originate from South Valley Regional Airport, but also includes operations to and from the Utah Test and Training Range (UTTR) located in Utah's West Desert.

As noted in the previous chapter of this document, preliminary planning is underway for the possible future development of a new National Guard Armory adjacent to the Airport. According to Guard personnel, the new Armory could accommodate a variety of Aviation and Aviation-Support Roles for the Utah National Guard. A possible development scenario could include the relocation/dispersal of some of the aviation assets from South Valley Regional Airport (i.e., a percentage of the AH-64 Apache and/or UH-60 Blackhawk helicopters and their associated support functions) to Nephi Municipal Airport, which would increase the military helicopter operational activity levels at the Airport. However, based upon current planning schedules, the development of

the new Armory is anticipated midway through the 20-year planning period of this document, with helicopter operations ranging from near 5,000 by 2018 to 8,000 by 2028. In addition, it should be noted that the Armory operation could also include fixed-wing aircraft, depending on the specific mission that is established for the facility, and it is likely that operations will fluctuate from year to year in response to changing missions and training levels. The following table, entitled *MILITARY OPERATIONS FORECAST, 2008-2028*, presents the projected operational forecast scenario for military operations at Nephi Municipal Airport.

Table B5
MILITARY OPERATIONS FORECAST, 2008-2028

Year	Total Operations
2008[1]	1,000
2013	1,000
2018	5,000
2023	6,500
2028	8,000

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA *Terminal Area Forecasts* – 2003 military activity total.

Local and Itinerant Operations Forecast

Forecasts of operations have also been categorized accordingly into local and itinerant operations. Since Nephi Municipal Airport will continue to transition into a center for business-related general aviation operations, local operations will continue to be the dominant aircraft activity at the Airport. However, with this transition, it is expected that the existing estimate of 78% local operations will decrease and the existing estimate of 22% of itinerant operations will increase throughout the end of the planning period. Based on these considerations, forecasts of local and itinerant operations are shown on the following table entitled *SUMMARY OF LOCAL AND ITINERANT GA OPERATIONS, 2008-2028*.

Table B6
SUMMARY OF LOCAL AND ITINERANT GA OPERATIONS, 2008-2028

Year	Local		Itinerant		Total
2008[1] [2]	4,711	*(78%)*	1,329	*(22%)*	6,040
2013	5,462	*(76%)*	1,725	*(24%)*	7,187
2018	6,329	*(74%)*	2,224	*(26%)*	8,553
2023	7,328	*(72%)*	2,850	*(28%)*	10,178
2028	8,478	*(70%)*	3,633	*(30%)*	12,112

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
[2] Average breakdown of local and itinerant operations based on FAA Form 5010-1, *Airport Master Record* and FAA *Terminal Area Forecasts*, between years 1998 to 2008.

Operations Forecast By Aircraft Type

A further assessment of the forecasts involves the individual and collective use of the Airport by various types of aircraft. Supplementary to an assessment of the local and itinerant use of the Airport, the types of aircraft expected to use the Airport assist in determining the amount and type of facilities needed to meet the aviation demand.

The following table, entitled *SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2008-2028*, depicts the approximate level of use by aircraft types that are projected to use Nephi Municipal Airport. This table reflects the growing percentage of turbine-powered aircraft anticipated to operate at the Airport, as well as the decreasing percentage of piston-powered aircraft. This is indicative of the type of facility the Airport is expected to become, and the prevailing local economic conditions. It is also in line with overall national trends in general aviation and parallels the FAA expectations and projections characteristic of the general aviation fleet.

Table B7
SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2008-2028

Operations by Type	2008 [1]	2013	2018	2023	2028
General Aviation	*6,040*	*7,187*	*8,553*	*10,178*	*12,112*
Single-Engine[2]	1,903	2,192	2,523	2,850	3,270
Multi-Engine	1,148	1,330	1,540	1,832	2,120
Turboprop	2,537	3,127	3,806	4,631	5,632
Business Jet	151	216	342	509	727
Helicopter	302	323	342	356	363
Military [3]	*1,000*	*1,000*	*5,000*	*6,500*	*8,000*
TOTAL	**7,040**	**8,187**	**13,553**	**16,678**	**20,112**

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
[2] Includes single-engine piston and turboprop operations.
[3] Existing activity is represented by Utah National Guard helicopter touch & go training operations.

Based Aircraft Forecasts

The number and type of aircraft anticipated to be based at an airport are vital components in developing a plan for the Airport. Depending on the potential market and forecast, the Airport will tailor the plan in response to anticipated demand. Generally, there is a relationship between aviation activity and based aircraft, stated in terms of Operations Per Based Aircraft (OPBA). Sometimes, a trend can be established from historical information on operations and based aircraft. The national trend has been changing, with more aircraft being used for business purposes and fewer for pleasure flying. The impacts to the OPBA are that business aircraft are usually flown more often than pleasure aircraft.

Historical data (1998-2008) for the Airport indicate that the OPBA has fluctuated from 500 to 1,078, with an average of 616. With the addition of hangar facilities and an upgrade in airside facilities, it is expected that the number of OPBA will decrease at the Airport, as more aircraft based there are used for business purposes. The OPBA is expected to decrease from 604 in 2008 to 583 by the end of the planning period.

The based aircraft forecasts are presented in the following table entitled *BASED AIRCRAFT FORECAST, 2008-2028*. As can be seen, based aircraft forecasted in this Master Plan are expected to increase from 10 presently to 20 by 2028, an average annual growth rate of 3.54%. As mentioned previously, preliminary planning is underway for the possible future development of a new National Guard Armory adjacent to the Airport, which could potentially base military aircraft, including helicopters

and fixed-wing aircraft. However, since the new Armory is in the preliminary planning phase, no based military aircraft are included in the following table.

Table B8
BASED AIRCRAFT FORECAST, 2008-2028

Year	Based Aircraft	OPBA
2008 [1]	10	604
2013	12	604
2018	14	583
2023	17	583
2028	20	583

Source: BARNARD DUNKELBERG & COMPANY.
OPBA – Operations per Based Aircraft.
[1] FAA National Based Aircraft Inventory Program.

Note: Depending upon the establishment of a National Guard Armory facility, military aircraft could potentially be based at the Airport midway through the planning period of this document.

The mix of based aircraft for incremental periods is shown in the following table entitled *BASED AIRCRAFT FORECAST BY TYPE, 2008-2028*. As with the trend nationally, the percentage of piston-powered aircraft is expected to decrease as a portion of the total based aircraft population at the Airport.

Table B9
BASED AIRCRAFT FORECAST BY TYPE, 2008-2028

Aircraft Type	2008 [1]		2013		2018		2023		2028	
Single-Engine[2]	7	*70.0(%)*	8	*69.0(%)*	9	*63.0(%)*	10	*58.0(%)*	11	*56.0(%)*
Multi-Engine	0	*0.0(%)*	1	*6.0(%)*	1	*7.0(%)*	1	*8.5(%)*	2	*10.0(%)*
Turboprop	1	*10.0(%)*	1	*12.0(%)*	2	*14.0(%)*	3	*15.0(%)*	3	*15.0(%)*
Business Jet	0	*0.0(%)*	0	*0.0(%)*	1	*5.0(%)*	1	*7.5(%)*	2	*8.0(%)*
Helicopter	2	*20.0(%)*	2	*13.0(%)*	2	*11.0(%)*	2	*11.0(%)*	2	*11.0(%)*
TOTAL	**10**		**12**		**14**		**17**		**20**	

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA National Based Aircraft Inventory Program.
[2] Includes single-engine piston and single-engine turboprop.

Note: Depending upon the establishment of a National Guard Armory facility, military aircraft could potentially be based at the Airport midway through the planning period of this document.

Summary

A summary of the aviation forecasts prepared for this study is presented in the following table entitled *SUMMARY OF AVIATION ACTIVITY FORECASTS, 2008-2028.* This information will be used in the following chapters to analyze the capacity of the Airport and to develop facility requirements. In other words, the aviation activity forecasts are the foundation from which future plans will develop and implementation decisions will be made.

Table B10
SUMMARY OF AVIATION ACTIVITY FORECASTS, 2008-2028

Operations	2008[1]	2013	2018	2023	2028
General Aviation	*6,040*	*7,187*	*8,553*	*10,178*	*12,112*
Single-Engine[2]	1,903	2,192	2,523	2,850	3,270
Multi-Engine (Piston)	1,148	1,330	1,540	1,832	2,120
Multi-Engine (Turboprop)	2,537	3,127	3,806	4,631	5,632
Business Jet	151	216	342	509	727
Helicopter	302	323	342	356	363
Military[3]	*1,000*	*1,000*	*5,000*	*6,500*	*8,000*
TOTAL OPERATIONS	**7,040**	**8,187**	**13,553**	**16,678**	**20,112**
Local GA Operations	4,711	5,462	6,329	7,328	8,478
Itinerant GA Operations	1,329	1,725	2,224	2,850	3,633

Based Aircraft By Type	2008[4]	2013	2018	2023	2028
Single-Engine[2]	7	8	9	10	11
Multi-Engine (Piston)	0	1	1	1	2
Multi-Engine (Turboprop)	1	1	2	3	3
Business Jet	0	0	1	1	2
Helicopter	2	2	2	2	2
TOTAL	**10**	**12**	**14**	**17**	**20**

Sources: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
[2] Includes single-engine piston and single-engine turboprop.
[3] Existing activity is represented by Utah National Guard helicopter touch & go training operations.
[4] FAA National Based Aircraft Inventory Program.

Note: Depending upon the establishment of a National Guard Armory facility, military aircraft could potentially be based at the Airport midway through the planning period of this document.

Airport Reference Code (ARC)/Critical Aircraft Analysis

The types of aircraft presently utilizing an airport and those projected to utilize the facility in the future are important considerations for planning airport facilities. An airport should be designed in accordance with the Airport Reference Code (ARC) standards that are described in *AC 150/5300-13 Airport Design*. The ARC is a coding system used to relate and compare airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the Airport. The ARC has two components that relate to the Airport's "Design Aircraft". The first component, depicted by a letter (i.e., A, B, C, D, or E), is the aircraft approach category and relates to aircraft approach speed based upon operational characteristics. The second component, depicted by a Roman numeral (i.e., I, II, III, IV, or V), is the aircraft design group and relates to aircraft wingspan (physical characteristic).

Generally speaking, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan is primarily related to separation criteria associated with taxiways and taxilanes.

Based on an examination of the current operation information for Nephi Municipal Airport, which consists of numerous Category B turboprops and some business jet operations, and projected increases in Category C business jet operations, the Airport should be maintained at the existing ARC C-II dimensional criteria standard. The following table, entitled *SUMMARY OF AIRCRAFT OPERATIONS BY AIRPORT REFERENCE CODE (ARC), 2008-2028*, provides an estimate (no exact historic or forecast data is available) of the breakdown of aircraft operations by Airport Reference Code. These estimates are derived by using existing based aircraft and operational data for Nephi Municipal Airport, along with general data available for the national aircraft fleet. As a general reference, Approach Category C aircraft have an approach speed in the landing configuration ranging between 121 and 141 knots, which compares to 91 and 121 knots for Approach Category B aircraft. In addition, Airplane Design Group (ADG) II aircraft have wingspans that range from 49 to less than 79 feet.

At present, the Airport has seven based single-engine aircraft, two helicopters, and one based multi-engine turboprop aircraft. The based multi-engine aircraft (Cessna 320B), has an ARC of A-I. An analysis of 2007 Aircraft Situation Display to Industry[5] (ASDI) for the Airport was conducted to estimate the number of business turboprop and business jet operations by specific aircraft type occurring annually. The ASDI analysis[6] showed that the majority of the operations were conducted by A-I and B-I multi-engine turboprop aircraft, and some operations were performed by B-II business jets (such as the Cessna Citation 560XL).

[5] ASDI is a data service available through the U.S. Department of Transportation that provides information on the position and flight plans of aircraft within the U.S. However, the system may not contain all flight plans due to a program developed by the National Business Aviation Association (NBAA) entitled Block Aircraft Registration Request (BARR) which allows its membership to block flight plans from entering the ASDI system.

[6] The 2007 ASDI analysis performed at Nephi Municipal Airport does not reflect an accurate total of aircraft operations.

Table B11
SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE (ARC), 2008-2028

Operations by ARC	2008	2013	2018	2023	2028
A-I through B-I	3,050	3,535	4,188	4,989	5,815
B-II [1]	2,688	3,123	3,695	4,322	5,228
A-III through C-IV [2]	0	206	328	511	705
TOTAL	**5,738**	**6,864**	**8,211**	**9,822**	**11,748**

Sources: Operational estimates generated by BARNARD DUNKELBERG & COMPANY and Airport Staff.
[1] Operation count is represented by a combination of multi-engine turboprops and small business jets.
[2] Operation count is represented by a combination of ARC C-II and D-II business jets.

Note: Estimated operations by ARC do not include military or helicopter operations.

Forecast Approval

In accordance with language specified in *Aviation Forecast Guidance APP-400*, local aviation forecasts are approved by regional airports division offices or airports district offices (ADOs). Local forecasts that are consistent with the Terminal Area Forecasts (TAF) (i.e., forecast differs by less than 10% in the first five years, differs by less than 15% in the remaining forecast periods, and does not affect the timing or scale of an airport project), do not need to be coordinated with APP-400 and APO-110. Local forecasts that are not consistent with the TAF, but do not affect the timing or scale of an airport project and do not impact the analysis of a National Environmental Policy Act (NEPA) document or Benefit Cost Analysis (BCA), may be accepted (not approved) for information purposes by the regional office/ADO without APP/APO coordination. As noted on the following table, entitled *SUMMARY OF MASTER PLAN & TAF FORECAST COMPARISON, 2008-2023*, the Master Plan forecasts for total operations exceed the specified TAF thresholds for acceptance, but would not affect the timing or scale of an airport project.

Table B12
SUMMARY OF MASTER PLAN & TAF FORECAST COMPARISON, 2008-2023

AIRPORT NAME: Nephi Municipal Airport

Total Operations	Year	MPU Forecast	TAF [1]	MPU/TAF (% Difference)
Base yr.	2008	7,040	5,500	28.0%
Base yr. + 5 yrs.	2013	8,187	5,500	48.8%
Base yr. + 10 yrs.	2018	13,553	5,500	146.4%
Base yr. + 15 yrs.	2023	16,678	5,500	203.2%

Source: BARNARD DUNKELBERG & COMPANY.

Notes: TAF data is on the U.S. Government fiscal year basis (October through September).
[1] Does not include military operations.

C. Capacity Analysis and Facility Requirements

Master Plan

Nephi Municipal Airport

C. Capacity Analysis and Facility Requirements

INTRODUCTION. The capacity of an airfield is primarily a function of the major aircraft operating surfaces that compose the facility and the configuration of those surfaces (runways and taxiways). However, it is also related to, and considered in conjunction with, wind coverage, airspace utilization, and the availability and type of navigational aids. Capacity refers to the number of aircraft operations that a facility can accommodate on either an hourly or yearly basis. Based upon the existing and projected operations levels at Nephi Municipal Airport, the operational capacity of the facility will not be a factor in this Master Plan. Facility requirements are analyzed to determine those facilities needed to meet the forecast demand and aircraft fleet, provided they are consistent with the established role and goals of the Airport. Evaluation procedures will focus on the Airport's appropriate Airport Reference Code (ARC), dimensional criteria, runway length, pavement strength, instrument approach capability, and layout of aircraft storage facilities.

Airport Role

The current role of Nephi Municipal Airport is to serve the general aviation needs of the community by providing many aviation-related services, including: business-related flying, recreational flying, flight training, air charters, air ambulance, hangar leasing and sales, and aerial surveillance, along with other aviation–related activities. Additionally, the Bureau of Land Management (BLM) operates a temporary Single-Engine Air Tanker (SEAT) firefighting base at the Airport. The management of Nephi Municipal Airport correlates directly with its designated role, which influences both Capital Improvements Programming and revenue generation opportunities. Therefore, all facility requirement and planning recommendations should reflect these general guiding principles explained in this chapter.

Knowledge of the types of aircraft currently using, and those aircraft expected to use, Nephi Municipal Airport provides information concerning the Airport Reference Code (ARC). FAA Advisory Circular 150/5300-13, *Airport Design*, provides guidelines for this determination. The ARC designation is based on the "Design Aircraft" that is judged the most critical aircraft using, or projected to use, the Airport. The ARC relates aircraft operational and physical characteristics to design criteria that are applied to various airport components. Under this methodology, safety margins are provided in the physical design of airport facilities.

There are two components in determining the ARC for an airport. The first component, depicted by a capital letter, is the Aircraft Approach Category and relates to aircraft approach speed. The second component, depicted by a Roman numeral, is the Airplane Design Group and relates to airplane wingspan.

Currently, a large number of multi-engine turboprop aircraft utilize the Airport on a regular basis; however, this traffic is supplemented by fair amounts of single-engine piston and turboprop aircraft, multi-engine piston, and jet aircraft that are operated primarily for business purposes. In addition, the Airport accommodates a significant number of military helicopter operations, due to training activity associated with the Utah Army National Guard facilities based at South Valley Regional Airport, located approximately 80 miles to the north.

Airfield Layout

The layout or "design" of the airfield refers to the arrangement and interaction of the airfield components, which include the runway system, taxiways, and ramp entrances. As previously described, Nephi Municipal Airport operates around a single runway (i.e., Runway 17/35[1]). This runway is served by a full-length east side parallel taxiway system (i.e., Taxiway "A") and three connector taxiways.

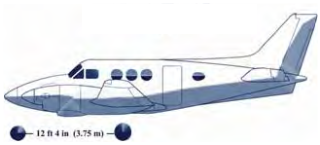
All of the Airport's existing landside facilities are located on the east side of the runway, approximately midfield. These include FBO facilities and individual executive/corporate hangars. Each of these facilities is located to make efficient use of the existing apron/taxiway system. As mentioned previously, the BLM operates a temporary SEAT firefighting base at the Airport and utilizes the FBO facilities on an as-needed basis during the summer fire season (i.e., June – September).

[1] The runway was previously oriented at 16/34, and updated to 17/35 in 2010.

Runway 17/35. All of the general aviation fixed-wing aircraft, including single-engine and multi-engine piston aircraft, turboprop aircraft, and jets utilize this runway. Past planning documents identified that the future "Design Aircraft" for this runway would be represented by an ARC C-II business jet (i.e., the Cessna Citation X), and these are the design standards that were utilized in the recent reconstruction of the Airport. The Cessna Citation X is a business jet aircraft that has an approach speed of 129 knots and a wingspan of 63.9 feet. The following illustration, entitled *REPRESENTATIVE AIRCRAFT BY AIRPORT REFERENCE CODE (ARC) DESIGNATION*, has been included for reference and comparison.



ARC A-I
Single-Engine Aircraft - 2 to 6 Seats
Beech Bonanza
deHaviland DHC-2 Beaver
Cessna-150



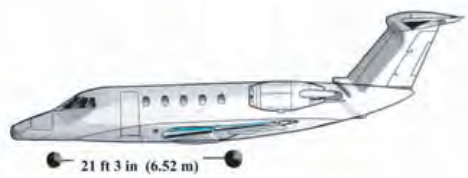
ARC B-I
Twin-Piston Aircraft - 4 to 10 Seats
Beech King Air B100
Piper 31-310 Navajo
Beech Baron 58



ARC B-I
Very Light Jet/Small Cabin 4-6 Seats
Citation Mustang



ARC B-II
Twin-Turboprop Aircraft - 6 to 10 seats
Includes most commercial turboprop aircraft.
Beech Super King Air B200
Cessna 441 Conquest
Grumman Gulfstream I



ARC B-II
Twin-Turboprop/Business Jet/Small Cabin Aircraft
6 to 12 Seats
Cessna Citation II/III/VII
Dassault Falcon 50
Dassault Falcon 900



ARC C-II
Business Jet/Medium Cabin - 8 to 19 Seats
Cessna Citation X
Gulfstream III
Bombardier CL-604 Challenger

Note: Representative Aircraft proportional, but not to scale.

Figure C1 Representative Aircraft by Airport Reference Code (ARC) Designation

Source: Aircraft Ground Service Guide, 2002 and Aircraft Manufacturer.

Nephi Municipal Airport

According to current operational estimates, approximately 2,537 turboprop operations were conducted at the Airport in 2008, including approximately 151 ARC B-II and C-II business jets. FAA guidance defines a "substantial use threshold" on federally funded projects for critical design airplanes (i.e., the design aircraft) to have at least 500 or more annual itinerant operations at the Airport. For Nephi Municipal Airport, it is estimated that this operational activity could increase to approximately 5,632 and 727 operations, respectively, by the end of the planning period, which would support the specified ARC C-II design criteria. For future planning purposes, the ARC C-II runway and taxiway dimensional design criteria will be maintained and protected to accommodate future operational increases by these higher performance aircraft.

Environmental Conditions

Climatological conditions specific to the location of an airport not only influence the layout of the airfield but also affect the utilization of the runway system. Variations in the weather, resulting in limited cloud ceilings and reduced visibility, typically lower airfield capacity, while changes in wind direction and velocity typically dictate runway usage and influence runway capacity.

Wind Coverage. Surface wind conditions (i.e., direction and speed) generally determine the desired alignment and configuration of the runway system. Runways that are not oriented to take advantage of prevailing winds will restrict the capacity of the Airport. Wind conditions affect all airplanes in varying degrees; however, the ability to land and takeoff in crosswind conditions varies according to pilot proficiency and aircraft type. Generally, the smaller the aircraft, the more it is affected by the crosswind component.

According to FAA AC 150/5300-13, *Airport Design*, for ARC-A-I and B-I airports, a crosswind component of 10.5-knots is considered maximum. For ARC A-II and B-II airports, a crosswind component of 13-knots is considered maximum. For ARC A-III, B-III, and C-I through D-III airports, a crosswind component of 16-knots is considered maximum. Finally, for ARC A-IV through D-VI airports, a crosswind component of 20-knots is considered maximum. In consideration of the Airport's ARC C-II classification, these standards specify that a maximum crosswind of 16-knots be considered in the analysis. For informational purposes, the 20-knot crosswind component is also included. In addition, it is known that the Airport will also continue to serve small single and twin-engine aircraft for which the 10.5-knot and 13-knot crosswind component is considered maximum; therefore, four crosswind components are important to be analyzed for this airport (the 10.5-knot, the 13-knot, the 16-knot, and the 20-knot).
Wind data to construct the all weather wind rose is typically obtained from a local weather reporting station, often located on the airport site, and is collected and maintained by the National Climatic Data Center (NCDC). As identified in the *Inventory of Existing Conditions* chapter, the existing

Automated Weather Observing System (AWOS) at the Airport was only recently installed (late 2008), and, therefore, insufficient wind and weather data is available for analysis[2] from this source. Wind data, both velocity and direction, to construct the all weather wind rose for Nephi Municipal Airport were obtained for the period October 1995-May 2000 from observations taken at Nephi Municipal Airport using portable wind instruments installed and monitored by the UDOT Division of Aeronautics. There were approximately 37,398 observations available for analysis during this five-year period. The allowable crosswind component is dependent upon the ARC for the type of aircraft that utilize the Airport on a regular basis. Accurate wind velocity and direction at Nephi Municipal Airport were obtained, and an all weather wind rose was constructed using the 10.5, 13, 16, and 20-knot crosswind components, and is presented in the following illustration entitled *ALL WEATHER WIND ROSE*.

The desirable wind coverage for an airport is 95%. This means that the runway should be oriented so that the maximum crosswind component is not exceeded more than 5% of the time. The following table, entitled *ALL WEATHER WIND COVERAGE SUMMARY*, quantifies the wind coverage offered by the Airport's existing runway system, including the coverage for each runway end.

Table C1
ALL WEATHER WIND COVERAGE SUMMARY

	Wind Coverage Provided Under All Weather Conditions			
	10.5-Knot	**13-Knot**	**16-Knot**	**20-Knot**
Runway 17/35	98.13%	99.03%	99.75%	99.96%
Runway 17	83.27%	84.07%	84.70%	84.89%
Runway 35	71.15%	71.54%	71.94%	72.03%

Source: Wind analysis tabulation provided by Barnard Dunkelberg & Company utilizing the FAA Airport Design Software supplied with AC 150/5300-13.

Note: Wind data obtained by the Utah Department of Transportation, Division of Aeronautics, from Nephi Municipal Airport, Nephi, Utah. Period of Record – October 1995-May 2000. Total Observations: 37,398.

[2] The FAA prefers to have a period of record of 10 years of hourly data from which to conduct the wind analysis. However, in extreme conditions a minimum of 1-year of on-site wind observations can be augmented with personal observations and interviews.

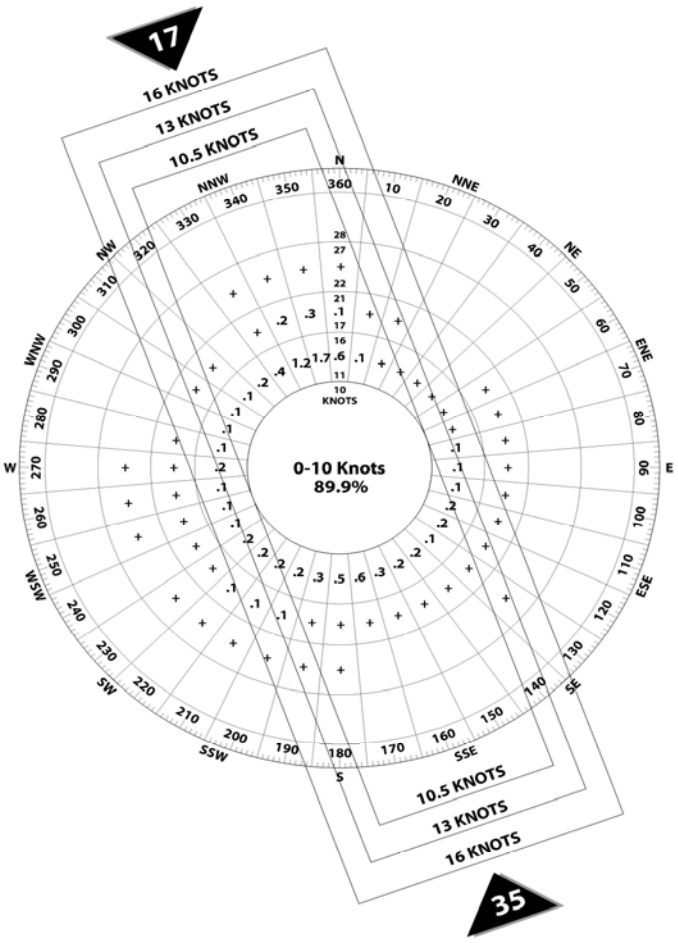


Figure C2
ALL WEATHER WIND ROSE: 16-, 13-, & 10.5-KNOT CROSSWIND COMPONENTS

Source: Utah Department of Transportation, Division of Aeronautics. Data obtained from Nephi Municipal Airport, Nephi, Utah. Period of Record – October 1995-May 2000. Total Observations: 37,398.

Based on this all weather wind analysis for Nephi Municipal Airport, utilizing the FAA Airport Design Software supplied with AC 150/5300-13, the existing single runway configuration provides excellent wind coverage (i.e., in excess of 98%) for each of the crosswind components. Therefore, no additional runways are required from a *wind coverage* standpoint.

At present, the Airport does not offer an instrument approach procedure; however, the Utah Department of Transportation (UDOT), Division of Aeronautics, is undertaking a study to determine the feasibility of establishing a GPS-based instrument approach procedure at the facility. With the absence of site-specific Instrument Flight Rules (IFR) wind and weather data for Nephi to evaluate the effectiveness of this future approach, the IFR wind data for a neighboring airport to the north (i.e., South Valley Regional Airport) was analyzed for comparison. It was concluded that, due to similarities in the all weather wind coverage of the two airports, which is dictated by the valley locations and surrounding mountainous terrain, similar wind patterns would also be present during IFR weather conditions. This would result in Runway 35 offering the better wind coverage during IFR weather conditions for each crosswind component, and this information has been incorporated into the formulation of various future, airside development alternatives and the ultimate development recommendations for the Airport. In addition, there is considerable anecdotal evidence that the percentage of VFR flying weather is greater in the Nephi area as compared to Provo, located to the north, due the localized effects of fog that can be attributed to the proximity of Utah Lake.

Facility Requirements

In efforts to identify future demand at the Airport for those facilities required to adequately serve future needs, it is necessary to translate the forecast aviation activity into specific types and quantities. This section addresses the actual physical facilities and/or improvements to existing facilities needed to safely and efficiently accommodate the projected demand placed on the Airport. This section consists of two separate analyses: those requirements dealing with *airside* facilities and those dealing with *landside* facilities.

Airside Facilities

The analysis of airfield requirements focuses on the determination of needed facilities and spatial considerations related to the actual operation of aircraft on the Airport. This evaluation includes the delineation of airfield dimensional criteria, the establishment of design parameters for the runway and taxiway system, and an identification of airfield instrumentation and lighting needs.

Airfield Dimensional Criteria

The types of aircraft that currently operate at Nephi Municipal Airport, and those that are projected to utilize the facility in the future, have an impact on the planning and design of airport facilities. This knowledge assists in the selection of FAA specified design standards for the Airport, which includes runway/taxiway dimensional requirements and runway length; and, runway, taxiway, and apron strength. These standards apply to the "Design Aircraft", which either currently utilize the Airport or which are projected to utilize the Airport in the future. As previously mentioned, the Cessna Citation X is currently identified as the Airport's future "Design Aircraft" for Runway 17/35 with regard to physical dimensions (i.e., 63.9-foot wingspan) and an approach speed of 129 knots. Therefore, based upon the Airport's forecast operational activity, as presented in the *Aviation Activity Demand Forecast* chapter of this document, it is recommended that the ARC C-II dimensional requirements be maintained to accommodate future increases by these higher performance aircraft.

According to FAA Advisory Circular 150/5300-13, *Airport Design*, the first step in defining an airport's design geometry is to determine its Airport Reference Code (ARC). A runway/airport that accommodates aircraft with an approach speed as great as 121 knots, but less than 141 knots, and with wingspans as great as 49 feet, but less than 79 feet, should be designed utilizing ARC C-II dimensional criteria. In addition, the Airport's existing design standards have been reviewed to ensure FAA compliance.

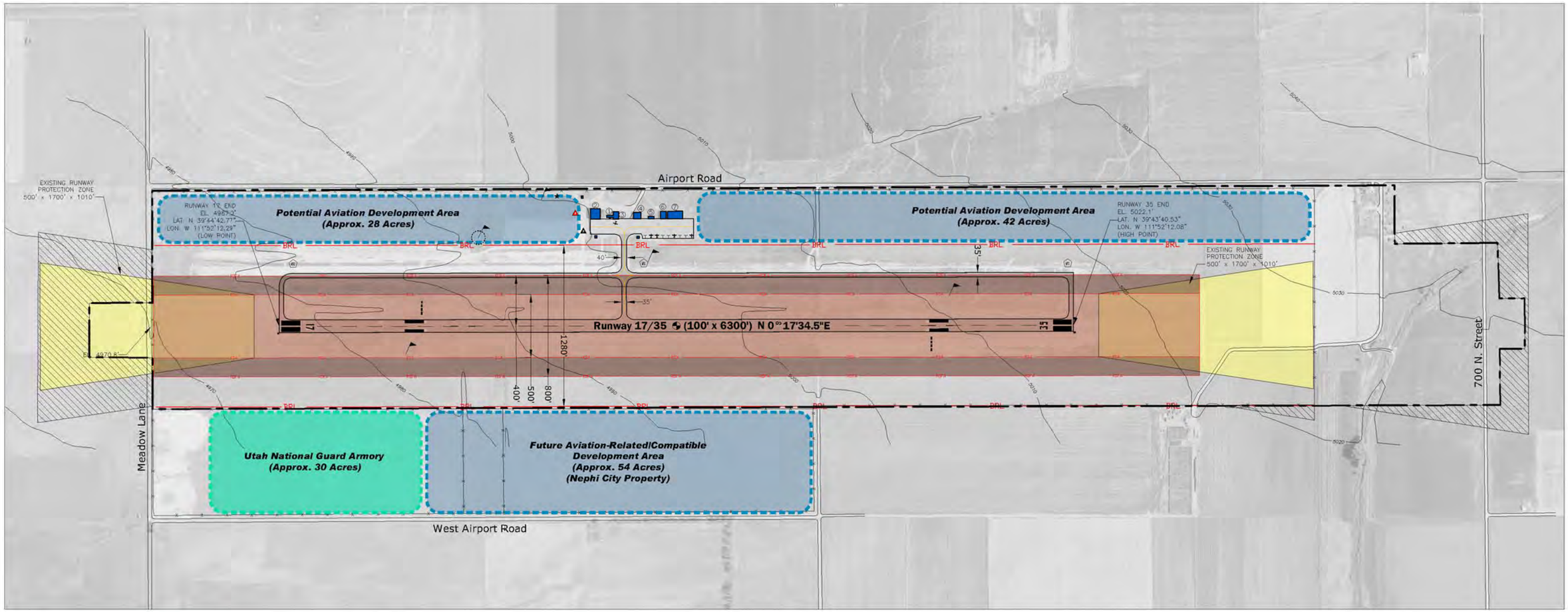
The previously referenced aircraft is the *Design Aircraft* to establish dimensional criteria only (i.e., runway/taxiway separation, runway/taxiway safety areas, aircraft parking separation, etc.) and is not intended to be used solely to dictate runway length requirements, although, it may be used in determining runway length. The following table, entitled *ARC C-II DIMENSIONAL STANDARDS FOR RUNWAY 17/35 (In Feet)*, presents a side-by-side comparison of the existing criteria dimensions with the dimensional design requirements that apply to Nephi Municipal Airport, for the specified ARC, depending on the two optional approach visibility minimum designations that are possible in the future.

Table C2
ARC C-II DIMENSIONAL STANDARDS FOR RUNWAY 17/35 (In Feet)

Item	Existing Dimension [1]	ARC C-II with Visual & ≥ ¾ Mile Visibility Minimums	ARC C-II with < ¾ Mile Visibility Minimums
Runway			
Runway Width	100	100	100
Runway Centerline to Parallel Taxiway Centerline (Taxiway "A")	400	300	400
Runway Centerline to Aircraft Parking	785	400	500
Runway Centerline to Holdline	250	250	250
Runway Safety Area Width	500[2]	500[2]	500[2]
Runway Safety Area Length beyond Runway End			
Runway 17	1,000	1,000	1,000
Runway 35	1,000	1,000	1,000
Runway Safety Area Length Prior to Landing Threshold			
Runway 17	600	600	600
Runway 35	600	600	600
Runway Object Free Area Width	800	800	800
Runway Object Free Area Length Beyond RW End			
Runway 17	1,000	1,000	1,000
Runway 35	1,000	1,000	1,000
Runway Obstacle Free Zone Width	400	400	400
Runway Obstacle Free Zone Length Beyond Runway End	200	200	200
Taxiway			
Taxiway Width	50	35	35
Taxiway Safety Area Width	79	79	79
Taxiway Object Free Area Width	131	131	131
Taxilane Object Free Area Width	115	115	115
Threshold Siting Surface Criteria Runway 17 & 35 [3]	---	Criteria Met	(Criteria Compliance To be Determined)

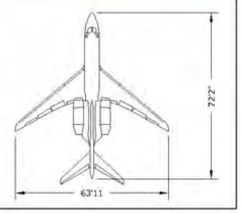
Source: AC 150/5300-13, Federal Aviation Administration.

Notes: Existing dimensions delineated in **bold** text reflect potential non-standard criteria.
[1] The Airport currently does not have any published instrument approach procedures.
[2] An RSA width of 400 feet is permissible to comply with ARC C-II dimensional standards.
[3] Applies existing Runway Type 3 criteria for Appendix 2, AC 150/5300-13 Change 14.



DESIGN AIRCRAFT

CESSNA CITATION X
ARC C-II
WEIGHT
EMPTY : 20,200 LBS.
TAKEOFF : 34,500 LBS.
LANDING : 31,000 LBS.



BUILDING LEGEND

NO.	DESCRIPTION	TOP ELEVATION
1	PILOTS LOUNGE	---
2	CORPORATE STORAGE/MAINTENANCE HANGAR	5025.9'
3	FBO MAINTENANCE HANGAR	5024.0'
4	HANGAR	5020.2'
5	HANGAR	---
6	HANGAR	---
7	HANGAR	---

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	
RUNWAY SAFETY AREA	RSA	
RUNWAY OBJECT FREE AREA	ROFA	
FUEL STORAGE AREA		
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
WIND CONE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT (ARP)		



Figure C3 Existing ARC-II Dimensional Criteria Map (Visual and Not Lower than 3/4-Mile Visibility Minimums

Nephi Municipal Airport

As can be noted in the above table and delineated in the previous illustration, Runway 17/35 at Nephi Municipal Airport is in compliance with all of the FAA specified ARC C-II design standards for both, the not lower than and the lower than ¾-mile visibility minimums. In addition, various development alternatives have been evaluated in the following *Alternatives Analysis* chapter of this document to identify/confirm the preferred recommendations needed to comply with potential future design criteria.

Objects Affecting Navigable Airspace. The criteria contained in Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, apply to existing and proposed man-made objects and/or objects of natural growth and terrain (i.e., obstructions). These guidelines define the critical areas in the vicinity of airports, which should be kept free of obstructions. Secondary areas may contain obstructions if they are determined to be non-hazardous by an aeronautical study and/or if they are marked and lighted as specified in the aeronautical study determination. Airfield navigational aids, as well as lighting and visual aids, by nature of their location, may constitute obstructions. However, these objects do not violate FAR Part 77 requirements, as they are essential to the operation of the Airport.

The current approach surfaces for each end of Runway 17/35 at Nephi Municipal Airport are classified as visual. The dimensions for a visual approach surface measure 500 feet at its inner width and 1,500 feet at its outer width and extend for a distance of 5,000 feet at an approach slope of 20:1. There is no published obstruction chart for the Airport, but according to the current Airport Master Record/Form 5010-1 for the facility, there are no *close-in* obstructions identified, and the 50:1 obstruction clearance slope is noted as clear off each end of the runway. It should be noted that any new potential obstructions identified through the preparation of this Master Plan will be evaluated in consideration of the ultimate planned approaches and associated FAR Part 77 surfaces. These obstructions will also include possible recommendations for disposition.

Runways

In consideration of the forecasts of future aviation activity, the adequacy of the runway system must be analyzed from several perspectives. These include runway orientation and airfield capacity, which were analyzed in the previous section, as well as runway length, pavement strength, and runway visibility, which will be evaluated in the following
text. The analysis of these various aspects pertaining to the runway system will provide a basis for recommendations of future improvements.

Runway Orientation. Nephi Municipal Airport currently operates with one runway, Runway 17/35, which provides a generally north-south orientation. As presented in a previous section, the existing

runway configuration provides excellent wind coverage (i.e., in excess of 98%) for the 10.5-knot crosswind component. Therefore, no additional runways need to be evaluated from a *wind coverage* standpoint.

Runway Length. The determination of runway length requirements for Nephi Municipal Airport is based on several factors. These include:

- **Airport elevation;**
- **Mean maximum daily temperature of the hottest month;**
- **Runway gradient;**
- **Critical aircraft type expected to use the Airport; and,**
- **Stage length of the longest nonstop trip destination.**

Therefore, the calculations for runway length requirements at Nephi Municipal Airport are premised on the following airport/runway specific data:

- **Airport Elevation at 5,005 feet AMSL;**
- **Mean Normal Maximum Temperature (NMT) at 93.0 degrees Fahrenheit; and,**
- **Maximum difference in runway centerline elevation at 35 feet.**

Generally, for design purposes, runway length requirements at general aviation airports are premised upon a combination of the most demanding aircraft within the general aviation fleet that are operating, or are projected to operate, at the Airport in the future. For the proposed Nephi Municipal Airport, this fleet would likely be dominated by small aircraft weighing 12,500 pounds maximum takeoff weight (MTOW) or less, with a few larger aircraft (i.e., the business jets that operate at the Airport) weighing less than 60,000 pounds MTOW. It should also be noted that pilots are able to adjust the operating weight of their aircraft based upon the specific payload requirements of their flight and the runway length available for takeoff. The specific performance capabilities of general aviation aircraft are documented through the aircraft certification process and defined by Federal Aviation Regulation (FAR) Part 23, *Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes*. Thus, both takeoff and landing procedures conducted at an airport must comply with these regulations to ensure the safety of these operations.

Runway length requirements for this study were derived from the guidance provided by AC 150/5325-4B, entitled *Runway Length Requirements for Airport Design*, which specifies the use of the 5-Step procedure for determining runway length requirements for purposes of airport design. It should also be noted that, for small aircraft having maximum certificated takeoff weights (MTOW) of 12,500 pounds or less or larger aircraft with an MTOW of more than 12,500 pounds (up to and including 60,000 pounds), use of the runway length curves specified by AC 150/5325-4B generates

runway lengths equivalent to those generated using the computer-based FAA Airport Design Software, supplied in conjunction with Advisory Circular 150/5300-13, *Airport Design.* Using this software, four values, which include the airport elevation Above Mean Sea Level (AMSL), the Mean Normal Maximum Temperature (NMT) in degrees Fahrenheit, length of haul in miles, and the maximum difference in runway elevation at the centerline, are entered into the program. As can be seen in the following table, entitled *RUNWAY 17/35 TAKEOFF LENGTH REQUIREMENTS*, there are four runway lengths shown for small aircraft type runways. Each of these provides the required length to accommodate a certain type of aircraft that will utilize the runway. The specified lengths for Nephi range from 4,680 to 6,440 feet in length.

For comparison purposes, there are also four different lengths given for large aircraft (i.e., aircraft weighing between 12,500 pounds and 60,000 pounds). The specified large aircraft runway lengths pertain to those general aviation aircraft, generally jet-powered, of 60,000 pounds or less maximum certificated takeoff weight. The runway length requirements for large aircraft range from 7,130 to 11,350 feet for Nephi Municipal Airport.

Table C3
RUNWAY 17/35 TAKEOFF LENGTH REQUIREMENTS

Runway Requirements	Runway Takeoff Length (Feet) Dry Pavement	Wet Pavement
Existing Condition		
Runway 17/35[1]	6,298	6,298
Small Aircraft with less than 10 seats [2]		
75% of Small Aircraft	4,680	4,680
95% of Small Aircraft	6,260	6,260
100% of Small Aircraft	6,440	6,440
Small Aircraft with more than 10 seats	6,440	6,440
Large Aircraft less than 60,000 pounds		
75% of fleet/60% useful load	7,130	7,130
100% of fleet/60% useful load	11,350	11,350
75% of fleet/90% useful load	8,950	8,950
100% of fleet/90% useful load	11,350	11,350
Large Aircraft more than 60,000 pounds	6,770	6,770

Source: FAA Advisory Circular, 150-5300-13, *Airport Design*.

Notes: Runway lengths based on 5,005 feet AMSL, 93.0˚F NMT, and maximum difference in runway end of 35 feet.
[1] The majority of aircraft operating at the Airport are contained within the Small Aircraft Category (i.e., ≤12,500 lbs.).

The runway length requirements shown in Table C3 are dependent upon meeting the operational requirements of a certain percentage of the fleet at a certain percentage of the useful load, (i.e., 75% of the fleet at 60% useful load). The useful load of an aircraft is defined as the difference between the maximum allowable structural gross weight and the operating weight empty. In other words, it is the load, composed of passengers, fuel, and cargo, that can be carried by the aircraft.

Runway Length Findings. Following an examination of the various runway lengths provided in the previous table, it can be noted that the existing runway length of 6,298 feet can accommodate between 95 and 100% of the Small Aircraft Fleet. In consideration of larger aircraft (i.e., aircraft weighing between 12,500 pounds and 60,000 pounds) it should be noted that this family of aircraft could be restricted at times from operating at the Airport at the longer stage lengths. As noted in the *1995 ALP Update*, the preparers and City Staff also recognized the importance of preserving the ability to construct additional runway length for the future condition to accommodate the operation of a more demanding aircraft.

Therefore, this current Master Plan will continue to illustrate a potential future runway extension of approximately 900 feet to the south, for an overall length of 7,200 feet, in consideration of the forecast increase in larger business jet aircraft operations through the planning period. From Table C3, it can also be noted that a proposed 7,200-foot runway could accommodate approximately 75% of the fleet (i.e., aircraft weighing between 12,500 pounds and 60,000 pounds) at a 60% useful load.

Runway Pavement Strength. As identified in the *Inventory of Existing Conditions* chapter of this document, Runway 17/35 is rated in good condition[3], with an existing gross weight bearing capacity of 21,000 pounds single wheel main landing gear configuration, and 30,000 pounds dual wheel main landing gear configuration. In addition, all existing airfield pavement should be tested periodically to properly ascertain existing pavement strengths.

Runway Line-of-Sight and Gradient. According to existing runway line-of-sight standards, any two points located five feet above the runway centerline must be mutually visible for the entire length of the runway. If the runway has a full-length parallel taxiway, the visibility requirement is reduced to a distance of one-half the runway length. Nephi Municipal Airport complies with the runway line-of-sight standards for the entire length of the runway.

Threshold Siting and Departure Surface Clearance Criteria. According to Appendix 2 information presented in AC 150/5300-13, "the standard shape, dimensions, and slope of the surface used for locating a

[3] A runway overlay project was completed at the Airport in 2003.

threshold are dependent upon the type of aircraft operations currently conducted or forecast, the landing visibility minimums desired, and the types of instrumentation available or planned for that runway end." For Runway 17/35 at Nephi Municipal Airport, the following threshold siting and departure surfaces were identified for evaluation:

- **Runway Type "3" [Approach end of runways expected to serve large airplanes (visual day/night); or instrument approach minimums ≥ 1 statute mile, day only].**
- **Runway Type "11" (Departure runway ends for all instrument operations)[4].**

For reference purposes, the Runway Type "3" threshold siting surface applies a 20:1 slope ratio for the obstruction clearance surface (OCS). The Runway Type "11" departure surface applies a 40:1 slope ratio for the OCS. When a penetration to a specified threshold siting surface is identified, one or more of the following steps must be implemented:

1. **The obstacle is removed or lowered to comply with specified criteria.**
2. **The runway landing threshold is displaced to comply with specified criteria.**
3. **The glide path angle (GPA) and/or threshold crossing height (TCH) is/are modified to comply with specified criteria.**
4. **Instrument approach visibility minimums are raised to comply with specified criteria.**

When a penetration to a specified departure surface is identified, one or more of the following steps must be implemented:

5. **The obstacle is removed, lowered, or relocated to comply with specified criteria. Also, within 6,000 feet of the origin of the departure surface, obstacles can be evaluated for compliance using the formula E+(0.025 x D), where E = DER elevation and D = Distance from OCS origin to object in feet.**
6. **Reduce the Takeoff Distance Available (TODA) to comply with specified criteria, resulting in a shorter operational runway length for takeoffs.**
7. **Modify standard instrument departure procedures by raising departure minimums and/or increasing specified climb gradients.**

The results of the threshold siting and departure surface screening analysis are presented in the

[4] The departure surface criteria only apply to runways with instrument operations. With only existing visual approaches to Runway 17/35, an evaluation of these surfaces has been provided for future reference purposes.

following table, entitled *RUNWAY 17/35 APPROACH/DEPARTURE CRITERIA*. As can be noted from the table, each end of Runway 17/35 was assessed independently for both threshold siting and departure surface terrain and tree penetrations.

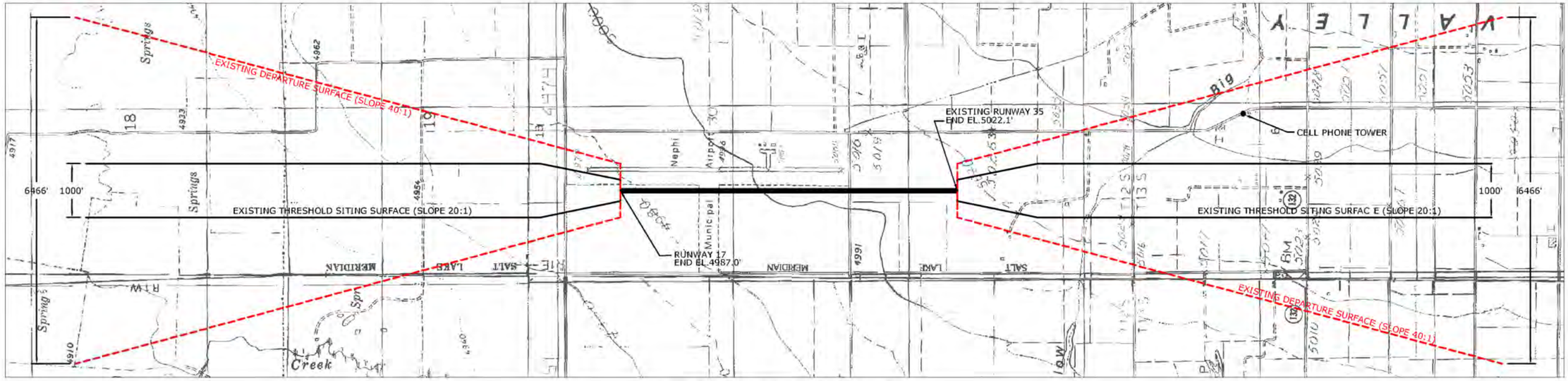
Table C4
RUNWAY 17/35 THRESHOLD SITING APPROACH & DEPARTURE SURFACE CRITERIA

Airport Site Alternatives	Threshold Siting Criteria Clearance (Terrain/Vegetation [1])	Departure Surface Clearance (Terrain/Vegetation[1])
Runway 17	Yes/Yes[2]	Yes/Yes[2]
Runway 35	Yes/Yes[2]	Yes/Yes[2]

Source: Threshold siting and departure surface evaluation prepared by BARNARD DUNKELBERG & COMPANY.

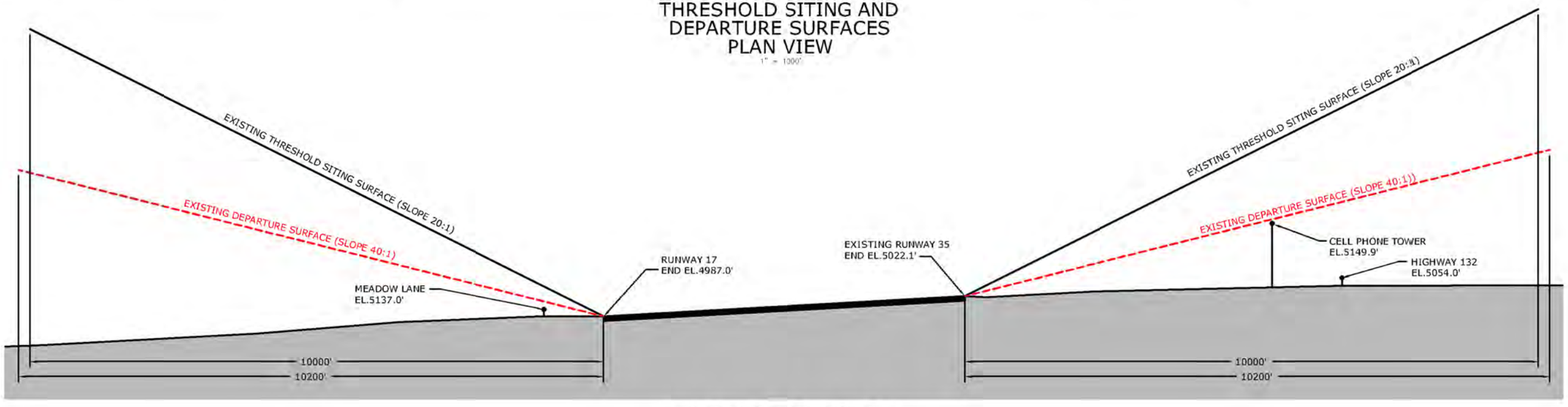
Notes:
[1] Assumes 100-foot tree heights.
[2] Clearances to be confirmed with detailed obstruction survey.

The following illustration, entitled *RUNWAY 17/35 THRESHOLD SITING & DEPARTURE SURFACES,* presents an application of the specified Airport Design screening criteria (both threshold siting and departure surfaces) for Runway 17/35. As can be noted, the existing visual approach threshold siting surfaces are clear, as well as the potential departure surfaces in consideration of the implementation of future instrument operations at the Airport.



THRESHOLD SITING AND
DEPARTURE SURFACES
PLAN VIEW

1" = 1000'



THRESHOLD SITING AND
DEPARTURE SURFACES
PROFILE VIEW

HORIZONTALLY 1" = 1,000'
VERTICALLY 1" = 100'

Figure C4 **Runway 17/35 Threshold Siting and Departure Surfaces**

Nephi Municipal Airport

Taxiways

Taxiways are constructed primarily to enable the movement of aircraft between the various functional areas on the Airport and the runway system. Some taxiways are necessary simply to provide access between aircraft parking aprons and runways, whereas, other taxiways become necessary to provide more efficient and safer use of the airfield. As described earlier, the taxiway system at Nephi Municipal Airport meets the required standards.

Taxiway improvements that were considered for development at Nephi Municipal Airport include the future extension of access taxiways and/or taxilanes to serve additional hangar development and expansion areas on the Airport. In addition, the existing access taxiway system has been evaluated with respect to existing and future departure ends of the runway. Every effort should be made to physically separate the airport roadways from taxiways, to prohibit unauthorized vehicles from accessing the Airport's aircraft movement areas, which will assist in the safety and security monitoring of the Airport.

Instrumentation and Lighting

Electronic landing aids, airport lighting, and weather/airspace services were detailed in the *Inventory of Existing Conditions* chapter of this Master Plan. As mentioned previously, the Airport currently offers only visual approaches and is not equipped with an instrument approach procedure. However, in 2002 the UDOT Division of Aeronautics contracted with Airspace Safety Analysis Corporation (ASAC) to examine the feasibility of establishing satellite-based Area Navigation (RNAV) instrument approach procedures (IAPs) at Nephi Municipal Airport. A copy of this 2002 Study is presented for reference in Appendix Four of this document. The IAP design standards that were used in this study utilized FAA criteria from Order 8260.3B Change 19, *United States Standard for Terminal Instrument Procedures*, which were applied to the original runway location that was later reconstructed approximately 400 feet to the west of the original runway. Based upon these criteria and the previous runway location, it was determined that a straight-in procedure could likely be developed to Runway 17. However, due to existing terrain constraints, which would affect final course alignment, only a circling procedure would be available for development to Runway 35.

At present, GPS approaches are anticipated to be the FAA's standard approach technology. With GPS, the cost of establishing new or improved instrument approaches at many airports can be significantly reduced. However, one of the tasks of this Master Plan is to examine the feasibility of implementing a precision approach at Nephi Municipal Airport in consideration of the *latest* FAA Order guidance for constructing and evaluating IAPs. This feasibility analysis is also based on several other factors, which include obstructions and terrain in the area, NAVAIDS, existing airspace requirements, and Air

Traffic Control Regulations and procedures. Each of these factors will be evaluated in greater detail during the final design/development of the procedure.

Instrument Approach Screening Criteria

The instrument approach screening criteria that have been utilized for this evaluation are contained in FAA Order 8260.54A, entitled *The United States Standard for Area Navigation (RNAV)* for procedures offering Localizer Performance with Vertical Guidance (LPV) minimums, and FAA Advisory Circular (AC) 150/5300-13, entitled *Airport Design*. The approach evaluation for each runway end proceeded using the following three (3) criteria evaluations:

- **Glidepath Qualification Surface (GQS) Evaluation**
- **Final & Straight Missed Approach Segment Obstacle Assessment**
- **Turning Missed Approach Segment Obstacle Assessment**

In order to create an accurate representation of the obstacle assessment surfaces, three-dimensional wireframes were created in AutoCAD, which allowed for exact XYZ coordinates and measurements of the specified FAA evaluation criteria. These wireframes were then imported to Google SketchUp and placed on geodetically- referenced aerial photography from Google Earth. The wireframes were then traced to create transparent surface models that could be overlayed on Google Earth topography and imagery to show approximate terrain penetrations. It should also be noted that Google Earth topography is based on USGS Digital Elevation Models (DEMs), which have an elevation accuracy of +/- 10 to 30 meters. As with the previous 2002 Feasibility Study, an adverse assumption estimate of 100 feet was applied for the height of trees for the evaluation of tree penetrations to the obstacle evaluation surfaces.

Glidepath Qualification Surface (GQS) Evaluation

As specified in FAA Order 8260.54A, "the GQS extends from the runway threshold along the runway centerline extended to the decision altitude (DA) point. It limits the height of obstructions between the DA and runway threshold (RWT). When obstructions exceed the height of the GQS, an approach procedure with positive vertical guidance (ILS, MLS, TLS, LPV, Baro-VNAV, etc.) is not authorized". Therefore, the first level of instrument approach screening for this analysis applied the GQS criteria using a 3.0° glide path angle. It should be noted that this GQS analysis focused primarily on existing terrain for penetrations, and there could be additional obstacle penetrations due to existing tree cover that was not visible on the existing aerial photograph.

In consideration of the existing runway end elevations at Nephi, the results of the GQS screening analysis are presented in the following table, entitled *RUNWAY 17/35 GLIDEPATH QUALIFICATION SURFACE (GQS) EVALUATION* and delineated on the following illustration, entitled *RUNWAY 17/35 GLIDEPATH QUALIFICATION SURFACE (GQS).*

Table C5
RUNWAY 17/35 GLIDEPATH QUALIFICATION SURFACE (GQS) EVALUATION

Airport/Runway	3.0° Glide Path Angle GQS Clearance	Advance Runway to Initial TERPs Analysis
Nephi Municipal Airport Runway 17 (4,987.0′ MSL)	yes	yes
Nephi Municipal Airport Runway 35 (5,022.1′ MSL)	yes	yes

Source: GQS evaluation prepared by BARNARD DUNKELBERG & COMPANY.



200' DA - 3.0° Glidepath



200' DA - 3.0° Glidepath

Figure C5 Runway 17/35 Glidepath Qualification Surface (GQS)

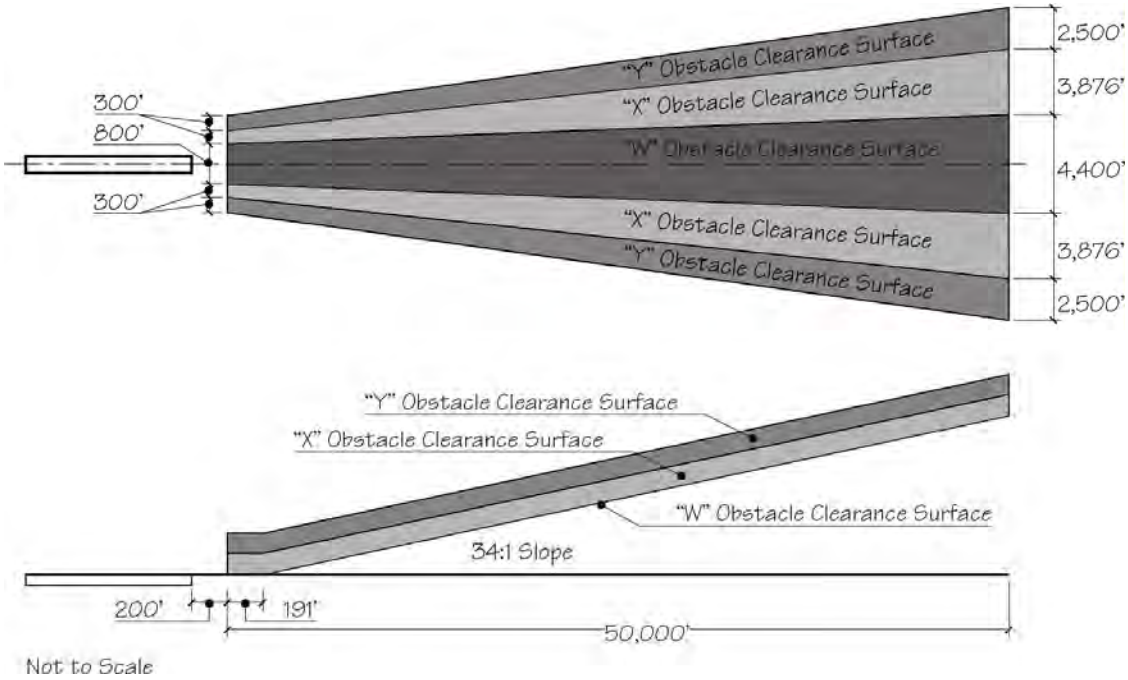
Source: Google Earth, 2009 TeleAtlas, State of Utah

Final & Straight Missed Approach Segment Obstacle Assessment

The second level of screening for this instrument approach capability assessment includes the application of criteria for the LPV Final Approach Segment (FAS)/Obstruction Evaluation Area and Straight-Out Missed Approach Segment (MAS)/Obstruction Evaluation Area. The details of these criteria are also specified in FAA Order 8260.54A.

For the LPV Final Approach Segment, the primary area obstacle clearance surface (OCS) consists of the W and X surfaces, with the Y surface being an early missed approach transitional surface. The W surface slopes longitudinally at a slope ratio of 34:1 along the final approach track and is level perpendicular to the track. The X and Y surfaces slope upward from the edge of the W surface perpendicular to the final approach track at a slope ratio of 4:1 and 7:1, respectively. Obstacles located in the X and Y surfaces are adjusted in height to account for perpendicular surface rise and evaluated under the W surface. The following figure illustrates the FAS OCS in plan and profile view as used in this evaluation.

Figure C6
LPV FINAL APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES

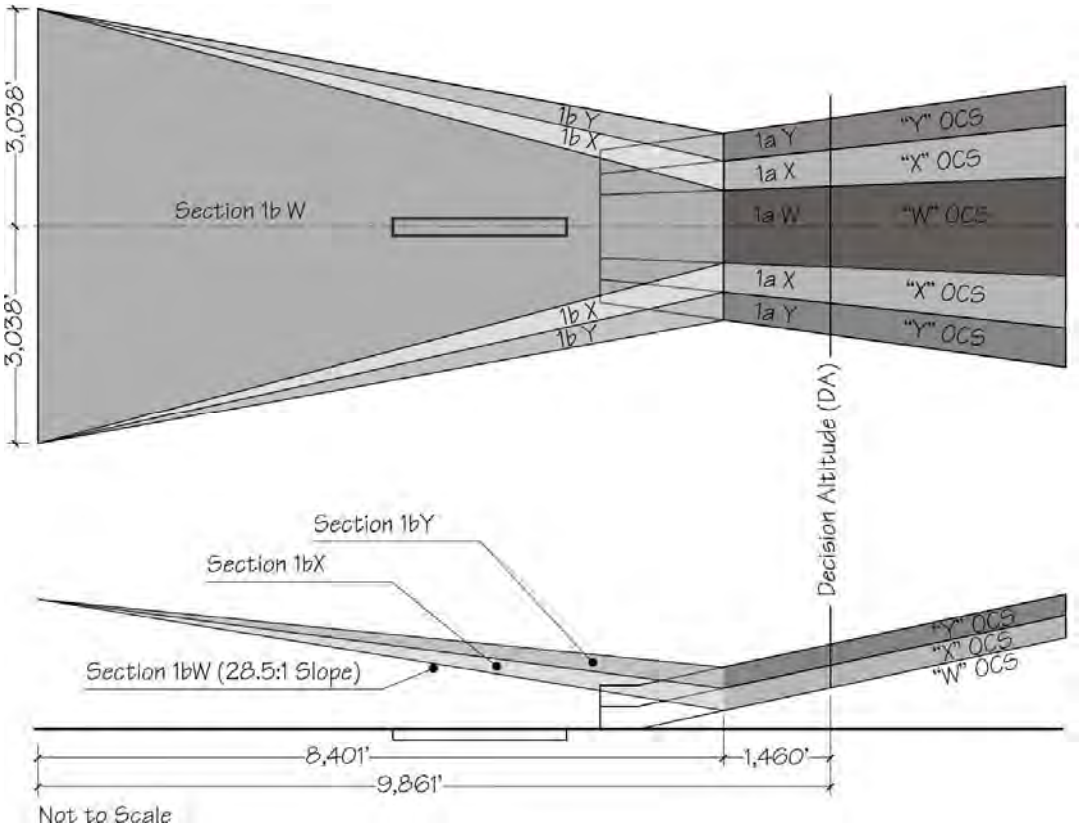


Source: Diagram prepared by BARNARD DUNKELBERG & COMPANY using information obtained from FAA Order 8260.54A, *The United States Standard for Area Navigation (RNAV).*

In consideration of the Straight-Out MAS, Section 1a is a 1,460-foot continuation of the Final Approach Segment beginning at the DA point. Section 1b begins at the end of Section 1a, extends for a distance of approximately 8,400 feet and rises at a slope ratio of 28.5:1.

The following illustration, entitled *LPV SECTION 1 MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES*, provides the specifics of the Section 1 MAS OCS.

Figure C7
LPV SECTION 1 MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES

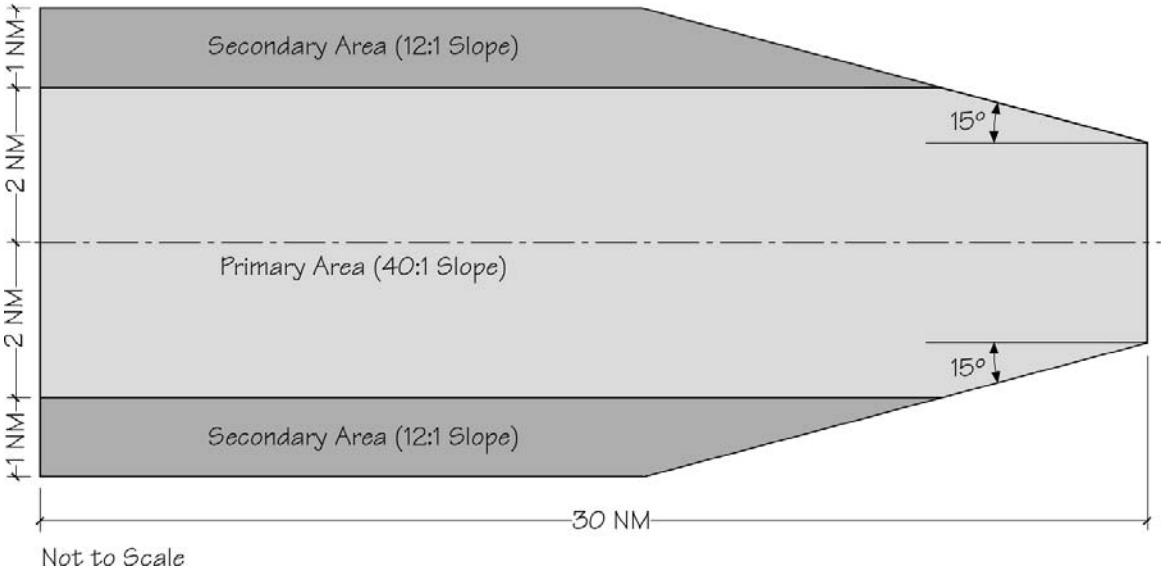


Source: Diagram prepared by BARNARD DUNKELBERG & COMPANY using information obtained from FAA Order 8260.54A, *The United States Standard for Area Navigation (RNAV)*.

Section 2 of the MAS begins at the end of 1b, utilizing a splay of 15°, and extends with a slope ratio of 40:1 until reaching a full width of 6 NMs within a length of up to 30 NMs. Figure C8, entitled

LPV SECTION 2 MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES, illustrates the details of the Section 2 Missed Approach Segment OCS.

Figure C8
LPV SECTION 2 MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES



Source: Diagram prepared by BARNARD DUNKELBERG & COMPANY using information obtained from FAA Order 8260.54A, *The United States Standard for Area Navigation (RNAV).*

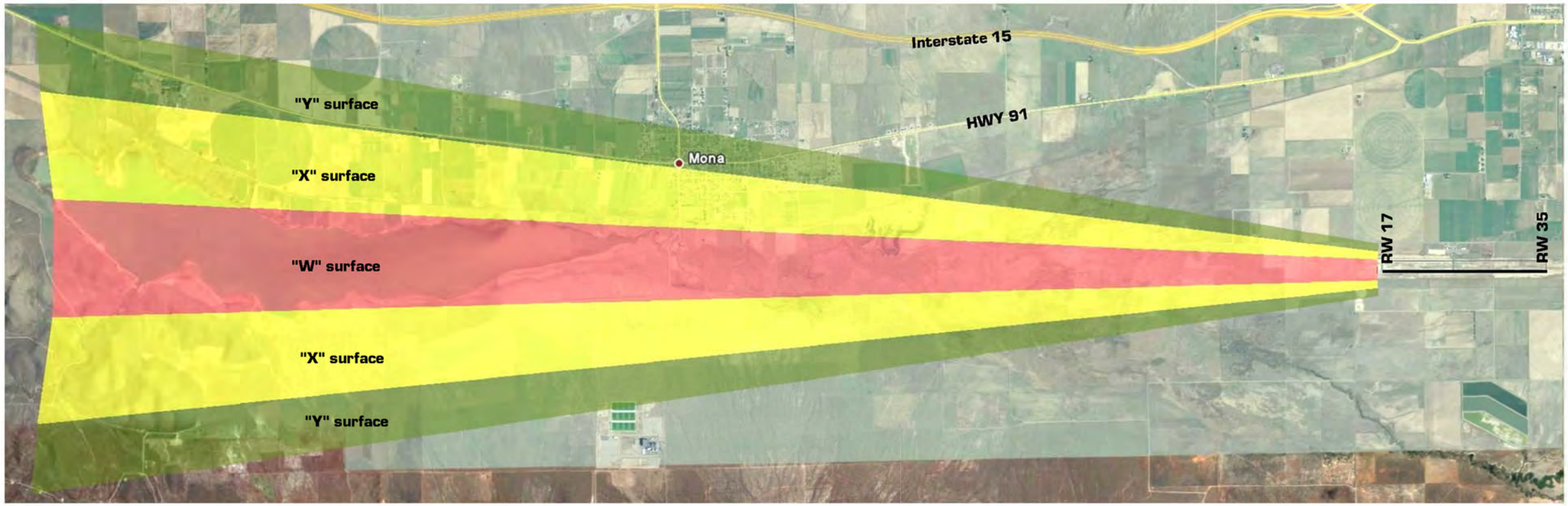
The results of the final approach and straight missed approach segment screening analysis are presented in the following table, entitled *FINAL & STRAIGHT MISSED APPROACH SEGMENT OBSTACLE ASSESSMENT (200-FOOT DA)*. It should also be noted that the evaluation of a 200-foot DA was selected based upon the scope of services for this project to evaluate a future precision instrument approach procedure at the Airport. As can be determined from the table, each end of Runway 17/35 was carried forward for this second level of screening and assessed independently for both the final approach and missed approach segments. The final approach segment for each runway end, as well as the Runway 35 straight missed approach segment, appears to be clear and free of terrain/tree obstructions. However, there are some potential terrain/tree obstructions identified within the *Section 2 Transitional Surface* of the Runway 17 straight missed approach surface.

Table C6
FINAL & STRAIGHT MISSED APPROACH SEGMENT OBSTACLE ASSESSMENT (200-FOOT DA)

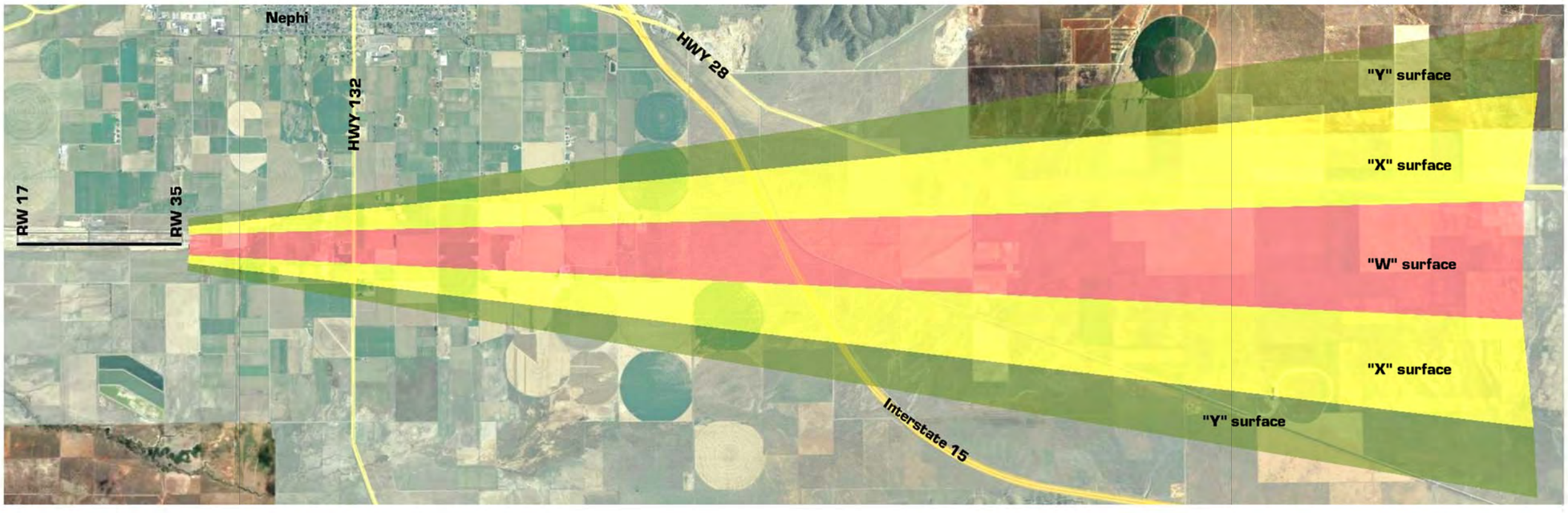
Airport/Runway	Final Approach Segment Obstacle Assessment (Terrain/Vegetation[1] Area)	Straight Missed Approach Segment Obstacle Assessment (Terrain/Vegetation[1] Area)
Nephi Municipal Airport Runway 17	none/none	yes/yes
Nephi Municipal Airport Runway 35	none/none	none/none

Source: Final & straight-out missed approach evaluation prepared by BARNARD DUNKELBERG & COMPANY.
[1] Assumes 100-foot tree heights.

The following illustrations, entitled *RUNWAY 17/35 FINAL APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES (OCS)* and *RUNWAY 17/35 STRAIGHT MISSED APPROACH SEGMENT OBSTACLE CLEARANCE SURFACES (OCS),* present an application of the specified OCS screening criteria for Nephi Municipal Airport.



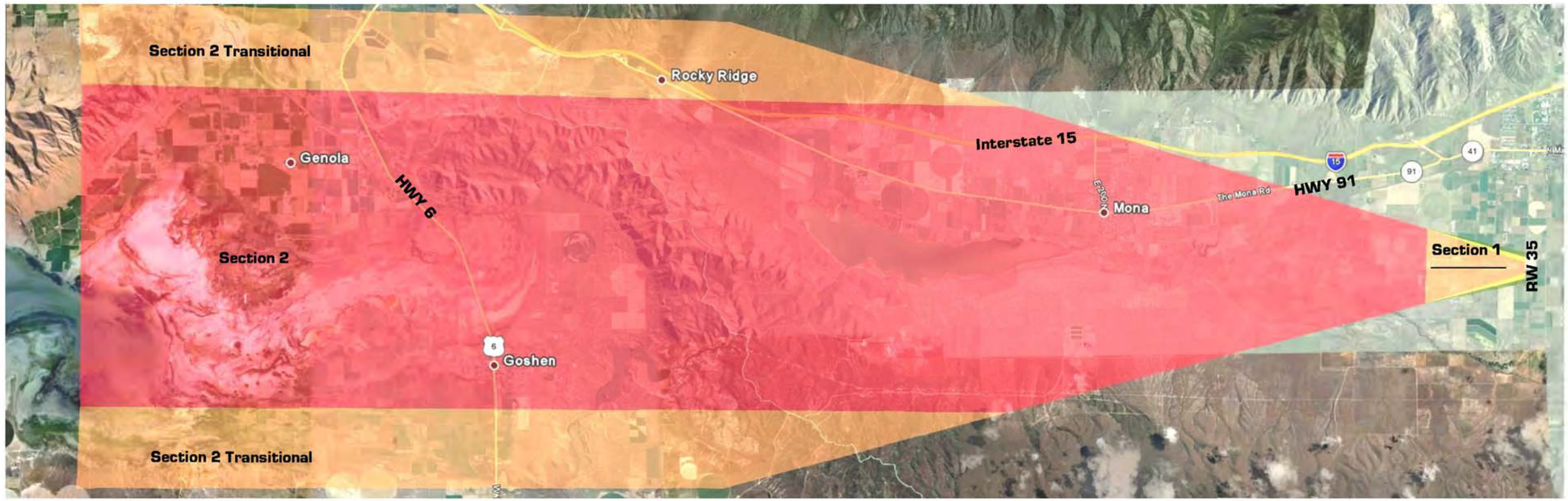
RW 17 Final Approach
Obstacle Clearance Surfaces (WXY)



RW 35 Final Approach
Obstacle Clearance Surfaces (WXY)

Figure C9 Runway 17/35 Final Approach Segment Obstacle Clearance Surfaces ((OCS)

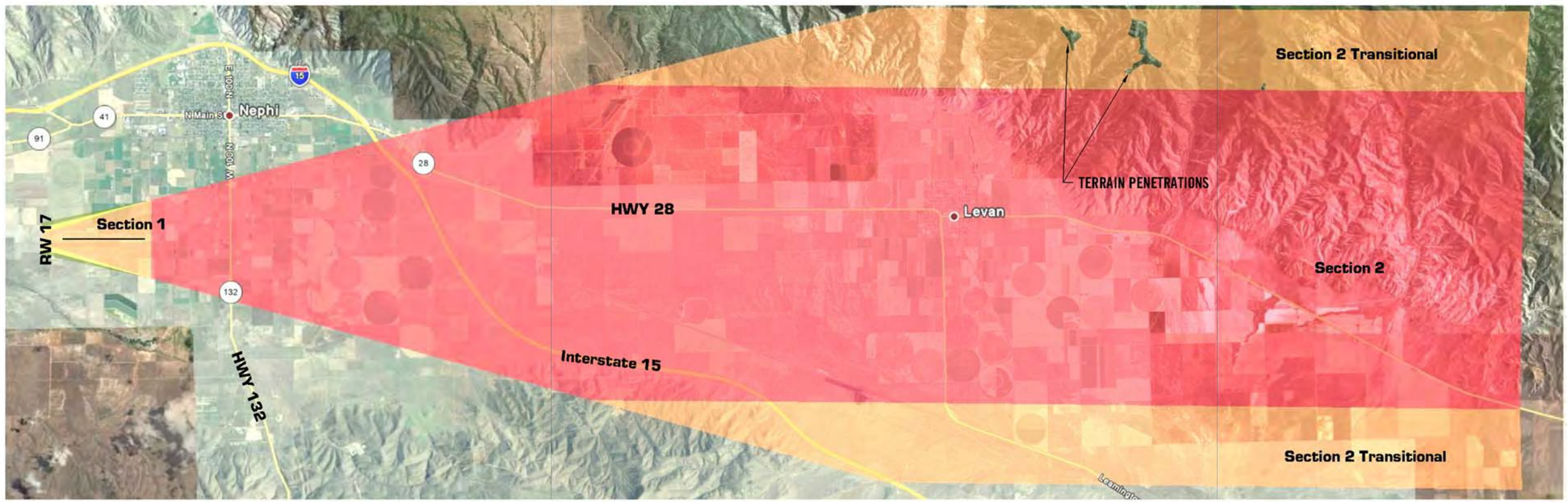
Source: Google Earth, 2009 TeleAtlas, State of Utah



RW 35 Straight-out

Missed Approach

Obstacle Clearance Surfaces (Section 1 & 2)



RW 17 Straight-out

Missed Approach

Obstacle Clearance Surfaces (Section 1 & 2)

Figure C10 Runway 17/35 Straight: Missed Approach Segment Obstacle Clearance Surfaces (OCS)

Source: Google Earth, 2009 TeleAtlas, State of Utah

Turning Missed Approach Segment Obstacle Assessment

For Runway 17, which has been carried forward to this third level of screening for the instrument approach capability assessment, it has been shown that a straight-out missed approach would not likely be feasible due to the positioning of the mountainous terrain located southeast of the Airport. Therefore, the criteria for a turning missed approach procedure, which is also specified in FAA Order 8260.54A, are available for evaluation in conjunction with the specified approach procedures. In consideration of the Turning Missed Approach Segment, the Section 1a and 1b areas are the same as those described previously for the Straight-Out Missed Approach Segment. There is an additional straight segment of Section 2, which represents the balance of the Turn Initiation Area (TIA) that must be accommodated prior to the boundary of the turning portion of Section 2, and all obstacles within Section 2 are to be evaluated with a slope ratio of 40:1.

Based upon the findings of the obstacle assessment for the straight-out missed approach procedure defined previously, and the results of the 2002 Instrument Approach Feasibility Study (see Appendix Four for reference), it was determined that a future missed approach to Runway 17 could likely be accommodated with the use of a 180° turning missed approach procedure, and thus avoid the obstructing terrain to the southeast of the Airport. In addition, it was specified in the 2002 Feasibility Study that a DA of 5,598 feet AMSL (i.e., a 611-foot height-above-threshold) would be required for the Runway 17 approach to mitigate the obstructing terrain within the turning missed approach obstacle clearance surfaces.

Instrument Approach Evaluation Findings. The initial LPV instrument approach screening indicates that there are no known obstructions within the GQS for each end of Runway 17/35; however, this fact will still need to be confirmed with a detailed obstruction survey in accordance with criteria specified in Advisory Circular 150/5300-16A, *Geodetic Control*. Subsequent screening indicates various obstructions are located within the Runway 17 missed approach surface; however, potential terrain or vegetation obstructions do not necessarily preclude establishing an LPV approach. Any trees located on or in close proximity to airport property can be removed or trimmed to mitigate the obstruction. Options available to mitigate other obstructions within the MAS OCS include one or more of the following actions:

- **Raise the glide path angle.**
- **Increase the threshold crossing height.**
- **Increase the decision altitude.**

Additionally, another option available for mitigating obstructions within Section 2 of the missed approach surface OCS is to implement a turning missed approach course (this is the procedure that

was identified for possible implementation in the 2002 Instrument Approach Feasibility Study). As identified previously, a turn at altitude or turn at fix missed approach course can likely be implemented that will mitigate the existing terrain/tree obstructions. The greater the distance from the airport facility an obstruction is located, the more likely it is that a turning missed approach procedure can be used to avoid the obstruction. Therefore, it is recommended that the airspace be protected for an instrument approach procedure with vertical guidance (APV), providing ½-mile approach visibility minimums at the Airport to each runway end (both Runways 17 & 35).

According to Appendix 16 of AC 150/5300-13, an APV with these specified minimums would also require an Approach Lighting System (ALS), and, therefore, the siting requirements for a potential ALS should be protected for implementation on the Airport Layout Plan. In addition, the runway should comply with standard runway markings and standard holding position signs, provide clear obstacle free zones, and have imaginary surfaces free of obstructions. As noted in the previous section, Runway 17/35 does comply with current ARC C-II standards.

Visual Landing Aids/Lighting. Presently, the runway at Nephi Municipal Airport is equipped with Medium Intensity Runway Lights (MIRLs), with both Precision Approach Path Indicators (PAPIs) and Runway End Identifier Lights (REILs) serving each runway end. The MIRLs should be maintained in conjunction with the existing/proposed instrument approach procedures. In addition, Medium Intensity Taxiway Lights (MITLs), which are presently in place on Taxiway "A" should also be maintained.

Glide path indicator lights are a system of lights that provides visual vertical approach slope guidance to aircraft during an approach to the runway. Precision Approach Path Indicators (PAPIs) or Visual Approach Slope Indicators (VASIs) are designed for day and nighttime use during VFR (i.e., good weather) conditions. The existing Precision Approach Path Indicators (PAPIs) are recommended to be retained at each runway end.

Runway End Identifier Lights (REILs) are a system of lights that provide an approaching aircraft a rapid and positive identification of the approach end of the runway. At present, each runway end is equipped with REILs and it is recommended that the Runway 17 REILs be maintained until the need for a future Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) is confirmed, contingent upon the visibility minimums that can be achieved with the future instrument approach procedures at the Airport.

Runway Protection Zones (RPZs). The function of the Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground off the end of runways. This is achieved through

airport control of the property within the RPZ area. This control can be exercised through either fee-simple ownership or the purchase of an RPZ easement. The RPZ is trapezoidal in shape and centered about the extended runway centerline. Its inner boundary begins 200 feet beyond the end of the area usable for takeoff or landing. The dimensions of the RPZ are functions of the type of aircraft that regularly operate at the Airport, in conjunction with the specified visibility minimums of the approach (if applicable).

In regards to the existing visual approaches for each runway end, and the type of aircraft the runway is currently accommodating, the existing RPZ dimensions can be maintained in consideration of the ARC C-II dimensional criteria. However, the RPZ dimensions would have to be enlarged to accommodate the implementation of instrument approach procedures offering visibility minimums lower than ¾-mile. The larger RPZ dimensions may also necessitate additional RPZ easement or property acquisition, with the required acreage being dependent upon the ultimate location of the Runway 35 threshold and the specified visibility minimums of the approach. The following table, entitled *RUNWAY PROTECTION ZONE DIMENSIONS*, lists the existing RPZ dimensions, along with the dimensional requirements for improved approach capabilities and/or more demanding approach category aircraft.

Table C7
RUNWAY PROTECTION ZONE DIMENSIONS

Item	Width at Runway End (feet)	Length (feet)	Width at Outer End (feet)	Airport Controls Entire RPZ
Existing RPZ Dimensional Requirements:				
Runway 17	500	1,700	1,010	Yes[1]
Runway 35	500	1,700	1,010	Yes
Required RPZ Dimensions for Various Visibility Minimums:				
Visual and not lower than 1-mile, Small Aircraft Only	250	1,000	450	---
Visual and not lower than 1-mile, Approach Categories A & B	500	1,000	700	---
Visual and not lower than 1-mile, Approach Categories C & D[2]	500	1,700	1,010	---
Not lower than 3/4-mile, all aircraft	1,000	1,700	1,510	---
Lower than 3/4-mile, all aircraft	1,000	2,500	1,750	---

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

Notes:
[1] Property interests include RPZ Easements.
[2] The existing RPZs as delineated on the current ALP are sized in accordance with Approach Category A & B aircraft.
--- Data not applicable.

Landside Requirements

Landside facilities are those facilities that support the airside facilities but are not actually a part of the aircraft operating surfaces. These consist of such facilities as terminal buildings, hangars, aprons, access roads, and support facilities. Following a detailed analysis of these facilities, current deficiencies can be noted in terms of accommodating both existing and future aviation needs at the Airport.

General Aviation Requirements

Aircraft based at Nephi Municipal Airport are stored in one of four areas: executive hangars, FBO storage hangars, or apron tiedowns. Currently, there are ten aircraft based at the Airport. Over the course of the 20-year planning period, the number of based aircraft is forecast to increase to 20, indicating that an increase in storage facilities to accommodate approximately ten new aircraft may be required. It is assumed that future storage spaces will reflect many of the same characteristics of current storage patterns, with the majority of the based aircraft fleet being stored in hangars. It should be noted that future storage facility projections have only been generated for the civilian aircraft category.

For the military category, preliminary planning is underway for the possible future development of a new National Guard Armory adjacent to the Airport, which could potentially require the basing of military aircraft, both helicopters and fixed wing aircraft. However, since the new Armory is in the preliminary planning phase, no estimates of based military aircraft have been developed for this master planning effort. It should also be noted that the ultimate development and operation of the Armory facility would be separate from the Airport and likely be operated as a *through-the-fence* operation.

Tiedown Storage Requirements/Based Aircraft. Aircraft tiedowns are provided for those aircraft that do not require or desire to pay the cost for hangar storage. Space calculations for these areas are based on 300 square yards of apron for each aircraft tiedown. This amount of space allows for aircraft parking and circulation between the rows of parked aircraft. Based upon existing aircraft storage practices and strong demand for new hangar facilities, it is projected that a significant number of new aircraft, as well as existing based aircraft that are currently stored on the apron, would prefer to have enclosed hangar storage. With the excess-based aircraft apron then being available for transition to use as either itinerant aircraft apron and/or possibly T-hangar facilities, it is projected that the based aircraft apron requirements will generally decline through the planning period at the Airport.

Tiedown Storage Requirements/Itinerant Aircraft. In addition to the needs of the based aircraft tiedown areas addressed in the preceding section, transient aircraft also require apron parking areas at Nephi Municipal Airport. This storage is provided in the form of transient aircraft tiedown space. In calculating the area requirements for these tiedowns, an area of 500 square yards per aircraft has been used. As previously described, it is anticipated that the forecast decreasing demand for the based aircraft apron would be available for use to accommodate a portion of the forecast increase in demand for itinerant aircraft apron and T-hangars through the planning period. The development plan for the Airport will designate adequate areas for future apron development to satisfy the additional demand.

The accompanying table shows the type of facilities and the number of units or acres needed for that facility in order to meet the forecast demand for each development phase. It is expected that most of the owners of aircraft that will be newly based at the Airport will desire some type of indoor storage facility. The actual type of hangar storage facility to accommodate based aircraft has been identified as T-hangars, executive hangars, and larger corporate and/or FBO-type hangars, although, the actual number, size, and location of the larger hangar types will depend on user needs and financial feasibility. In addition, access and perimeter roadway locations and auto parking requirements are not included in this tabulation, because the amount of land necessary for these facilities will be a function of the location of other facilities, as well as the most effective routing of roadways. The following table, entitled *GENERAL AVIATION FACILITY REQUIREMENTS, 2008-2028*, depicts the area required for general aviation landside facilities during all stages of development. This will assist in the development of detailed facility staging discussed in later chapters of this document.

Table C8
GENERAL AVIATION FACILITY REQUIREMENTS, 2008-2028

	Total Number Required (In Acres)				
Facility	**2008** [1]	**2013**	**2018**	**2023**	**2028**
Itinerant/GA Apron	0.2	0.2	0.3	0.4	0.5
Based A/C GA Apron	---	1.0	0.9	0.9	1.2
Total Apron (acres)	**0.2**	**1.2**	**1.2**	**1.3**	**1.7**
Hangar Space					
T-Hangars (no./acre)	0/0	1/0.2	1/0.2	1/0.2	1/0.2
Exec./Corp. (no./acre)	4/0.8	6/1.2	8/1.6	10/2.0	13/2.6

Source: BARNARD DUNKELBERG & COMPANY projections based on FAA AC 150/5300-13.

Potential Utah Army National Guard Armory Facility

As identified in the *Inventory* chapter, preliminary planning has been underway between the Utah National Guard and Nephi City for the possible future development of a new National Guard Armory on approximately 30 acres adjacent to the northwest boundary of the Airport. The first official steps in this process have been concluded with a property exchange between Nephi City and the Utah National Guard. In the exchange agreement that was signed in May of 2009, the Utah National Guard exchanged five acres highway frontage property in Nephi City for thirty (30) acres of property adjoining the northwest corner of airport property.

Though no development timeframe has been established, a possible development scenario could include the relocation/dispersal of some of the aviation assets (i.e., a percentage of the of AH-64 Apache and/or UH-60 Blackhawk helicopters and their associated support functions) from South Valley Regional Airport to Nephi Municipal Airport, which would provide an alternate basing/staging location for response to natural disasters and/or security threats. The new Armory facility would likely necessitate the development of hangars, operations buildings, maintenance facilities, and various support facilities. In addition, vehicular access to the Armory would be provided from the existing county road that parallels the northern boundary of the Airport.

Single-Engine Air Tanker (SEAT) Firefighting Base

Also as identified in the *Inventory* chapter, Nephi Municipal Airport is currently designated by the Bureau of Land Management as a temporary location for a SEAT firefighting base. When activated on an as-needed basis during the summer fire season (i.e., June-September), the Nephi SEAT firefighting base operation consists of two to four Air Tractor 802 tanker aircraft that are staged from the existing general aviation apron and managed from the existing office/trailer that is leased from the Airport's current Aviation Service Operator (i.e., Mt. Nebo Aviation). The tanker aircraft are refueled on the Airport from the existing self-service fueling facility and re-loaded with water or retardant from two 6,000 gallon above ground storage tanks that are located adjacent to the general aviation apron and central connector taxiway. In addition, the Nephi Volunteer Fire Department currently provides a support role to the SEAT Base when in operation by trucking in water from an offsite location to replenish the water storage supplies. This required fire department support role could be eliminated with the extension of City water service lines to the Airport, which currently relies upon wells for its water supply.

The BLM has expressed some interest in establishing a permanent SEAT Base installation at the Airport that would likely be activated on a seasonal basis. Therefore, a potential SEAT Base development area will be identified on the east side of the Airport to accommodate their specified

operational requirements. It is also recommended that a written agreement be established between Nephi City and the BLM for the use of the Airport during the summer fire season.

Support Facilities Requirements

In addition to the aviation facilities described above, there are several airport support facilities, which have quantifiable requirements and which are vital to the efficient and safe operation of the Airport. The support facilities at Nephi Municipal Airport that require further evaluation include the fuel storage facility and airport infrastructure development.

Fuel Storage Facility. According to fuel sale data provided by airport management, there has been an average of 9,847 gallons of AVGAS and Jet A fuel sold per year at Nephi Municipal Airport over the past three years to aircraft operators. Based on 2008 total operation counts, this equates to just under two and one-half gallons per operation. Typically, as operations increase, fuel storage requirements can be expected to increase proportionately. By increasing the ratio of gallons sold per operation, an estimate of future fuel storage needs can be calculated as a two-week supply during the peak month of operations. As can be seen in the following table, entitled *FUEL STORAGE REQUIREMENTS, 2008-2028*, it appears that the Airport's fuel storage requirements can be accommodated through the year 2028 utilizing existing storage facilities. However, this projection will be dependent upon the percentage breakdown of fuel types sold at the Airport over the planning period and may necessitate additional fuel storage capacity of either fuel type. Therefore, adequate expansion area will be reserved in the vicinity of the existing fuel farm to accommodate additional fuel storage tanks.

Table C9
FUEL STORAGE REQUIREMENTS, 2008-2028

	2008[1]	2013	2018	2023	2028
Average Daily Operations in Peak Month	19	23	28	33	39
Two-Week Operations	273	325	386	460	547
Gallons per Operation	2.4	3	4	5	6
Fuel Storage (Gallons)	12,000 [2]	974	1,545	2,298	3,282

Source: BARNARD DUNKELBERG & COMPANY.

Notes:
[1] Base year estimates.
[2] Existing fuel storage is represented by 50% AVGAS and 50% Jet A.

Airport Infrastructure Development. Future development of both aviation and/or aviation-related development areas within the northwest and east sides of the Airport will require the extension of access roadways and utilities (e.g., electricity, water, sanitary sewer, etc.), and the projected cost of this infrastructure development should be incorporated into the future development costs for this area.

Planning Issues Identification/Verification

Identification of the current and future airport planning issues, which may influence the use of a public facility, is an important step in the planning process. A preliminary list of these issues has been identified to assist in the key decision points of this Master Plan.

The following list identifies those issues that were considered in the preparation of the airside and landside development plan alternatives for Nephi Municipal Airport, and will ultimately provide the basis for the formulation of the future recommended plan for this facility. These issues, which have been organized into airside, landside and airport management categories, are referenced in more than one category, due to their connectivity or boundary relationships.

Airside Issues:

- Confirm Appropriate Future Airport Design Standards
- Prevent Future Non-Standard Design Criteria
- Identify/Confirm Future Instrument Approach Procedure Development Recommendations
- Maintain Existing Airport Infrastructure Development
- Expand Airport Infrastructure Development as Needed
- Recognize Environmental Issues in Consideration of Future Airport Development (i.e., Aircraft Noise, Aircraft Overflights, Land Use Compatibility with Surrounding Development, etc.)

Landside Issues:

- Confirm Appropriate Future Airport Design Standards
- Identify Future General Aviation Development Areas to Accommodate Existing/Future Demand (Hangars and Tiedown Apron)

- Verify Future Roadway Improvements Surrounding Airport to Coordinate Design and Development Considerations
- Maintain Existing Airport Infrastructure Development
- Expand Airport Infrastructure Development as Needed
- Identify Future Development Area for the SEAT firefighting base
- Maintain Aviation Security
- Promote Financial Self-Sufficiency for the Airport
- Recognize Environmental Issues in Consideration of Future Airport Development (i.e., Aircraft Noise, Aircraft Overflights, Land Use Compatibility with Surrounding Development, etc.)

Airport Management Issues:

- Identify Future General Aviation Development Areas to Accommodate Existing Demand (Hangars and Tiedown Apron)
- Coordinate Future Operational Agreements with the Proposed Utah National Guard Armory Facilities
- Coordinate Future Operational Agreements with the BLM for the Proposed SEAT firefighting base in the form of written agreements
- Maintain Aviation Security
- Promote Airport Compatibility with Surrounding Community
- Promote Financial Self Sufficiency of the Airport
- Recognize Environmental Issues in Consideration of Future Airport Development (i.e., Aircraft Noise, Aircraft Overflights, Land Use Compatibility with Surrounding Development, etc.)

Summary

The need for facilities, which have been identified in this chapter, can now be utilized to formulate the overall future Development Plan of the Airport. The following table summarizes the projected facility requirements necessary to accommodate the projected operational demands through 2028. The formulation of this plan will begin by establishing goals for future airport development and an

analysis of development alternatives, whereby demand for future airport facilities can be accommodated. These alternatives are presented in the following chapter, entitled *DEVELOPMENT CONCEPTS AND RECOMMENDATIONS*.

Table C10
FACILITY REQUIREMENTS SUMMARY, 2008-2028

Facility	2008[1]	2013	2018	2023	2028
Dimensional Standards					
Runway 17/35	ARC C-II	same	same	same	same
Runway Width/Length					
Runway 17/35	100' x 6,298'	same	same	same	100' x 7,200'
Instrument Approach Enhancement					
Runway 17 APV [2]	none	≥ ¾-mile	same	same	same
Runway 35 APV [2]	none	≥ ¾-mile	same	< ¾-mile	same
Approach Lighting System					
Runway 35	none	MALSR	same	same	same
General Aviation Apron Requirements (In Acres)					
Itinerant	0.2	0.2	0.3	0.4	0.5
Based	---	1.0	0.9	0.9	1.2
Total	*0.2*	*1.2*	*1.2*	*1.3*	*1.7*
General Aviation Aircraft Storage Facilities (No./Acres)					
T-Hangars	0/0	1/0.2	1/0.2	1/0.2	1/0.2
Exec./Corp.	4/0.8	6/1.2	8/1.6	10/2.0	13/2.6
Support Facilities					
Fuel Storage (gallons)	12,000	same	same	same	same

Source: BARNARD DUNKELBERG & COMPANY.

Notes:
[1] Actual.
[2] Potential instrument approach development capability [.e., approach with vertical guidance (APV)] will be preserved on the ALP and within the master planning document. However, recommendation for improvement will be dependent upon completion of an FAA instrument approach study for each end of Runway 17/35.

D. Development Concepts and Alternatives Analysis

Master Plan

Nephi Municipal Airport

D. Development Concepts and Alternatives Analysis

INTRODUCTION. The purpose of this chapter is to present the Development Plan Alternatives and/or Recommendations for Nephi Municipal Airport in terms of both their concept and reasoning. Therefore, several basic assumptions have been established, which are intended to direct the future development and maintenance of the Airport. These assumptions are supported by the aviation activity forecasts and include a commitment for continued airport development, which supports the economic development needs of the region.

Development Assumptions

Assumption One. The Airport will be developed and operated in a manner that is consistent with local ordinances and codes, federal and state statutes, federal grant assurances, and Federal Aviation Administration (FAA) regulations.

Assumption Two. This assumption recognizes the role of the Airport. The Airport will continue to serve as a facility that primarily accommodates general aviation activity, with a special focus on increased use by business jet aircraft. Scheduled passenger service activity does not occur at the Airport presently and is not presently anticipated in the future.

Assumption Three. The third assumption states that the existing visual approaches to Runway 17/35 will be evaluated for future instrument approach upgrades, in consideration of the potential runway extension and the existing ARC C-II design standards.

Assumption Four. The fourth assumption states that the landside development potential of the Airport's east side will be maximized, through infill development prior to initiating development on the northeast and southeast areas of the Airport.

Assumption Five. The fifth assumption focuses on the relationship of the Airport to off-airport land uses and the compatible and complementary development of each. This is inherent in the design considerations and placement of facilities so as to complement, to the maximum extent possible, off-

airport development, and to ensure the continued compatibility of the airport environs with the operation of the Airport.

Goals for Development

Accompanying these assumptions are several goals, which have been established for purposes of directing the plan and establishing continuity in the future development of the Airport. These goals take into account several categorical considerations relating to the needs of the facility, both in the short-term and the long-term, including safety, noise, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness. While all are project-oriented, some obviously represent more tangible activities than others; however, all are deemed important and appropriate to the future of the Airport.

The following goals are intended to guide the preparation of this Airport Master Plan, and direct the future development of Nephi Municipal Airport:

- **Plan the Airport to safely accommodate the forecast aircraft fleet, with facilities properly sized to accommodate the projected forecast demand.**
- **Program facilities to be constructed when demand is realized (construction is to be driven by actual demand, not forecast demand).**
- **Ensure that the future development of the Airport will continue to accommodate a variety of general aviation activities, ranging from small general aviation users to small corporate aviation operators.**
- **Enhance the self-sustaining capability of the Airport and ensure the financial feasibility of all future development.**
- **Develop land acquisition priorities (i.e., fee simple and/or easement), if necessary, related to airport safety, future airport development, and land use compatibility.**
- **Encourage the protection of existing public and private investment in land and facilities, and advocate the resolution of any potential land use conflicts, both on and off airport property.**
- **Plan and develop the Airport to be environmentally compatible with the community and minimize environmental impacts on airport property.**
- **Plan and develop/expand utilities/infrastructure to support airport tenants and users.**
- **As development continues, plan for expanded snow removal and infrastructure maintenance.**
- **Provide effective direction for the future development of the Airport through the preparation of a rational plan and adherence to the adopted development program.**

Airside & Landside Development Concepts

Introduction

Various development options have been identified for evaluation and are presented in the following development plan analysis. It is important to note that a final recommended Conceptual Development Plan will be prepared based on the analysis of these planning issues, and the recommended plan will likely represent a combination of the various development concepts presented. However, prior to the presentation of the various development options, a listing of the key airport airside and landside planning issues for the runway has been generated, and is presented in the following text:

Airside Planning Issues

- **ARC Dimensional Criteria**
- **Runway Dimensions**
- **Parallel Taxiway System**
- **Pavement Strength**
- **Instrument Approach Criteria**
- **Runway Lighting & Navigational Aids**

Airside Alternatives

To accommodate the projected operational demand at Nephi Municipal Airport through the year 2028 (i.e., the end of the 20-year planning period), various airside and landside planning alternatives will be examined relative to the previously specified planning issues. Both the forecast operations and the goals of the Nephi City, relative to aviation development and economic enhancement, have been incorporated into this planning effort.

Based upon the environmental information previously identified in the *Inventory of Existing Conditions* chapter, a brief summary of potential key environmental impacts related to the alternatives will be provided. This review of potential environmental impacts will assist the Airport Sponsor with the selection of a recommended alternative that can be supported by the FAA during the future National Environmental Policy Act (NEPA) study process. In addition, a graphic summary of the selected planning recommendations for Nephi Municipal Airport is presented in Figure D12, entitled *CONCEPTUAL DEVELOPMENT PLAN*, located at the end of this chapter.

ARC Dimensional Criteria

As presented in the previous chapter, Runway 17/35 is currently designed in accordance with Airport Reference Code (ARC) C-II design criteria, as specified by the FAA. These are the standards that apply to the "Design Aircraft", in consideration of wingspan and approach speed, which currently utilizes this runway or that are projected to utilize this runway in the future.

As presented in the previous chapter, the Airport meets or exceeds all of the ARC C-II design standards for the existing runway and parallel taxiway system, which include the existing Runway Safety Area (RSA) and Runway Object Free Area (ROFA) design standards. Based upon the Airport's existing and projected operational activity, the ARC C-II design standard is the appropriate dimensional criteria designation for this runway.

Therefore, the Airport Sponsor has elected to maintain the existing application of the ARC C-II design criteria, as illustrated in the previous chapter, and these standards will be depicted on the Conceptual Development Plan for the Airport.

Runway Dimensions

The existing Runway 17/35 length of 6,298 feet is adequate in accommodating 95% to 100% of the small aircraft fleet (i.e., aircraft with more than 10 seats), as specified by the FAA Airport Design program in consideration of the Airport's elevation, design temperature, and runway elevation differential. In consideration of larger aircraft (i.e., aircraft weighing between 12,500 pounds and 60,000 pounds) it should be noted that this family of aircraft could potentially be restricted at times from operating at the Airport at longer stage lengths due to the additional fuel requirements requiring heavier operating weights.

As noted in the *1995 ALP Update*, the preparers and City Staff also recognized the importance of preserving the ability to construct additional runway length in the future to better accommodate the operation of more demanding business jet aircraft. Therefore, the previously programmed 900-foot runway extension to the south will be maintained to provide for an ultimate runway length of 7,200 feet. This future extension will accommodate approximately 75% of the aircraft fleet weighting between 12,500 pounds and 60,000 pounds at a 60% useful load, as well as some larger aircraft weighing in excess of 60,000 pounds.

Parallel Taxiway System

Runway 17/35 is equipped with an existing parallel taxiway system (i.e., Taxiway "A"), which serves the east side of the runway. In addition, Medium Intensity Taxiway Lights (MITLs), which are

presently in place on Taxiway "A", should also be maintained. The existing taxiway system has been evaluated with respect to existing and future departure ends of the runway. Every effort should be made to physically separate the airport roadways from taxiways, to prohibit unauthorized vehicles from accessing the Airport's aircraft movement areas, which will assist in the safety and security monitoring of the Airport.

Due to the fact that all the Airport's existing aviation development is located on the east side of the runway, the following options for future taxiway development have been identified.

Option One: This alternative recommends the previously programmed 900-foot extension to the south of the east side parallel taxiway (Taxiway "A"), in conjunction with the future runway extension. This alternative also recommends the construction of a connector taxiway, extending to the west from the Runway 17 threshold and providing access to the proposed Army National Guard development area.

Option Two: As with Option One, this alternative recommends the future 900-foot extension of Taxiway "A" to the south in conjunction with the future runway extension. Additionally, this alternative recommends the construction of a partial parallel taxiway, located 400 feet west of the runway centerline, connecting the Runway 17 threshold to the midfield connector taxiway. This partial parallel taxiway would provide airside access from the west side of the Airport, and specifically to accommodate the future needs of the Army National Guard and other potential aviation or aviation-related development within the northwest quadrant of the Airport.

The following illustrations presented below depict the various taxiway development options described above. Based upon the long-term development plans for the northwest quadrant of the Airport, the Airport Sponsor has selected the partial parallel taxiway development recommendations presented in Option Two for inclusion on the Conceptual Development Plan.

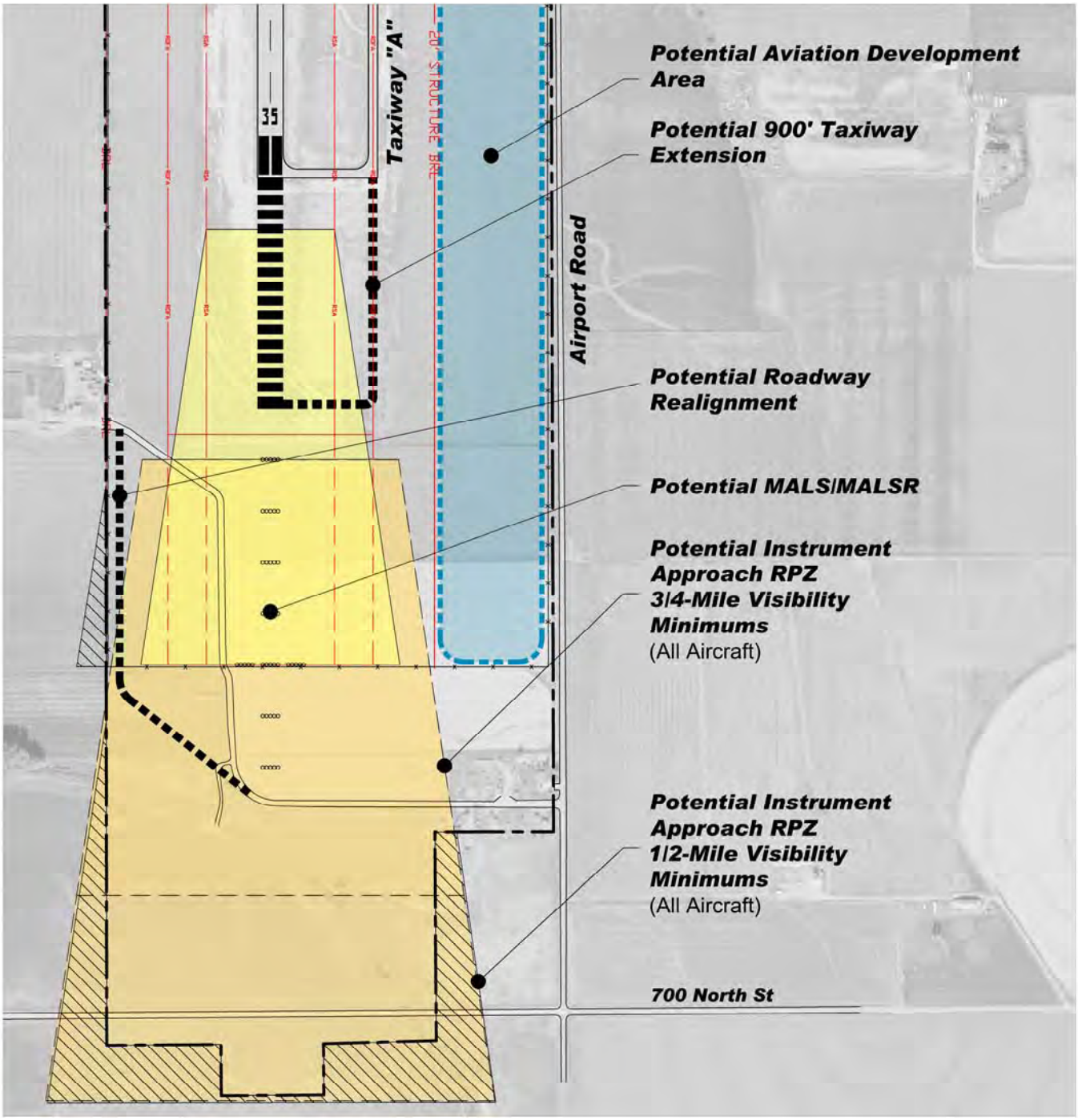


Figure D1 Option One & Two Taxiway "A" Extension

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

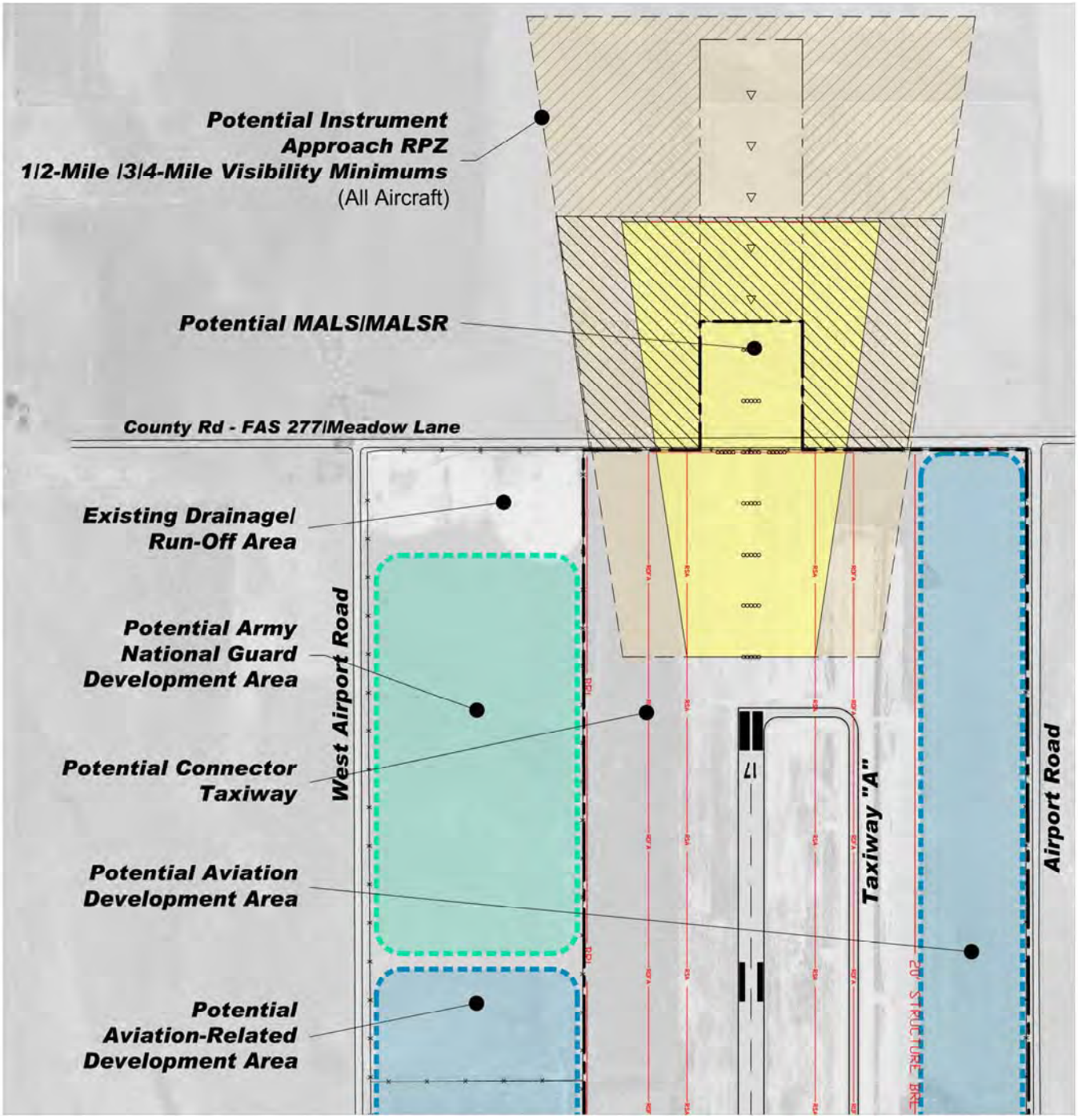


Figure D2 Option One/West Side Taxiway Connector

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

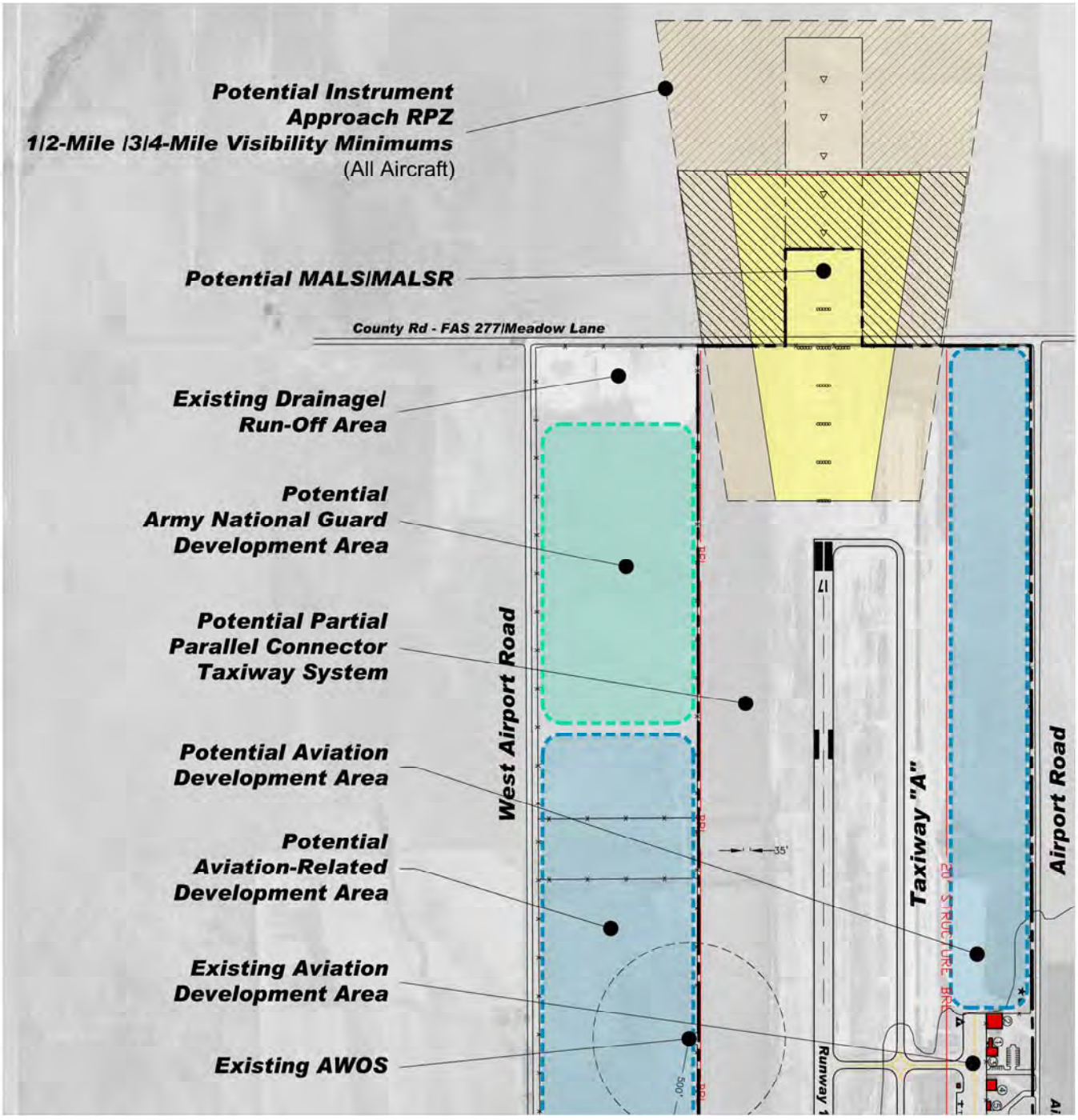


Figure D3 Option Two/West Side Partial Parallel Taxiway

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

Pavement Strength

Runway 17/35 is constructed of asphalt and has a published gross weight bearing capacity of 21,000 pounds single wheel, and 30,000 pounds dual wheel main landing gear configuration. In addition, a runway overlay project was completed in 2003; however, all existing airfield pavement should be tested periodically to properly ascertain existing pavement strengths. In consideration of the projected operational fleet mix, the Sponsor has elected to maintain the existing runway pavement strength, and this decision will be reflected on the Conceptual Development Plan for the Airport.

Instrument Approach Criteria

There are currently no instrument approach procedures at Nephi Municipal Airport. However, as previously identified in the *Capacity Analysis and Facility Requirements* chapter, it is recommended that both ends of Runway 17/35 be protected for an instrument approach procedure with vertical guidance (APV). It should also be noted that the feasibility of implementing a future instrument approach procedure and a determination of the visibility minimums that can be achieved for each runway end will be based on several factors, but dictated primarily by the surrounding terrain in the area.

Option One: This alternative recommends protecting for a future GPS instrument approach procedure with vertical guidance, providing not lower-than ¾-mile visibility minimums (all aircraft) for each runway end. No additional property or easement acquisition would be required to accommodate the required larger Runway Protection Zones (RPZs).

Option Two: This alternative recommends protecting for a future GPS instrument approach procedure with vertical guidance, providing ½-mile visibility minimums (all aircraft) to each runway end. No additional property or easement acquisition would be required to accommodate the required approach lighting system or larger Runway RPZ on the Runway 35 end. However, approximately 10.1 acres of land acquisition would be required to accommodate the future Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) light lane, with an easement acquisition of approximately 22.9 acres being required to accommodate the balance of the future RPZ.

Based upon a desire to preserve future instrument approach development capabilities for the Airport, offering visibility minimums as low as ½-mile, and a goal to better accommodate the small to medium sized business jet fleet on this runway, the Sponsor has elected to protect for the future instrument approach procedures (IAPs) described by Option Two. These future IAPs will be depicted on the Conceptual Development Plan for the Airport.

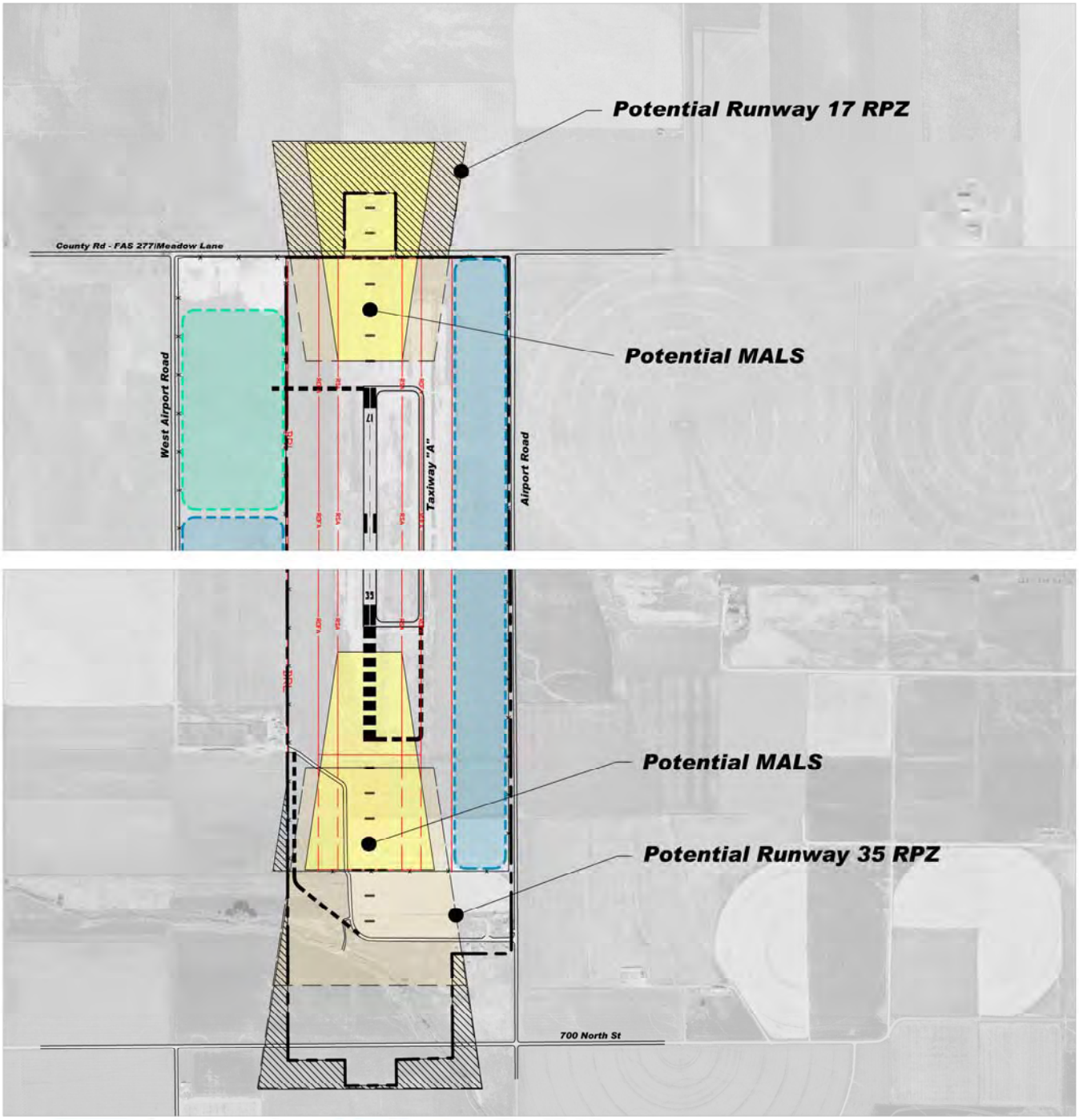


Figure D4 Option One/Runway 16 & 34 Instrument Approach Procedure Developemnt (3/4-Mile Visibility Minimums)

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

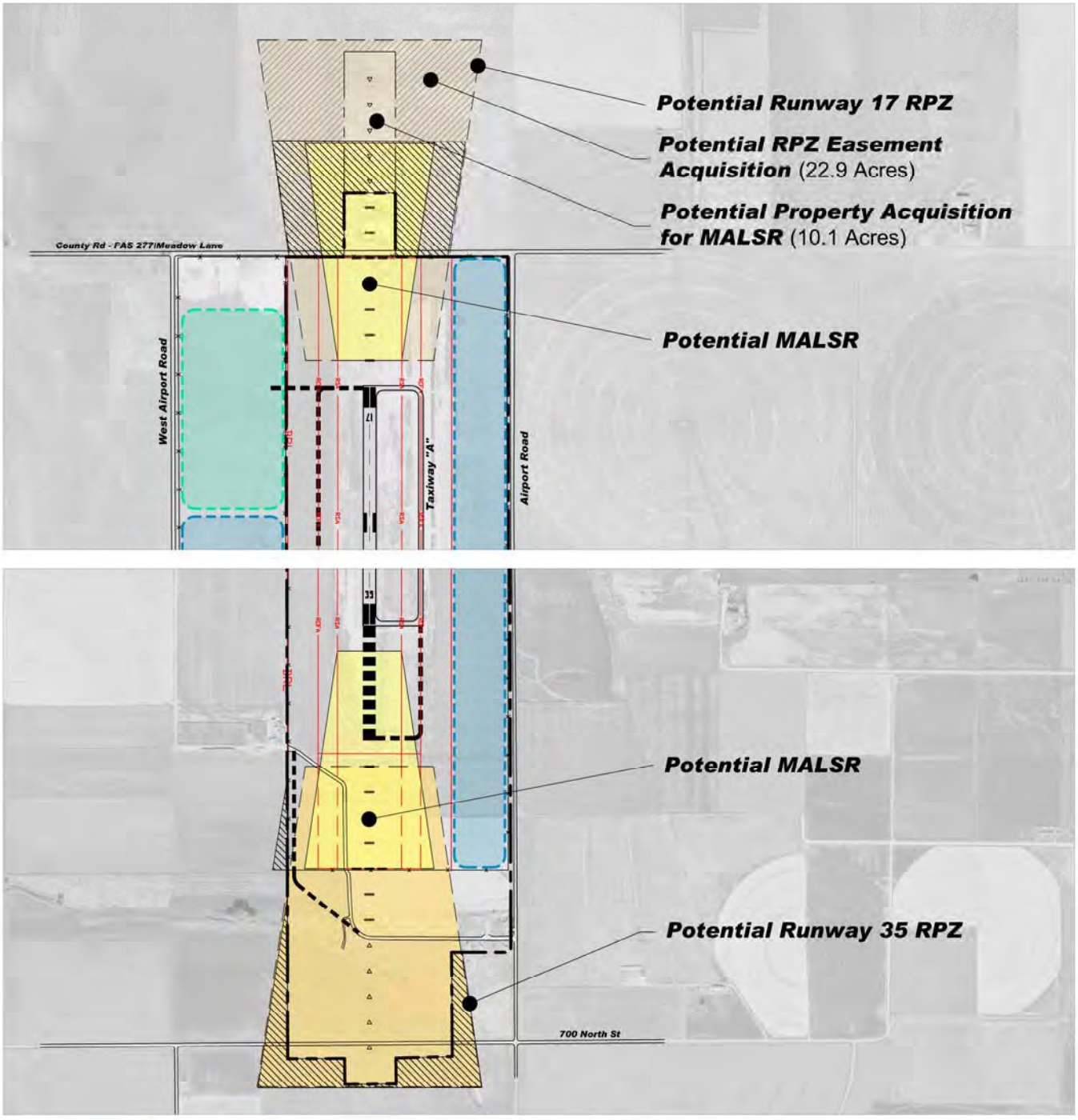


Figure D5 **Option Two/Runway 17 & 35 Instrument Approach Procedure Developemnt (1/2-Mile Visibility Minimums)**

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

Runway Lighting & Navigational Aids

Presently, the runway at Nephi Municipal Airport is equipped with Medium Intensity Runway Lights (MIRLs), with both Precision Approach Path Indicators (PAPIs) and Runway End Identifier Lights (REILs) serving each runway end. The MIRLs should be maintained in conjunction with the existing/proposed instrument approach procedures.

Based upon the selected instrument approach procedure upgrade to each runway end, the following runway lighting and navigational aids modifications/upgrades have been identified:

- **Install future MALSR to each runway end (see Figure D5 for proposed layout of the approach lighting system).**
- **Extend existing MIRLs in conjunction with future 900-foot runway extension.**
- **Relocate Runway 35 PAPIs.**
- **Extend existing MITLs in conjunction with future 900-foot extension of Taxiway "A".**
- **Install MITLs in conjunction with future development of the west side partial parallel taxiway system.**

These runway lighting and navigational aids modifications/upgrades will be illustrated on Figure D12, entitled *CONCEPTUAL DEVELOPMENT PLAN*.

Landside Planning Issues

The key airport landside planning issues for the Airport have been generated, and are presented in the following text:

- **General Aviation Development**
- **Aviation-Related Development**
- **Airport Access Roadways**
- **Property/Easement Acquisition**
- **Support Facilities**

Landside Alternatives

General Aviation Development. In accordance with the forecast based aircraft counts and facility requirement projections that were presented in previous sections, it has been concluded that adequate future aviation-use development property is available on the east side of airport property to accommodate this projected aviation demand for the 20-year planning period of this study. Detailed general aviation development options have been prepared for the balance of the eastern portions immediately surrounding the existing aviation development areas of the Airport, with more generalized area planning boundaries being prepared for the long-term development being proposed for the northeast, southeast, and northwest quadrants of the Airport.

It should also be emphasized that the future development of aircraft storage facilities at the Airport will be demand dictated. Therefore, the number, size, and location of these hangars will vary depending on the demand for specific facilities, and the development plans must be flexible to accommodate a variety of user groups. In addition, there are important development guidelines that the Airport Sponsor should consider when making hangar placement determinations at the Airport. These include:

- **Each executive hangar should be supplied with taxiway access that is separated from automobile access and adjacent automobile parking. This is most efficiently accomplished when a row of hangars is developed and provided with taxiway access on one side and automobile access and parking on the other side.**

- **Each T-hangar should be nested and developed with taxiway access to both sides of the hangar. Controlled automobile access should be provided to the taxiway/apron area near the T-hangars, and a public access parking area should be provided near the T-hangar facilities to accommodate both users and visitors.**

It is most efficient to "double load" both the taxiway access and the automobile access routes with hangars. More specifically, the access taxiways/taxilanes are to be lined with hangars on both sides and the automobile roadways/parking areas are also to be lined with hangars on both sides. Typically, the airside spacing between the hangars is dictated by the clear width door design of the hangars, with a 79-foot Taxilane Object Free Area (TOFA) width being specified for Airplane Design Group (ADG) I aircraft, which compares to a 115-foot TOFA spacing for ADG II aircraft. In recent years, the FAA has limited funding participation on taxilanes to projects designed for ADG II aircraft. As shown in the following illustrations, ADG II TOFA design standards were applied to each landside alternative to comply with the FAA's current project funding/eligibility requirements.

Based upon input received from the Airport Sponsor, and the projected aircraft storage improvements that will be needed to serve the aviation users, three hangar, apron, and access taxiway development alternatives have been prepared. They are described below and presented on the following detail illustrations.

Landside Alternative One

As with each of the landside alternatives, Landside Alternative One centralizes the landside development on the eastern portion of the Airport. Landside development would expand south from the existing aviation-use areas. On the existing apron, room is designated for one additional small executive hangar on the southeast portion of the existing apron, and an infill development site for a future Bureau of Land Management (BLM) Single Engine Air Tanker (SEAT) facility has been identified near the midway point of the existing apron. Automobile access and parking would be extended behind the existing apron from the existing southernmost airport entrance road.

Landside Alternative One also recommends the extension of the existing apron to the south, utilizing ADG II TOFA design standards. This extended apron area would provide space for seven additional tiedown spaces and three large corporate/Fixed Base Operator (FBO) hangar facilities. Automobile access would be provided directly from Airport Road, and automobile parking would be located immediately east of the large hangar facilities. From the extended apron, three taxilanes would extend south to a new east-west connector taxiway that would provide direct access to Taxiway "A". Within the three taxilanes, room is reserved for two rows of nested T-hangars (approximately 18-units in each), and one row of small executive hangars (approximately 11 total).

Additionally, Landside Alternative One recommends the construction of a small apron/taxilane extending southward from the midfield taxiway, adjacent to the existing BLM storage tanks, to allow for more convenient, efficient access to the storage tanks and minimizing traffic congestion on the existing apron. Additional land to the north of the existing landside development area reserves approximately 31 acres for future aviation development, while land to the south reserves approximately 35 acres for future aviation development needs. Landside Alternative One is illustrated in the following figure.

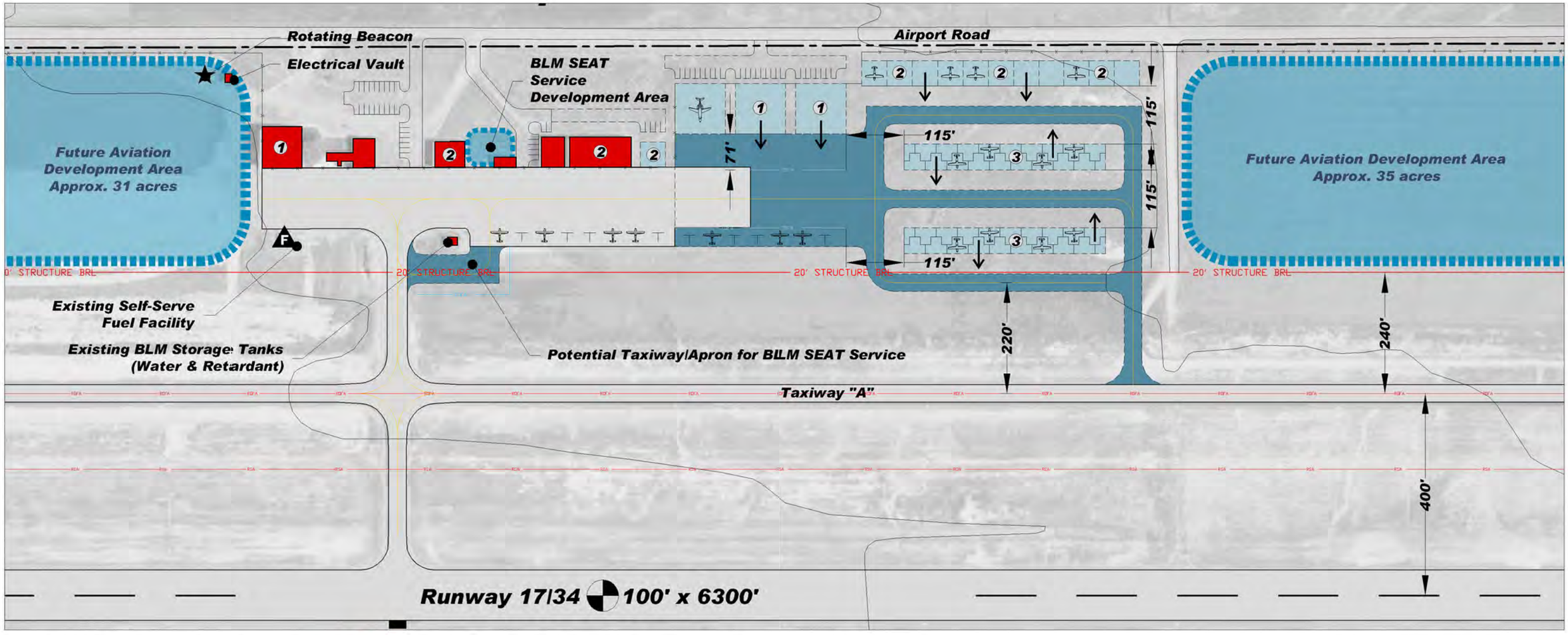


Figure D6 Landside Alternative One

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Landside Alternative Two

For Landside Alternative Two, development would expand north and south from the existing aviation-use areas, utilizing ADG II TOFA design standards. The north extended apron would reserve space for three large/FBO corporate hangars, as well as nine tiedown positions. A connecting taxiway would be located on the north side of this apron, providing direct access to Taxiway "A". Automobile access to the north apron area would be provided by two new entrance roads extending from Airport Road, on the northeast side of the apron. These new access roads would link to new automobile parking areas east of the hangar facilities, as well as connect to existing airport entrance roads.

This alternative also recommends the expansion of the existing apron to the west and south, which could potentially provide approximately 29 tiedown positions. The extended southwest apron transitions into three taxilanes, extending south to an east-west connector taxiway that would provide access to Taxiway "A". Within the three taxilanes, space is reserved for three rows of nested T-hangars (each accommodating approximately 16-units), and one row of small executive or shade hangars (approximately 18 total). An additional access road extending from Airport Road, with automobile parking, would connect with the southeast portion of the existing apron, providing automobile access and parking availability to both existing and future aviation-use facilities within this portion of the landside development area.

Additionally, Landside Alternative Two recommends the construction of additional apron located west of the BLM storage tanks, connecting to the extended southwest taxilane and apron. This would reduce traffic congestion on the existing apron and allow for more efficient access to the storage tanks. Remaining land to the north of the existing/future landside development in this alternative reserves approximately 28 acres for future aviation development, while the remaining land to the south reserves approximately 35 acres for future aviation development needs. Landside Alternative Two is illustrated in the following figure.

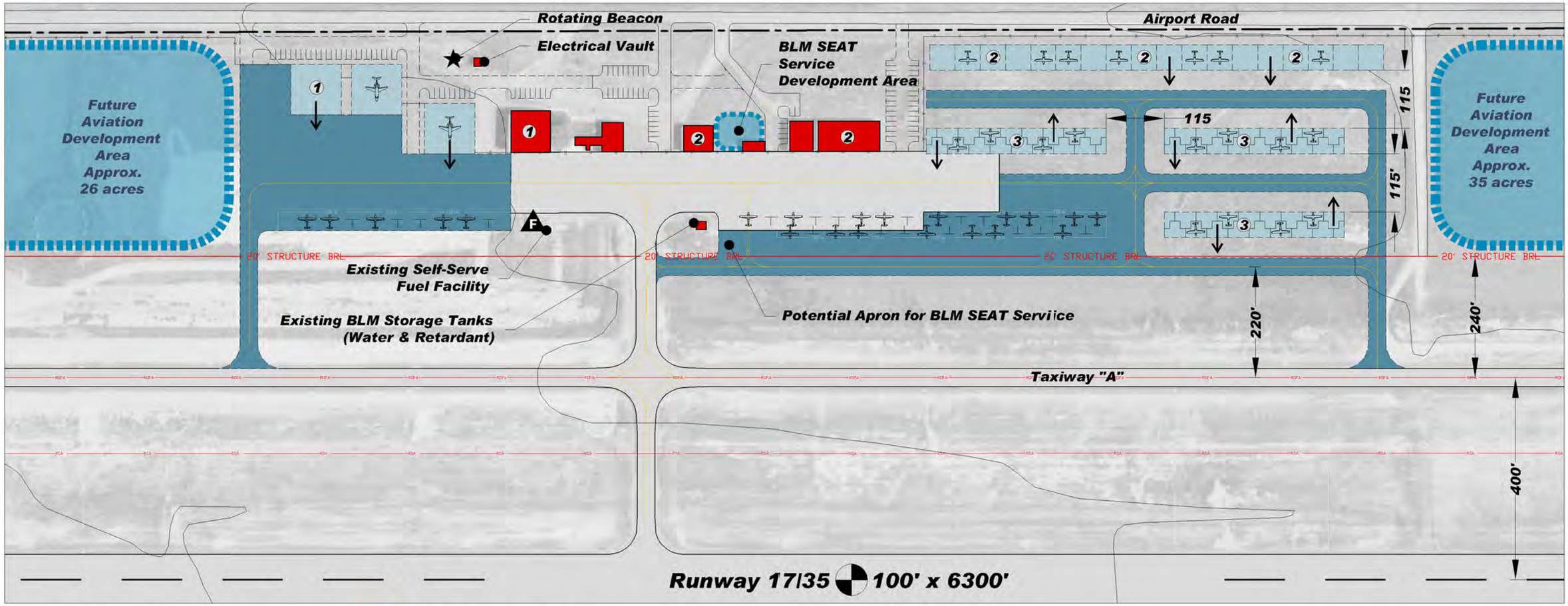


Figure D7 Landside Alternative Two

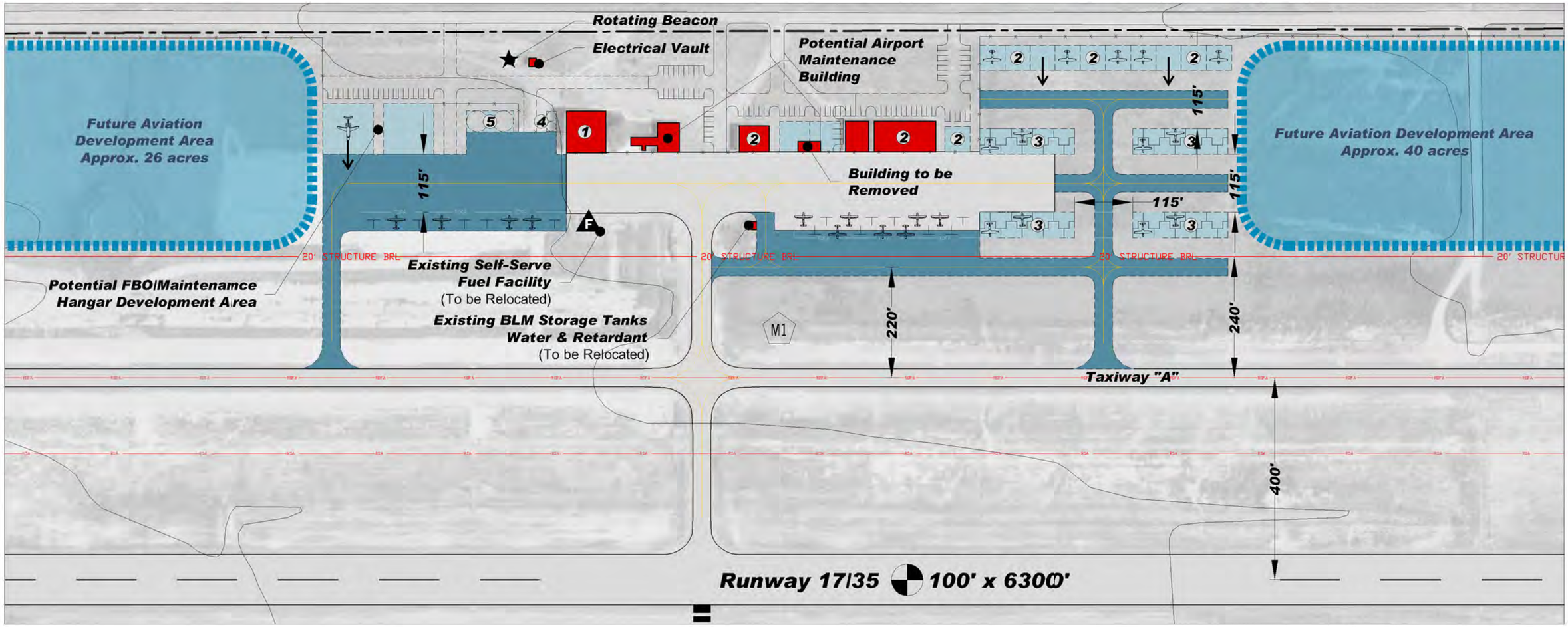
SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Landside Alternative Three

Landside Alternative Three also expands development north and south from the existing aviation-use areas, utilizing ADG II TOFA design standards. The extended north apron area would reserve space for two large FBO/corporate hangars, as well as nine tiedown positions. A connecting taxiway would be located on the north side of this apron, providing direct access to Taxiway "A". Automobile access would be provided by two new access roads. The first would extend westward from Airport Road, with the second extending to the south and connecting to the existing airport entrance roads. Each would provide access to automobile parking adjacent to the new hangar facilities.

Infill development is recommended along the existing apron, with space being reserved for three additional executive hangars. Automobile access and parking would be expanded in this area along the backside of the hangars, including the development of a new airport access/entrance road connecting with Airport Road. This alternative also recommends the construction of a new connector taxiway that would extend from Taxiway "A", and connect with three north-south taxilanes located south of the existing apron. These taxilanes would serve four rows of eight-unit nested T-hangars, as well as reserve space for approximately ten small executive hangars positioned alongside the right-of-way to Airport Road.

With respect to airport support facilities, this alternative reserves space near the northeast corner of the existing general aviation ramp for the future relocation of the Airport's self-serve fueling facility and BLM water and retardant storage tanks. In addition, undeveloped property to the north of the existing landside development area reserves approximately 26 acres for future aviation development, while the undeveloped property to the south reserves approximately 40 acres for future aviation development needs. Landside Alternative Three is illustrated in the following figure.



1. FBO/Corporate Hangar
2. Executive Hangar
3. T-Hangar
4. Future BLM Storage Tanks
5. Future Self-Serve Fuel Facility

Existing Structure to Remain

Future Buildings

Existing Airfield Pavement

Future Airfield Pavement

N 0 50' 100' 200' 1000'
GRAPHIC SCALE IN FEET

Figure D8 Landside Alternative Three

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Following a thorough evaluation and input received from the Airport Sponsor of the three landside development alternatives presented above, it is recommended that portions of both Alternatives Two and Three, combined with additional reconfigurations of the landside development area be selected for a phased implementation. This selected landside development plan is presented as an element of the Conceptual Development Plan at the conclusion of this chapter (see Figure D12).

As shown on the Conceptual Development Plan, the small executive hangars (within the southeast general aviation development area) have been repositioned in a "back-to-back" configuration, with eight located alongside the right-of-way to Airport Road. Further, development infill alongside the southeast portion of the existing apron would provide approximately five additional tiedown spaces.

A development area is reserved specifically for the BLM SEAT Firefighting Base, located north of the east side GA development area. This would allow for infill development immediately south of the future relocated self-serve fueling facility, where space would be reserved for two additional small executive hangars. Further, a connecting taxiway from Taxiway "A" would provide direct access to the BLM SEAT apron area. Auto access and parking would be expanded to the BLM SEAT Firefighting Base development area east of the BLM SEAT apron area.

The Conceptual Development Plan also depicts an access taxiway connecting the north apron area to the BLM SEAT Firefighting Base development area. Ultimately, pavement infill development is recommended along both sides of this connecting taxiway for additional ramp/apron space.

Property/Easement Acquisition

Currently, the existing Runway Protection Zone (RPZ) dimension associated with Runway 17 that extends beyond the airport boundary and across County Road –FAS 277 is controlled by the Airport under an avigation easement. The existing RPZ for Runway 35 is located entirely on airport property. As noted previously, implementing a precision instrument approach to Runway 17 would require future land acquisition of approximately 10.1 acres, and easement acquisition of approximately 22.9 acres.

Aviation Support Facilities

Aviation support facilities are required for the Airport to operate properly, but are not part of the runway/taxiway system and do not relate directly to aircraft storage facilities. The support facilities

at Nephi Municipal Airport, which require development recommendations, include a new self-serve fueling facility, a new airport maintenance/storage building, and new infrastructure development.

Fuel Storage Facility. According to existing fuel storage and sales data, along with projected future storage requirements, it appears that the Airport's fuel storage requirements can be accommodated through the year 2028 utilizing existing storage facilities. However, a long-term development site has been identified near the northeast corner of the existing general aviation ramp for the future relocation of the Airport's self-serve fueling facility. The proposed site, which was identified on Figure D8, entitled *LANDSIDE ALTERNATIVE THREE,* would be designed to accommodate the above-ground storage of both Jet A fuel and AVGAS, as well as a designated self-serve fueling position on the apron that is positioned outside of the taxilane object free area. Landside access to the site would be provided via new roadways connecting to Airport Road.

Airport Maintenance Facility. Nephi City representatives have expressed a need for a dedicated maintenance/storage building to be located at the Airport. The primary function of the facility would be for the storage of snow removal and maintenance equipment that is used at the Airport. For airports such as Nephi that are located outside of the City limits and within the county jurisdiction, often times it makes sense for the City and County to collaborate on the development of a joint-use facility that is located on the Airport, but serves the needs of both entities. A possible development site for this facility was identified on Figure D8, entitled *LANDSIDE ALTERNATIVE THREE,* and is located at the site of the existing Quonset hangar, just north of the Airport's security gate entrance onto the general aviation ramp.

Airport Infrastructure Development. Future development of both aviation and/or aviation-related development areas (located adjacent to the northwest and east sides of the Airport) will require the extension of access roadways and utilities (e.g., electricity, natural gas, water, sanitary sewer, etc.). The projected cost of this infrastructure development, which includes design/engineering, will be incorporated into the future development costs for this area, and specific infrastructure projects will be identified in the 20-year development program for the Airport.

Aviation-Related Development

Utah Army National Guard Armory Development. The proposed development site for the armory is located on approximately 30 acres adjacent to the northwest quadrant of the Airport. A possible development scenario could include the relocation/dispersal of some of the aviation assets (i.e., a percentage of the of AH-64 Apache and/or UH-60 Blackhawk helicopters and their associated support functions) from Salt Lake City Airport II to Nephi Municipal Airport, which would provide an alternate basing/staging location for response to natural disasters and/or security threats. The new

Armory facility would likely necessitate the development of hangars, operations buildings, maintenance facilities, and various support facilities, as well as include FAA/Nephi City approval of a "Through-The Fence" operation/access agreement. Also, vehicular access to the Armory would be provided from the existing county road that parallels the northern boundary of the Airport.

Single-Engine Air Tanker (SEAT) Firefighting Base. The existing Single-Engine Air Tanker (SEAT) firefighting base is operated by the Bureau of Land Management (BLM) on an as-needed basis during the summer fire season from the general aviation apron, and managed from the existing office/building that is located along the flight line. The tanker aircraft will continue to be refueled on the Airport from the existing self-service fueling facility and re-loaded with water and/or retardant from two 6,000 gallon above-ground storage tanks that are located adjacent to the general aviation apron and central connector taxiway until these facilities are relocated to the future designated service/support area near the northeast corner of the existing general aviation ramp. In addition, the BLM has expressed some interest in establishing a permanent SEAT Base installation at the Airport that would likely be activated on a seasonal basis. Therefore, a potential SEAT Base development area will be identified on the east side of the Airport to accommodate their specified operational requirements, and several potential infill development sites are currently available for this purpose. It's also recommended that a written operational/use agreement, with protocols, be established between Nephi City and the BLM for the use of the Airport during the summer fire season.

Potential Environmental Impacts

The key potential environmental impacts that should be taken into consideration prior to any future airport projects include the following:

- **Noise**
- **Hazardous wildlife attractants**
- **Air and water quality**
- **Historical, architectural, archaeological, and cultural resources**
- **Threatened and endangered species**
- **Wetlands**
- **Farmland**
- **Floodplains**
- **Section 4(f) Property**

The following descriptions briefly summarize these various environmental issues.

Noise

Computer Modeling. The DNL noise contours were generated using the Integrated Noise Model (INM) Version 7.0a, specifically developed by the Federal Aviation Administration (FAA) to plot noise contours for airports. The original version was released in 1977, with the current version being released in September of 2008. The program is provided with standard aircraft noise and performance data that can be tailored to the characteristics of individual airports.

The INM program requires the input of the physical and operational characteristics of the Airport. Physical characteristics include runway coordinates, airport elevation, and temperature. Operational characteristics include aircraft mix, flight tracks, and approach profiles. Optional data that is contained within the model include departure profiles, approach parameters, and aircraft noise curves. All of these options were incorporated in order to model the noise environment at the Nephi Municipal Airport.

Land Use Compatibility Matrix. The Land Use Compatibility Matrix, presented on the following figure, indicates those land uses that are compatible within certain DNL noise contours. It identifies land uses as being compatible, incompatible, or compatible if sound attenuated. The matrix, which was developed by the FAA, can act as a guide to Juab County for land use planning and control, and a tool to compare relative land use impacts that would result from various airfield planning alternatives. The DNL noise contours do not delineate areas that are either free from excessive noise or areas that will be subjected to excessive noise. In other words, it cannot be expected that a person living on one side of a DNL noise contour will have a markedly different reaction than a person living nearby, but on the other side. What can be expected is that the general aggregate community response to noise within the DNL 65 noise contour, for example, will be less than the public response from the DNL 75 noise contour.

This study generated the 60, 65, 70, and 75 DNL noise contours to determine land use compatibility. The immediate area outside the 65 DNL noise contour is an area within which most land uses are compatible, but is an area where single event noise complaints are often received. The area between the 65 and 70 DNL noise contours is an area of significant noise exposure where many types of land uses are normally unacceptable and where land use compatibility controls are recommended. Finally, the area inside the 70 and 75 DNL noise contours identifies land uses that are subjected to a significant level of noise and the sensitivity of various uses to noise is increased.

LAND USE	YEARLY DAY-NIGHT NOISE LEVEL (DNL) IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to NOTES.

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE KEY

SLUCM	Standard Land Use Coding Manual.
Y(Yes)	Land Use and related structures compatible without restrictions.
N(No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30 or 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided that special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Figure D9 Land Use Compatibility Matrix

Source: FAR Part 150 Guidelines.

Noise Analysis. In predicting the approximate noise impacts that could occur from the operation of Nephi Municipal Airport, several assumptions were made to estimate the number of operations, type of aircraft, and the airport configuration that would be most reasonable to model for the 2008 base year, and for the end of the planning period, year 2028. If FAA recommended land use development is strictly controlled within these contours, then most noise-related land use problems can be alleviated before they develop. However, this is not to say that the City would not receive noise complaints due to overflights by aircraft from well outside of the 65 DNL noise contour. The two sets of total operations, defined by aircraft type, which were used as a basis for generating the noise contours, are shown in the following table entitled *EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE, 2008 & 2028*.

Table D1
EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE, 2008 & 2028

Operations by Type	2008	2028
General Aviation	*6,040*	*12,112*
Single Engine [1]	1,903	3,270
Multi-Engine	1,148	2,120
Turboprop	2,537	5,632
Business Jet	151	727
Helicopter	302	363
Military	*1,000*	*8,000*
Fixed Wing	0	0
Helicopter [2]	1,000	8,000
TOTAL	**7,040**	**20,112**

Sources: Operational estimates generated by BARNARD DUNKELBERG & COMPANY using
FAA Form 5010-1, *Airport Master Record*.

Notes:
[1] Includes single engine piston and turboprop operations.
[2] Existing activity is represented by Utah National Guard helicopter touch-and-go training operations.

2008 Noise Contours. Using the existing 2008 aircraft operation base counts and types previously presented in Table D1, noise contours were generated and are presented in Figure D10, entitled *2008 EXISTING DNL NOISE CONTOURS WITH GENERALIZED EXISTING ZONING*. As can be seen in the illustration, each of the generated DNL noise contours is contained on airport property and,

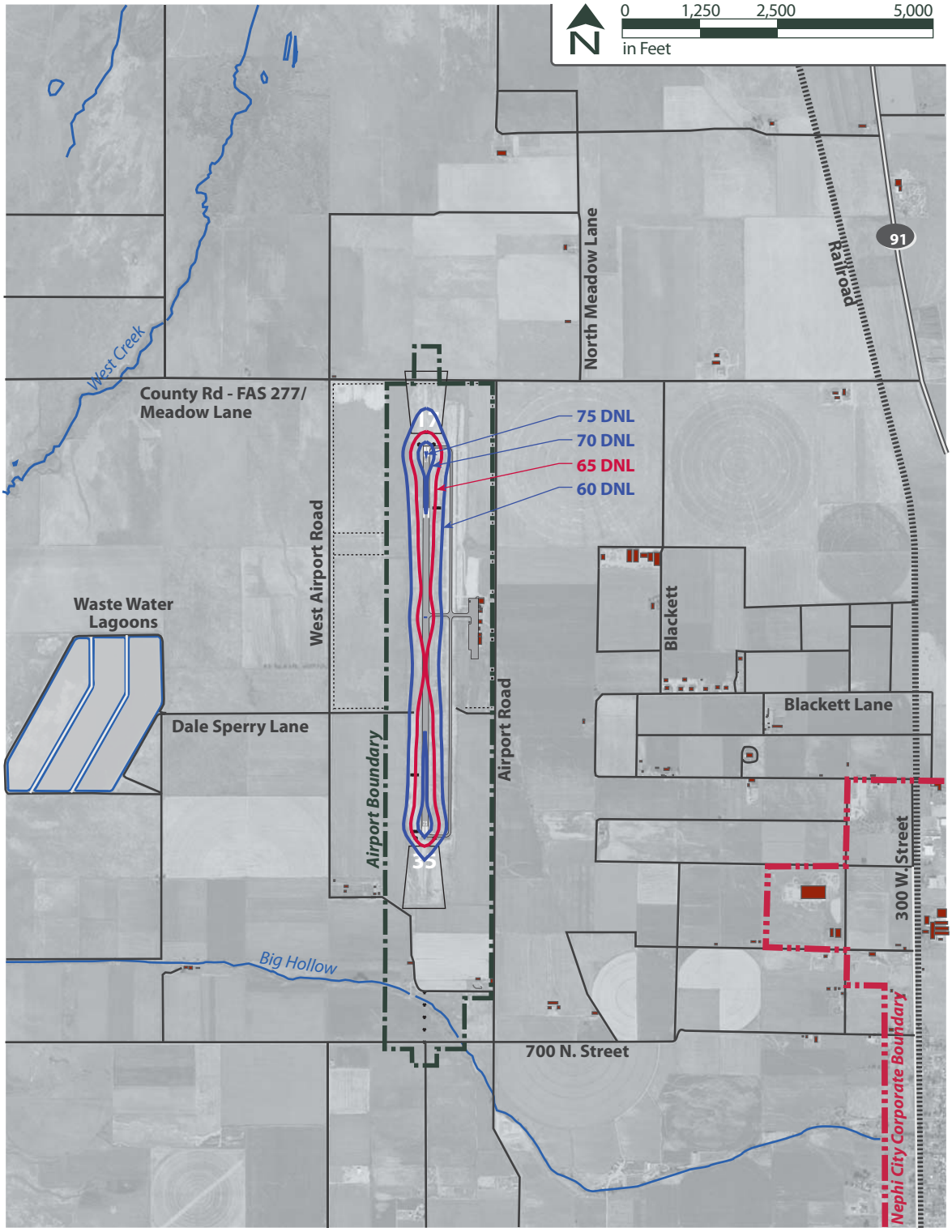


Figure D10 2008 Existing DNL Noise Contours with Generalized Existing Zoning

Nephi Municipal Airport

therefore, no existing noise sensitive land uses are contained within the contours[1]. As delineated, the 75 DNL noise contour encompasses less than one acre, the 70 DNL noise contour encompasses 6.9 acres, the 65 DNL noise contour encompasses 39.0 acres, and the 60 DNL noise contour encompasses 87.2 acres.

2028 Noise Contours. The 2028 aircraft operation counts and types, presented in Table D1, were used to generate the noise contours that are illustrated in Figure D11 entitled *2028 FUTURE DNL NOISE CONTOURS WITH GENERALIZED EXISTING ZONING*. In comparison with the 2008 contours, the 2028 noise contours are very similar in shape, but larger, with the footprint is slightly broadened near the runway ends due to the projected increase in aircraft operations. As with the 2008 baseline contours, the DNL noise contours are contained on airport property and, therefore, no existing noise sensitive land uses are contained within the contours. As delineated, the 75 DNL noise contour encompasses 2.3 acres, the 70 DNL noise contour encompasses 22.9 acres, the 65 DNL noise contour encompasses 75.8 acres, and the 60 DNL noise contour encompasses 156.1 acres.

Nationally, the aircraft fleet, particularly the jet fleet, is becoming quieter. The majority of the business jet aircraft that produce the greatest noise levels will, by age, be removed from service during the 20-year planning period on which this study is based. In addition, the National Business Aviation Association (NBAA) passed a voluntary resolution to eliminate the operation of all Stage 1 business jets in 2005, and all newly manufactured business jets comply with Stage 3 noise reduction criteria. For propeller driven aircraft, propeller upgrades are available for some of the general aviation fleet to reduce noise, and some general aviation aircraft manufacturers are opting to utilize de-rated engines in their aircraft, which allow engine operation at lower revolutions per minute (RPMs) to achieve improved noise reduction levels.

As can be seen from the existing and future noise contours generated for this Master Plan, the projected increase in operations at the Airport through the 20-year planning period does result in a larger contour footprint. The projected 2028 noise contours would continue to be contained entirely on existing airport property, and thus result in no impacts to existing noise sensitive land uses.

[1] 2008 and 2028 Integrated Noise Model (INM) Noise Contour Data for Nephi Municipal Airport is included in Appendix Five.

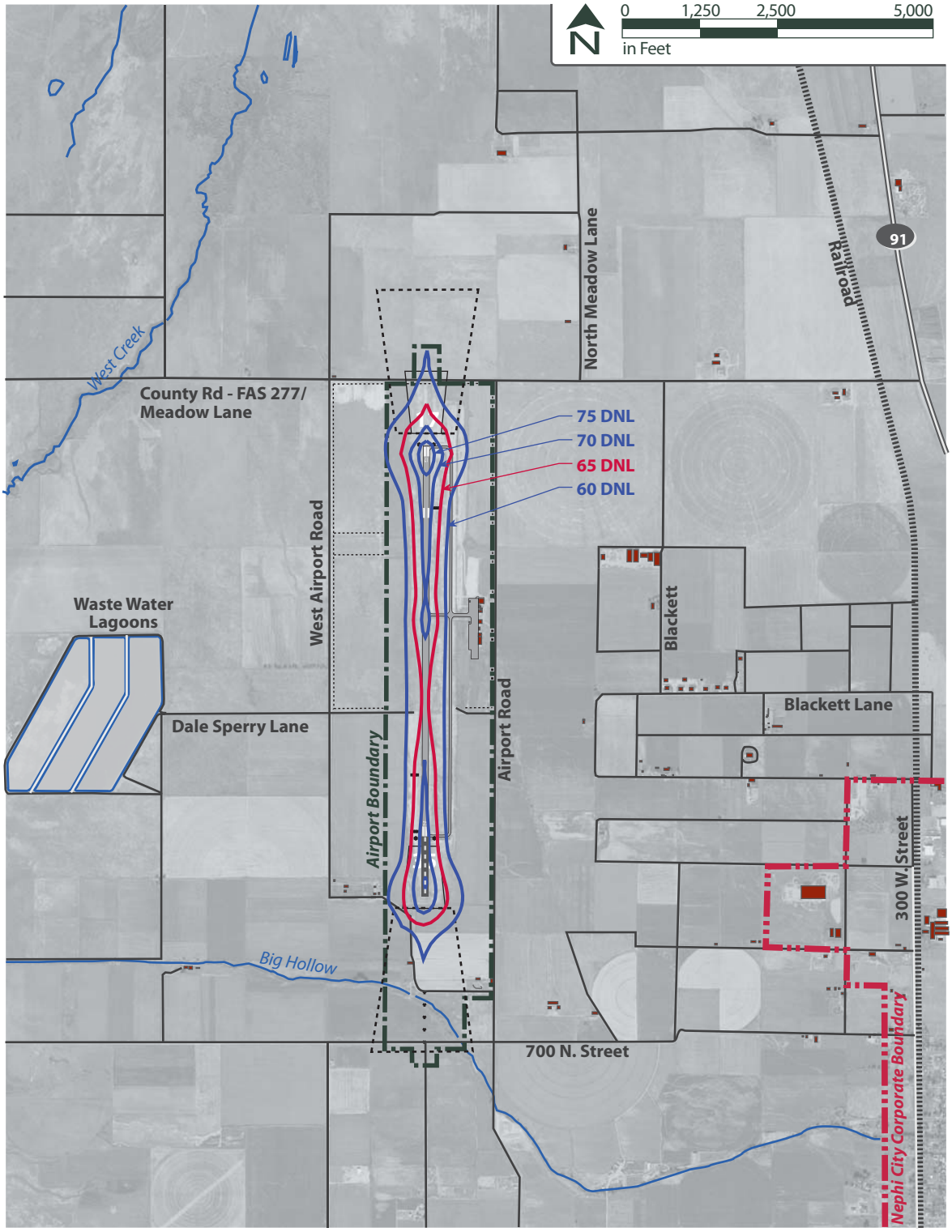


Figure D11 Future 2028 DNL Noise Contours with Generalized Existing Zoning

Nephi Municipal Airport

Hazardous Wildlife Attractants

The existence of hazardous wildlife attractants in the vicinity of airports can pose a potential serious public safety risk and economic impact to airport operators and sponsors. Retention and settling ponds, recreational use ponds, wastewater and storm water treatment facilities, ponds resulting from mining activities, and drinking water intake and treatment facilities can frequently attract large numbers of potentially hazardous wildlife, such as birds. In order to avoid potential concerns with hazardous wildlife, it is recommended that the minimum separation criteria be established between the air operations area (AOA) and certain land uses that could potentially attract hazardous wildlife, as described in FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*. As identified in the *Airport Inventory* chapter, the Nephi City's existing waste water treatment plant is located less than one mile west of the Airport. In addition, the Burraston Ponds WMA is located approximately six miles north of the Airport, and the Nephi WMA is located less than two miles northwest of the Airport.

It should be noted that the 1996 Environmental Assessment (EA) for Nephi Municipal Airport concluded that since the Airport is not located directly between the waste water treatment plant and the existing wildlife areas northwest of the Airport, and the fact that no bird strikes have been reported in the vicinity of the Airport, the existing less-than-standard separation criteria was determined not to be significant. However, the Airport Improvement Program (AIP) Handbook was amended in the summer of 2009 to allow funding for Wildlife Hazard Assessments (WHAs) at general aviation airports with documented reports of wildlife hazards. Given the proximity of Nephi City's existing waste water treatment plant to the Airport, it's recommended that the City include a project for a WHA in the Capital Improvement Program of this Airport Master Plan. In the interim, Nephi City could continue to incorporate measures, developed in consultation with a wildlife damage management biologist, to minimize hazardous wildlife attract attractants.

Air and Water Quality

As described previously, Nephi Municipal Airport is not located within a non-attainment area. Provo, Utah, which is 42 miles north of the Airport, is the closest non-attainment area. Since the forecast general aviation operations for the Airport are well below the 180,000 annual operations threshold, and the Airport is not a commercial service airport, FAA Order 5050.4A specifies that no air quality analysis will be required for the Airport. However, short-term air quality impacts may be expected from temporary construction activities such as heavy equipment pollutant emissions, fugitive dust resulting from cut and fill activities, and the operation of portable concrete batch plants. Compliance with all applicable local, state, and federal air quality regulations and permitting requirements will be the responsibility of all contractors.

Contractors doing work at the Airport will be required to follow guidelines outlined in the Federal Aviation Administration's Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports*, which is the FAA's guidance to airport sponsors concerning protection of the environment during construction. The final plans and specifications for any project will incorporate the provisions of AC 150/5370-10A to ensure minimal impact due to erosion, air pollution, sanitary waste, and the use of chemicals. Additionally, a National Pollutant Discharge Elimination System (NPDES) permit, administered by the Utah Department of Environmental Quality, may be required for construction projects.

Historical, Architectural, Archaeological, and Cultural Resources

At present, several sites in Nephi are listed on the National Register of Historic Places (NRHP); however, none of these existing known sites is close to airport property. The National Register lists one restricted site in Nephi, which could potentially be located within the airport vicinity. In addition, a cultural resource survey was conducted as an element of the 1996 Environmental Assessment (EA). Two archaeological sites, a prehistoric lithic and ground stone scatter and a historic trash scatter were located during the survey, but none of the sites were found to meet the eligibility requirements of the NRHP. Despite the existing absence of any historic properties (including archaeological sites, buildings, structures, objects, or districts) on the Airport, the Utah Division of State History, Historic Preservation Office will need to be contacted prior to the development of any future airport projects. Additionally, should any construction activity expose buried archaeological material, work would stop in that area, and both the FAA and the Utah Division of State History will be contacted.

Threatened and Endangered Species

Twenty (20) wildlife species of concern and two federally listed or candidate species under the *Endangered Species Act* were identified in Juab County, as presented previously. The *Endangered Species Act*, as amended, requires each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. Prior to the construction of any future airport projects, the Airport would need to confirm if any of the threatened and endangered species are located on Airport property, or within the proposed project area. If the species are found to be present, and depending on potential impact, an Environmental Assessment or Environmental Impact Statement may have to be prepared prior to project implementation.

Wetlands

Currently, the airport terrain generally slopes to the north and northwest, and several drainage swales are located on airport property, west of the runway, with extensive growth which serves as erosion control. Potential wetlands located within the airport vicinity include West Creek, which is located approximately one mile northwest of the Airport, and the Big Hollow channel, which intersects airport property and the extended runway centerline approximately 2,500 feet south of the existing Runway 35 threshold. In 2007, the U.S. Army Corps of Engineers verified jurisdiction of three channels within the Nephi area to be waters of the U.S., regulated under Section 404 of the *Clean Water Act*[2]. This jurisdiction includes the entirety of the Big Hollow channel.

In addition, the 1996 Environmental Assessment (EA) indicated that a small wet meadow wetland was identified on the north end of airport property. This wet meadow wetland area contains approximately 0.1 acres of wetlands. Additionally, a canal area is located on the south end of the Airport, and is hydrologically supported by water for irrigation purposes.

If any proposed projects in the Conceptual Development Plan would impact these wetlands, the Airport will coordinate with the U.S. Army Corps of Engineers, and some further environmental analysis may be necessary. Should there be any mitigation measures identified, contractors would be required to follow guidelines outlined in the FAA's AC 150/5370-10A to minimize the impacts to the environment, including wetlands.

Farmland

Several areas of land on and surrounding airport property were identified previously as prime farmland and farmland of statewide importance, according to the National Soil Survey by the National Resources Conservation Service (NRCS).

Consultation with the U.S. Department of Agriculture (USDA) and the NRCS will be required to determine if the Farmland Protection Policy Act (FPPA) applies to the land or applies to any land to be converted to non-agricultural use as a result of the any of the proposed projects.

[2] Letter received from the U.S. Department of the Army, Corps of Engineers, April 13, 2007. Verification of the waters of the U.S. jurisdictional determination is valid for five years. Waters of the United States (below the ordinary high watermark) include the Salt Creek channel (from the headwaters to the Old North Diversion inlet), the Old North Diversion channel, and the entirety of the Big Hollow channel. These waters are tributaries of Utah Lake, which verifies regulation under the *Clean Water Act*, Section 404.

Floodplains

Nephi Municipal Airport is not located within a 100-year floodplain; therefore, there are no proposed impacts to any floodplains associated with the implementation of any of the recommended airport development projects. Although there are no mapped floodplains within the immediate airport vicinity, other parts of the Juab Valley are located within a 100-year floodplain. A portion of Nephi City is located within the 100-year floodplains that are associated with the Big Hollow channel[3] and Salt Creek.

Section 4(f) Property

The Airport, and the immediate vicinity of the Airport, currently do not have any potential Section 4(f) resources; therefore, no impacts to any Section 4(f) resources are anticipated with the implementation of any future airport development projects.

Development Projects & Phasing

The major airside and landside projects associated with the Conceptual Development Plan are presented in the following text. As described in previous sections, the likely phasing of many of the projects will be demand dictated; therefore, projected development order of the projects will continue to evolve and change from year to year throughout the planning period of this study.

Runway 17/35 Airside Projects:

1) **Conduct Airport Airspace Analysis Survey for future Runway 17 and 35 instrument approach procedure development.**
2) **Design future GPS instrument approach procedure to each runway end.**
3) **Publish Runway 17 GPS instrument approach procedure.**
4) **Publish Runway 35 GPS instrument approach procedure.**
5) **Extend Runway 35 900 feet to the south.**
6) **Extend Taxiway "A" 900 feet to the south.**
7) **Conduct Airport Airspace Analysis Survey for future Runway 35 instrument approach procedure revision.**
8) **Install Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to support Runway 35 instrument approach procedure.**

[3] FEMA Flood Insurance Rate Map, City of Nephi, Utah, Juab County, Panel 0005C, Map Number 4902290005C, December 2007.

9) **Install Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to support Runway 17 instrument approach procedure.**

10) **Design and publish future Required Navigation Procedure (RNP) instrument approach to each runway end.**

11) **Implement ongoing runway pavement maintenance projects.**

Airport Landside Projects:

12) **Acquire property for Runway 17 MALSR light lane (10.1 acres).**

13) **Acquire Runway 17 RPZ easement (22.9 acres).**

14) **Design/Engineer Airport Infrastructure Development Plan.**

15) **Prepare phasing plan for development of aircraft storage facilities.**

16) **Prepare phasing plan for future apron/taxiway/taxilane development.**

17) **Prepare phasing plan for future landside roadway and parking facility development.**

18) **Prepare site development standards for commercial aviation and aircraft hangar facilities.**

19) **Relocate BLM water and retardant storage tanks, as need is documented.**

20) **Relocate existing self-serve fuel storage facility, as preferred alternative is implemented.**

21) **Modify/rehabilitate existing hangar for Airport Maintenance Building.**

22) **Develop Minimum Standards for Commercial Aeronautical Activities documentation.**

Alternatives Summary

The proposed development alternatives for Nephi Municipal Airport are intended to present Nephi City with a variety of options for future facility expansion, based on input and comments provided by interested citizens and airport users within the general aviation community. Following a careful assessment of the potential impacts of the proposals for each development issue, in conjunction with a detailed FAA evaluation, the airport Sponsor has selected components of a recommended Conceptual Development Plan, which are presented in the following illustration, and which will be confirmed and presented in the *Airport Plans* chapter of this document to represent the ultimate airport configuration.

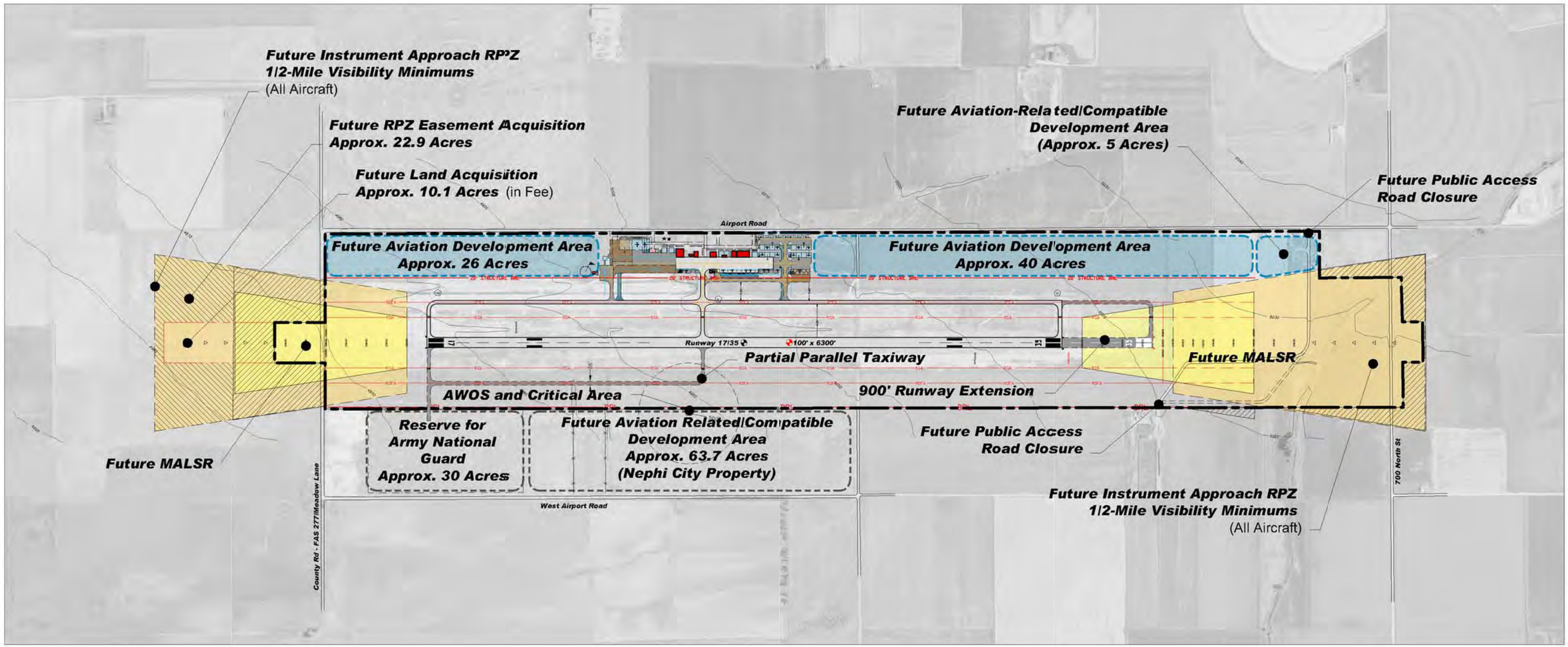
Following the confirmation of the Sponsor's Conceptual Development Plan, the appropriate state and federal agencies will be provided with copies of the plan requesting their overview of potential environmental impacts.

A summary of the recommendations described by the Conceptual Development Plan for Nephi Municipal Airport is presented in the following table, entitled *AIRSIDE & LANDSIDE DEVELOPMENT SUMMARY*.

Table D2
RUNWAY 17/35 AIRSIDE & LANDSIDE DEVELOPMENT SUMMARY

	Existing	Conceptual Development Plan
Runway 17/35		
Dimensions (Width)	100′	same
Dimensions (Length)		
TORA	6,300′/6,300′	7,200′/7,200′
TODA	6,300′/6,300′	7,200′/7,200′
ASDA	6,300′/6,300′	7,200′/7,200′
LDA	6,300′/6,300′	7,200′/7,200′
Airport Reference Code	C-II	Same
Instrument Approach/Visibility Minimums	None Visual	GPS/GPS ½-Mile/≥ ½-Mile
Runway Lighting	PAPI, REIL	MALSR (RW 17), MALSR (RW 35), PAPI
Parallel Taxiway	TW "A" East Side	Same/Partial TW West Side (from RW 17 to TW "B")
Landside Development Area (Infill or Expansion)		
Commercial Aviation	0.5 acres	3.9 acres
General Aviation	3.7 acres	10.8 acres
Post-Planning Aviation	75.5 acres	65 acres
Aviation-Related/Compatible	54 acres	54 acres
Fee Simple Property or Easement Acquisition Requirements		
Runway 17/35 RPZ Fee Simple/Easements	None	10.1 acres (Fee Simple)/22.9 acres (easement)

Source: BARNARD DUNKELBERG & COMPANY.



Existing Avigation Easement

Existing Property Line

Existing Fencing

Future Avigation Easement

Future Runway Protection Zone

Existing Runway Protection Zone

N 0 250' 500' 1000' 1500'
GRAPHIC SCALE IN FEET

Figure D12 Conceptual Development Plan

SOURCE: Base drawing prepared by Barnard Dunkelberg & Co. using "as-built" construction drawings by Creamer & Noble Engineers, 2007.

Nephi Municipal Airport

E. Airport Plans

Master Plan

Nephi

Municipal Airport

E. Airport Plans

INTRODUCTION. The plan for the future development of Nephi Municipal Airport has evolved from an analysis of many considerations. Among these are: aviation demand forecasts; facility requirements; aircraft operational characteristics; environmental considerations; and, the general direction of future airport development, as expressed by Nephi City. The various landside/airside development options that were presented in the previous chapter provided the Study Advisory Committee with a variety of options for future facility expansion. Following a careful assessment of the potential impacts of each development option, the Airport Sponsor selected components of a recommended Conceptual Development Plan, which was presented at the conclusion of the previous chapter.

Because previous chapters have established and quantified the future development needs of the Airport, the various elements of the selected plan are categorically reviewed here in an outline and graphic format. A brief written description of the individual elements, represented in the set of *Airport Plans* for Nephi Municipal Airport, is accompanied by a graphic description presented in the form of the *Airport Layout Drawing, Airport Airspace Drawings, Airspace Approach Profiles, Inner Portion of the Approach Surface Drawings, Departure Surface Drawing, Terminal Area Plan, Land Use Drawing* and *Airport Property Map*.

It is recognized that future demand for facilities cannot be totally predicted at the Airport, particularly during the latter stages of the 20-year planning period. Therefore, particular emphasis is placed on the initial portion of the planning period, the first five years. Here, the projections are more definable and the magnitude of program accomplishment is more pronounced. Furthermore, carefully guided development within the initial years of the planning period is essential to the future expansion of this facility and the continued enhancement of aviation development.

Airport Layout Plan

The Airport Layout Plan (ALP), which illustrates both airside and landside facilities, is a graphic depiction of the existing and ultimate airport facilities that will be required for the Airport to properly accommodate the forecast future demand. In addition, the ALP provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards. The following illustration, entitled *AIRPORT LAYOUT DRAWING*, and the following paragraphs describe the major components of the Airport's future Conceptual Development Plan.

Runway System

The development recommendations for the runway system are presented in the following text.

Runway 17/35.

- **Airport Reference Code (ARC) Dimensional Criteria:** This runway is currently designed in accordance with Airport Reference Code (ARC) C-II design criteria, as specified by the FAA. These are the standards that apply to the "Design Aircraft", (Cessna Citation X), in consideration of wingspan and approach speed, which currently utilize this runway or that are projected to utilize this runway in the future. As indicated in the *Aviation Activity Forecasts* chapter, approximately 705 operations conducted by a combination of ARC C-II and D-II aircraft are anticipated by the end of the planning period. Therefore, the ALP will continue to illustrate and maintain the existing/future ARC C-II criteria for this runway.

- **Dimensions:** Based on a desire to construct additional runway length for the future condition to accommodate the operation of a larger, more demanding aircraft, the ALP will protect for the future 900-foot extension of the runway for a total length of 7,200 feet. The existing 100-foot runway width will be maintained with the runway extension. The future runway length could accommodate approximately 75% of the fleet (i.e., aircraft weighing between 12,500 pounds and 60,000 pounds) at a 60% useful load, as specified by the FAA Airport Design program in consideration of the Airport's elevation, design temperature, and difference in runway elevation.

- **Pavement:** The runway's existing published gross weight bearing capacity (i.e., 21,000 pounds single wheel, and 30,000 pounds dual wheel main landing gear configuration will be maintained.

SURVEY MONUMENTS

ITEM	CONTROL STATION IDENTIFICATION NUMBER	DESCRIPTION
M1	U14 A DI1835	STAINLESS STEEL ROD IN SLEEVE
M2	U14 B DI2116	SURVEY DISK SET IN TOP OF CONCRETE MONUMENT
M3	U14 C DI2117	SURVEY DISK SET IN TOP OF CONCRETE MONUMENT

AIRPORT INFORMATION

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NAVD 88	5022.1'	*SAME*
AIRPORT REFERENCE POINT (ARP) NAD 83	N 39°44'11.70" W 111°52'12.20"	*N 39°44'07.20" W 111°52'12.14"*
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	93°F	*SAME*
AIRPORT REFERENCE CODE	C-II	*SAME*
TAXIWAY LIGHTING	MITL	*SAME*
DESIGN AIRCRAFT	CESSNA CITATION X	*SAME*

FAA APPROVAL

CONDITIONALLY APPROVED

Subject to letter dated: _____

FEDERAL AVIATION ADMINISTRATION
DENVER AIRPORTS DISTRICT OFFICE

Date: _____

CASE NO. 2011-ANM-292-NRA

SPONSOR APPROVAL

SPONSOR SIGNATURE _____ DATE_____

EXISTING BUILDINGS

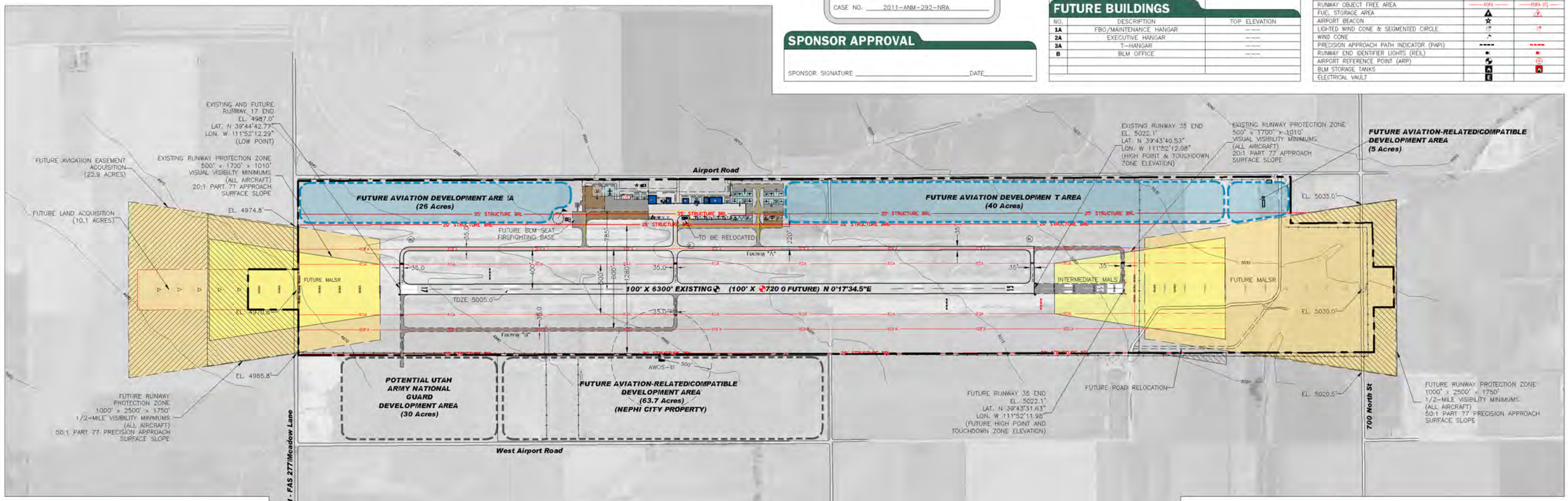
NO.	DESCRIPTION	TOP ELEVATION
1	FBO/CORPORATE HANGAR	--.--
2	PILOTS LOUNGE/OFFICE	5025.9'
3	AIRPORT MAINTENANCE HANGAR	--.--
4	EXECUTIVE HANGAR	5024.0'
5	EXECUTIVE HANGAR(TO BE REMOVED)	5020.2'
6	EXECUTIVE HANGAR	--.--
7	EXECUTIVE HANGAR	--.--

FUTURE BUILDINGS

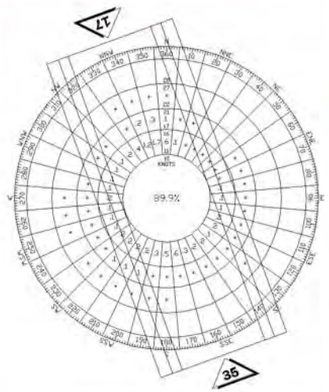
NO.	DESCRIPTION	TOP ELEVATION
1A	FBO/MAINTENANCE HANGAR	--.--
2A	EXECUTIVE HANGAR	--.--
3A	T-HANGAR	--.--
B	BLM OFFICE	--.--

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
ULTIMATE AIRPORT BUILDINGS (Beyond 20 Years)		
ULTIMATE AIRFIELD PAVEMENT (Beyond 20 Years)		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)
FUEL STORAGE AREA		F
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
WIND CONE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT (ARP)		
BLM STORAGE TANKS	B	B
ELECTRICAL VAULT	E	



ALL WEATHER WINDROSE



Wind Coverage Provided Under All Weather Conditions

RUNWAY	10.5-KNOT	13-KNOT	16-KNOT	20-KNOT
Runway 17/35	98.13%	99.03%	99.75%	99.96%
Runway 17	83.27%	84.07%	84.70%	84.89%
Runway 35	71.15%	71.54%	71.94%	72.03%

Source: Wind analysis tabulation provided by Barnard Dunkelberg & Company utilizing the FAA Airport Design Software supplied with AC 150/5300-13.

Note: Wind data obtained by the Utah Department of Transportation, Division of Aeronautics, from Nephi Municipal Airport, Nephi, Utah. Period of Record – October 1995-May 2000. Total Observations: 37,345.

LOCATION MAP



Figure A1 Airport Location Map

VICINITY MAP

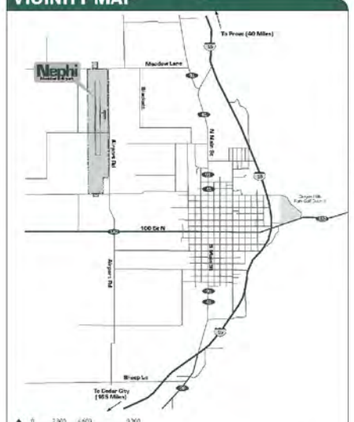
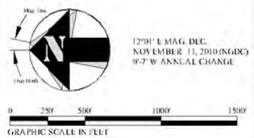


Figure A2 Airport Vicinity Map



RUNWAY INFORMATION

	RUNWAY 17/35 EXISTING	RUNWAY 17/35 FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL/VISUAL	*1/2-MILE/1/2-MILE*
FAR PART 77 APPROACH SLOPE	20:1/20:1	*50:1/50:1*
FAR PART 77 APPROACH CATEGORY	VISUAL/VISUAL	*PIR/PIR*
RUNWAY LENGTH x WIDTH	100' x 6300'	*100' x 7200'*
RUNWAY PAVEMENT TYPE	ASPHALT	*SAME*
PAVEMENT STRENGTH (IN 1000 LBS.)	21sw, 30dw	*SAME*
RUNWAY LIGHTING	MIRL	*SAME*
RUNWAY MARKING	NON-PREC	*SAME*
EFFECTIVE RUNWAY GRADIENT %	0.62	*SAME*
RUNWAY LINE-OF-SIGHT	CRITERIA MET	*SAME*
VISUAL APPROACH AIDS	PAPI,REILS	*PAPI,MALSR*
NAVAIDS (ELECTRONIC)	BEACON	*BEACON,GPS*
AIRPORT REFERENCE CODE	C-II	*SAME*
RUNWAY SAFETY AREA (RSA) WIDTH	500'	*SAME*
RSA LENGTH BEYOND STOP END	1000'	*1000'*
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'	*SAME*
OFA LENGTH BEYOND STOP END	1000'	*SAME*
OBSTACLE FREE ZONE (OFZ) WIDTH *	400'	*SAME*
OFZ LENGTH BEYOND STOP END *	200'	*SAME*
RUNWAY CENTERLINE TO HOLD LINE	250'	*SAME*
COMBINED % WIND COVERAGE (10.5,13,16)	98.13%,99.03%,99.75%	*SAME*

* No OFZ object penetrations

RUNWAY END DATA

		RUNWAY 17	RUNWAY 35
RUNWAY END COORDINATES	EXISTING	LAT. N 39°44'42.77" LON. W 111°52'12.29"	LAT. N 39°43'40.53" LON. W 111°52'12.08"
	FUTURE	*SAME*	*LAT. N 39°43'31.63" LON. W 111°52'11.98"*
RUNWAY ELEVATIONS		RUNWAY 17/35 EXISTING	RUNWAY 17/35 FUTURE
	END	4987.0'/5022.1'	*SAME*
	HIGH POINT	5022.1'	*SAME*
	LOW POINT	4987.0'	*SAME*
	TOUCHDOWN ZONE ELEVATION (TDZE)	5005.0'/5022.1'	*SAME*

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. The preparation of this plan was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.
2. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
3. Aerial Photo by Aerial Data Service, INC. October 2007.
4. Horizontal coordinate data in NAD83, vertical data is NAVD88.
5. No threshold siting surface object penetrations.
6. There are no FAA approved modifications to standards or non-standard conditions at this airport.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT LAYOUT DRAWING

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

SCALE
1" = 500'

SHEET NO.
1 OF 14

- **Instrument Approach Criteria:** The ALP will illustrate future instrument approach implementation to both runway ends and the procedures will likely be phased-in through the planning period The ultimate instrument approach procedures that are being planned include:

  Runway 17: Global positioning system (GPS) instrument approach with lower-than ½-mile visibility minimums.

  Runway 35: GPS instrument approach with lower-than ½-mile visibility minimums.

- **Runway Protection Zone (RPZ):** In regards to the existing visual approaches for each runway end, and the type of aircraft the runway is currently accommodating, the existing RPZ dimensions can be maintained at 500' x 1,750' x 1,010', in consideration of the ARC C-II dimensional criteria. However, the RPZ dimensions would have to be enlarged to accommodate the implementation of instrument approach procedures offering visibility minimums lower than ¾-mile. The future size of the RPZ for Runway 17 would increase to 1,000' x 2,500' x 1,750' in conjunction with the implementation of the future ILS/GPS approach with ½ mile visibility minimums. The future size of the RPZ for Runway 35 would increase to 1,000' x 1,700' x 1,510' in conjunction with implementation of the future GPS approach with greater-than ¾-mile visibility minimums.

- **Runway Lighting & Navigational Aids:** Maintain the placement of the runway's existing Medium Intensity Runway Lights (MIRLs), the Precision Approach Path Indicator (PAPI) lights, and the Runway End Identifier Lights (REILs) serving each runway end. In addition, it is recommended the Runway 17 REILs be maintained only until the need for a future Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) is confirmed, contingent upon the visibility minimums that can be achieved with the future instrument approach procedures at the Airport. In the intermediate term (six to ten years), it is recommended that a Medium Intensity Approach Lighting System (MALS) be installed off the Runway 35 in conjunction with the future GPS approach. In the long-term, the Runway 35 MALS will be upgraded to a MALSR following the 900 foot extension to Runway 35.

Taxiway System

The development recommendations for the Airport's taxiway system are presented in the following text.

- **Dimensions:** The ALP will reflect the maintenance of the Airport's existing parallel taxiway

system serving Runway 17/35. Taxiway "A" will remain 35 feet wide, and is proposed to be extended 900 feet in conjunction with the future 900-foot runway extension. It is also proposed that a taxiway connector system be constructed on the west side of the runway for direct access to the future Army National Guard development area facilities. Additional access taxiways and taxilanes will be constructed to serve the Bureau of Land Management (BLM) development area, and the hangar development and expansion areas on the east side of the Airport.

- **Pavement:** The existing taxiway pavement is to be maintained.
- **Taxiway Lighting:** The existing system of Medium Intensity Taxiway Lights (MITLs) associated with Taxiway "A" is to be maintained.

Property/Easement Acquisition or Release

The Airport Sponsor (i.e., Nephi City) presently owns the majority of the property associated with the existing RPZs at each runway end. A portion of the Runway 17 RPZ extends beyond airport property, which the Airport Sponsor controls through an avigation easement. However, with the future instrument approach implementations to Runway 17, approximately 33 acres of property acquisition, or a combination of property acquisition and avigation easement is recommended to control the balance of the future enlarged Runway 17 RPZs. This specified property/easement transaction is summarized as follows:

- **Runway 17 RPZ Property Acquisition.** 33 acres total or 10.9 acres in fee simple and 22.9 in easement (future approach RPZ).

It is recommended, that at a minimum, the Airport Sponsor maintain the existing easements for the future Runway 35 RPZs.

Airspace Plan

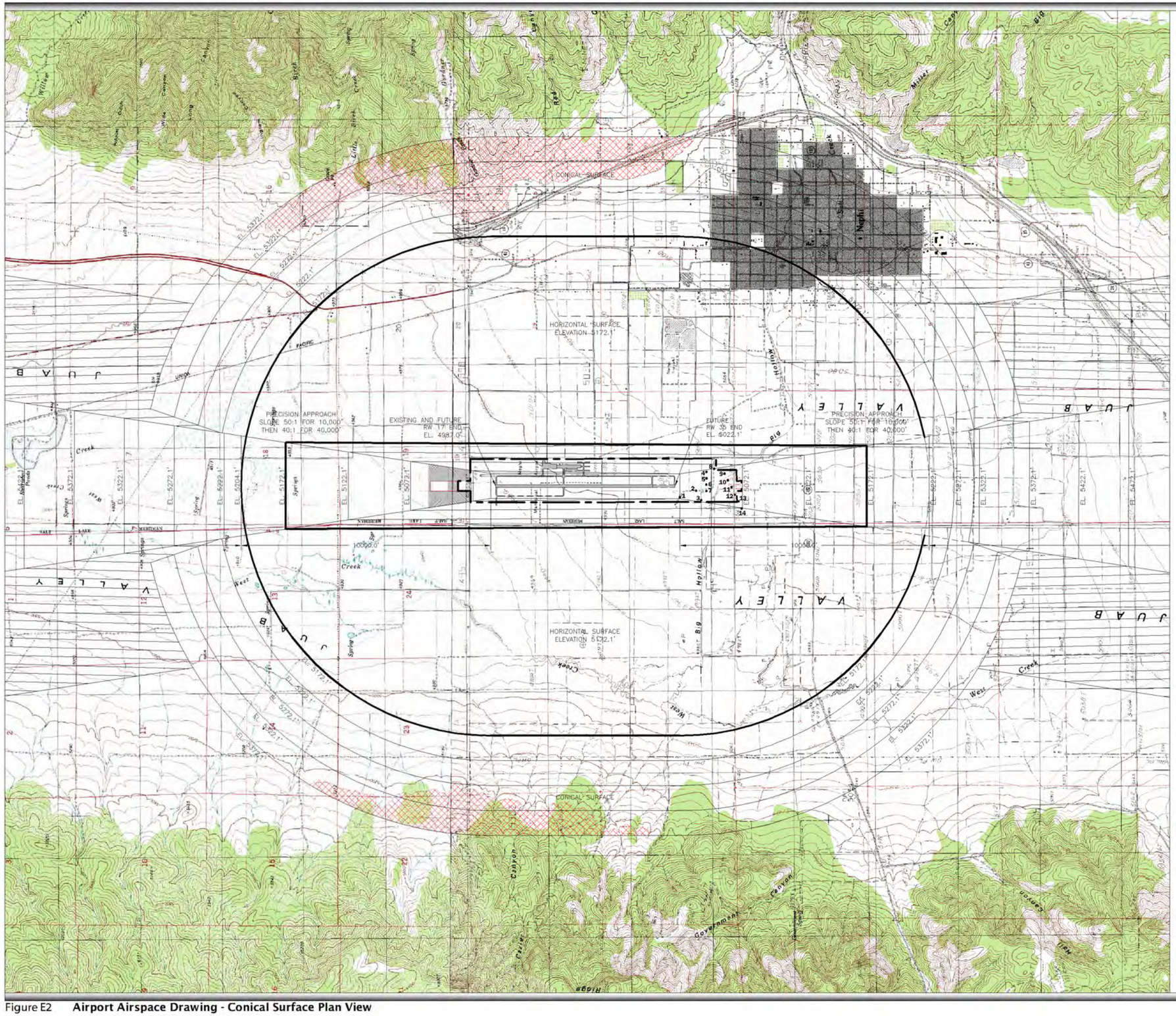
The Airspace Plan for the Airport is based upon Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. In order to protect the Airport's airspace and approaches from hazards that could affect the safe and efficient operation of aircraft, federal criteria contained in the FAR Part 77 document have been established to provide guidance in controlling the height of objects in the vicinity of the Airport. FAR Part 77 criteria specify a set of imaginary surfaces which, when penetrated, designate an object as being an obstruction. However, some obstructions can be determined to be non-hazardous by an aeronautical study by virtue of their location and/or marked and lighted as specified in the aeronautical study determination. Airfield navigational aids, as well as

lighting and visual aids, by nature of their location, may constitute obstructions, but these objects do not violate FAR Part 77 criteria, as they are essential to the operation of the Airport.

The Airspace Plan, which is illustrated in the following figures, provides plan and profile views that depict these criteria as they specifically relate to Nephi Municipal Airport. The plan is based on the ultimate planned runway length, along with the ultimate planned approaches to each runway end. Therefore, these figures reflect larger-than-utility airport criteria for Runway 17/35. Runway 17/35 will be protected for a future precision approach to both ends.

As specified by FAR Part 77 guidelines, the dimension for the precision instrument approach surfaces for the future Runway 17/35 measures 1,000 feet at the inner width, 16,000 feet at the outer width, and extends for a horizontal distance of 10,000 feet at an approach slope angle of 50:1, and an additional horizontal distance of 40,000 feet at an approach slope angle of 40:1.

According to the application of these various approach criteria, as well as the criteria for the primary, transitional, horizontal, and conical surfaces, 14 obstructions were identified and distributed within the Runway 35 primary approach surface slope. It should be noted that these identified obstructions will be evaluated by the FAA through the airspace review process (i.e., an aeronautical study) to reach a hazard/no hazard determination and disposition for each obstruction.



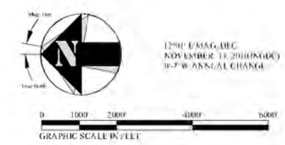
OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
1	DIRT ROAD	5021.0'	15'	PRIMARY	TO BE RELOCATED
2	DIRT ROAD	5025.0'	9.3'	35 APPROACH	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	3.3'	35 APPROACH	TO REMAIN
4	POWER POLE	5067.0'	26.1'	35 APPROACH	TO BE RELOCATED
5	POWER POLE	5065.0'	24.1'	35 APPROACH	TO BE RELOCATED
6	POWER POLE	5063.0'	22.1'	35 APPROACH	TO BE RELOCATED
7	POWER POLE	5061.9'	20.1'	35 APPROACH	TO BE RELOCATED
8	ROAD	5034.0'	0.0'	35 APPROACH	TO REMAIN
9	POWER POLE	5076.4'	19.9'	35 APPROACH	TO BE RELOCATED
10	POWER POLE	5076.4'	17.5'	35 APPROACH	TO BE RELOCATED
11	POWER POLE	5073.4'	11.7'	35 APPROACH	TO BE RELOCATED
12	POWER POLE	5076.4'	11.5'	35 APPROACH	TO BE RELOCATED
13	POWER POLE	5076.0'	6.2'	35 APPROACH	TO BE RELOCATED
14	POWER POLE	5076.0'	5.5'	35 APPROACH	TO BE RELOCATED

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.
NOTE: SEE INNER PORTION OF THE APPROACH SURFACE – RUNWAY 35 DRAWING FOR CLOSE-IN OBSTRUCTIONS.

DRAWING LEGEND

	EXISTING	FUTURE
TERRAIN OBSTRUCTION		
AIRPORT PROPERTY LINE		
AVIGATION EASEMENT		



REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Aerial Photo by Aerial Data Service, INC, October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/datasheet_prd/plsq_airport.PRO_AIRPORT_RUNWAY?v_cnt_num=26582. Horizontal coordinate data is NAD83, vertical data is NAVD88.

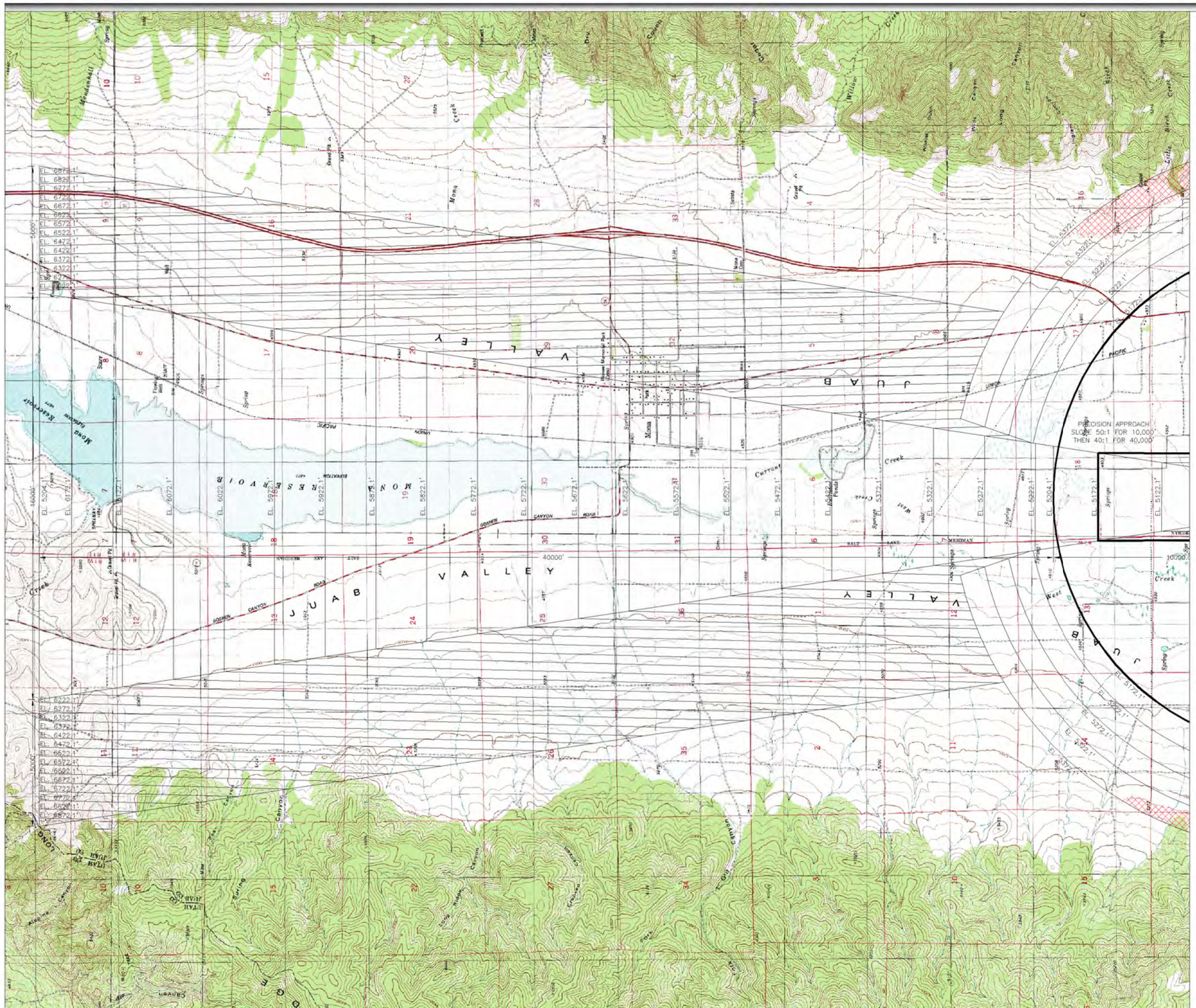
NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT AIRSPACE DRAWING
CONICAL SURFACE (PLAN VIEW)

Barnard Dunkelberg & Company
TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8841
DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8841

DATE
AUGUST 2011
SCALE
1" = 400'
SHEET NO.
2 OF 14

Figure E2 **Airport Airspace Drawing - Conical Surface Plan View**



OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
	NONE				

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.

DRAWING LEGEND

TERRAIN OBSTRUCTION

12°00' E (MAG DEC)
NOVEMBER 18, 2010 (NGDC)
8.7' W ANNUAL CHANGE

0 1000' 2000' 4000' 6000'
GRAPHIC SCALE IN FEET

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/datasheet_prd/pkg_airport.PRO_AIRPORT_RUNWAY?v_cntl_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT AIRSPACE DRAWING
RUNWAY 17 EXTENDED APPROACH (PLAN VIEW)

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

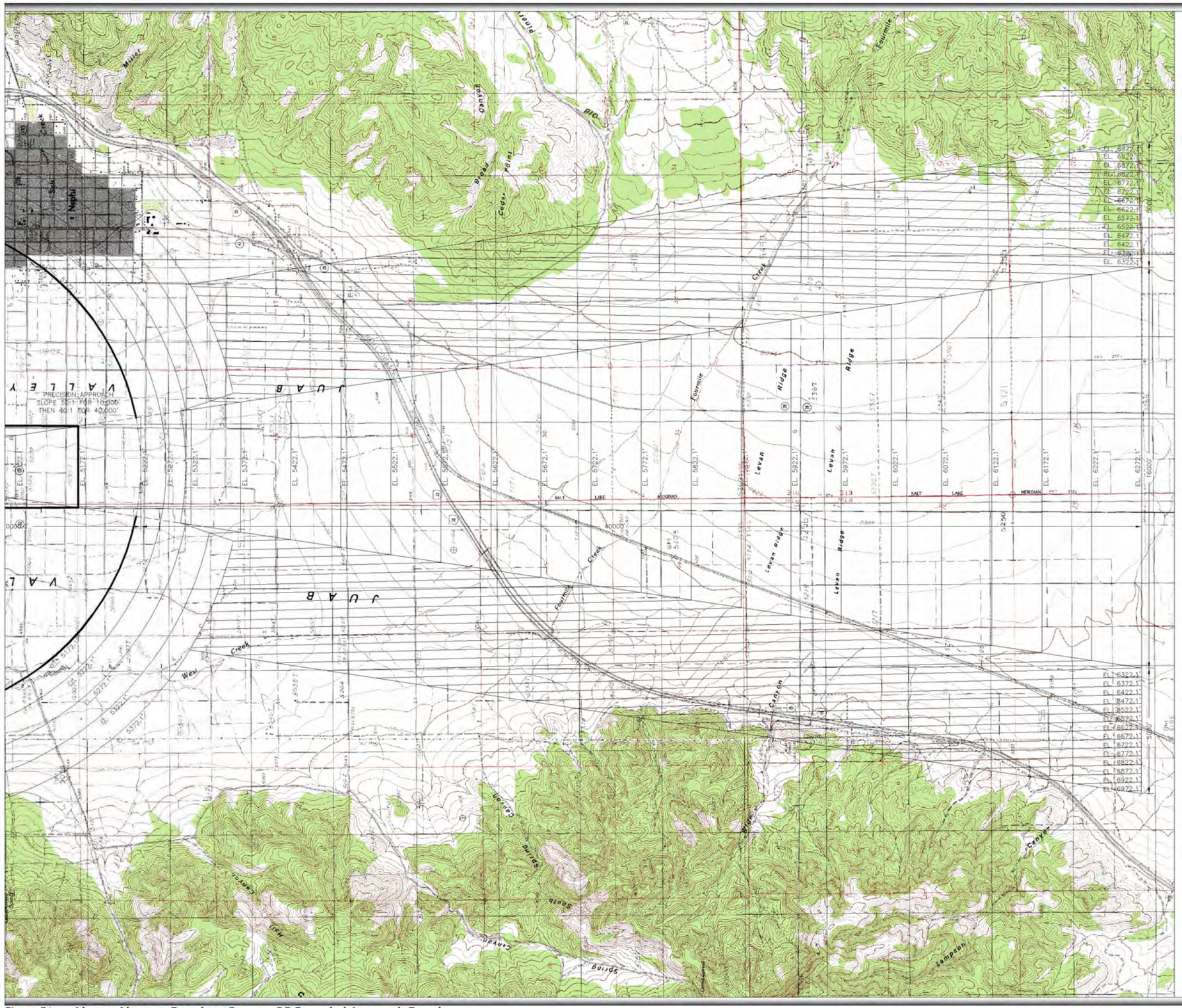
DENVER
1743 Wazee Street, Suite 300
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

SCALE
1" = 400'

SHEET NO.
3 OF 14

Figure E3 **Airport Airspace Drawing - Runway 17 Extended Approach Drawing**

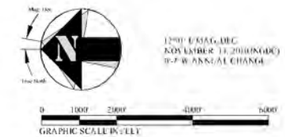


OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
1	DIRT ROAD	5021.0'	15'	PRIMARY	TO BE RELOCATED
2	DIRT ROAD	5025.0'	9.3'	35 APPROACH	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	3.3'	35 APPROACH	TO REMAIN
4	POWER POLE	5067.0'	26.1'	35 APPROACH	TO BE RELOCATED
5	POWER POLE	5065.0'	24.1'	35 APPROACH	TO BE RELOCATED
6	POWER POLE	5063.0'	22.1'	35 APPROACH	TO BE RELOCATED
7	POWER POLE	5061.0'	20.1'	35 APPROACH	TO BE RELOCATED
8	ROAD	5034.0'	0.0'	35 APPROACH	TO REMAIN
9	POWER POLE	5076.4'	19.9'	35 APPROACH	TO BE RELOCATED
10	POWER POLE	5076.4'	17.5'	35 APPROACH	TO BE RELOCATED
11	POWER POLE	5073.4'	11.7'	35 APPROACH	TO BE RELOCATED
12	POWER POLE	5076.4'	11.5'	35 APPROACH	TO BE RELOCATED
13	POWER POLE	5076.0'	8.2'	35 APPROACH	TO BE RELOCATED
14	POWER POLE	5076.0'	5.5'	35 APPROACH	TO BE RELOCATED

NOTE: SEE INNER PORTION OF THE APPROACH SURFACE – RUNWAY 35 DRAWING FOR CLOSE-IN OBSTRUCTIONS.

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.



REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/datasheet_prd/pkg_airport.PRO_AIRPORT_RUNWAY?v_cntl_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT AIRSPACE DRAWING
RUNWAY 35 EXTENDED APPROACH (PLAN VIEW)

Barnard Dunkelberg & Company
TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8841
DENVER
1743 Wazee Street, Suite 800
Denver, Colorado 80202
303.825.8841

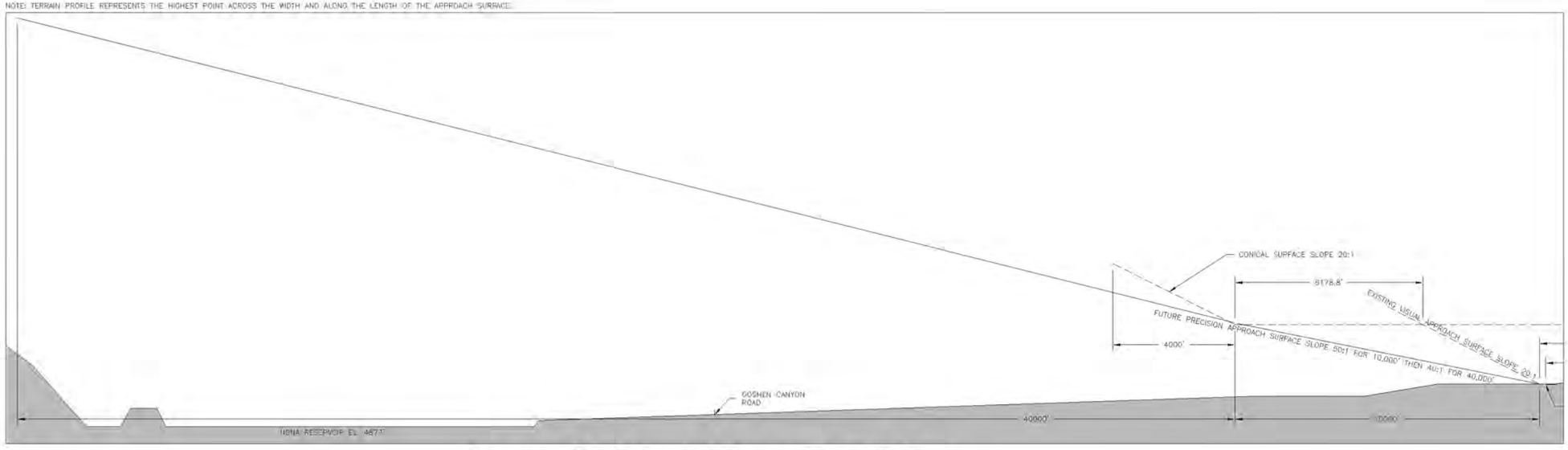
DATE
AUGUST 2011

SCALE
1" = 400'

SHEET NO.
4 OF 14

Figure E4 **Airport Airspace Drawing - Runway 35 Extended Approach Drawing**

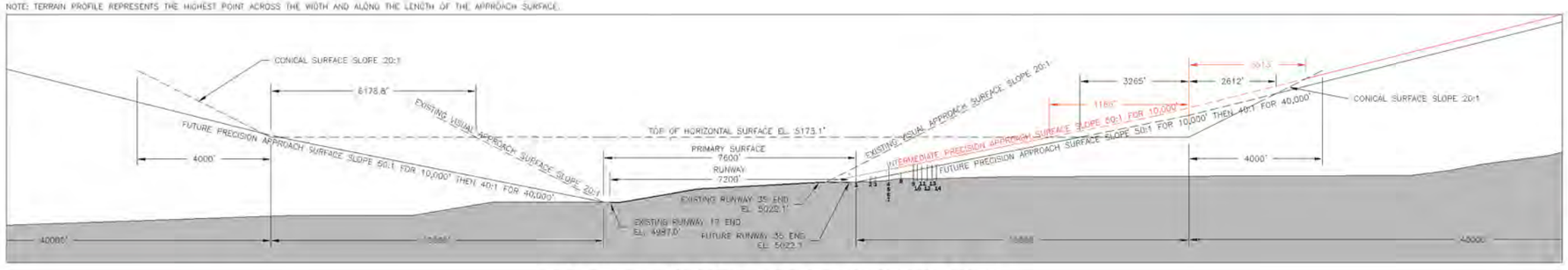
NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE APPROACH SURFACE.



Runway 17 - Extended Approach Profile View

1" = 2000' HORIZONTALLY
1" = 200' VERTICALLY

NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE APPROACH SURFACE.



Runway 17/35 - Approach Profile View

1" = 2000' HORIZONTALLY
1" = 200' VERTICALLY

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
1	DIRT ROAD	5021.0'	15'	PRIMARY	TO BE RELOCATED
2	DIRT ROAD	5025.0'	9.5'	35 APPROACH	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	3.5'	35 APPROACH	TO REMAIN
4	POWER POLE	5067.9'	26.1'	35 APPROACH	TO BE RELOCATED
5	POWER POLE	5065.9'	24.1'	35 APPROACH	TO BE RELOCATED
6	POWER POLE	5063.9'	22.1'	35 APPROACH	TO BE RELOCATED
7	POWER POLE	5061.9'	20.1'	35 APPROACH	TO BE RELOCATED
8	ROAD	5034.0'	0.0'	35 APPROACH	TO REMAIN
9	POWER POLE	5076.4'	19.9'	35 APPROACH	TO BE RELOCATED
10	POWER POLE	5076.4'	17.5'	35 APPROACH	TO BE RELOCATED
11	POWER POLE	5073.4'	11.7'	35 APPROACH	TO BE RELOCATED
12	POWER POLE	5076.4'	11.5'	35 APPROACH	TO BE RELOCATED
13	POWER POLE	5076.0'	8.2'	35 APPROACH	TO BE RELOCATED
14	POWER POLE	5076.0'	5.5'	35 APPROACH	TO BE RELOCATED

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/dataSheet_pr4/plsg_airport.PRO_AIRPORT_RUNWAY?v_cnt_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT AIRSPACE DRAWING
RUNWAY 17 APPROACH PROFILES

Barnard Dunkelberg & Company
TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844
DENVER
1743 Wazee Street, Suite 500
Denver, Colorado 80202
303.825.8844

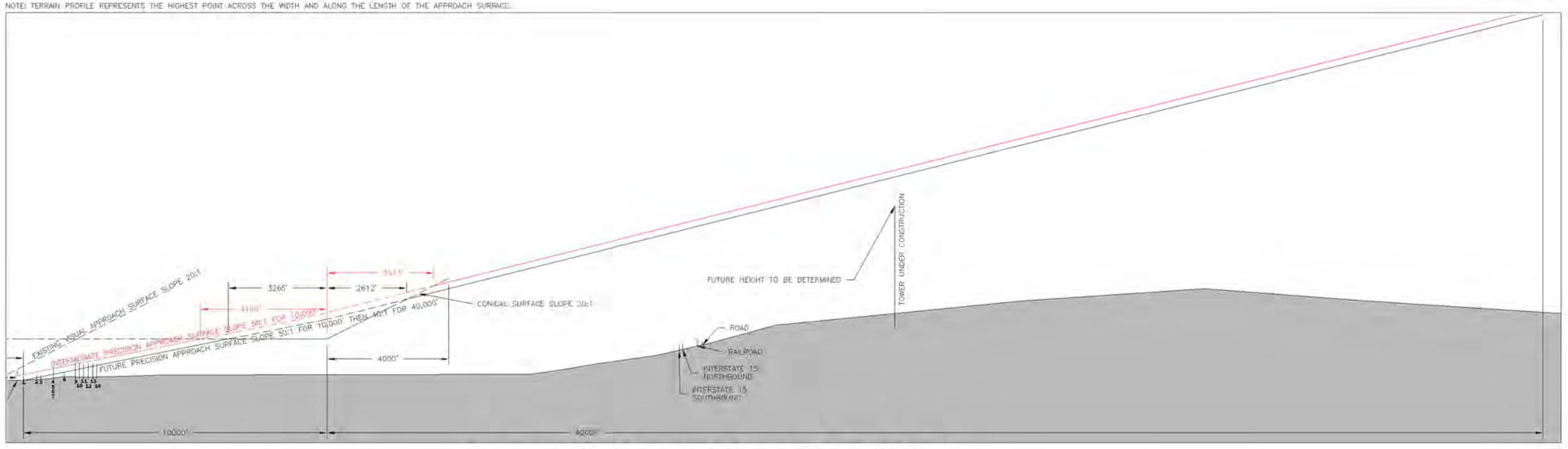
DATE
AUGUST 2011

SCALE
1" = 400'

SHEET NO.
5 OF 14

Figure E5 **Airport Airspace Drawing - Runway 17 Approach Profiles**

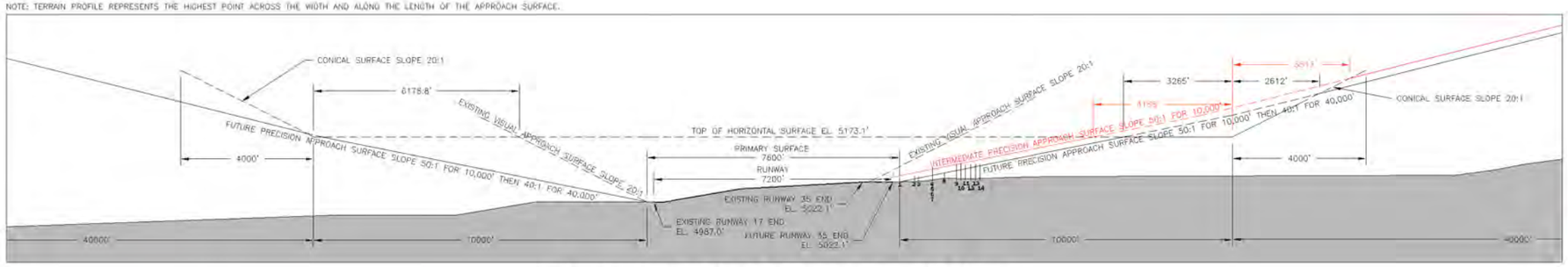
NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE APPROACH SURFACE.



Runway 35 - Extended Approach Profile View

1" = 2000' HORIZONTALLY
1" = 200' VERTICALLY

NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE APPROACH SURFACE.



Runway 17/35 - Approach Profile View

1" = 2000' HORIZONTALLY
1" = 200' VERTICALLY

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	EXISTING PENETRATION	INTERMEDIATE PENETRATION	FUTURE PENETRATION	SURFACE	DISPOSITION
1	DIRT ROAD	5021.0'	0'	0'	15'	PRIMARY	TO BE RELOCATED
2	DIRT ROAD	5025.0'	0'	0'	9.3'	35 APPROACH	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	0'	0'	3.1'	35 APPROACH	TO REMAIN
4	POWER POLE	5067.9'	0'	8.1'	26.1'	35 APPROACH	TO BE RELOCATED
5	POWER POLE	5065.9'	0'	8.1'	24.1'	35 APPROACH	TO BE RELOCATED
6	POWER POLE	5063.9'	0'	8.1'	22.1'	35 APPROACH	TO BE RELOCATED
7	POWER POLE	5061.9'	0'	2.1'	20.1'	35 APPROACH	TO BE RELOCATED
8	ROAD	5034.0'	0'	0'	0.0'	35 APPROACH	TO REMAIN
9	POWER POLE	5076.4'	0'	1.9'	19.9'	35 APPROACH	TO BE RELOCATED
10	POWER POLE	5076.4'	0'	0'	17.5'	35 APPROACH	TO BE RELOCATED
11	POWER POLE	5073.4'	0'	0'	11.7'	35 APPROACH	TO BE RELOCATED
12	POWER POLE	5076.4'	0'	0'	11.5'	35 APPROACH	TO BE RELOCATED
13	POWER POLE	5076.0'	0'	0'	8.2'	35 APPROACH	TO BE RELOCATED
14	POWER POLE	5076.0'	0'	0'	5.5'	35 APPROACH	TO BE RELOCATED

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation or navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/dataSheet_pr4/pkg_airport.PRO_AIRPORT_RUNWAY?v_cnt_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT AIRSPACE DRAWING
RUNWAY 35 APPROACH PROFILES

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 500
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

SCALE
1" = 400'

SHEET NO.
6 OF 14

Figure E6 **Airport Airspace Drawing - Runway 35 Approach Profiles**

Inner Portion of the Approach Surface Plans

To provide a more detailed view of the inner portions of the Part 77 imaginary approach surfaces and the Runway Protection Zones (RPZs), the following drawings are provided. An RPZ is trapezoidal in shape, centered about the extended runway centerline, and typically begins 200 feet beyond the end of the runway. The RPZs are essentially an expanded area of the runway safety areas within which it is desirable to clear all objects (although some uses are normally acceptable). The size of the RPZ is contingent upon the approach category of the design aircraft and the visibility minimums associated with the type of approach (visual and lower than ¾-mile).

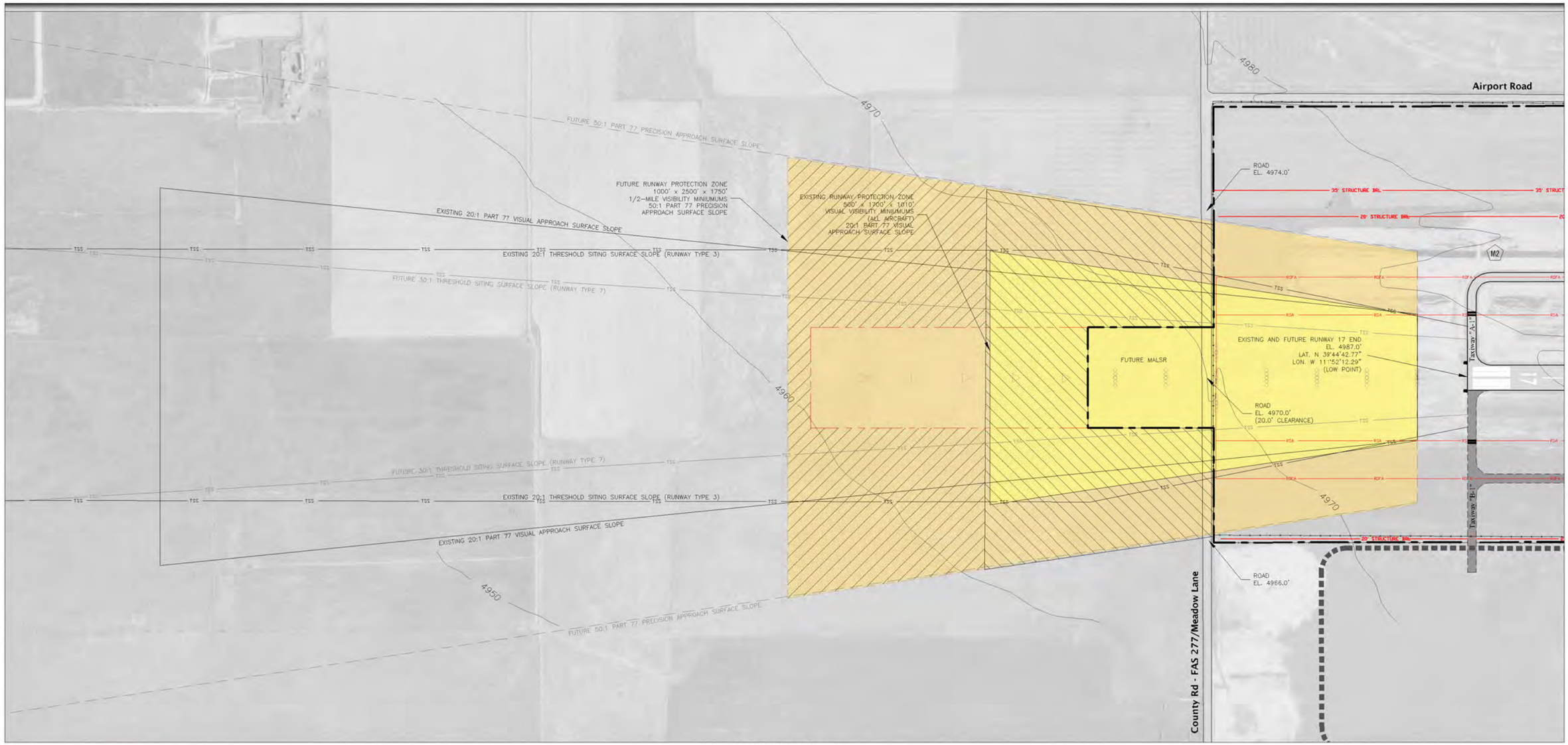
As noted in previous sections, the future RPZ dimensions for both runway ends will be enlarged from their existing dimensions of 500' x 1,700' x 1,010'. The future RPZ dimensions for Runway 17/35 are to be enlarged to 1,000' x 1,750' x 2,500'.

Generally speaking, the Airport Sponsor, as either fee simple acquisition or as an RPZ easement, should control the RPZs, with fee simple being the preferred type of ownership. If an easement is purchased, it is a purchase of the air rights over the actual ground. Nephi City currently owns most of the property within the existing RPZs. However, a large portion of the future Runway 17 RPZ has been identified for future fee simple, or avigation easement acquisition.

The *Inner Portions of the Approach Surface Drawings* that are depicted in Figures E7 through E10 provide large-scale drawings with both plan and profile delineations. They are intended to facilitate identification of the roadways, utility lines, railroads, structures, and other possible obstructions that may lie within the confines of the inner approach surface area associated with each runway end. In addition, these drawings illustrate the approach clearance requirements specified by threshold siting criteria. According to Appendix 2 information presented in AC 150/5300-13, "the standard shape, dimensions, and slope of the surface used for locating a threshold are dependent upon the type of aircraft operations currently conducted or forecast, the landing visibility minimums desired, and the types of instrumentation available or planned for that runway end." For Nephi Municipal Airport, the following threshold siting surfaces were identified for evaluation:

- **Existing Runway 17 and 35:** Runway Type "3" [Approach end of runways expected to accommodate large airplanes (visual day or night); or instrument approaches having visibility minimums > one statute mile (day only)].
- **Future Runway 17 and 35:** Runway Type "7" [Approach end of runways expected to accommodate approaches with positive vertical guidance (GQS)].

As with the *Airspace Plan*, the *Inner Portion of the Approach Surface Drawings* is based on the ultimate planned runway length, along with the ultimate planned approach to each runway end. According to the application of these threshold siting surface criteria, 14 obstructions (ten power poles and four surface penetrations by one road) were identified within the Runway 35 extended approach surface that will be evaluated by the FAA through the airspace review process (i.e., an aeronautical study). Regarding the disposition of these obstructions, it is likely that the roads and power poles would be recommended for relocation.



RUNWAY 16 PLAN

1" = 200'

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PART 77 PENETRATION	TSS PENETRATION	DISPOSITION
	NO PENETRATIONS TO RUNWAY 17 SURFACES.				

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.

12°01' E MAG. DEC.
NOVEMBER 11, 2010 (NGDC)
0.7' W ANNUAL CHANGE

0 250' 500' 1000' 1500'
GRAPHIC SCALE IN FEET

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Horizontal coordinate data in NAD83, vertical data is NAVD88.
3. Threshold siting surface criteria standards determined by FAA Advisory Circular 150/5300-13, *Airport Design*, Change 15, Appendix 2, Table A2-1.

NEPHI MUNICIPAL AIRPORT

Nephi City, Utah

INNER PORTION OF THE APPROACH SURFACE

RUNWAY 17 (PLAN VIEW)

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

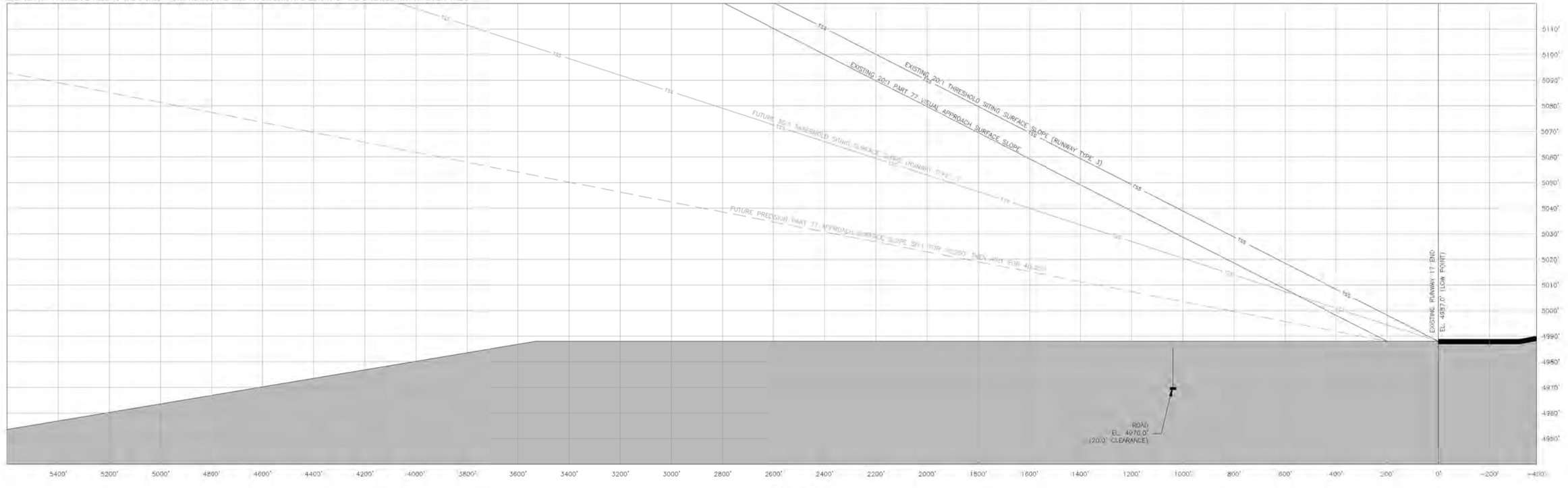
DATE
AUGUST 2011

SCALE
VARIES

SHEET NO.
7 OF 14

Figure E7 **Inner Portion of the Approach Surface - Runway 17 Plan View**

NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE EXTENDED RUNWAY SAFETY AREA.



RUNWAY 17 PROFILE

1" = 200' HORIZONTALLY
1" = 20' VERTICALLY

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PART 77 PENETRATION	TSS PENETRATION	DISPOSITION
	NO PENETRATIONS TO RUNWAY 17 SURFACES				

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Horizontal coordinate data in NAD83, vertical data is NAVD88.
3. Threshold siting surface criteria standards determined by FAA Advisory Circular 150/5300-13, Airport Design, Change 16, Appendix 2, Table A2-1.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

INNER PORTION OF THE APPROACH SURFACE
RUNWAY 17 (PROFILE VIEW)

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8841

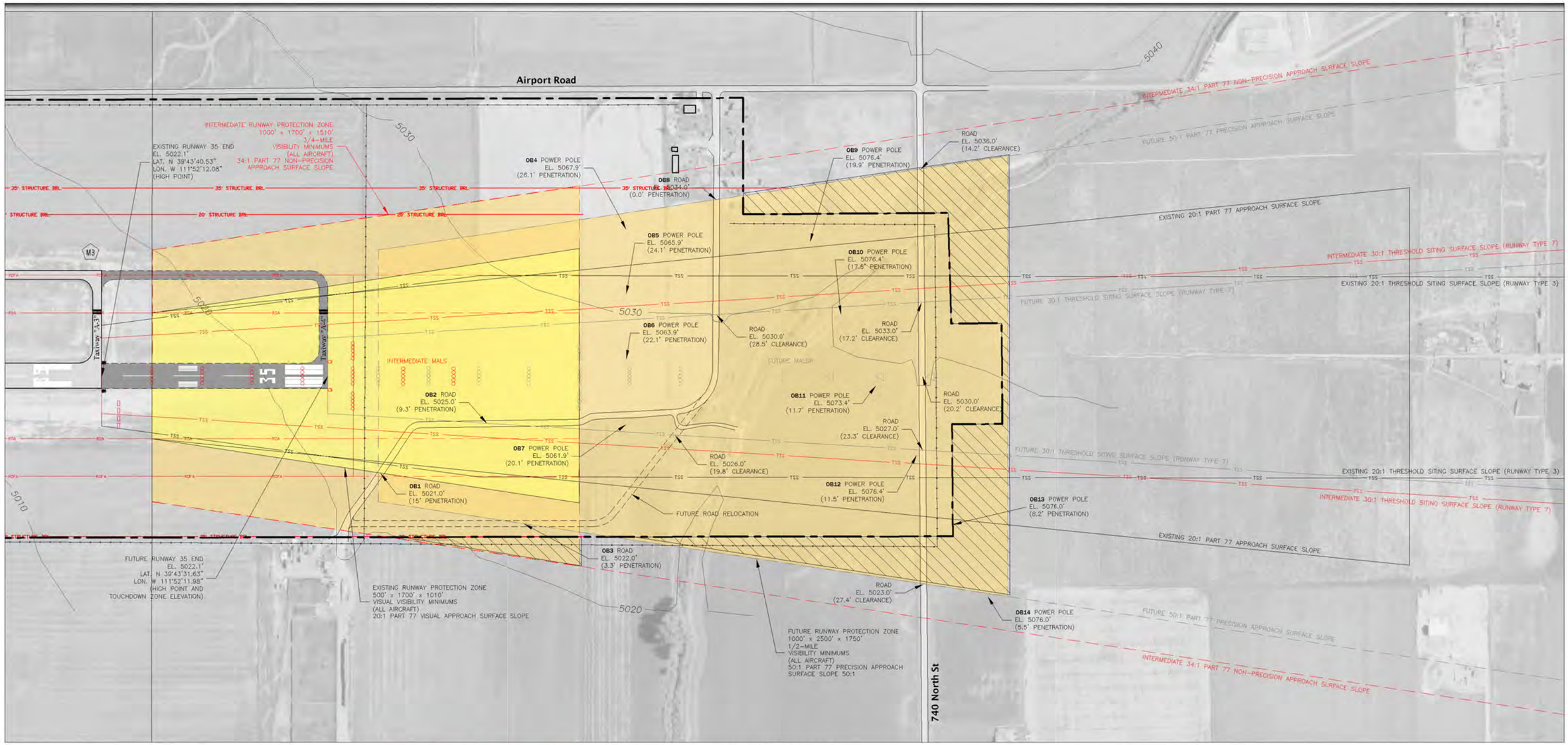
DENVER
1743 Wazee Street, Suite 300
Denver, Colorado 80202
303.825.8841

DATE
AUGUST 2011

SCALE
VARIES

SHEET NO.
8 OF 14

Figure E8 **Inner Portion of the Approach Surface - Runway 17 Profile View**



RUNWAY 35 PLAN

1" = 200'

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRFIELD PAVEMENT		
ULTIMATE AIRFIELD PAVEMENT (Beyond 20 Years)		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)

OBSTRUCTIONS

NO.	DESCRIPTION	EXISTING ELEVATION	EXISTING PART 77 PENETRATION	EXISTING TSS PENETRATION	INTERMEDIATE PART 77 PENETRATION	INTERMEDIATE TSS PENETRATION	FUTURE PART 77 PENETRATION	FUTURE TSS PENETRATION	DISPOSITION
1	DIRT ROAD	5021.0'	0'	NONE.	0'	NONE	15'	NONE	TO BE RELOCATED
2	DIRT ROAD	5025.0'	0'	NONE.	0'	NONE	9.3'	NONE	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	0'	NONE.	0'	NONE	3.3'	NONE	TO REMAIN
4	POWER POLE	5067.9'	0'	NONE.	8.1'	NONE	26.1'	NONE	TO BE RELOCATED
5	POWER POLE	5065.9'	0'	NONE.	6.1'	NONE	24.1'	NONE	TO BE RELOCATED
6	POWER POLE	5063.9'	0'	NONE.	4.1'	NONE	22.1'	2.2'	TO BE RELOCATED
7	POWER POLE	5061.9'	0'	NONE.	2.1'	NONE	20.1'	0.0'	TO BE RELOCATED
8	ROAD	5034.0'	0'	NONE.	0'	NONE	0.0'	NONE	TO REMAIN
9	POWER POLE	5076.4'	0'	NONE.	1.9'	NONE	19.9'	NONE	TO BE RELOCATED
10	POWER POLE	5076.4'	0'	NONE.	0'	NONE	17.5'	NONE	TO BE RELOCATED
11	POWER POLE	5073.4'	0'	NONE.	0'	NONE	11.7'	NONE	TO BE RELOCATED
12	POWER POLE	5076.4'	0'	NONE.	0'	NONE	11.5'	NONE	TO BE RELOCATED
13	POWER POLE	5076.0'	0'	NONE.	0'	NONE	8.2'	NONE	TO BE RELOCATED
14	POWER POLE	5076.0'	0'	NONE.	0'	NONE	5.5'	NONE	TO BE RELOCATED

NOTE: 15' ADDED TO ROAD ELEVATIONS TO DETERMINE OBSTRUCTION PENETRATION.

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.

12°01' E MAG. DEC.
NOVEMBER 11, 2010 (NGDC)
0.7' W ANNUAL CHANGE

0 250' 500' 1000' 1500'
GRAPHIC SCALE IN FEET

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Horizontal coordinate data in NAD83, vertical data is NAVD88.
3. Threshold siting surface criteria standards determined by FAA Advisory Circular 150/5300-13, *Airport Design*, Change 15, Appendix 2, Table A2-1.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

INNER PORTION OF THE APPROACH SURFACE
RUNWAY 35 (PLAN VIEW)

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8884

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

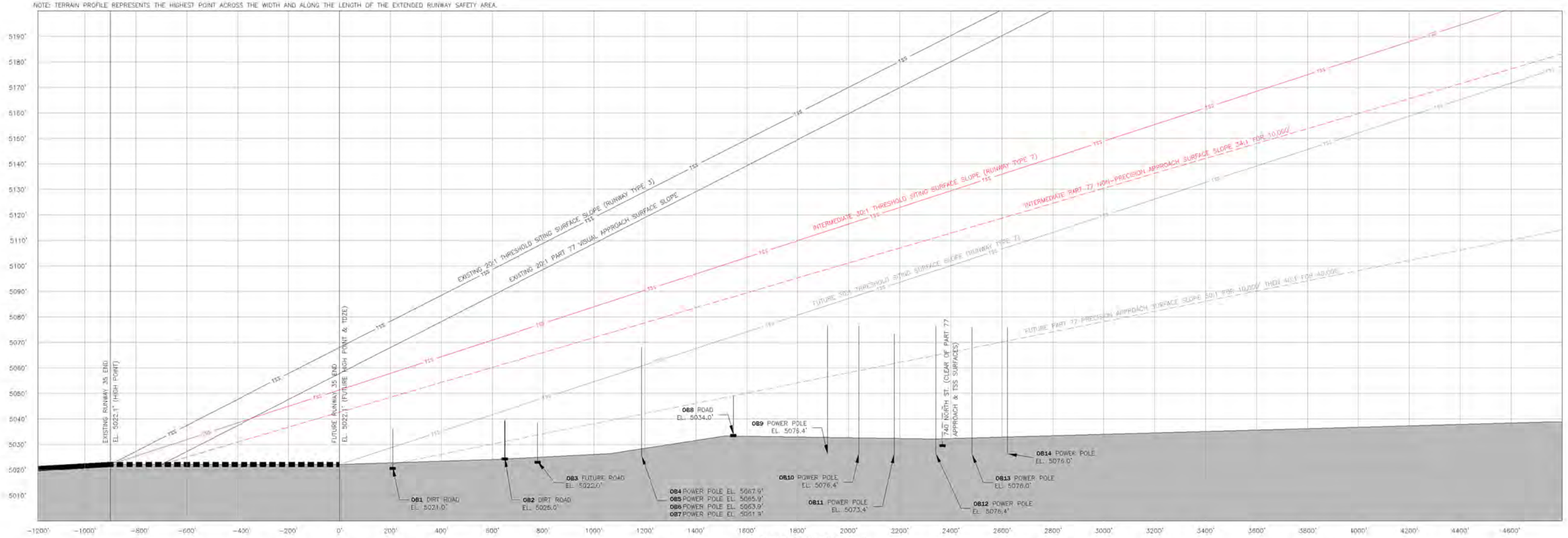
DATE
AUGUST 2011

SCALE
1" = 2000'

SHEET NO.
9 OF 14

Figure E9 **Inner Portion of the Approach Surface - Runway 35 Plan View**

NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE EXTENDED RUNWAY SAFETY AREA.



RUNWAY 35 PROFILE

1" = 200' HORIZONTALLY
1" = 20' VERTICALLY

OBSTRUCTIONS

			EXISTING		INTERMEDIATE		FUTURE		
NO.	DESCRIPTION	ELEVATION	PART 77 PENETRATION	TSS PENETRATION	PART 77 PENETRATION	TSS PENETRATION	PART 77 PENETRATION	TSS PENETRATION	DISPOSITION
1	DIRT ROAD	5021.0'	0'	NONE	0'	NONE	15'	NONE	TO BE RELOCATED
2	DIRT ROAD	5025.0'	0'	NONE	0'	NONE	9.3'	NONE	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	0'	NONE	0'	NONE	3.3'	NONE	TO REMAIN
4	POWER POLE	5067.9'	0'	NONE	8.1'	NONE	26.1'	NONE	TO BE RELOCATED
5	POWER POLE	5065.9'	0'	NONE	6.1'	NONE	24.1'	NONE	TO BE RELOCATED
6	POWER POLE	5063.9'	0'	NONE	4.1'	NONE	22.1'	2.2'	TO BE RELOCATED
7	POWER POLE	5061.9'	0'	NONE	2.1'	NONE	20.1'	0.0'	TO BE RELOCATED
8	ROAD	5034.0'	0'	NONE	0'	NONE	0.0'	NONE	TO REMAIN
9	POWER POLE	5076.4'	0'	NONE	1.9'	NONE	18.9'	NONE	TO BE RELOCATED
10	POWER POLE	5076.4'	0'	NONE	0'	NONE	17.5'	NONE	TO BE RELOCATED
11	POWER POLE	5073.4'	0'	NONE	0'	NONE	11.7'	NONE	TO BE RELOCATED
12	POWER POLE	5076.4'	0'	NONE	0'	NONE	11.5'	NONE	TO BE RELOCATED
13	POWER POLE	5076.0'	0'	NONE	0'	NONE	8.2'	NONE	TO BE RELOCATED
14	POWER POLE	5076.0'	0'	NONE	0'	NONE	5.5'	NONE	TO BE RELOCATED

NOTE: 15' ADDED TO ROAD ELEVATIONS TO DETERMINE OBSTRUCTION PENETRATION.

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Horizontal coordinate data in NAD83, vertical data is NAVD88.
3. Threshold siting surface criteria standards determined by FAA Advisory Circular 150/5300-13, *Airport Design*, Change 15, Appendix 2, Table A2-1.

NEPHI MUNICIPAL AIRPORT

Nephi City, Utah

INNER PORTION OF THE APPROACH SURFACE

RUNWAY 35 (PROFILE VIEW)

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1745 Wazee Street, Suite 300
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

SCALE
1" = 2000'

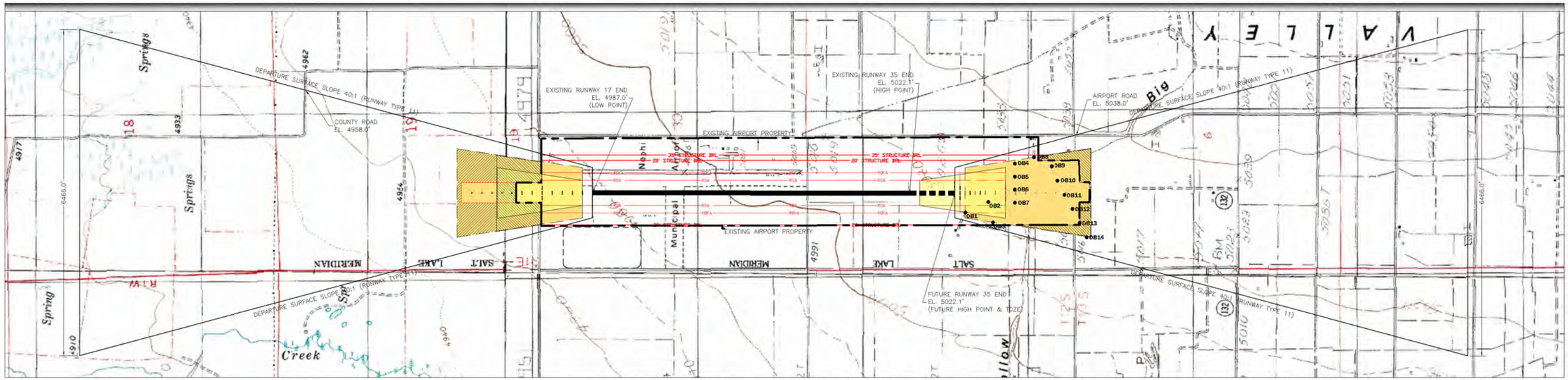
SHEET NO.
10 OF 14

Figure E10 **Inner Portion of the Approach Surface - Runway 35 Profile View**

Departure Surface Plans

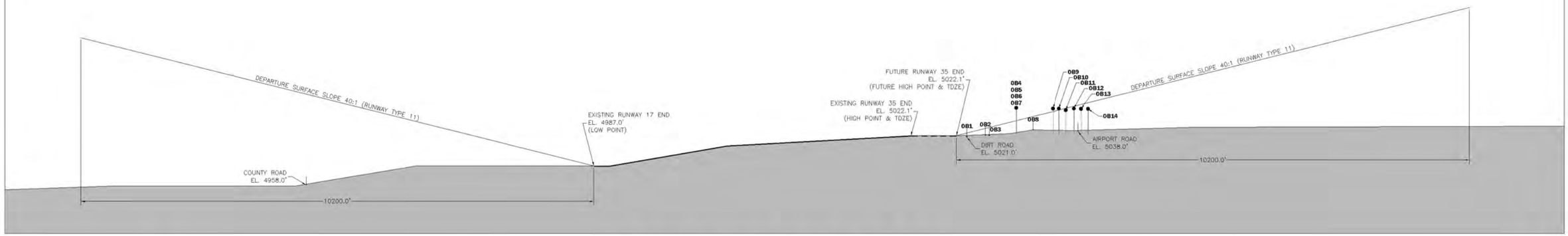
In addition to the *Inner Portion of the Approach Surface Drawings* that were previously described, a departure surface plan has been developed to illustrate the dimensions and slope of the departure surface used to establish the departure end of runway (DER). According to Appendix 2 information presented in AC 150/5300-13, for runways providing instrument departure capability to general aviation aircraft, no object should penetrate a surface beginning at the elevation of the runway at the DER or end of the clearway, whichever is greater, that slopes at a 40:1 gradient. Penetrations by existing obstacles of 35 feet or less do not require TODA reduction or other mitigations; however, they may affect new or existing departure procedures.

The *Departure Surface Drawing* that is depicted in Figure E11 provides a large-scale view with both plan and profile delineations, which reflect the ultimate planned runway length, along with the ultimate planned departure surface extending from each runway end. According to the application of these departure surface criterion, 14 obstructions were identified (ten power poles and four surface penetrations by one road) that will be evaluated by the FAA through the airspace review process (i.e., an aeronautical study). Regarding the disposition of these obstructions, it is likely that the power poles and the dirt road would be recommended for relocation.



DEPARTURE SURFACES - PLAN VIEW

1" = 1000'



RUNWAY 17/35 DEPARTURE SURFACE - PROFILE VIEW

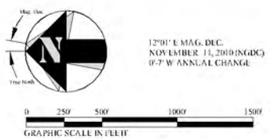
1" = 1000' HORIZONTALLY
1" = 100' VERTICALLY

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
1	DIRT ROAD	5021.0'	15'	35 DEPARTURE	TO BE RELOCATED
2	DIRT ROAD	5025.0'	1.4'	35 DEPARTURE	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	-3.9'	35 DEPARTURE	TO REMAIN
4	POWER POLE	5067.9'	16.1'	35 DEPARTURE	TO BE RELOCATED
5	POWER POLE	5065.9'	14.1'	35 DEPARTURE	TO BE RELOCATED
6	POWER POLE	5063.9'	12.1'	35 DEPARTURE	TO BE RELOCATED
7	POWER POLE	5061.9'	10.1'	35 DEPARTURE	TO BE RELOCATED
8	ROAD	5034.0'	-12.2'	35 DEPARTURE	TO REMAIN
9	POWER POLE	5076.4'	6.4'	35 DEPARTURE	TO BE RELOCATED
10	POWER POLE	5076.4'	3.3'	35 DEPARTURE	TO BE RELOCATED
11	POWER POLE	5073.4'	-5.1'	35 DEPARTURE	TO BE RELOCATED
12	POWER POLE	5076.4'	-4.2'	35 DEPARTURE	TO BE RELOCATED
13	POWER POLE	5076.0'	-8.1'	35 DEPARTURE	TO BE RELOCATED
14	POWER POLE	5076.0'	-11.6'	35 DEPARTURE	TO BE RELOCATED
	NO OBSTRUCTIONS TO RUNWAY 17				

NOTE: 15' ADDED TO ROAD ELEVATIONS TO DETERMINE OBSTRUCTION PENETRATION.

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.



DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
RUNWAY PROTECTION ZONE		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)
AVIGATION EASEMENT		

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Horizontal coordinate data in NAD83, vertical data is NAVD88.
3. Departure surfaces criteria standards determined by FAA Advisory Circular 150/5300-13, *Airport Design*, Change 15, Appendix 2, Table A2-1.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

DEPARTURE SURFACE DRAWING

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

SCALE
VARIES

SHEET NO.
11 OF 14

Figure E11 **Departure Surface Drawing**

Terminal Area Plan

Based upon input received from the Airport Sponsor, and the projected aircraft storage improvements that were identified in the *Aviation Activity Forecasts* chapter, the development recommendations for the existing/expanded terminal area (i.e., the hangar, apron, and access taxiway improvements) are presented in the following text and depicted in the following illustration, *TERMINAL AREA PLAN*.

Aircraft Storage.

- **Infill Hangar Development:** Promote new hangar construction within existing undeveloped or redeveloped lots located along the existing flightline.
- **Hangar Expansion Development:** Identify hangar expansion areas that can be efficiently developed, accommodate a variety of hangar types, and minimize new infrastructure development.
- **BLM SEAT Firefighting Base:** Identify a future development site to relocate existing storage tanks and accommodate expanded/segregated support facilities.
- **Aircraft Tiedown Positions:** Identify the expansion of existing aircraft tiedown apron that can be developed as needed throughout the planning period.

Airside Access.

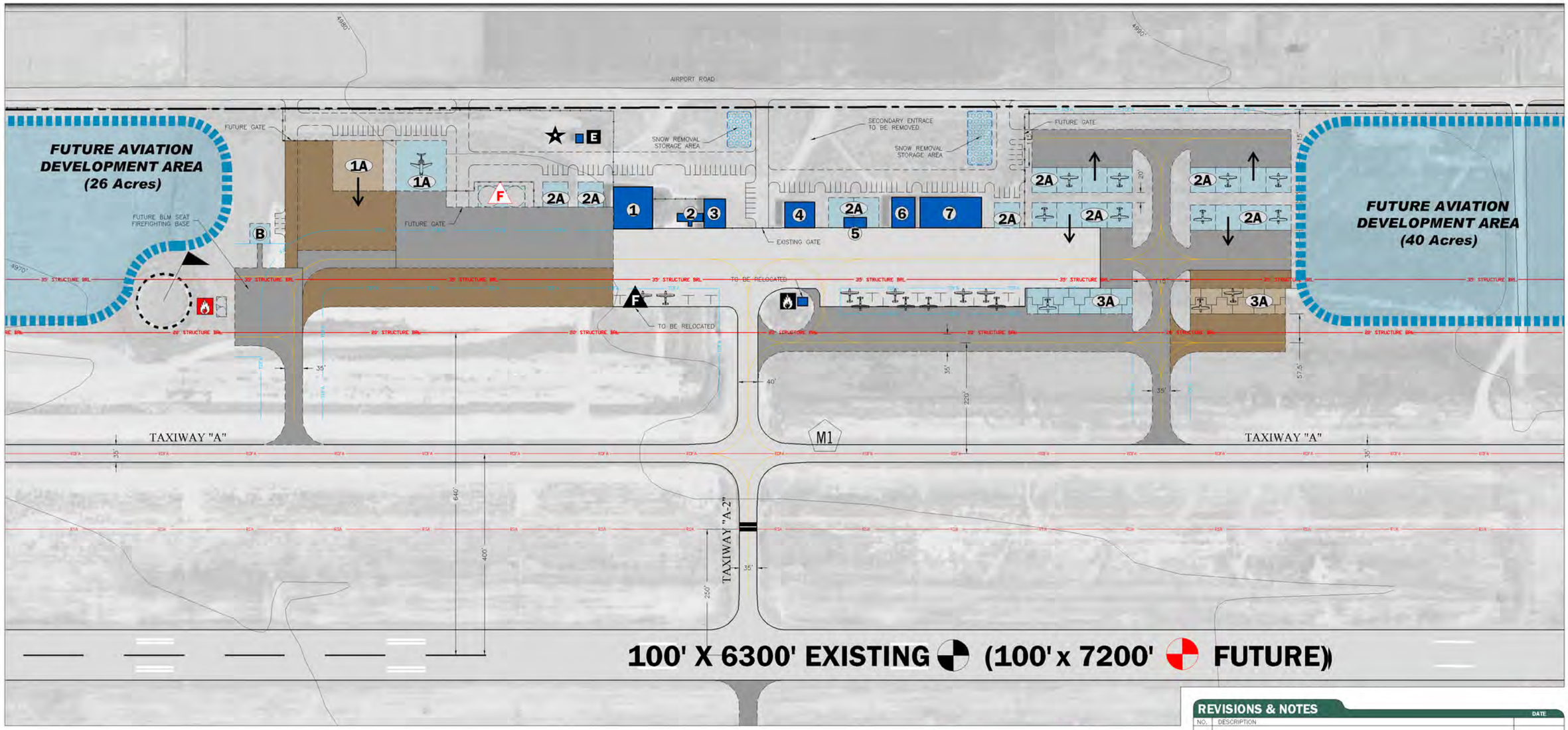
- **Connector Taxiway Development:** Identify locations for new connector taxiway construction that links the existing parallel taxiway system to new hangar development areas.
- **Partial Parallel Taxiway Development:** Provide for the future development of a partial parallel taxiway system to facilitate the movement of additional aircraft through the planning period.

Landside Access.

- **Access Roadway & Parking Development:** Provide direct roadway access and auto parking to all hangar facilities.
- **Security Fencing and Controlled Access Gates:** Modify/expand existing security fencing and provide new controlled access gates to serve future hangar expansion areas.

Support Facilities.

- **Fuel Farm:** Identify future development site for relocation of existing fuel storage and dispensing facilities.
- **Snow Removal Storage:** Identify landside locations for snow removal storage.
- **Utilities/Infrastructure:** Utility corridors will be identified within the Airport's landside development area, Nephi City water supply lines will be extended to airport property for distribution, and sanitary sewer connections will be established for airport tenants.



12°01' E MAG. DEC.
NOVEMBER 11, 2010 (NGDC)
0.2° W ANNUAL CHANGE

0 50' 100' 200' 300'
GRAPHIC SCALE IN FEET

EXISTING BUILDINGS

NO.	DESCRIPTION	TOP ELEVATION
1	FBO/CORPORATE HANGAR	---
2	PILOTS LOUNGE/OFFICE	5025.9'
3	AIRPORT MAINTENANCE HANGAR	---
4	EXECUTIVE HANGAR	5024.0'
5	EXECUTIVE HANGAR(TO BE REMOVED)	5020.2'
6	EXECUTIVE HANGAR	---
7	EXECUTIVE HANGAR	---

FUTURE BUILDINGS

NO.	DESCRIPTION	TOP ELEVATION
1A	FBO/MAINTENANCE HANGAR	---
2A	EXECUTIVE HANGAR	---
3A	T-HANGAR	---
B	BLM OFFICE	---

AIRPORT INFORMATION

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NAVD 88	5022.1'	SAME
AIRPORT REFERENCE POINT (ARP) NAD 83	N 39°44'11.70" W 111°52'12.20"	N 39°44'07.20" W 111°52'12.14"
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	93°F	SAME
AIRPORT REFERENCE CODE	C-II	SAME
TAXIWAY LIGHTING	MITL	SAME
DESIGN AIRCRAFT	CESSNA CITATION X	SAME

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
UTLIMATE AIRPORT BUILDINGS (Beyond 20 Years)		
ULTIMATE AIRFIELD PAVEMENT (Beyond 20 Years)		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)
FUEL STORAGE AREA		
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
WIND CONE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT (ARP)		
BLM STORAGE TANKS		
ELECTRICAL VAULT		

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/datasheet_prd/pkg_airport.PRO_AIRPORT_RUNWAY?v_cntl_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

TERMINAL AREA PLAN

Barnard Dunkelberg & Company

TULSA
1516 East 15th Street
Tulsa, Oklahoma 74120
918.585.8884

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8884

DATE
AUGUST 2011

SCALE
1" = 200'

SHEET NO.
12 OF 14

Figure E12 **Terminal Area Plan**

Land Use Drawing

Figure E13, entitled *LAND USE DRAWING*, depicts existing and recommended use of all land within the ultimate airport property line. The purpose of the *Land Use Drawing* is to provide the Airport Sponsor with a plan for leasing revenue-producing areas on the Airport. All existing/future development within the bounds of the property owned by Nephi City will be compatible with the primary purpose and function of the Airport, and will generate lease revenue to support the operation of the Airport. Some areas of the facility are not likely to be provided with taxiway access; although, they can be utilized for non-aeronautical support activities that may not require airside access. The revenue-generating potential of these areas will vary based upon local traffic patterns and vehicular access. Specific proposals for future non-aeronautical uses will be subject to additional review and approval by the Federal Aviation Administration.

The *Land Use Drawing* also provides guidance to local authorities for establishing appropriate land use zoning in the vicinity of the Airport. As specified by the FAA, Grant Assurance #21, entitled *Compatible Land Use*, states that the Airport Sponsor "*will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the Airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft*". In addition, this Master Plan includes a Land Use Compatibility Planning element designed to update the County's existing height hazard zoning regulations and map to reflect the specified planning recommendations. These proposed revisions are presented in the following text.

Height Hazard Zoning Ordinance & Map Revisions

As noted in the *Inventory of Existing Conditions* chapter of this document, the existing height hazard zoning regulations and map for the Airport, as specified in the *Juab County Land Use Code*, is presented for reference in Appendix One of this document. Based upon the updated instrument approach planning recommendations for Runway 17 (identified as Runway 16 in the existing land use code), the following text edits are recommended to *Chapter 12-1-27 Airport Protection*:

Section 12-1-2703/pg. 166, 1st paragraph, 2nd sentence. Replace "Municipal Airport Zoning Map" with "Nephi Municipal Airport Zoning Map".

Section 12-1-2703/pgs. 166-167, 2nd paragraph. Replace all text as follows: "1. Runway Precision Instrument Approach Zone. An approach zone is established at the end of Runway 17 for landing and take-offs based on an ultimate 7,200 foot runway. The Precision Approach Zone shall have a width 1,000 feet at a distance of 200 feet beyond the end of the runway, widening hereafter uniformly to a width of 16,000 feet at a distance of 50,200 feet beyond the end of the runway, its centerline being the continuation of the centerline of the

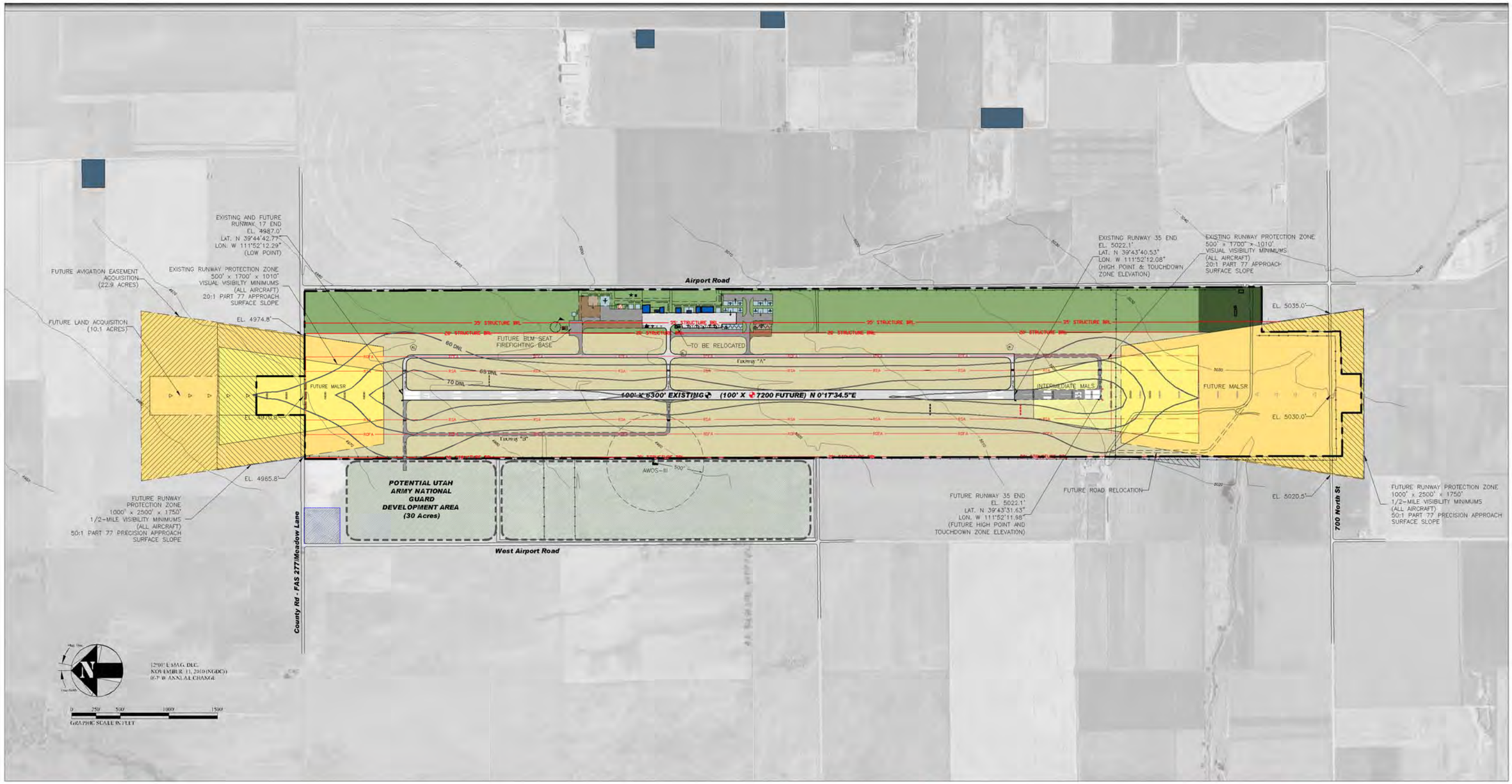
runway. The Approach Zone shall rise 1 foot in height for each 50 feet horizontal distance for the first 10,000 feet, beginning at a point 200 feet from and at the centerline elevation of the runway, then shall rise 1 foot in height for each 40 feet horizontal distance for an additional 40,000 feet, extending to a total distance of 50,200 feet from the end of the runway."

Section 12-1-2703/pg. 167, 2nd paragraph, 2nd sentence. Replace text as follows: "An approach zone is established at the end of Runway 35 for landing and take-offs based on an ultimate 7,200 foot runway."

Section 12-1-2704/pg. 168. Delete text and re-number as follows: Delete "1. Runway Non-Precision Approach Zone. 1 foot in height for each 34 feet horizontal distance beginning at a point 200 feet from the end of the runway and at the centerline elevation, extending a distance of 10,000 feet."

Section 12-1-2704/pgs. 168-169. Re-number remaining zones and specified height limitations (1-6), beginning with "Runway Precision Instrument Approach Zone" and ending with "Most Restrictive Limitation Prevails".

In addition, Figure E14, entitled *REVISED NEPHI MUNICIPAL AIRPORT ZONING MAP*, depicts the recommended updates to the existing height zoning boundaries as specified by this Master Plan.



RECOMMENDED LAND USE

- Aircraft Operations Protected Area
- Off-Airport Compatible Development
- Existing Airfield Pavement
- Aviation-Related/Compatible Development
- Aviation Development
- Runway Protection Zone
- Future Airfield Pavement
- Noise Countours
- Residential
- Agriculture/Open
- Storm Water Detention Basin

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Horizontal coordinate data in NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

LAND USE DRAWING

Barnard Dunkelberg & Company

TULSA
1516 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

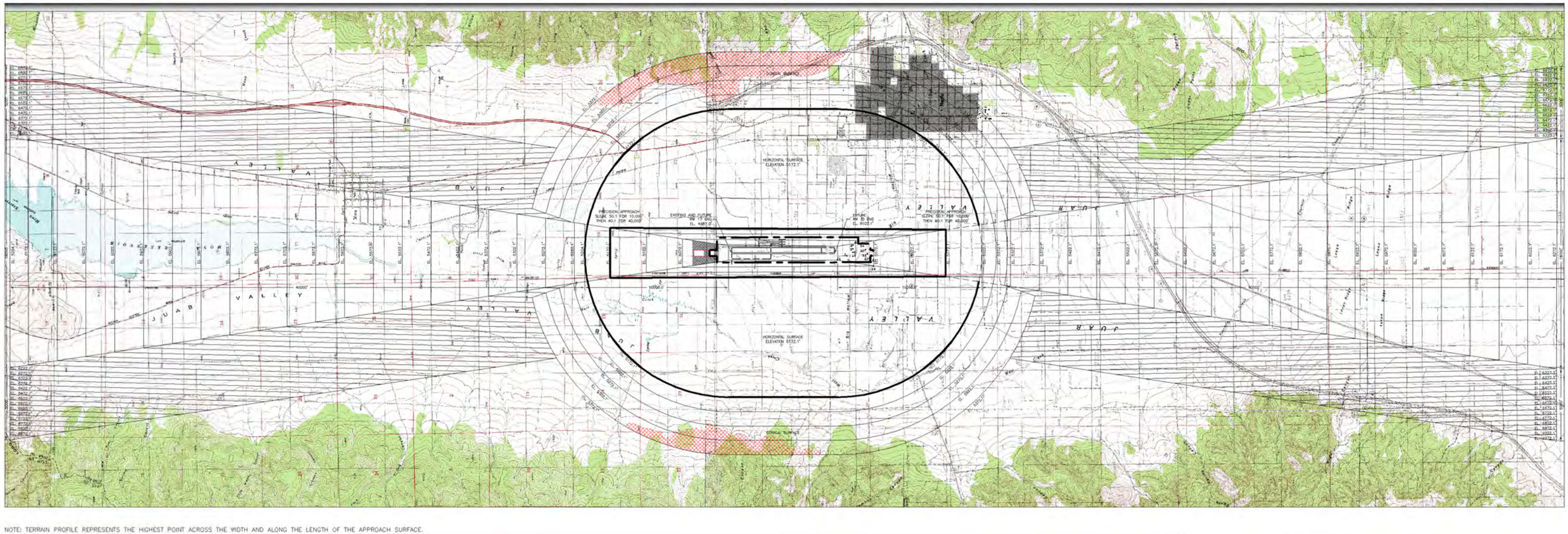
DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

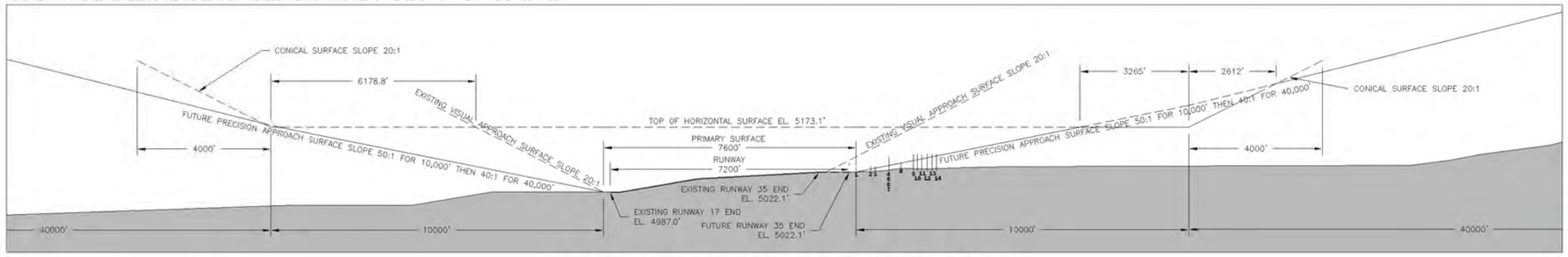
SCALE
1" = 500'

SHEET NO.
13 OF 14

Figure E13 **Land Use Drawing**

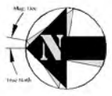


NOTE: TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE APPROACH SURFACE.



Runway 17/35 - Approach Profile View

1" = 2000' HORIZONTALLY
1" = 200' VERTICALLY



12°01' E MAG. DEC
NOVEMBER 11, 2010(NGDC)
0-7' W ANNUAL CHANGE

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
1	DIRT ROAD	5021.0'	15'	PRIMARY	TO BE RELOCATED
2	DIRT ROAD	5025.0'	9.5'	35 APPROACH	TO BE RELOCATED
3	FUTURE ROAD (CONTROLLED ACCESS)	5022.0'	3.5'	35 APPROACH	TO REMAIN
4	POWER POLE	5067.9'	26.1'	35 APPROACH	TO BE RELOCATED
5	POWER POLE	5065.9'	24.1'	35 APPROACH	TO BE RELOCATED
6	POWER POLE	5063.9'	22.1'	35 APPROACH	TO BE RELOCATED
7	POWER POLE	5061.9'	20.1'	35 APPROACH	TO BE RELOCATED
8	ROAD	5034.0'	0.0'	35 APPROACH	TO REMAIN
9	POWER POLE	5076.4'	19.9'	35 APPROACH	TO BE RELOCATED
10	POWER POLE	5076.4'	17.5'	35 APPROACH	TO BE RELOCATED
11	POWER POLE	5073.4'	11.7'	35 APPROACH	TO BE RELOCATED
12	POWER POLE	5076.4'	11.5'	35 APPROACH	TO BE RELOCATED
13	POWER POLE	5076.0'	8.2'	35 APPROACH	TO BE RELOCATED
14	POWER POLE	5076.0'	5.5'	35 APPROACH	TO BE RELOCATED

SOURCE: PRIOR ALP, BARNARD DUNKELBERG, 1995.
NOTE: SEE INNER PORTION OF THE APPROACH SURFACE – RUNWAY 35 DRAWING FOR CLOSE-IN OBSTRUCTIONS.

DRAWING LEGEND

TERRAIN OBSTRUCTION	

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://avnwww.jccbi.gov/pls/datasheet_prd/pkg_airport.PRO_AIRPORT_RUNWAY?v_cntl_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

HEIGHT ZONING MAP
PLAN AND PROFILE VIEW

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

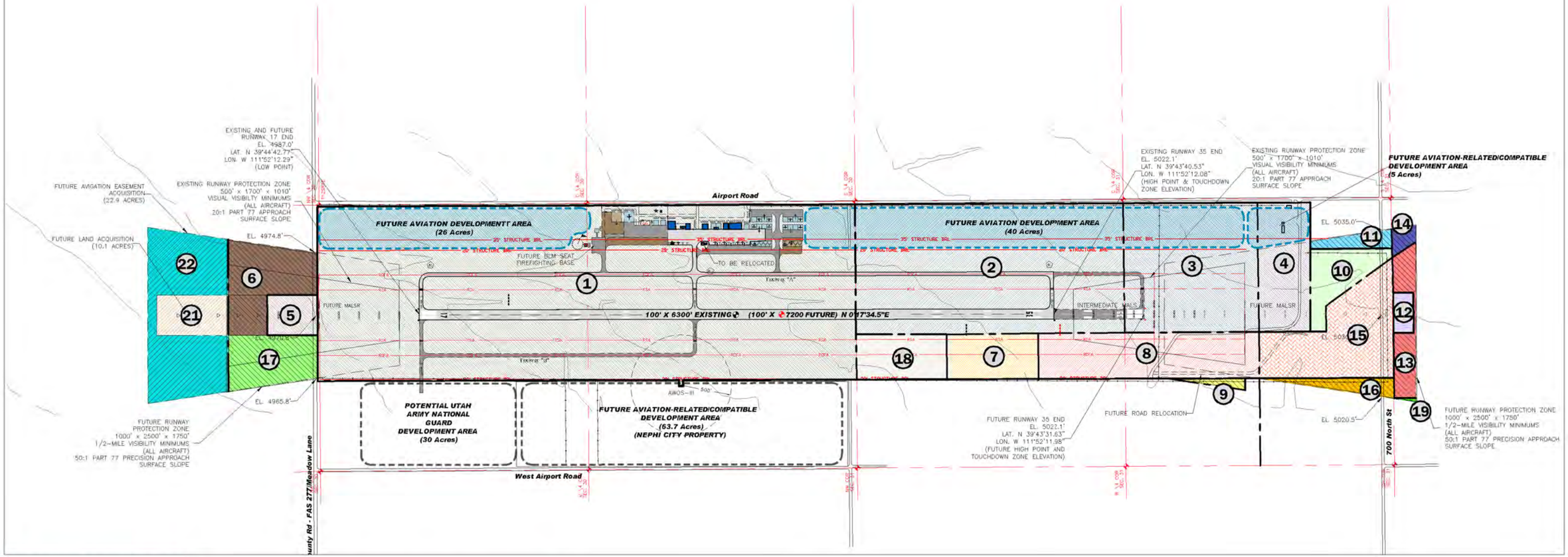
SCALE
VARIES

SHEET NO.
1 OF 1

Figure E14 **Revised Nephi Municipal Airport Zoning Map**

Airport Property Map

The *AIRPORT PROPERTY MAP*, which is presented on Figure E15, indicates how various tracts of land within the airport boundaries were acquired (e.g., federal funds, surplus property, local funds, etc.). The purpose of the drawing is to provide documentation of the current and future aeronautical use of land acquired with federal funds. According to existing property records, there is a total of 554.76 acres of fee simple property, and 37.67 acres in avigation easements that are owned and controlled by Nephi City. It should also be noted that the Airport is planning to acquire approximately 10.1 acres of property for the future visual approach aid (MALSR) to Runway 17, and approximately 22.9 acres in fee or easement to obtain full control of the future Runway 17 RPZs.



ON-AIRPORT PROPERTY DATA

PARCEL #		PREVIOUS OWNER	BOOK & PAGE	RECORDED DATE	DOCUMENT	ENTRY #	APPROX. ACRES	FEDERAL PROJECT	REMARKS
		Present Owner Nephi City Corp. by the following Deeds:							
1		Vaughn & Vera Paxman, Clarence & Mildred Paxman	Bk.127 Pg.285	Feb. 04 1944	Warranty Deed	71018	93.2		
1		V. A. Beck & Ida W. Beck	Bk.134 Pg.597	Mar. 30 1948	Quit Claim Deed	76924	–		
1		Clarence Paxman	Bk.136 Pg.11	Apr. 05 1948	Court Order	76939	–		
1		J. Earl & Nora Reid	Bk.127 Pg.287	Feb. 25 1944	Warranty Deed	71024	26.3		
1		F.C. & Jennie Chapman	Bk.127 Pg.348	May. 10 1944	Warranty Deed	71298	13.5		
1		Jane Bean	Bk.127 Pg.408	Jul. 20 1944	Warranty Deed	71664	40		
1		Federal Land Bank	Bk.127 Pg.416	Jul. 29 1944	Quit Claim Deed	71693	40		
1		Lusia Cutler & Florence Cutler, George H. & Marie C. Cutler	Bk.127 Pg.417	Jul. 29 1944	Warranty Deed	71694	–		
1		Jane Bean	Bk.127 Pg.427	Aug. 19 1944	Quit Claim Deed	71733	–		
1		Leland & Helen Fitzgerald	Bk.173 Pg.256	Jan. 03 1957	Quit Claim Deed	94756	–		
1		Dudley & Fawn Bray	Bk.173 Pg.257	Jan. 03 1957	Quit Claim Deed	94757	–		
2		Blake & Susan Garrett	Bk.428 Pg.65	Oct. 09 2001	Warranty Deed	225202	80.98	A.I.P. 3-49-0023-02	XB-2037
3		Blake & Susan Garrett	Bk.428 Pg.65	Oct. 09 2001	Warranty Deed	225202	39.49		XB-2038
4		Blake & Susan Garrett	Bk.428 Pg.65	Oct. 09 2001	Warranty Deed	225202	16.69		XB-2040
5		Roscoe R. Garrett	Bk.428 Pg.341	Oct. 18 2001	Warranty Deed	225302	4.98		XB-1915
6	Easement	Roscoe R. Garrett	Bk.428 Pg.342	Oct. 18 2001	Avigation Easement	225303	14.22		XB-1915
7		Roscoe R. Garrett	Bk.428 Pg.341	Oct. 18 2001	Warranty Deed	225302	9.30		XB-2035
8		R. Roscoe Garrett and Ellen A. Garrett Family L.C.	Bk.428 Pg.346	Oct. 18 2001	Warranty Deed	225304	22.93		XB-2036
9	Easement	R. Roscoe Garrett and Ellen A. Garrett Family L.C.	Bk.428 Pg.348	Oct. 18 2001	Avigation Easement	225305	1.01		XB-2036
10		Ellen A. Garrett Family L.C.	Bk.427 Pg.867	Oct. 02 2001	Warranty Deed	225139	7.82		XB-2041
11	Easement	Ellen A. Garrett Family L.C.	Bk.427 Pg.868	Oct. 02 2001	Avigation Easement	225140	2.57		XB-2041
12		Wesley A. & Gayle W. Lynn	Bk.417 Pg.158	Nov. 22 2000	Warranty Deed	222157	1.84		XB-2031
13	Easement	Wesley A. & Gayle W. Lynn	Bk.417 Pg.159	Nov. 22 2000	Avigation Easement	222158	6.02		XB-2031
14	Easement	Jarrett Land & Livestock	Bk.438 Pg.150	Jul. 22 2002	Avigation Easement	227975	1.21		XB-2294
15		McPherson Ranch Ltd.	Bk.436 Pg.216	May. 24 2002	Warranty Deed	227321	21.67		XB-2039
16	Easement	McPherson Ranch Ltd.	Bk.436 Pg.228	May. 24 2002	Avigation Easement	227329	3.11		XB-2039
17	Easement	McPherson Ranch Ltd.	Bk.436 Pg.223	May. 24 2002	Avigation Easement	227328	9.42		XB-1914
18		Gerald & Carol Cooper Trusts	Bk.427 Pg.589	Sep. 21 2001	Warranty Deed	225027	9.06		XB-2034
19	Easement	Larry A. & Christine G. Anderson	Bk.438 Pg.792	Aug. 09 2002	Avigation Easement	228163	0.11		XB-2301-22
						Total In-Fee	427.67	Acres	
						Total Avigation Easement	37.76	Acres	
21	FEE	Future Visual Approach Aid Acquisition			Warranty Deed		10.1		
22	Easement	Future RPZ Easement			Avigation Easement		22.9		

OFF-AIRPORT PROPERTY DATA

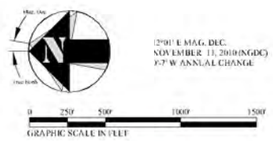
PARCEL #	PREVIOUS OWNER	BOOK & PAGE	RECORDED DATE	DOCUMENT	ENTRY #	APPROX. ACRES	FEDERAL PROJECT	REMARKS
	Present Owner Nephi City Corp. by the following Deeds:							
	Vaughn & Vera Paxman, Clarence & Mildred Paxman	Bk.127 Pg.285	Feb. 04 1944	Warranty Deed	71018	26.8		
	V. A. Beck & Ida W. Beck	Bk.134 Pg.597	Mar. 30 1948	Quit Claim Deed	76924	–		
	Clarence Paxman	Bk.136 Pg.11	Apr. 05 1948	Court Order	76939	–		
	J. Earl & Nora Reid	Bk.127 Pg.287	Feb. 25 1944	Warranty Deed	71024	5.6		
	F.C. & Jennie Chapman	Bk.127 Pg.348	May. 10 1944	Warranty Deed	71298	26.5		
	George Sigler Administrator	Bk.127 Pg.417	Jul. 22 1944	Deed of Administrator	71695	40		
	UTAH STATE ARMORY BOARD	Bk.0532 Pg.1902	Apr. 22, 2009	Warranty Deed	256886	30		

LEGAL DESCRIPTION

Beginning at the north ¼ corner of Section 30 Township 12 South Range 1 East SLB&M; thence S0°05'35"E, 2,664.35 feet along the north/south center section line to the center ¼ corner of Section 30; thence S0°05'35"E, 2,664.45 feet along the north/south center section line to the south ¼ corner of Section 30; thence S0°01'47"E, 2,2661.28 feet along the north/south center section line of Section 31; thence S0°01'47"E, 1,850.64 feet along the north/south center section line of Section 31; thence N90°00'00"W, 508.94 feet; thence S0°17'35"W, 814.39 feet to a point on the south line of Section 31 Township 12 South Range 1 East SLB&M; thence S89°33'37"W, 440.05 feet along the south line of Section 31; thence S0°26'23"E, 200.00 feet; thence S89°33'37"W, 400.00 feet; thence N0°26'23"W, 200.00 feet, to a point on the south line of Section 31; thence S89°33'37"W, 440.05 feet along the south line of Section 31; thence N0°17'34"E, 5,330.87 feet to a point on the north line of Section 31; thence N0°17'35"E, 5,333.30 feet along a line offset 640.00 feet westerly from the center line of the proposed runway to a point on the north line of Section 30; thence N89°58'15"E, 405.68 feet along the north line of Section 30 to the northeast corner of the NW ¼ NW ¼ of Section 30; thence N0°05'10"E, 500.00 feet; thence N89°58'15"E, 433.33 feet; thence S0°01'45"E, 500.00 feet, to a point on the north line of Section 30; thence N89°58'15"E, 887.65 feet along the north line of Section 30 to the north ¼ corner of Section 30 and the point of beginning. Containing 428.40 acres more or less.

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		RPZ (FUT.)
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)
FUEL STORAGE AREA		
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
WIND CONE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT (ARP)		
BLM STORAGE TANKS		
ELECTRICAL VAULT		



REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Horizontal coordinate data in NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

AIRPORT PROPERTY MAP

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

DATE
AUGUST 2011

SCALE
1" = 400'

SHEET NO.
14 OF 14

Figure E15 **Airport Property Map**

F. Implementation Plan

Master Plan

Nephi

Municipal Airport

F. Implementation Plan

INTRODUCTION. This chapter provides the 20-year improvement program for continued development at Nephi Municipal Airport. The goals of this exercise are to identify projects deemed necessary to efficiently accommodate the forecast aviation demand, project the timeframe in which the projects should be accomplished, estimate the costs associated with each project, and identify potential funding sources for each. The results of this effort are presented in the Airport's Capital Improvement Program (CIP). The airport improvements required to satisfy the forecast aviation demand at Nephi Municipal Airport have been placed into three development phases: short-term (0-5 years), intermediate-term (6-10 years), and long-term (11-20 years). These proposed improvements for each phase are illustrated graphically by time period on the *PHASING PLAN* (see Figure F1 at the end of this chapter), and the cost estimates for the proposed improvements are presented on the following pages.

Project List and Implementation Schedule

A list of pro-active capital improvement projects has been assembled from the facility requirements documentation previously presented. The project list has been coordinated with the Airport Layout Plan (ALP) drawing set and the capital improvement program that is continuously updated by airport management and the Federal Aviation Administration (FAA). The projects currently listed for each phase on the Airport's Capital Improvement Program are listed in priority order without specific year designators. Nephi Municipal Airport's phased capital improvement program and associated costs, entitled *PHASE I*, *II*, and *III DEVELOPMENT*

PLAN PROJECT COSTS, are presented as Tables F1, F2, and F3 in this chapter. Projects identified beyond the 20-period are identified (without cost estimates) in Table F4, *POST PLANNING PERIOD (BEYOND 20 YEARS) DEVELOPMENT PLAN PROJECTS*. Furthermore, it is anticipated that the project phasing will invariably alter as local and federal priorities evolve over the coming months and years.

This implementation plan, or development plan[1], is appropriately and realistically designed to represent the Airport's best opportunity to meet its potential. However, the plan also represents a series of choices and alternatives for the Airport. The ultimate success of Nephi Municipal Airport does not rely upon the completion of each and every capital item programmed in the implementation plan. To meet realistic funding expectations, it may be necessary to weigh the items of the development plan in a thoughtful and global manner.

In other words, to keep from being short-sighted in its choices, the community may be required to selectively implement the capital items. Knowing the full scope of development possibilities enables the community to capitalize on opportunities, respond to financial realities, and select development items that are in harmony with the overall development plan.

Cost Estimates

Cost estimates for individual projects, based on current (2010) dollars, have been prepared for improvements that have been identified as necessary during the 20-year planning period. The estimates have been categorized by the total cost for each facility requirement, that portion to be borne by the Airport Sponsor or local entity, and that part of the total cost anticipated to be paid by the FAA under the Airport Improvement Program (AIP) or similar program. In addition to airport sponsor funds, the local share can include sources such as State or local economic development funds, regional commissions and organizations, other units of local government, as well as funding from private individuals or businesses. This data is then reviewed and analyzed for specific factors that may influence costs, such as operational constraints, project schedule, utility locations, and other special project requirements. That being said, these estimates are intended to be used for planning purposes only and should not be construed as detailed construction cost estimates, which can only be compiled following the preparation of detailed design documentation.

[1] Also referred to as the "Development Plan" by the UDOT Division of Aeronautics.

Capital Improvement Program (CIP)

The projects, phasing, and costs presented in this Master Plan are the best projections that can be made at the time of formulation. The purpose is to provide a reasonable projection of capital needs, which can then be used in fiscal programming to test for financial feasibility. To assist in the preparation of the Airport's CIP that the Airport keeps on file and updates annually with the FAA, the first phase of the projects list and cost estimates has been organized in a format similar to that used by the FAA. However, as soon as it is published, the long-term project list presented here begins to be out of date and, therefore, it will always differ to some degree from the Airport's five-year CIP on file with the FAA.

Phasing Plan

The cost estimates below indicate the suggested phasing for projects during the short-, intermediate-, and long-term development planning periods. This phasing plan is also shown in the illustration at the end of this chapter. These are suggested schedules, and variance from them may be necessary, especially during the latter time periods. Attention has been given to the first six years as being the most critical, and the scheduled projects outlined in that time frame should be adhered to as much as is possible and feasible. The demand for certain facilities, especially in the latter time frame, and the economic feasibility of their development, are the prime factors influencing the timing of individual project implementation. Care must be taken to provide for adequate lead-time for detailed planning and construction of facilities in order to meet aviation demands. It is also important to minimize the disruptive scheduling, where a portion of the facility may become inoperative due to construction, and to prevent extra costs resulting from improper project scheduling.

Sources of Capital Funding

Following is a short description of capital improvement funding sources to provide background and context when reviewing the *DEVELOPMENT PLAN PROJECT COSTS* tables.

Federal Funding

Federal AIP Entitlement Grants. The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21), enacted in April 2000, established the first-ever Non-Primary Airports Entitlement Program. AIR-21 sets aside grant funding for general aviation airports listed in the National Plan of Integrated Airport Systems (NPIAS) for pavement maintenance work. General aviation airports can each receive up to $150,000 per year based on the FAA's assessment of maintenance needs over a five-year period.

This funding set-aside is available for each federal fiscal year when Congress appropriates at least $3.2 billion for the FAA's AIP grant program. For the convenience of the Airport Sponsor, if a project is anticipated to cost in excess of $150,000, participating airports can rollover (save) the Non-Primary Entitlement funds for up to two years, at which time the accumulated total of rolled-over funds can be used for larger projects. These set-aside funds cannot be transferred to another airport, and any unused funds at the end of the entitlement program revert to the FAA. It should also be noted that Nephi Municipal Airport has been designated by the FAA as a "General Aviation" airport.

Federal AIP Discretionary Grants. The FAA also provides discretionary grants on a 95/5% basis to airports similar to Nephi Municipal Airport. This source of funding is over and above entitlement funding and is provided to airports for projects that have a high federal priority for enhancing safety, security, and capacity of the Airport and would be difficult to fund otherwise. The dollar amounts of individual grants vary and can be significant in comparison to entitlement funding. Discretionary grants are awarded at the FAA's sole prerogative. Discretionary grant applications are evaluated based on need, the FAA's project priority ranking system, and the FAA's assessment of a project's significance within the national airport and airway system.

Further, per the FAA, discretionary funds are those established in various set-asides, plus any appropriated funding remaining after all apportionment funds have been allocated. These funds are assigned at the discretion of the FAA Administrator, to support noise mitigation projects and the highest-priority development that will benefit the National Airspace System (NAS). These discretionary set-aside funds are designed to achieve specific funding minimums for the noise program, reliever airports, and the conversion of military airports. The Capacity/Safety/Security/Noise (CSSN) fund is to be used to preserve and enhance capacity, safety, and security and to carry out noise compatibility programs, and include Letters of Intent (LOIs). The noise or CSSN funds are used towards FAR Part 150 Noise Compatibility Programs (NCPs). The remaining discretionary funding is also referred to as "pure discretionary" and is assigned to projects at the Administrator's discretion.

FAA Facilities & Equipment Funds. Within the FAA's budget appropriation, money is available in the Facilities and Equipment (F&E) Fund to purchase navigational aids and air safety-related technical equipment, including Airport Traffic Control Towers (ATCTs) for use at commercial service airports in the national airport system. Each F&E development project is evaluated independently through a cost/benefit analysis to determine funding eligibility and priority ranking. The qualified projects are totally funded (i.e., 100%) by the FAA, with the

remaining projects likely being AIP eligible. In addition, the Airport will apply for NAVAIDS maintenance funding through the F&E program for those facilities that are not F&E funded. It is possible that some of the proposed navigational aid-related development projects for Nephi Municipal Airport would qualify for F&E funding, if available.

State Grants

Currently, state grants for aviation projects in Utah are administered through the Utah Department of Transportation (UDOT), Division of Aeronautics. For state-funded projects, the UDOT Division of Aeronautics will provide a 90% match of the total cost for an eligible state project. As with many states, these funds have historically been primarily utilized to provide assistance on pavement "maintenance" oriented projects, such as crack seals and marking.

The typical participation rate on federal projects ranges from $5,000 to $25,000 for projects costing up to $1.1 million. For federal projects costing over $1.1 million, the State can contribute up to one-half of the local match (i.e., 2.5% of the project cost). The typical state participation rate on eligible state grant projects is 90% of the total project cost. Project eligibility is determined through a project ranking formula that considers state program priorities (i.e., preservation, standards and planning, upgrade, and capacity, in consideration of based aircraft counts), project items that include "project out" ranking from the runway facility[2], and multiplier variables associated with land use compatibility and discretionary factors (i.e., project amount, use of federal money, multiple projects, and economies of scale). It should also be noted that the Division of Aeronautics funding formulas for both state and federal grant participation are subject to change, depending upon current funding availability and policy at the time of project implementation.

Private Third-Party Financing

Many airports use private third-party financing when the planned improvements will be primarily used by a private business or other organization. Such projects are not ordinarily eligible for federal funding. Projects of this kind typically include hangars, fixed base operator (FBO) facilities, fuel storage, exclusive aircraft parking aprons, industrial aviation-use facilities, non-aviation office/commercial/industrial developments, and various other projects.

[2] Projects associated with the runway would receive the highest priority, with a lower or decreasing priority being applied to projects that are located further from the runway.

Private development proposals are considered on a case-by-case basis. Often, airport funds for infrastructure, preliminary site work, and site access are required to facilitate privately developed projects on airport property.

Airport-Generated Revenue Financing

Typically, the revenues generated by airports are used to support the local match of eligible state and federal projects. However, some projects are either non-eligible for state or federal funding participation, or do not compete well for eligible funding. In these cases, the Airport Sponsor would be responsible for 100% of the project cost to implement the proposed development.

Implementation Strategy

Funding sources for the capital improvement program depend on many factors, including AIP project eligibility, the ultimate type and use of facilities to be developed, debt capacity of the Airport, the availability of other financing sources, and the priorities for scheduling project completion. For planning purposes, assumptions were made related to the funding source of each capital improvement. The projects' costs provided in the following tables are identified with likely funding sources.

It is important to note that the percentage of costs borne by the FAA is subject to change depending upon current funding legislation and policy at the time of construction. The relationship between local and anticipated federal funding as shown in this document is based on current FAA participation of 95% of the total project cost, but this ratio does vary according to some anticipated state funding participation on various projects. Before detailed planning on a particular project is developed, the funding structures and requirements should be identified to determine the current funding policies of the various entities.

Table F1

PHASE I (0-5 YEARS) DEVELOPMENT PLAN PROJECT COSTS

	Project Description		Total Costs	A) Federal	B) State	C) Sponsor	D) Other
A.1	Design/publish future GPS approach to RW 17 & RW 35	*H)*	$0	$0	$0	$0	$0
A.2	Design airport infrastructure development plan for the east side GA development area		$72,000	$68,400	$0	$3,600	$0
A.3	Design/construct apron and ramp areas in southeast GA development area		$110,000	$104,500	$0	$5,500	$0
A.4	Construct utilities (water, sewer and electricity) in the southeast GA development area		$413,000	$392,350	$0	$20,650	$0
A.5	Design/construct auto access and parking in the southeast GA development area		$280,000	$266,000	$0	$14,000	$0
A.6	Construct executive hangars in the southeast GA development area		$740,000	$0	$0	$0	$740,000
A.7	Modify/rehabilitate/replace existing Airport Maintenance Building		$100,000	$0	$0	$100,000	$0
A.8	Prepare site development standards for commercial aviation and aircraft hangar facilities		$15,000	$14,250	$0	$750	$0
A.9	Acquire easement for RW 17 RPZ (approx. 22.9 acres)		$50,000	$47,500	$0	$2,500	$0
A.10	Acquire land for RW 17 MALSR (approx. 10.1 acres)	*G)*	$227,250	$215,888	$0	$11,362	$0
A.11	Design/construct connecting taxiway from the existing apron to midfield taxiway (TW "A-1") for BLM SEAT operations	*E)*	$0	$0	$0	$0	$0
A.12	Construct utilities (water, sewer and electricity) in the southeast GA development area		$234,000	$222,300	$0	$11,700	$0
A.13	Design/construct apron infill areas in the southeast GA development area		$290,000	$275,500	$0	$14,500	$0
A.14	Design/construct T-hangars in the southeast GA development area		$400,000	$380,000	$0	$20,000	$0
A.15	Implement ongoing airfield pavement maintenance projects		$150,000	$0	$135,000	$15,000	$0
A.16	Conduct Wildlife Hazard Assessment		$40,000	$38,000	$0	$2,000	$0
	Sub-Total/Phase I		**$3,121,250**	**$2,024,688**	**$135,000**	**$221,562**	**$740,000**

Source: Nephi City personnel, BARNARD DUNKELBERG & COMPANY, and Creamer & Noble Engineers.

Notes: Cost estimates, based upon 2010 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

BLM = Bureau of Land Management
SEAT = Single Engine Air Tanker

A) Federal Aviation Administration matching funds – Airport Improvement Program (AIP).
B) State of Utah, Division of Aeronautics.
C) Sponsor/local funding – Current revenues, cash reserves, bonds, private/third party funding, etc.
D) Private/other funding.
E) No cost associated. Bureau of Land Management (BLM) funding.
F) No cost associated. Department of Defense (DOD) funding.
G) Funding eligibility contingent upon FAA Cost Benefit Analysis qualification.
H) FAA Flight Procedures Office funding.

Table F2

PHASE II (6-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS

	Project Description		Total Costs	A) Federal	B) State	C) Sponsor	D) Other
B.1	Design/construct taxiways, taxilanes, and ramp areas in the southeast GA development area		$1,222,000	$1,160,900	$30,550	$30,550	$0
B.2	Construct utilities (water, sewer and electricity) in the southeast GA development area		$145,000	$137,750	$0	$7,250	$0
B.3	Design/construct auto access and parking in the east/southeast GA development area		$195,000	$185,250	$0	$9,750	$0
B.4	Design/construct executive hangars in the southeast GA development area		$800,000	$0	$0	$0	$800,000
B.5	Design/install MALS to RW 35 to support GPS approach, including environmental documentation	*G)*	$350,000	$0	$0	$0	$350,000
B.6	Design/construct access taxiway (35 ft wide) and apron in the BLM SEAT Firefighting Base development area	*E)*	$0	$0	$0	$0	$0
B.7	Relocate BLM water and retardant storage tanks to the BLM SEAT Firefighting Base development area	*E)*	$0	$0	$0	$0	$0
B.8	Design/construct auto access and parking to the BLM SEAT Firefighting Base development area	*E)*	$0	$0	$0	$0	$0
B.9	Construct BLM office building	*E)*	$0	$0	$0	$0	$0
B.10	Design/construct taxiway connector (35 ft wide), west of RW 17 threshold to the Utah Army National Guard development area	*F)*	$0	$0	$0	$0	$0
B.11	Implement ongoing airfield pavement maintenance projects		$175,000	$0	$157,500	$17,500	$0
	Sub-Total/Phase II		**$2,887,000**	**$1,483,900**	**$188,050**	**$65,050**	**$1,150,000**

Source: Nephi City personnel, BARNARD DUNKELBERG & COMPANY, and Creamer & Noble Engineers.

Notes: Cost estimates, based upon 2010 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

BLM = Bureau of Land Management
SEAT = Single Engine Air Tanker

A) Federal Aviation Administration matching funds – Airport Improvement Program (AIP).
B) State of Utah, Division of Aeronautics.
C) Sponsor/local funding – Current revenues, cash reserves, bonds, private/third party funding, etc.
D) Private/other funding.
E) No cost associated. Bureau of Land Management (BLM) funding.
F) No cost associated. Department of Defense (DOD) funding.
G) Funding eligibility contingent upon FAA Cost Benefit Analysis qualification.
H) FAA Flight Procedures Office funding.

Table F3

PHASE III (11-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS

	Project Description		Total Costs	A) Federal	B) State	C) Sponsor	D) Other
C.1	Design/construct apron and taxilane in the northeast GA development area		$600,000	$570,000	$0	$30,000	$0
C.2	Construct utilities (water, sewer, and electricity) in the northeast GA development area		$83,000	$78,850	$0	$4,150	$0
C.3	Design/construct auto access and parking in the northeast GA development area		$262,000	$248,900	$0	$13,100	$0
C.4	Design/construct partial parallel taxiway (35 ft wide) from TW "B" south to TW "C", located 400 ft west of RW 17/35		$1,657,000	$1,574,150	$41,425	$41,425	$0
C.5	Relocate and upgrade self-serve fuel storage facility		$200,000	$0	$0	$200,000	$0
C.6	Design/install MALSR to RW 17 to support GPS approach, including environmental documentation	*G)*	$550,000	$0	$0	$0	$200,000
C.7	Construct executive hangars in the northeast GA development area		$200,000	$0	$0	$0	$200,000
C.8	Construct large FBO/corporate hangar in the northeast GA development area		$350,000	$0	$0	$0	$350,000
C.9	Design/construct access taxiway (35 ft wide) from the northeast GA development area to the BLM SEAT Firefighting Base apron		$200,000	$190,000	$0	$10,000	$0
C.10	Design/construct taxilane and ramp area in the southeast GA development area		$248,000	$235,600	$0	$12,400	$0
C.11	Construct utilities (water, sewer and electricity) in the southeast GA development area		$70,000	$66,500	$0	$3,500	$0
C.12	Design/construct executive hangars in the southeast GA development area		$400,000	$0	$0	$0	$400,000
C.13	Conduct environmental study for 900 ft. RW/TW extension and revised instrument approach procedure		$350,000	$332,500	$0	$17,500	$0
C.14	Design 900 ft extension to RW 35 and TW "A"		$159,000	$151,050	$0	$7,950	$0
C.15	Construct 900 ft extension to RW 35 and TW "A"		$1,587,000	$1,507,650	$39,675	$39,675	$0
C.16	Conduct airspace analysis survey for future RW 35 instrument approach procedure revision		$55,000	$52,250	$0	$2,750	$0
C.17	Relocate existing MALS and install RAILs for a MALSR off extended RW 35 threshold to support GPS approach	*G)*	$200,000	$0	$0	$0	$200,000
C.18	Relocate road southwest of RW 35 threshold for MALSR light lane clearance		$175,000	$166,250	$0	$8,750	$0
C.19	Design/publish future RNP approaches to RW 17 & RW 35	*H)*	$0	$0	$0	$0	$0
C.20	Implement ongoing airfield pavement maintenance projects		$400,000	$0	$360,000	$40,000	$0
	Sub-Total/Phase III		**$7,746,000**	**$5,173,700**	**$441,100**	**$431,200**	**$1,350,000**
	GRAND TOTALS		**$13,754,250**	**$8,682,288**	**$764,150**	**$717,812**	**$3,240,000**

Source: Nephi City personnel, BARNARD DUNKELBERG & COMPANY, and Creamer & Noble Engineers.

Notes: Cost estimates, based upon 2010 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

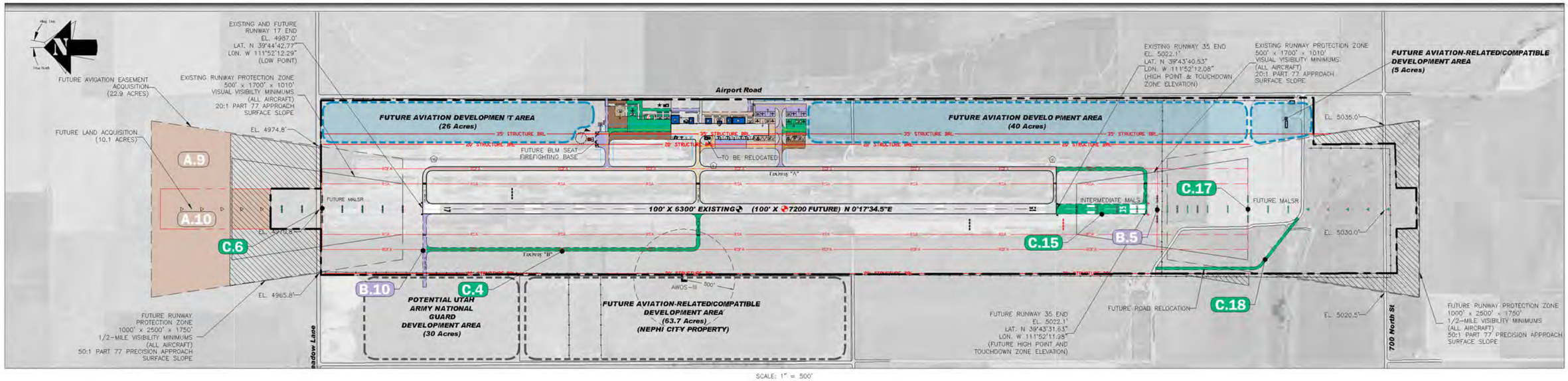
BLM = Bureau of Land Management SEAT = Single Engine Air Tanker

A) Federal Aviation Administration matching funds – Airport Improvement Program (AIP).
B) State of Utah, Division of Aeronautics.
C) Sponsor/local funding – Current revenues, cash reserves, bonds, private/third party funding, etc.
D) Private/other funding.
E) No cost associated. Bureau of Land Management (BLM) funding.
F) No cost associated. Department of Defense (DOD) funding.
G) Funding eligibility contingent upon FAA Cost Benefit Analysis qualification.
H) FAA Flight Procedures Office funding.

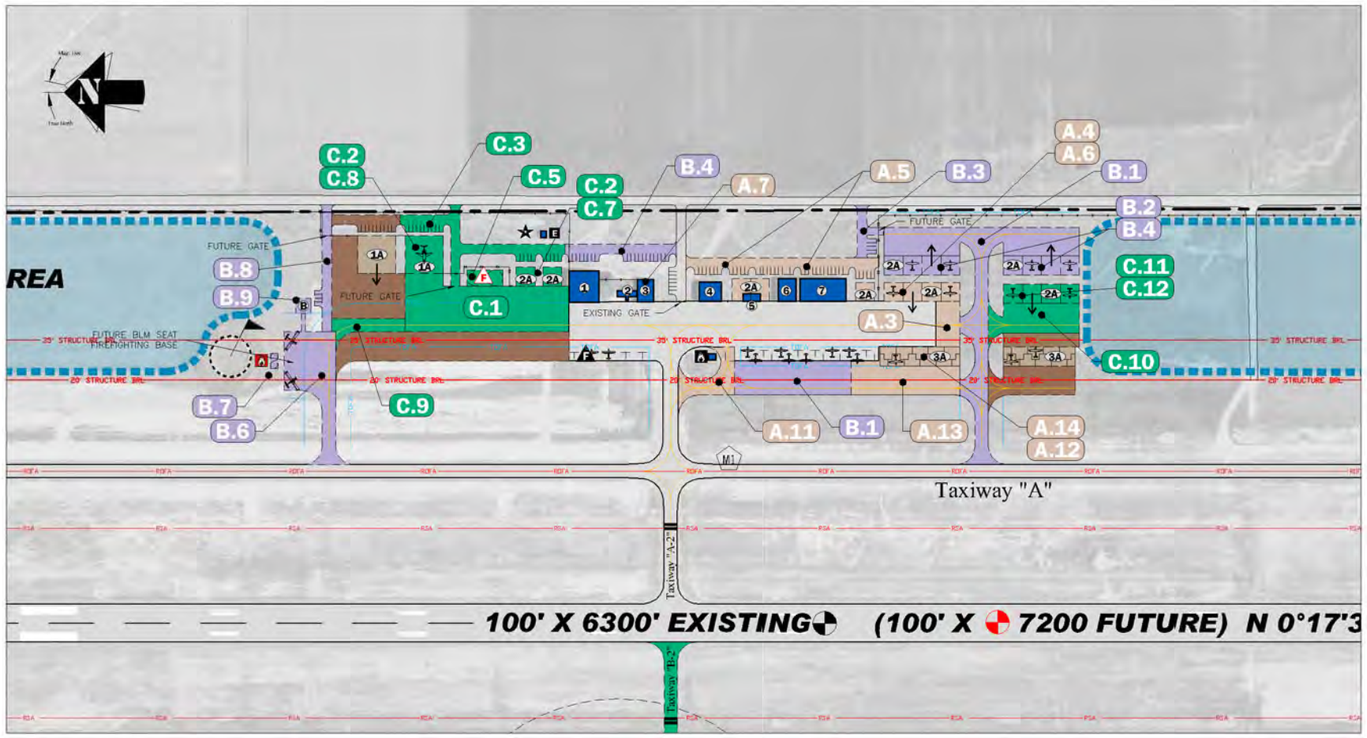
Table F4

POST PLANNING PERIOD (BEYOND 20 YEARS) DEVELOPMENT PLAN PROJECTS

Project Description	Total Costs	A) Federal	B) State	C) Sponsor	D) Other
Design/construct taxilane and ramp areas in the southeast GA development area	N/A	N/A	N/A	N/A	N/A
Design/construct utilities (water, sewer, and electricity) in the southeast GA development area	N/A	N/A	N/A	N/A	N/A
Design/construct T-hangars in the southeast GA development area	N/A	N/A	N/A	N/A	N/A
Design/construct apron and ramp area in the northeast GA development area	N/A	N/A	N/A	N/A	N/A
Design/construct utilities (water, sewer, and electricity) in the northeast GA development area	N/A	N/A	N/A	N/A	N/A
Design/construct auto access and parking in the northeast GA development area	N/A	N/A	N/A	N/A	N/A
Construct large FBO/corporate hangar in the northeast GA development area	N/A	N/A	N/A	N/A	N/A
Implement ongoing airfield pavement maintenance projects	N/A	N/A	N/A	N/A	N/A
Total/Post Planning Period	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**



SCALE: 1" = 500'



SCALE: 1" = 200'

Phase I
Phase II
Phase III
Post Planning Period

EXISTING BUILDINGS

NO.	DESCRIPTION	TOP ELEVATION
1	FBO/CORPORATE HANGAR	---.---
2	PILOTS LOUNGE/OFFICE	---.---
3	AIRPORT MAINTENANCE BUILDING	5025.9'
4	EXECUTIVE HANGAR	5024.0'
5	EXECUTIVE HANGAR(TO BE REMOVED)	5020.2'
6	EXECUTIVE HANGAR	---.---
7	EXECUTIVE HANGAR	---.---

FUTURE BUILDINGS

NO.	DESCRIPTION	TOP ELEVATION
1A	FBO/MAINTENANCE HANGAR	---.---
2A	EXECUTIVE HANGAR	---.---
3A	T-HANGAR	---.---
B	BLM OFFICE	---.---

AIRPORT INFORMATION

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NAVD 88	5022.1'	SAME
AIRPORT REFERENCE POINT (ARP) NAD 83	N 39°44'11.70" W 111°52'12.20"	N 39°44'07.20" W 111°52'12.14"
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	93°F	SAME
AIRPORT REFERENCE CODE	C-II	SAME
TAXIWAY LIGHTING	MITL	SAME
DESIGN AIRCRAFT	CESSNA CITATION X	SAME

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
ULTIMATE AIRPORT BUILDINGS (Beyond 20 Years)		
ULTIMATE AIRFIELD PAVEMENT (Beyond 20 Years)		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)
FUEL STORAGE AREA	A	A
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
WIND CONE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT (ARP)		
BLM STORAGE TANKS	B	B
ELECTRICAL VAULT	E	E

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. This drawing reflects planning standards specific to this airport and is not a product of detailed engineering design analysis. It is not intended to be used for construction documentation of navigation.
2. Aerial Photo by Aerial Data Service, INC. October 2007.
3. Elevation and Coordinate data from http://gvnwww.jcbi.gov/pls/datasheet_prd/pkg_airport.PRO_AIRPORT_RUNWAY?v_cntl_num=26592. Horizontal coordinate data is NAD83, vertical data is NAVD88.

NEPHI MUNICIPAL AIRPORT
Nephi City, Utah

PHASING PLAN

Barnard Dunkelberg & Company
TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844
DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

DATE
MARCH 2011

SCALE
VARIES

SHEET NO.
1 OF 1

Figure F1 **Phasing Plan**

Summary

As presented in the respective tables, the development plan project cost estimates for the 20-year planning period, not including maintenance and operational expenses, amount to approximately $13,754,250. The anticipated FAA share is some $8,682,288 and the Sponsor share is approximately $717,812.

Of the sponsor's share of funds needed to develop Nephi Municipal Airport, approximately $221,562 are required during the short-term period, $65,050 during the intermediate-range period, and the remaining $431,200 during the long-term period. Additionally, maintenance and operation expenses will increase as the Airport develops and more airport facilities are completed. Revenues generated by airport facilities should also increase. It is a worthy and feasible goal that operational expenses and revenues should balance at the Airport. This relationship should, however, be monitored closely so that future imbalances can be anticipated and provided for in the budgeting and capital improvement processes. The federal share required for development of the Airport includes programmed expenditures of $2,024,688 during the short-term period, $1,483,900 during the intermediate-term period, and $5,173,700 during the long-term period.

Appendix

Master Plan

Nephi

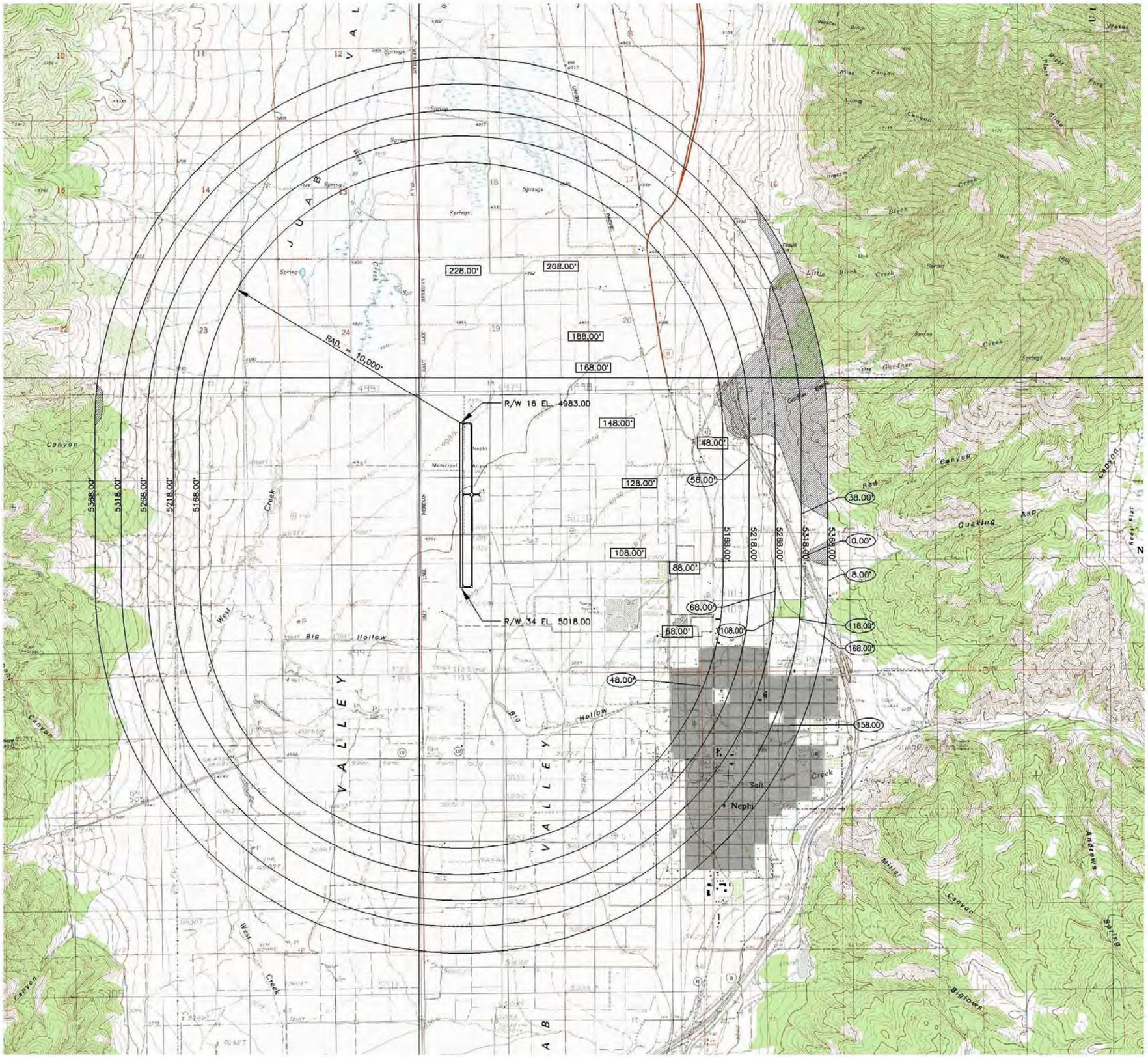
Municipal Airport

Appendix One

> Existing Nephi Municipal Airport Height Hazard Zoning Map
> Juab County Land Use Code/Airport Protection

Master Plan

Nephi Municipal Airport



LEGEND

188.00 – DISTANCE BETWEEN GROUND AND HORIZONTAL SURFACE

– TERRAIN OBSTRUCTION AREA

8.00' – DISTANCE BETWEEN GROUND AND CONICAL SURFACE

N

0 1000 2000 4000

SCALE IN FEET

DESIGNED PG
CHECKED PG
DRAWN DSW

DATE APPROVED 03/03
PROJECT NO.
SCALE AS SHOWN

REVISION DATE
REVISION DATE
REVISION DATE

CREAMER & NOBLE ENGINEERS
ST. GEORGE, UTAH

NEPHI AIRPORT TOPO MAP

AIRPORT AIRSPACE PLAN VIEW

SHEET NO.
1 of 1

Juab County

Land Use Code

July 2, 2007

DISTRICT REGULATIONS

TABLE OF CONTENTS

12-1-1 General Provisions 1

12-1-2 Definitions 4

12-1-3 Planning And Zoning Administration 30

12-1-4 Board Of Adjustment 36

12-1-5 Establishment Of Districts And Official Map 41

12-1-6 Agricultural District A-1 44

12-1-7 Grazing, Mining, Recreation, & Forestry District GMRF-1 48

12-1-8 Highway Commercial 52

12-1-9 Industrial District ID 55

12-1-10 Outlying District 0-1 59

12-1-11 Residential Agriculture RA-1 62

12-1-12 Growth Area District GA 65

12-1-13 Acreage Requirements 68

12-1-14 Industrial Parks 69

12-1-15 Conditional Uses 75

12-1-16 Commercial And Industrial Performance Standards 83

12-1-17 Mobile Home Parks And Recreational Vehicle Parks 99

12-1-18 Open Extraction Of Earth Products 109

12-1-19 Off-Street Parking And Loading 114

12-1-20 Site Plan Review 121

12-1-21 Planned Unit Development (PUD) 125

12-1-22 Sign Regulations 132

12-1-23 Supplemental Regulations 144

12-1-24 Vested Rights 157

12-1-25 Nonconforming Uses 159

12-1-26 Ordinance And Map Amendment 163

12-1-27 Airport Protection 165

12-1-28 Enforcement And Penalties 173

TITLE 12-1-000 PLANNING AND ZONING

12-1-1 GENERAL PROVISIONS

12-1-101 SHORT TITLE

This Title shall be known as the "Land Use Ordinance of Juab County, Utah" and may be so cited and pleaded.

12-1-102 PURPOSE

This ordinance and the regulations and restrictions contained herein are adopted and enacted for the purpose of promoting the health, safety, morals, convenience, order, prosperity, and welfare of the present and future inhabitants of Juab County, including among other things, the lessening of congestion in the streets or roads, securing safety from fire and other dangers, providing adequate open spaces, light and air, classification of land uses, distribution of land development and utilization, protection of the tax base, securing economy in governmental expenditures, fostering agricultural and other industries, and to promote the development of a more wholesome, serviceable and attractive county resulting from an orderly, planned use of resources.

12-1-103 INTERPRETATION

In interpreting and applying the provisions of this section, the requirements contained herein are declared to be the minimum requirements for the purposes set forth.

12-1-104 CONFLICT

This shall not nullify the more restrictive provisions of covenants, agreements, other ordinances or laws, but shall prevail notwithstanding such provisions which are less restrictive.

12-1-105 EFFECT ON PREVIOUS ORDINANCES AND MAPS

The existing ordinances covering zoning, in their entirety, and including the maps heretofore adopted and made a part of said ordinances, are hereby superseded, amended and re-codified to read as set forth herein; provided, however, that this Ordinance, including the attached map or maps shall be deemed a continuation of previous codes and not a new enactment, insofar as the substance of revisions of previous codes is included in this Ordinance, whether in the same or in different language; and this Ordinance shall be so interpreted upon all questions of construction relating to tenure of officers and boards established by previous codes to questions of conforming or nonconforming uses and buildings and structures, and to questions as to the dates upon which such uses, buildings, or structures became conforming or nonconforming.

12-106 LAND USE APPLICATION ENTITLED TO APPROVAL

An applicant is entitled to approval of a land use application if the application conforms to the requirements of the Juab County land use maps, zoning maps, and applicable land use ordinance in effect when a complete application is submitted and all fees have been paid, unless:

1. the land use authority, on the record, finds that a compelling, countervailing public interest would be jeopardized by approving the application; or
2. in the manner provided by local ordinance and before the application is submitted, the county has formally initiated proceedings to amend its ordinances in a manner that would prohibit approval of the application as submitted.

The county shall process an application without regard to proceedings initiated to amend the counties ordinances if:

1. 180 days have passed since the proceedings were initiated; and
2. The proceedings have not resulted in an enactment that prohibits approval of the application as submitted.

NEPHI MUNICIPAL AIRPORT

12-1-27 AIRPORT PROTECTION

12-1-2701 PURPOSE

This section has been enacted to provide for safe operation of the existing Nephi Municipal Airport and those persons and aircraft that use this airport.

12-1-2702 AIRPORT DEFINITIONS

---

1. Airport. The Nephi Municipal Airport

2. Airport Approach, Transitional, Horizontal, and Conical Zones. These zones apply to the area under the approach, transitional, horizontal, and conical surfaces and are defined in this chapter.

3. Airport Elevation. The elevation in feet above mean sea level of the highest point of the landing areas of the airport.

4. Airport Hazard. Any structure or natural growth or use of land which obstructs or restricts the airspace required for the safe flight of aircraft in landing, taking off, or maneuvering at or in the vicinity of the airport, or is otherwise hazardous to such landing, taking off, or maneuvering of aircraft.

5. Airport Runway. A defined area on an airport prepared for landing and take-off of aircraft along its length. For the purpose of this ordinance, the runway length shall be 7200 feet.

6. Airport Primary Surface. A surface longitudinally centered on a runway. When the runway has a specifically prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. The width of the primary surface of a runway will be that width prescribed in Part 77 of the Federal Aviation Regulations (FAR) for the most precise approach existing or planned for either end of that runway. The elevation of any point in the primary surface is the same as the elevation of the nearest point on the runway centerline.

7. Airport Utility Runway. A runway intended solely for the operation of aircraft using visual approach procedures with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan, a military service's approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

8. Airport Non-Precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in, non-precision instrument approach has been approved or planned, and for which no precision approach facilities are planned or indicated on an FAA-planned document or military service's military airport planning document.

9. Airport Precision Instrument Runway. Precision instrument runway means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan; or a military service's approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

12-1-2703 HEIGHT LIMITING ZONES

In order to carry out the provisions of this ordinance, there are hereby created and established certain height limiting zones, which include all the land lying within the utility and non-precision instrument approach zones, transition zones, horizontal zones, and conical zones. Such zones are shown on the Municipal Airport Zoning Map, which is attached to this ordinance and made a part hereof to the same extent as if said map and the information thereon were fully described and set forth herein. The various height limiting zones are hereby established and defined as follows:

1. Runway Non-Precision Instrument Approach Zone. An approach zone is established at the end of Runway 16 based on a 6300 foot runway, for landing and take-offs. The Non-Precision Approach Zone shall have a width of 1000 feet at a distance of 200 feet beyond the end of the runway, widening hereafter uniformly to a width of 3500 feet at a distance of 10,200 feet beyond the end of the runway, its centerline being the continuation of the centerline of the runway. The Approach Zone shall rise 1 foot in height for each 34 feet in horizontal distance beginning at a point 200 feet from and

at the centerline elevation of the runway and extending to a distance of 10,200 feet from the end of the runway.

2. Runway Precision Instrument Approach Zone. An approach zone is established at the end of Runway 34 for landing and take-offs based on a 7200 foot runway. The Precision Approach Zone shall have a width of 1000 feet at a distance of 200 feet beyond the end of the runway, widening hereafter uniformly to a width of 16,000 feet at a distance of 50,200 feet beyond the end of the runway, its centerline being the continuation of the centerline of the runway. The Approach Zone shall rise 1 foot in height for each 50 feet horizontal distance for the first 10,000 feet, beginning at a point 200 feet from and at the centerline elevation of the runway, then shall rise 1 foot in height for each 40 feet horizontal distance for an additional 40,000 feet, extending to a total distance of 50,200 feet from the end of the runway.

3. Transition Zone. Transition zones are hereby established adjacent to each runway and approach zone as indicated on the airport zoning map. Transition zones symmetrically located on either side of runways have variable widths as shown on the airport zoning map. Transition zones extend outward from a line on either side of the centerline of the runway, for the length of such runway plus 200 feet on the end, and are parallel to and level with such runway centerlines. Part The transition zone along such runway slopes upward and outward 7 feet horizontally for each 1 foot vertically to the point where they intersect the surface of the horizontal zone. Further, transition zones are established adjacent to approach zones for the entire length of the approach zone up to the point of intersection with the horizontal zone. These transition zones have variable widths, as shown on the airport zoning map. Such transitions flare symmetrically with either side of the runway approach zone from the base of such zone and slope upward and outward at the rate of 7 feet horizontally for each 1 foot vertically to the points where they intersect the surfaces of the horizontal and conical zones.

4. Horizontal Zone. A horizontal zone is hereby established as the area within arcs of radius from points at the end of the runway at the centerline extension and having a radius of 10,000 feet at 150 feet above the airport elevation. The horizontal zone does not include the utility and non-precision instrument approach zone and the transition zone.

5. Conical Zone. A conical zone is hereby established as the area that commences at the periphery of the horizontal zone and extends outward for a distance of 4,000 feet. The conical zone does not include the utility and non-precision instrument approach zone and transition zone. The conical

zone shall rise 20 feet in height for each 1 foot in horizontal distance beginning at the periphery of the horizontal zone, extending to a height of 350 feet above the airport elevation.

12-1-2704 HEIGHT LIMITATIONS

Except as otherwise provided in this ordinance, no structure or tree shall be erected, altered, allowed to grow, or maintained in any height limiting zone created by this ordinance to a height in excess of the height limit herein established for each of the zones in question as follows:

1. Runway Non-Precision Approach Zone. 1 foot in height for each 34 feet horizontal distance beginning at a point 200 feet from the end of the runway and at the centerline elevation, extending a distance of 10,000 feet.

2. Runway Precision Instrument Approach Zone. 1 foot in height for each 50 feet horizontal distance beginning at a point 200 feet from the end of the runway and at the centerline elevation, extending a distance of 10,000 feet, then 1 foot in height for each 40 feet horizontal distance, extending for an additional 40,000 feet.

3. Transition Zone. Slope 7 feet outward for each 1 foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation. In addition to the foregoing, there are established height limits sloping 7 feet outward for each 1 foot upward beginning at the sides of and at the same elevation as the approach surface, and extending to where they intersect the conical surface.

4. Horizontal Zone. 150 feet above the airport elevation.

5. Conical Zone. 20 feet in height for each 1 foot of horizontal distance beginning at the periphery of the horizontal zone, extending to a height of 350 feet above the airport elevation.

6. Accepted Height Limitation. Nothing in this ordinance shall be construed as prohibiting the growth, construction, or maintenance of any tree or structure to a height consistent with the terms of this chapter.

7. **Most Restrictive Limitation Prevails. Where a zone is covered by more than one height limitation, the more restrictive limitations shall prevail.**

12-1-2705 USE REGULATIONS.

1. Notwithstanding any other provisions of this ordinance, no use shall be made of land within any height limiting zone established by this ordinance in such a manner as to do any of the following:

    a. Create electrical interference with radio communication between the airport and aircraft;
    b. Make it difficult for pilots to distinguish between airport lights and other lights;
    c. Result in glare in the eyes of pilots using the airport;
    d. Impair visibility in the vicinity of the airport; or
    e. Otherwise endanger the landing, taking off, or maneuvering of aircraft.

2. Notwithstanding any other provisions of this ordinance, no places of public assembly, including, but without limitation, apartment, barracks, churches, hospital, hotels, mobile home parks, multiple-family dwellings, recreational vehicle parks, schools and theaters, shall be erected or otherwise located within any of the areas established as a runway protection zone on the airport layout plan.

12-1-2706 NONCONFORMING USES

1. Regulations not Retroactive. The regulations prescribed by this ordinance shall not be construed to require the removal, lowering, or other changes or alterations of any structure or tree not conforming to the regulations as of the effective date of this ordinance or otherwise interfere with the continuation of any nonconforming use. Nothing herein contained shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this ordinance and is diligently prosecuted.

2. Marking and Lighting. Notwithstanding the provision of A above, the owner of any nonconforming structure or tree, is hereby required to permit the installation, operation and maintenance thereon of such markers or lights as shall be deemed necessary by the airport manager to indicate to the operators of aircraft in the vicinity of the airport, the presence of such airport hazards.

1. Future Uses. Except as specifically provided in paragraph 1, 2, 3, and 4 hereunder, no material change shall be made in the use of the land and no structures or trees shall be erected, altered, planted, or otherwise established in any zone hereby created unless a permit thereof shall have been applied for and granted by the planning commission. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted.

2. In the territory lying within the limits of the horizontal zone and the conical zone, no permit shall be required for any tree or structure less than 75 feet of vertical height above the ground, except when because of terrain, land contour, or topography features, such tree or structure would extend above the height limits prescribed for such zone.

3. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than 75 feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

4. In the territories within the limits of the transition zone beyond the perimeter of the horizontal zone, no permit shall be required for any tree or structure less than 75 feet of vertical height limit prescribed for such transition area except when such tree or structure would extend above the height limits prescribed for such zones.

5. Nothing contained in any of the foregoing exceptions will be construed as permitting or intending to permit any construction, alteration, or growth of any structure or tree in excess of any of the height limits established by this ordinance as set forth in 12-1-2704.

6. Existing Uses. No permit shall be granted that would allow the establishment or creation of an airport hazard or permit a nonconforming use, structure or tree to be made or become higher, or become a greater hazard to air navigation, than it was on the effective date of this ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applicants for such a permit shall be granted.

7. Nonconforming Uses Abandoned or Destroyed. Whenever the Building Inspector determines that a nonconforming structure or tree has been abandoned or more than 50% torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the application or otherwise deviate from the ordinance.

8. Special Permit. Any person desiring to erect or increase the height of any structure or permit the growth of any tree or use property not in accordance with the regulations prescribed in this ordinance, may apply to the Legislative Body for a Special Permit from such regulations. Such Special Permit shall be allowed where it is duly found that a literal application or enforcement of the regulations would result in practical difficulty, unnecessary hardship, or a taking, and the relief granted would not be contrary to the public interest but will do substantial justice and be in accordance with the spirit of this ordinance. Upon acceptance by the Legislative Body of any application for a Special Permit, Juab County will provide written notice to Nephi City, as the Airport Sponsor, of said application prior to any hearing or action on the application.

9. Hazard Marking and Lighting. Any regular or special permit granted may, if such action is deemed advisable to effectuate the purpose of this ordinance and be reasonable in the circumstances, as a condition, require the owner of the structure or tree in question at his own expense, to install, operate, and maintain thereon such markers and lights as may be necessary to indicate to flyers the presence of any airport hazard.

12-1-2708 CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this ordinance or any other regulations applicable to the same zone, whether the conflict be with respect to the height of structures or trees, the use of the land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

Appendix Two

> 1997 Environmental Assessment Wetlands Mapping for New Runway 16/34 at Nephi Municipal Airport

> Natural Resources Conservation Service Soils Mapping

Master Plan

Nephi

Municipal Airport

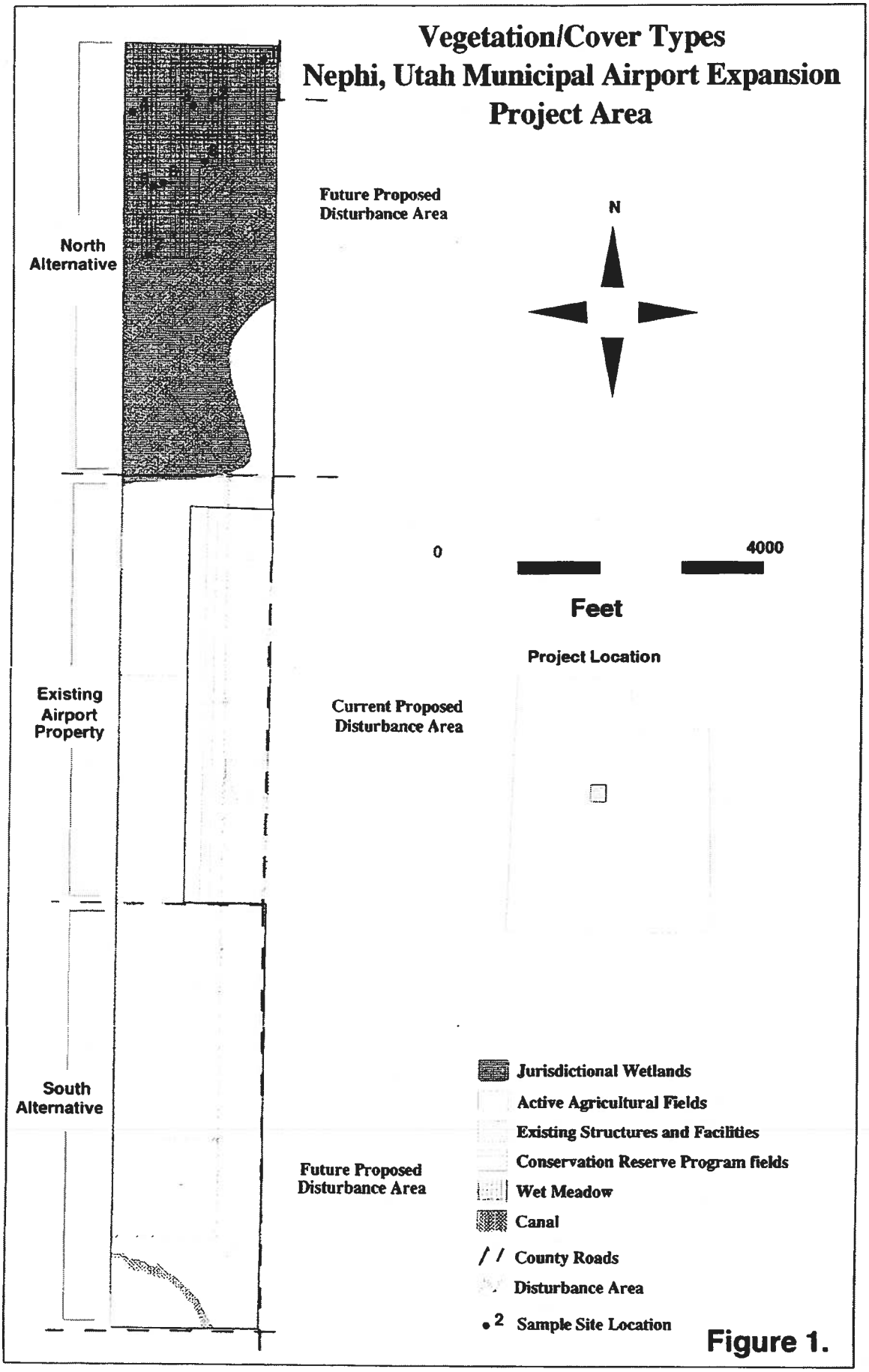
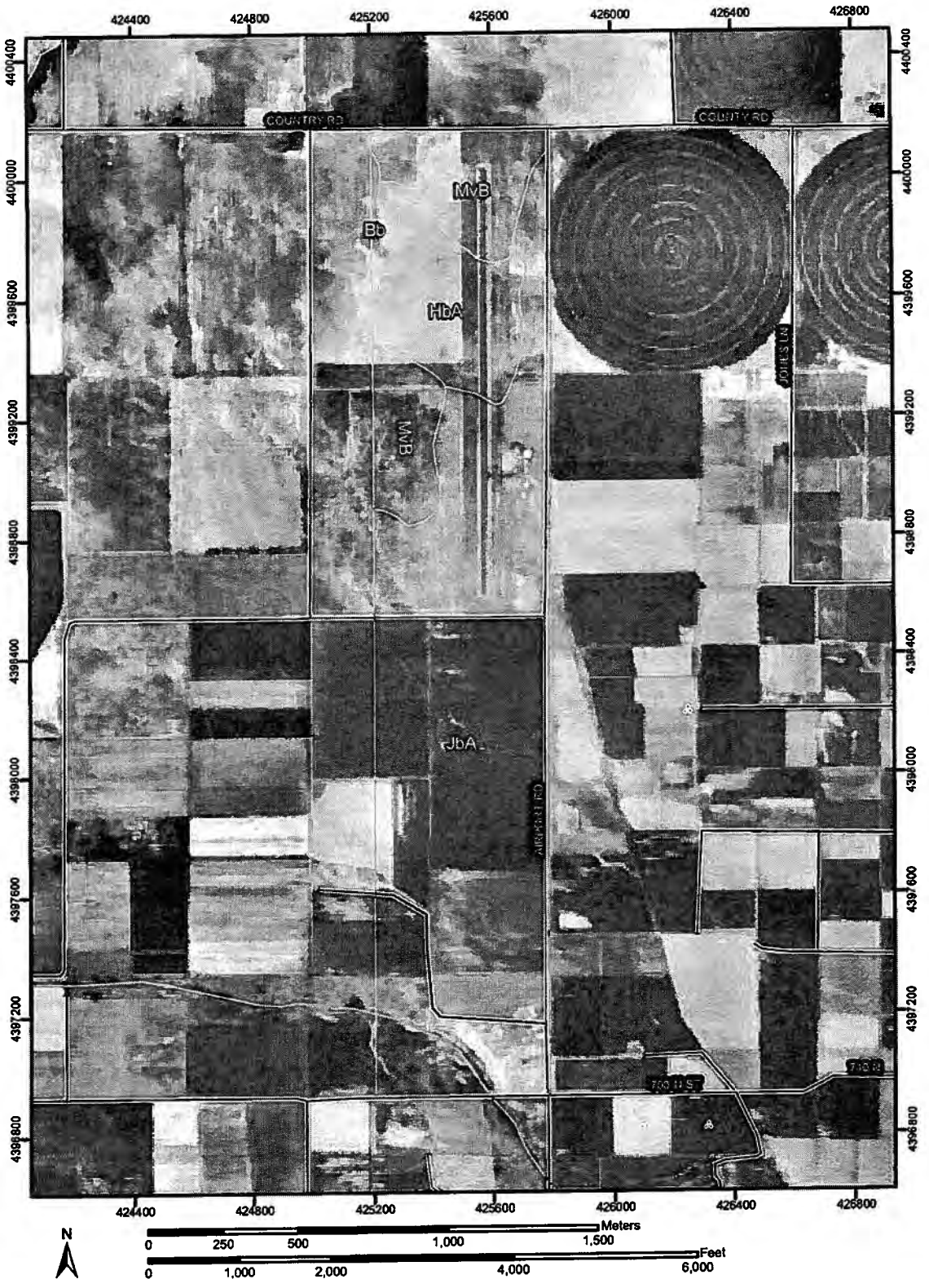

Vegetation/Cover Types
Nephi, Utah Municipal Airport Expansion
Project Area
Future Proposed
Disturbance Area
N
North
Alternative
0
4000
Feet
Project Location
Existing
Airport
Property
Current Proposed
Disturbance Area
South
Alternative
Future Proposed
Disturbance Area
Jurisdictional Wetlands
Active Agricultural Fields
Existing Structures and Facilities
Conservation Reserve Program fields
Wet Meadow
Canal
County Roads
Disturbance Area
2 Sample Site Location

Figure 1.


424400
424800
425200
425600
426000
426400
426800
4400400
4400000
4399600
4399200
4398800
4398400
4398000
4397600
4397200
4396800
COUNTRY RD
COUNTRY RD
MvB
Bb
HbA
MvB
JbA
JONES LN
700 N ST
N
0
250
500
1,000
1,500
Meters
0
1,000
2,000
4,000
6,000
Feet

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fairfield-Nephi Area, Utah
Survey Area Data: Version 3, Jan 4, 2007

Date(s) aerial images were photographed: 8/14/1993; 8/17/1993; 9/9/1993; 9/12/1997; 10/1/1997; 8/6/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Fairfield-Nephi Area, Utah (UT608)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Bb	Benjamin silty clay loam	3.0	0.7%
HbA	Hansel silt loam, 0 to 2 percent slopes	59.5	12.8%
JbA	Juab loam, 0 to 2 percent slopes	332.0	71.6%
MvB	Musinia silty clay loam, moist, 0 to 2 percent slopes	69.2	14.9%
Totals for Area of Interest (AOI)		463.8	100.0%

Appendix Three

> Capital Improvement Program (CIP), November 2010

Master Plan

Nephi

Municipal Airport

Utah Division of Aeronautics

Airport Development Plan Project List

	Nephi Municipal	Airport Sponsor:	Nephi City	Present ARC:	C-II	Future ARC:	C-II	
Sponsor Contact:	Randy McKnight	Tele. Ph #	435-623-0822	E-mail:	rmcknight@nephi.utah.gov		Date Submitted:	10-Nov-10
Consultant Contact:	Creamer & Noble / Mel Leseberg	Tele. Ph #	435-673-4677	E-mail:	mleseberg@creamerandnoble.com			

Project Description & Cost Estimate

Proposed Calendar Year to Begin Project	Project Description	Project Identification in ALP/MP	Project Location on ALP	Sponsor Priority Number	Estimated Total Cost of Project	Cost Allocation $		
						Federal Participation	State Participation	Sponsor Participation
Federally Funded Projects						95.00%		5.00%
2011	Snow Removal Equipment (SRE),							
	SRE Building & Pavement Preservaton			1	$ 425,565	$ 404,287		$ 21,278
2012	Bank GA Entitlement							
2013	Expand Apron			2	$ 789,747	$ 750,000	$ 10,000	$ 29,747
2014	Repay borrowed funds							
2015	Bank GA Entitlement							
2016	Apron Expansion			3	$ 473,684	$ 450,000		$ 23,684
2017	Repay borrowed funds							
Participation Totals					**$ 1,688,996**	**$ 1,604,287**	**$ 10,000**	**$ 74,709**
State Funded Projects							90.00%	10.00%
2016	Crack Seal, Seal Coat, & Paint				$ 135,000		$ 121,500	$ 13,500
	Airport Pavements						$ -	$ -
							$ -	$ -
							$ -	$ -
							$ -	$ -
							$ -	$ -
							$ -	$ -
Participation Totals					**$ 135,000**		**$ 121,500**	**$ 13,500**

Note: Attach additional sheets as necessary to fully describe projects or to add information needed for a full understanding of project scope, location and costs.

Appendix Four

> Nephi Municipal Airport Instrument Approach Feasibility Analysis (2002)

Master Plan

Nephi Municipal Airport

Nephi Municipal Airport
Nephi, Utah

Overview

Nephi Municipal Airport currently does not have published instrument approach procedures. This report is published to examine the feasibility of satellite-based Area Navigation (RNAV) procedures. Airspace Safety Analysis Corporation (ASAC) conducted an aeronautical feasibility study to establish a Global Positioning System (GPS) instrument approach procedures (IAP) to support operations into Nephi Municipal Airport, Nephi, Utah. The purpose of the study was to determine the lowest possible weather and descent minimums for RNAV (GPS) approach procedures to **Runway 16/34** at Nephi Municipal Airport. It is expected the conclusions of this study will support Federal Aviation Administration (FAA) acceptance and future publication as an FAA approved procedure to Nephi Municipal Airport.

Data Analysis and Design

This study is based on a navigation facility and obstacle database established on November 15, 2002, for a Scope of Work as requested by Utah Department Of Transportation Aeronautical Division. An obstacle database was compiled from maps/charts/Digital Terrain Elevation Data (DTED) of National Imagery and Mapping Agency (NIMA) and the United States Geological Survey (USGS) origin and from published FAA information. Airport, runway, facility data and additional obstacle data from the FAA's Instrument Approach Procedure Automation (IAPA #2) tool was also incorporated into this study. The IAP design criteria used to complete this study was based on the Federal Aviation Administration Order 8260.3B Change 19 *United States Standard for Terminal Instrument Procedures* and associated IAP guidance. Assumptions that were made in evaluating the procedure to the Runway 16/34 thresholds are as follows:

1. A Runway 16/34 length of 4713 feet was used with runway elevations of 5009 feet above mean sea level (AMSL) for the north end (RWY 16 Threshold), 5009 feet AMSL for the south end (RWY 34 Threshold) and a touchdown zone elevation of 5009 feet AMSL for Runway 16 and a touchdown zone elevation of 5009 feet AMSL for Runway 34.
2. An airport and surrounding area Magnetic Variation (MAGVAR) of fourteen (14) degrees east was applied to the preliminary analysis.
3. Procedures were designed with the assumption that an operational Automated Weather Observing System (AWOS) with an approved altimeter source and reporting capability is installed.
4. An adverse assumption of 100 feet above ground level (AGL) was applied for vegetation in all procedure segments per guidance from the FAA.
5. No adverse assumption for unknown/man-made structures below 200 feet was evaluated in the final/missed approach segments. It is expected that an airborne evaluation by FAA Flight Inspection will be conducted to identify uncharted and potentially unknown obstacles near the runway/airport.

6. No known vegetation/terrain or man-made obstacles exist off the approach end of Runway 16/34 that would penetrate a 34:1 slope beginning at a point 200 feet from the runway landing surface.

RNAV (GPS) Runway 16



Evaluation: As mentioned, the recently approved FAA Order 8260.3B Change 19 *United States Standard for Terminal Instrument Procedures* was used to develop an RNAV (GPS) approach to Runway 16. In the procedure design phase, several obstacle clearing techniques and final approach courses were evaluated to remove the effects of rising terrain and obstacle penetrations to the final and the missed approach segments. The challenge for this IAP is certainly the effects of terrain located in the vicinity of Nephi Municipal Airport. During the development of the Runway 16 procedure the missed approach point was established at 1 nautical mile from the threshold and the Minimum Descent Altitude (MDA) was raised 80 feet to defeat obstacles in the missed approach segment. A standard missed approach segment was constructed back to an initial approach fix with an immediate turnout back to an initial located to the north of the airfield. A complete environmental analysis is the responsibility of the FAA and further coordination with local airport and air traffic authorities may require further evaluation.

Recommendation: The highest probability exists for a standard RNAV (GPS) IAP to Runway 16 at Nephi Municipal Airport. A MDA of 611 feet Height Above Touchdown (HAT) and a visibility requirement of 1 ¼ mile can be expected for category A aircraft, while a MDA of 611 feet HAT and a visibility requirement of 1 ¾ mile can be expected for Category C aircraft. It should be noted that the FAA may require precipitous terrain adjustments in the final approach segment, resulting in higher minimums.

RNAV (GPS) Runway 34

Evaluation: The effects of terrain had a impact on procedure design for procedures to Runway 34 at Nephi Municipal Airport. The final approach segment had to be offset 5 degrees and the intermediate segment offset 25 degrees. The final approach segment was extended to 6.5 nautical miles in length and a stepdown fix added at 2.7 nautical miles from the threshold. The missed approach point (MAP) was established 3000 feet from the threshold. A standard missed approach segment was constructed back to the initial approach fix with an immediate turnout back to the initial approach fix located to the east of the airfield. A complete environmental analysis is the responsibility of the FAA and further coordination with local airport and air traffic authorities may require further evaluation.



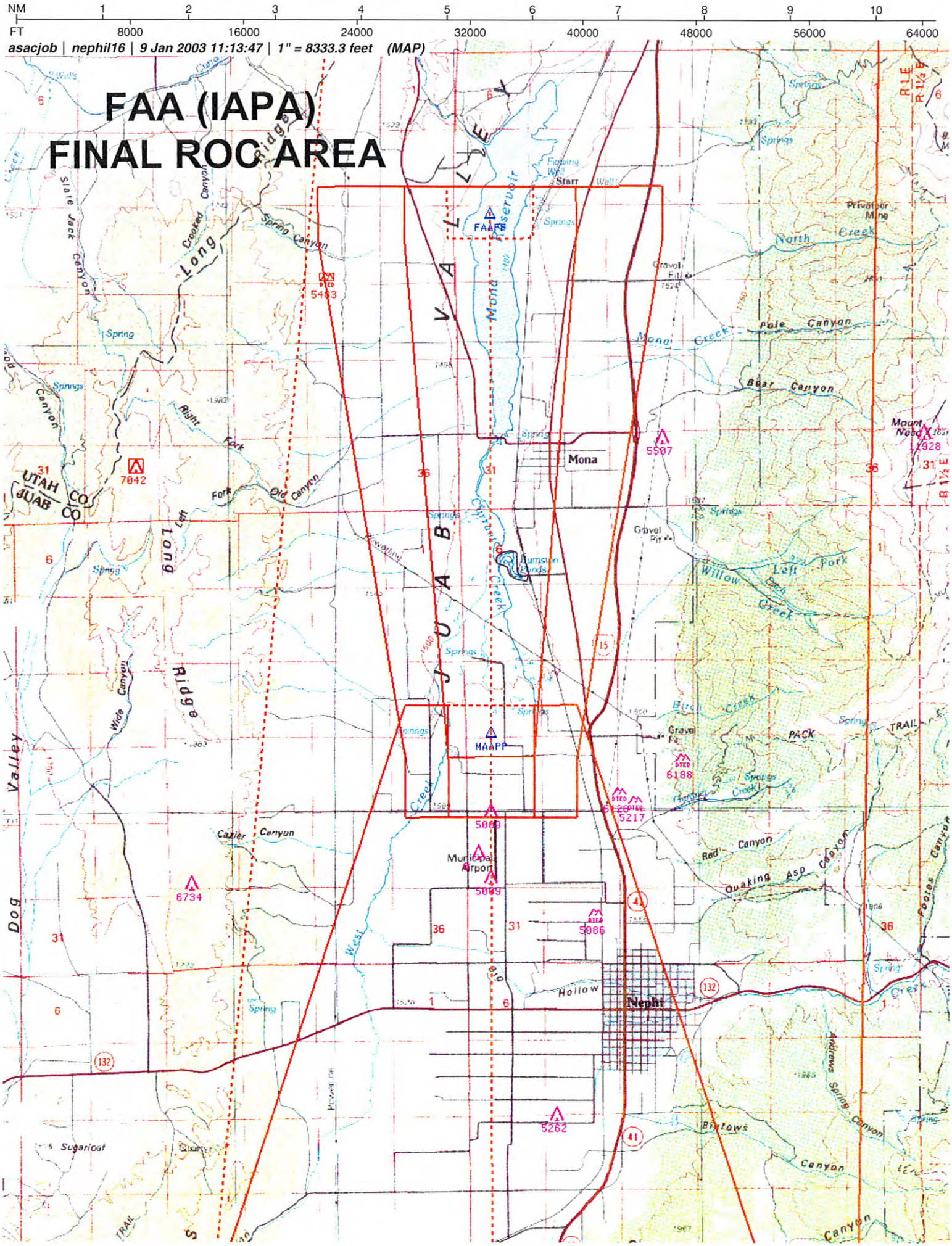
Recommendation: An RNAV (GPS) IAP to Runway 34 at Nephi Municipal Airport appears to possible, however, in this case, offsetting the approach course results in a nonstandard circle-to-land approach. A standard circle-to-land procedure that would approach the airfield from a course not aligned with the runway would have the highest possibility of approval by the FAA. A Minimum Descent Altitude (MDA) of 311 feet Height Above Touchdown (HAT) and a visibility requirement of 1 mile can be expected for category A through category C aircraft. It should be noted that the FAA may require precipitous terrain adjustments in the final approach segment, resulting in higher minimums.

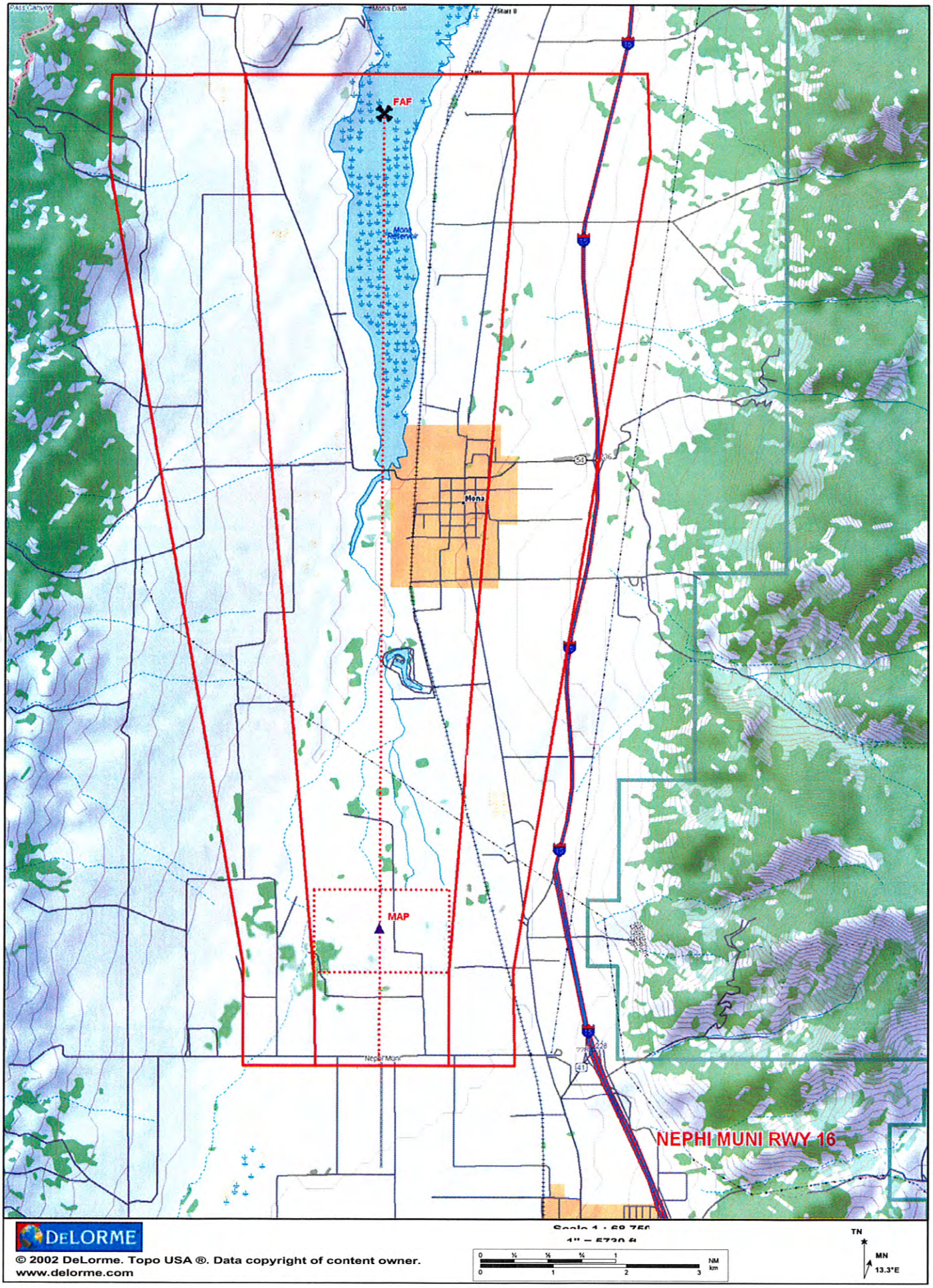
Both runways require further analysis prior to any conclusions or finality in the feasibility of these recommendations. Further study would include, but is not limited to, obstacle verification/surveys, additional terrain analysis in the area, interviews with FAA Air Traffic Control facilities, and considerations by the user community (ALPA/AOPA). The establishment of a more efficient missed approach ground track is an area that might need further direct coordination with local airport officials. As discussed in the evaluation, an Environmental Impact Statement (EIS)/Environmental Assessment (EA)/Categorical Exclusion (CATEX) may be required by the FAA. On occasion, the FAA has required additional environmental evaluation on new IAP's or when an IAP final approach course (FAC) has changed from existing IAP's by greater than three (3) degrees. ASAC believes a full CATEX environmental review could be supported for this approach. Significant time involvement can be expected by FAA Flight Standards Division for the approval process.

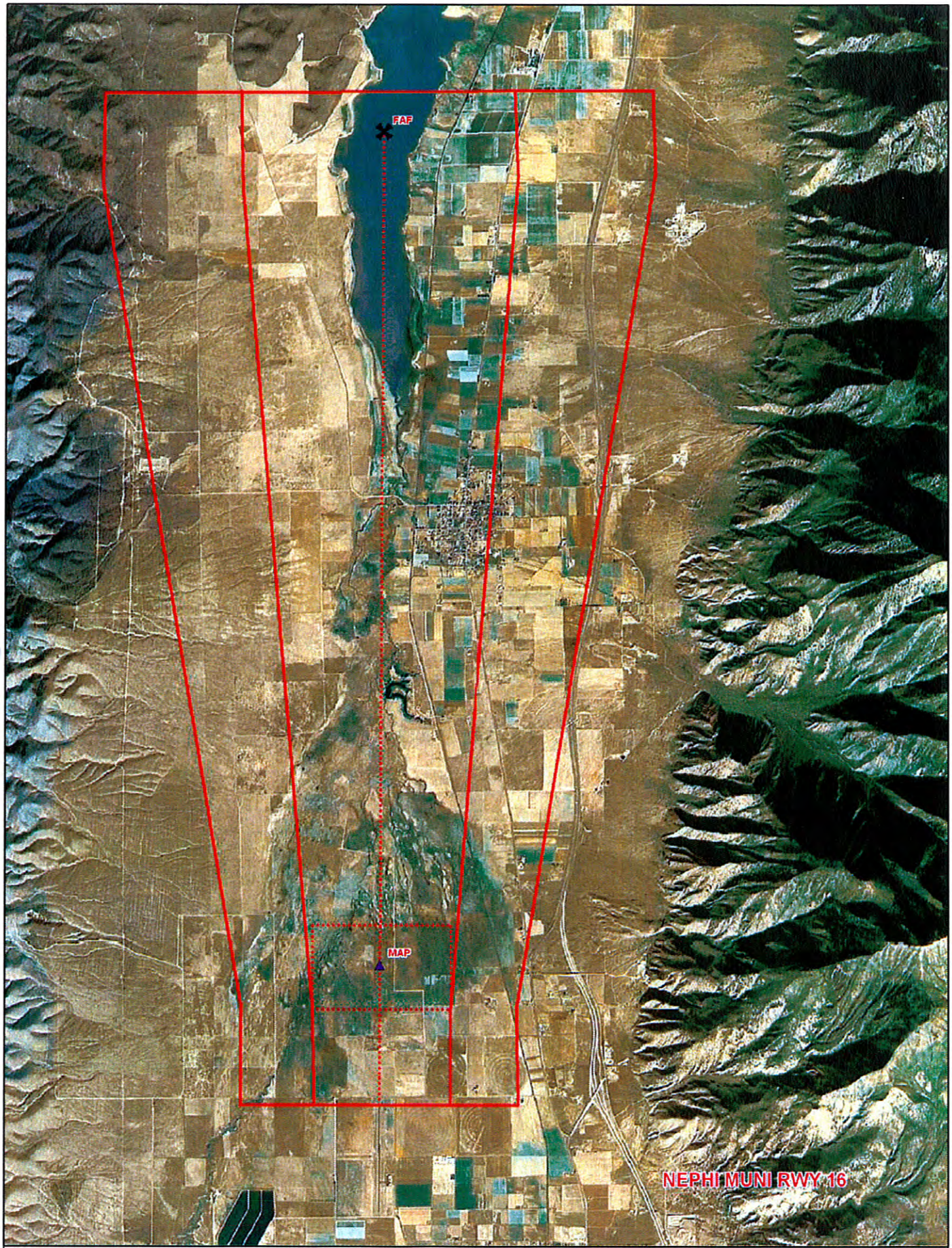
Conclusion

Properly equipped aircraft and satellite-based navigation technology give airports state-of-the-art approach procedures to support safety enhanced operation and airport utilization under IFR conditions. The implementation of the RNAV (GPS) RWY 17 and RNAV (GPS) RWY 35 approach procedures into Nephi Municipal Airport are recommended and would be considered significant tools in support of safe and efficient aircraft operations in the area. With the submission of a complete procedure design package, FAA Airborne Flight Inspection, and approval of the Flight Standards Division, these procedures can be considered very positive solutions to enhanced aviation safety and capacity for Nephi Municipal Airport.

Included as attachments to this Feasibility Study are color drawings of the RNAV (GPS) required obstacle clearance (ROC) areas. These angular areas are supplemented with additional design points for understanding and discussion.


NM 1 2 3 4 5 6 7 8 9 10
FT 8000 16000 24000 32000 40000 48000 56000 64000
asacjob | nephil16 | 9 Jan 2003 11:13:47 | 1" = 8333.3 feet (MAP)
FAA (IAPA)
FINAL ROC AREA
JUAB VALLEY
FAAFB
MAAPP
Mona
Nephi
Mona Reservoir
Mona Creek
Long Ridge
Dog Valley
Wide Canyon Ridge
Spring Canyon
Crooked Canyon
Slate Jack Canyon
Pole Canyon
Bear Canyon
Willow Creek
Left Fork
Right Fork
Old Canyon
Cazier Canyon
Red Canyon
Quaking Asp Canyon
Birch Creek
Foote Canyon
Andrews Spring Canyon
Municipal Airport
Gravel Pit
Private Mine
Mount Nebo
UTAH CO
JUAB CO
5483
7042
5507
6734
5069
5099
5086
6188
5217
5262
11928
132
41
TRAIL
PACK


FAF
MAP
Mona
Mona Reservoir
Mona Dam
Nephi Mark
NEPHI MUNI RWY 16
DeLORME
© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com
TN
MN
13.3°E
NM
km



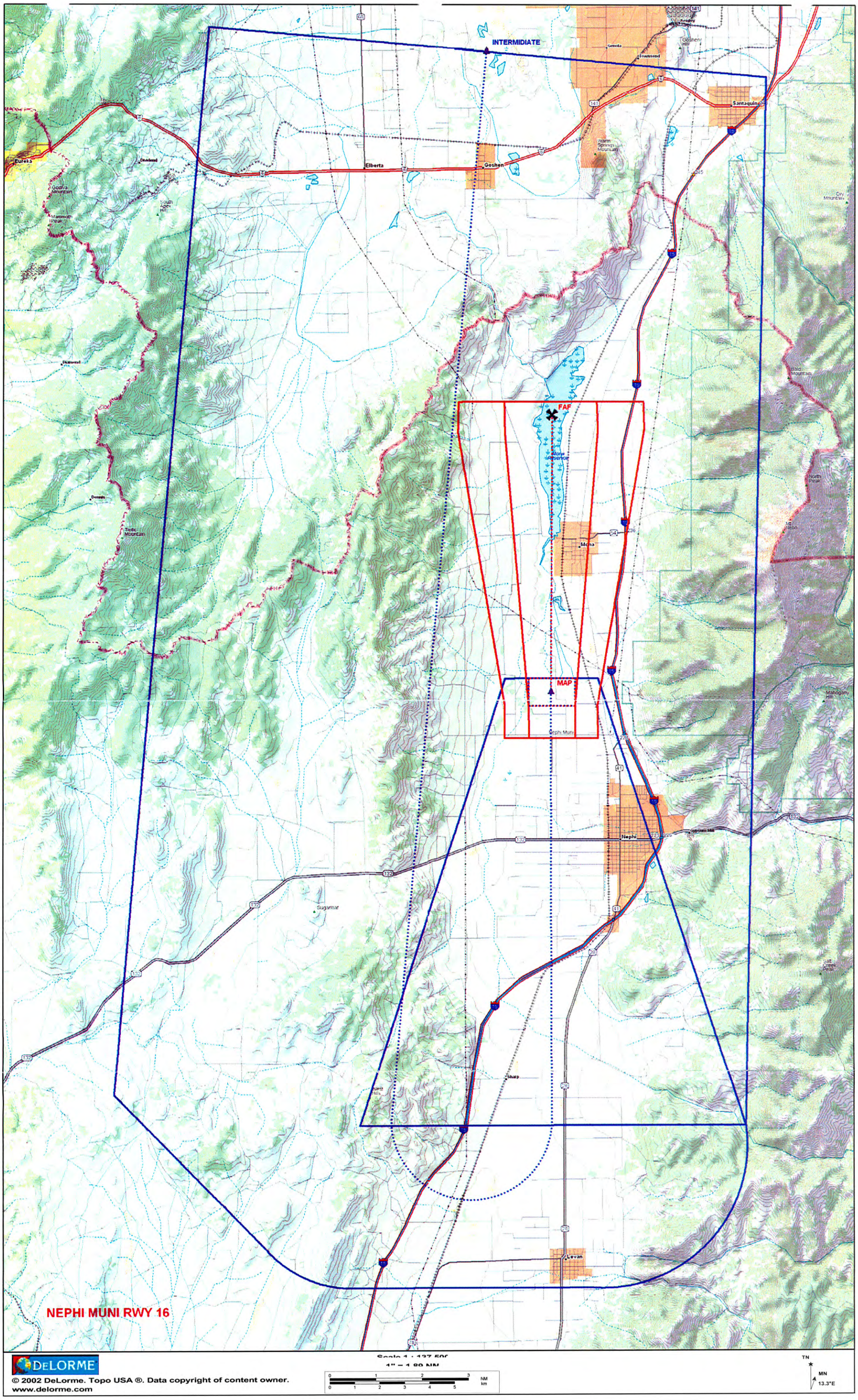
DELORME

© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com

Scale 1 : 69,756
1" = 5730 ft

0 ½ ½ ½ 1 NM
0 1 2 3 km

TN
MN
13.3°E



DeLORME
© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com

AC 150/5300-13 (CHANGE 6)
TABLE A-16C SUMMARY
NONPRECISION APPROACH REQUIREMENTS

NEPHI (U14)
RNAV (LNAV) RWY 16

VISIBILITY MINIMUMS	1 SM	> 1 SM
Height Above Touchdown (HAT)	Does Not Meet Requirements	Meets Requirements [1]
TERPS Paragraph 251 Surfaces		Data Not Available [2]
Precision Object Free Area (POFA)		Data Not Available [2]
Airport Layout Plan (ALP)		Does Not Meet Requirements [3]
Minimum Runway Length		Meets Requirements [4]
Runway Markings		Does Not Meet Requirements [5]
Holding Position Signs and Markings		Does Not Meet Requirements [6]
Runway Edge Lights		Meets Requirements [7]
Parallel Taxiway/Obstacle Free Zone		Possible [8]
Approach Lighting System (ALS)		Meets Requirements [9]
Runway Design		Data Not Available [2]
Threshold Siting Criteria		Data Not Available [2]
Survey Data Required		Data Not Available [2, 10]
Night Operations		Possible [11]

1 HAT = 611 feet. Remainder of chart requirements based on visibility > 1 SM.

2 Required (minimum runway survey: Type C).

3 Required if obligated in the National Plan of Integrated Airport Systems (NPIAS). ALP exists but requires amendment.

4 4700 feet > 4200 feet.

5 Runway has no markings.

6 See AC 150/5340-1 and AC 150/5340-18.

7 Runway has MIRL.

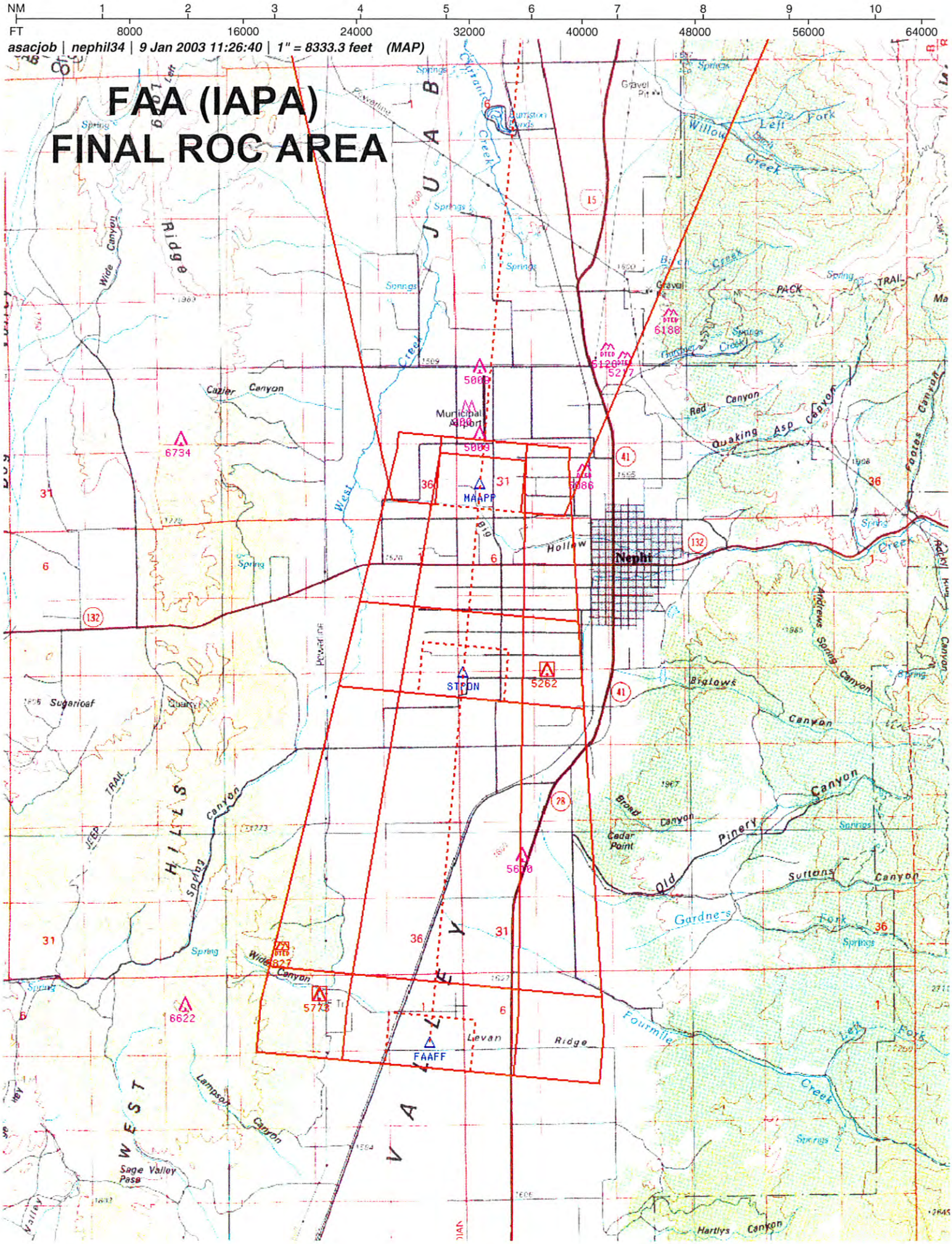
8 Parallel taxiway to runway threshold recommended but not required (minimum runway survey: Type C).

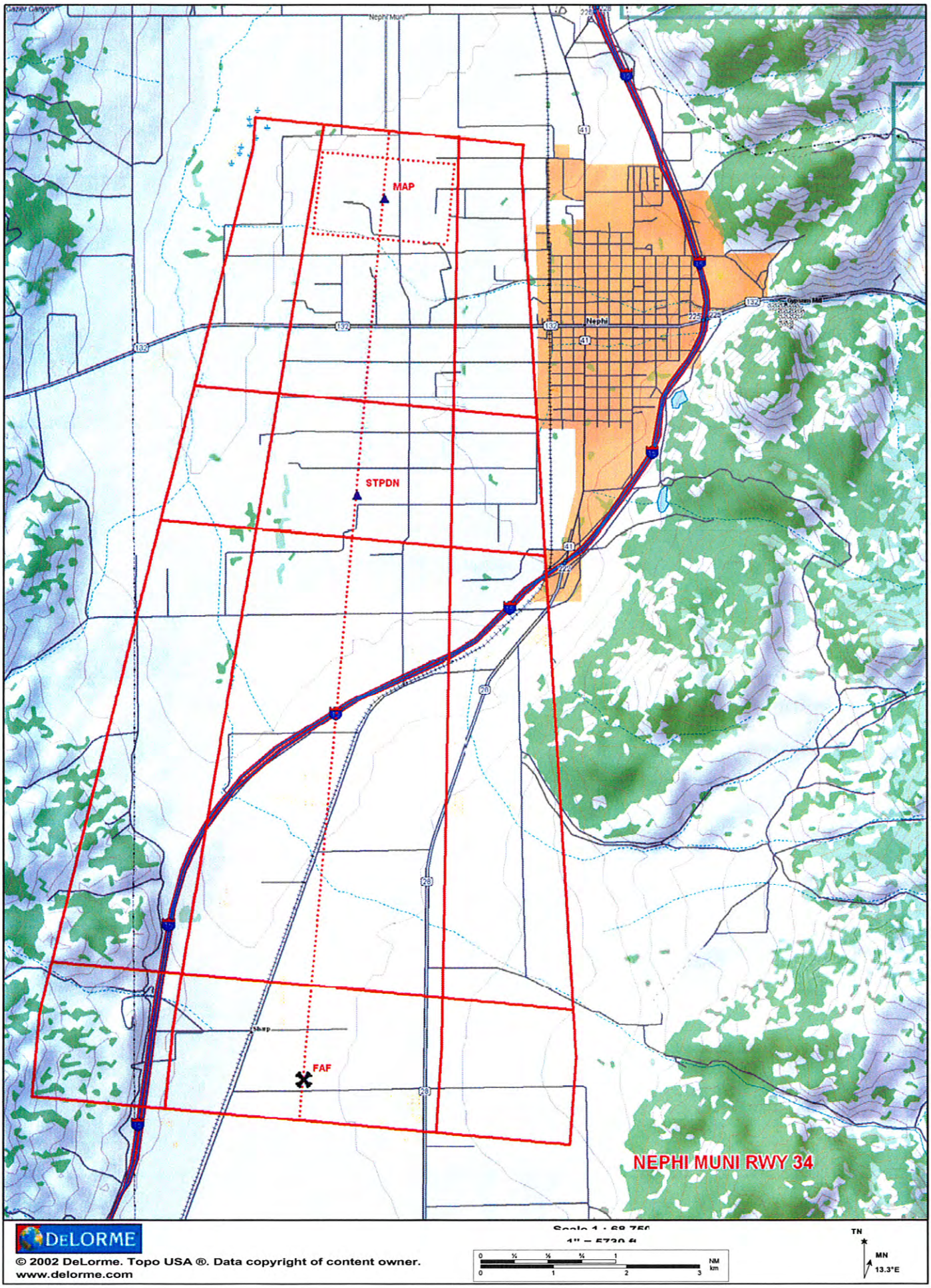
9 ALS not required.

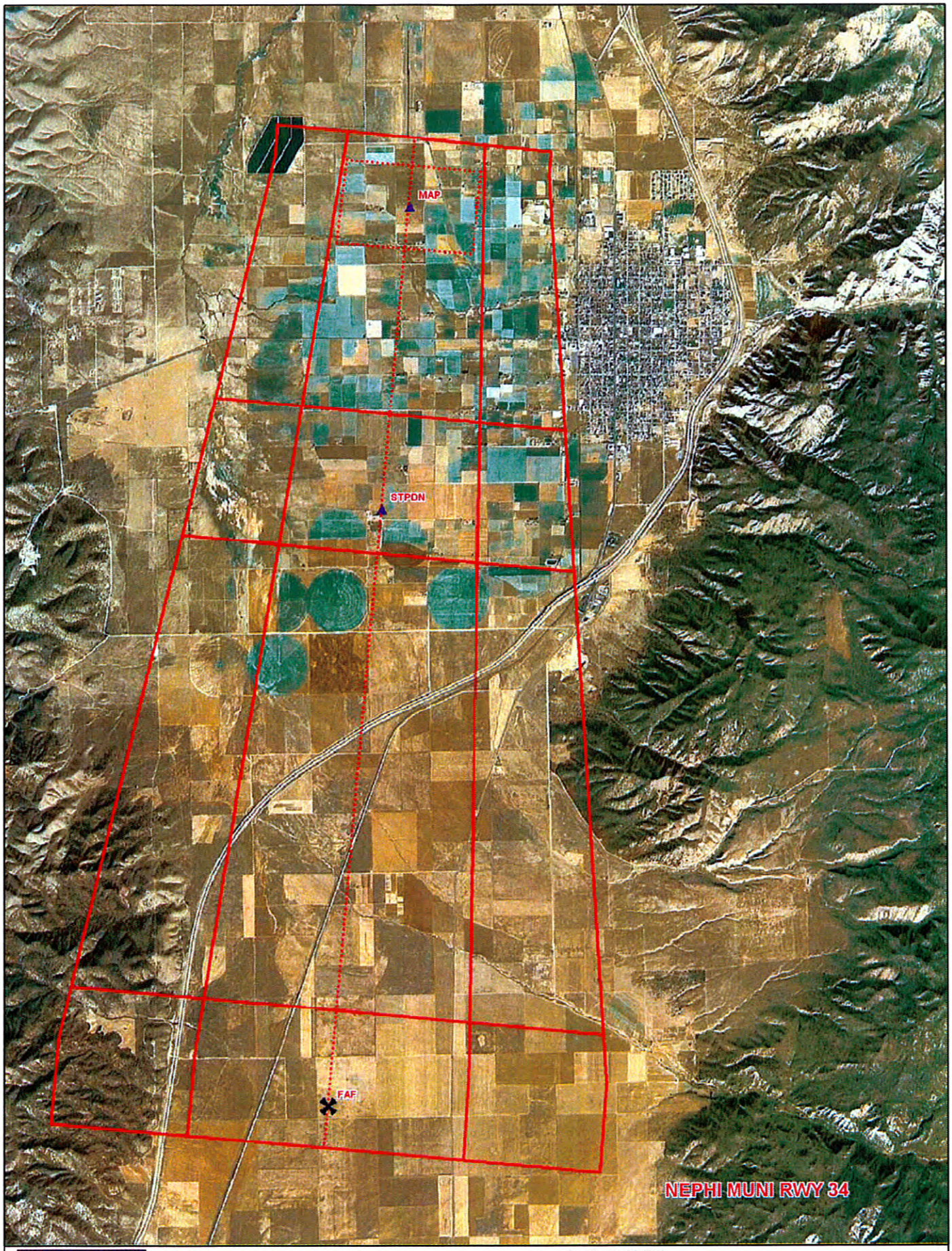
10 Additional requirements to be met. See FAAO 8260.3B, Paragraph 251, and AC 150/5300-13, Appendix 2.

11 Additional requirements to be met. See FAAO 8260.3B, Paragraph 251, and AC 70/7460-1.

ASAC Form A-16C (Proprietary)


NM 1 2 3 4 5 6 7 8 9 10
FT 8000 16000 24000 32000 40000 48000 56000 64000
asacjob | nephil34 | 9 Jan 2003 11:26:40 | 1" = 8333.3 feet (MAP)
FAA (IAPA)
FINAL ROC AREA
JUAB
Nephi
Municipal Airport
MAAPP
STPON
FAAFF
WEST VALLEY
Cazier Canyon
Wide Canyon
Ridge
Sugarloaf
Spring Canyon
Sage Valley Pass
Lamoson Canyon
Levan Ridge
Fourmile Creek
Hartlys Canyon
Gardners Fork
Suttons Canyon
Old Pinery
Broad Canyon
Cedar Point
Briglows Canyon
Andrews Spring Canyon
Red Canyon
Quaking Asp Canyon
Pack Trail
Left Fork Willow Creek
Big Hollow
West Creek
Gravel Pit
Springs
6734
6622
5773
5627
5600
5262
5217
5120
5009
5003
4886
6188


MAP
STPDN
FAF
Nephi
NEPHI MUNI RWY 34
DeLORME
© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com
TN
MN
13.3°E



DeLORME
© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com

Scale 1 : 68,750
1" = 5730 ft

0 ¼ ½ ¾ 1 NM
0 1 2 3 km

TN
MN
13.3°E

MISSED

MAP

STPDW

FAF

NEPHI MUNI RWY 34

DeLORME
© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com

Scale 1 : 87,500
1" = 1.20 NM

0 ½ 1 1½ 2 NM
0 1 2 3 4 km

TN
MN
13.3°E

AC 150/5300-13 (CHANGE 6)
TABLE A-16C SUMMARY
NONPRECISION APPROACH REQUIREMENTS

NEPHI (U14)
RNAV (LNAV) RWY 34

VISIBILITY MINIMUMS	1 SM	> 1 SM
Height Above Touchdown (HAT)	Meets Requirements [1]	Meets Requirements [1]
TERPS Paragraph 251 Surfaces	Data Not Available [2]	Data Not Available [2]
Precision Object Free Area (POFA)	Data Not Available [2]	Data Not Available [2]
Airport Layout Plan (ALP)	Does Not Meet Requirement [3]	Does Not Meet Requirements [3]
Minimum Runway Length	Meets Requirements [4]	Meets Requirements [4]
Runway Markings	Does Not Meet Requirements [5]	Does Not Meet Requirements [5]
Holding Position Signs and Markings	Does Not Meet Requirements [6]	Does Not Meet Requirements [6]
Runway Edge Lights	Meets Requirements [7]	Meets Requirements [7]
Parallel Taxiway/Obstacle Free Zone	Possible [8]	Possible [8]
Approach Lighting System (ALS)	Meets Requirements [9]	Meets Requirements [9]
Runway Design	Data Not Available [2]	Data Not Available [2]
Threshold Siting Criteria	Data Not Available [2]	Data Not Available [2]
Survey Data Required	Data Not Available [2, 10]	Data Not Available [2, 10]
Night Operations	Possible [11]	Possible [11]

[1] HAT = 311 feet.

[2] Required (minimum runway survey: Type C).

[3] Required if obligated in the National Plan of Integrated Airport Systems (NPIAS). ALP exists but requires amendment.

[4] 4700 feet > 4200 feet.

[5] Runway has no markings.

[6] See AC 150/5340-1 and AC 150/5340-18.

[7] Runway has MIRL.

[8] Parallel taxiway to runway threshold recommended but not required (minimum runway survey: Type C).

[9] ALS not required.

[10] Additional requirements to be met. See FAAO 8260.3B, Paragraph 251, and AC 150/5300-13, Appendix 2.

[11] Additional requirements to be met. See FAAO 8260.3B, Paragraph 251, and AC 70/7460-1.

ASAC Form A-16C (Proprietary)

Categorical Exclusion Checklist

The information you provide below will assist the FAA in making its determination as to whether a Categorical Exclusion is appropriate or further environmental analysis is required for your proposed instrument approach(es)/departure(s). Please place a checkmark in the blank next to the numbered items indicating you have no concerns on that issue. Should you have any remarks that may indicate the need to prepare an EA/EIS, attach a brief explanation of the circumstances so that we can evaluate the issue further.

Airport Name: Nephi Date: Dec 17, 2002

Approach/Departure Requested: Area Navigation (RNAV) Approach/Departure Procedures

NO 1. Section 4(F) of DOT ACT: This procedure will not use federal, state or local parklands nor substantially increase noise over those parklands.

NO 2. Environmental Controversy: The proposed procedure is not highly controversial on environmental grounds. Opposition on environmental grounds has not been received from federal, state or local government agencies, or by a substantial number of persons affected by the proposed action.

NO 3. Natural Environment: The proposed procedure will not have a significant impact on natural, ecological, cultural or scenic resources of national, state, or local significance; will not impact any federally listed or proposed to be listed endangered or threatened species protected by the Endangered Species Act.

NO 4. Noise: The proposed procedure will not have a significant impact on noise sensitive areas. (Normally, no noise analysis is needed if airport operations do no exceed 90,000 propeller operations or 700 jet operations. These numbers of operations generally do not produce a noise contour off airport property.)

NO 5. Cumulative Impacts Considerations: The overall impact of the proposed action and the consequences of subsequent related actions have been considered, and are not considered to be collectively significant.

I certify, to the best of my knowledge, that the information provided above is complete and correct, and that there is no information that indicates the need for further environmental analysis.

Signature: Charles Theobald

Name: CHARLES THEOBALD

Title/Position: AIRPORT PLANNER

Address: 435 EAST TABERNACLE ST.
St. George, Utah

Phone Number: 435-673-4677

Signature: Robert H. Withers SR.

ROBERT H WITHERS, SR.
Manager,
ASAC Airspace Development
Phone: 678-924-8000

CHECKLIST OF EXTRAORDINARY CIRCUMSTANCES IN SUPPORT OF A CATEGORICAL EXCLUSION DETERMINATION

Project/Action: NEPHI MUNI Date: Dec 17, 2002 Preparer: CHARLES THEOBALD

Circumstance	Impact Potential Yes	Impact Potential No	Comments/Follow-Up See attached comments If needed
1. Effect on Section 106 Historic Properties		✓	
2. Effect on Section 4(f) Lands		✓	
3. Controversy on Environmental Grounds		✓	
4. Effect on Natural Systems		✓	
5. Effect on Endangered Species		✓	
6. Effect on Wetland		✓	
7. Effect on Floodplains		✓	
8. Effect on Coastal Zones		✓	
9. Effect on Prime/Unique Farmland		✓	
10. Effect on Energy/Resources		✓	
11. Controversy Regarding Relocation Housing		✓	
12. Community Disruption		✓	
13. Traffic Congestion		✓	
14. Effect on Noise Levels in Noise Sensitive Areas		✓	
15. Effect on Air Quality		✓	
16. Effect on Water Quality		✓	
17. Contains/Affects Hazardous Materials		✓	
18. Land Use Conflicts		✓	
19. Induced Impacts		✓	
20. Wold and Scenic Rivers		✓	
21. Cumulative Impacts		✓	
22. Inconsistent With Other Environmental Laws		✓	
23. Environmental Justice		✓	
24. Helicopter tracks over major thoroughfares		✓	

Rec'd

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIRPORT MASTER RECORD

PRINT DATE: 01/23/2003
AFD EFF 01/23/2003
Form Approved OMB 2120-0015

> 1 ASSOC CITY: NEPHI
> 2 AIRPORT NAME: NEPHI MUNI
3 CBD TO AIRPORT (NM): 03 NW
4 STATE: UT
6 REGION/ADO: ANM/DEN
LOC ID: U14
5 COUNTY: JUAB UT
7 SECT AERO CHT: LAS VEGAS
FAA SITE NR: 25228.*A

GENERAL

10 OWNERSHIP: PUBLIC
> 11 OWNER: CITY OF NEPHI
> 12 ADDRESS: 21 E 100 NORTH
NEPHI, UT 84648
> 13 PHONE NR: 801-623-0822
> 14 MANAGER: RANDY MC KNIGHT
> 15 ADDRESS: CITY OF NEPHI
NEPHI, UT 84648
> 16 PHONE NR: 801-623-0822
> 17 ATTENDANCE SCHEDULE:

MONTHS	DAYS	HOURS
ALL	MON-FRI	0800-1700

18 AIRPORT USE: PUBLIC
19 ARPT LAT: 39-44-19.836N ESTIMATED
20 ARPT LONG: 111-52-17.764W
21 ARPT ELEV: 5009 SURVEYED
22 ACREAGE: 320
> 23 RIGHT TRAFFIC: NO
> 24 NON-COMM LANDING: NO
25 NPIAS/FED AGREEMENTS: N1
26 FAR 139 INDEX:

SERVICES

> 70 FUEL: 100LL A
> 71 AIRFRAME RPRS: MINOR
> 72 PWR PLANT RPRS: MINOR
> 73 BOTTLE OXYGEN: NONE
> 74 BULK OXYGEN: NONE
75 TSNT STORAGE: HGR
76 OTHER SERVICES:

FACILITIES

> 80 ARPT BCN: CG
> 81 ARPT LGT SKED: DUSK-DAWN
> 82 UNICOM: 122.800
> 83 WIND INDICATOR: YES-L
84 SEGMENTED CIRCLE: NONE
85 CONTROL TWR: NONE
86 FSS: CEDAR CITY
87 FSS ON ARPT: NO
88 FSS PHONE NR: 435-586-3806
89 TOLL FREE NR: 1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG:	4
91 MULTI ENG:	2
92 JET:	1
TOTAL:	7
93 HELICOPTERS:	0
94 GLIDERS:	1
95 MILITARY:	0
96 ULTRA-LIGHT:	1

OPERATIONS

100 AIR CARRIER:	0
101 COMMUTER:	0
102 AIR TAXI:	0
103 G A LOCAL:	3,500
104 G A ITNRNT:	1,000
105 MILITARY:	1,000
TOTAL:	5,500

OPERATIONS FOR
MOS ENDING

RUNWAY DATA

> 30 RUNWAY IDENT:		16/34
> 31 LENGTH:		4,700
> 32 WIDTH:		75
> 33 SURF TYPE-COND:		ASPH-F
> 34 SURF TREATMENT:		
35 GROSS WT:	SW	21
36 (IN THSDS)	DW	
37	DTW	
38	DDTW	

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:	MED
> 42 RWY MARK TYPE-COND	- / -
> 43 VGSI	/
44 THR CROSSING HGT	/
45 VISUAL GLIDE ANGLE	/
> 46 CNTRLN-TDZ	- / -
> 47 RVR-RVV	- / -
> 48 REIL	/
> 49 APCH LIGHTS	/

OBSTRUCTION DATA

50 FAR 77 CATEGORY	A(V) / A(V)
> 51 DISPLACED THR	/
> 52 CTLG OBSTN	ROAD /
> 53 OBSTN MARKED/LGTD	/
> 54 HGT ABOVE RWY END	15 /
> 55 DIST FROM RWY END	375 /
> 56 CNTRLN OFFSET	0B /
57 OBSTN CLNC SLOPE	11:1 / 50:1
58 CLOSE-IN OBSTN	N / Y

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA)	/
> 61 TAKE OFF DIST AVBL (TODA)	/
> 62 ACLT STOP DIST AVBL (ASDA)	/
> 63 LNDG DIST AVBL (LDA)	/

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

110 REMARKS:

A 033 RWY 16/34 CRACKING & LOOSE CHIPS ON APRON & RY.
A 051 RWY 16 THR RELOCATED 200 FT FOR NGT OPERATIONS; RY 34 THR RELOCATED 400 FT FOR NGT OPERATIONS; 4100 FT OF RY AVBL FOR NGT OPERATIONS.
A 058 RWY 34 +15' ROAD 190' FROM THR.
A 070 FUEL AVBL MON-FRI 0800-1700; OTHER TIMES & WEEKENDS WITH PROR NOTICE & $20 CALL OUT FEE.
A 081 ACTVT MIRL RY 16/34 - CTAF.
110-01 EXTENSIVE GLIDER ACTIVITY ON & INVOF ARPT.

111 INSPECTOR: (S)
112 LAST INSP: 02/14/1997
113 LAST INFO REQ:

FAA Form 5010-1 (5-91) SUPERSEDES PREVIOUS

Appendix Five

> Nephi Municipal Airport - 2008 and 2028 Integrated Noise Model (INM) Noise Contour Data

Master Plan

Nephi Municipal Airport

INM 7.0 SCENARIO RUN INPUT REPORT 21-Apr-10 10:39

STUDY: C:\PROGRAM FILES\INM7.0A\NEPHI MP EXISTING\
Created : 15-Dec-09 11:20
Units : English
Airport :
Description :
Nephi Municipal Airport Master Plan

SCENARIO: Existing2008
Created : 15-Dec-09 12:00
Description : Existing INM Noise Contours
Last Run : 16-Dec-09 08:37
Run Duration : 000:00:01

STUDY AIRPORT
Latitude : 39.736583 deg
Longitude : -111.870060 deg
Elevation : 5022.1 ft

CASES RUN:

CASENAME: EXISTING
Temperature : 93.0 F
Pressure : 29.92 in-Hg
AverageWind : 8.0 kt
ChangeNPD : No

STUDY RUNWAYS
16
Latitude : 39.745213 deg
Longitude : -111.870060 deg
Xcoord : 0.0000 nmi
Ycoord : 0.5174 nmi
Elevation : 4987.0 ft
OtherEnd : 34
Length : 6298 ft
Gradient : 0.56 %
TkoThresh : 0 ft
AppThresh : 0 ft

CASENAME: EXISTING
RwyWind : 8.0 kt

CASENAME: EXISTING
RwyWind : 8.0 kt
34
Latitude : 39.727923 deg
Longitude : -111.870000 deg
Xcoord : 0.0028 nmi
Ycoord : -0.5192 nmi
Elevation : 5022.1 ft
OtherEnd : 16
Length : 6298 ft
Gradient : -0.56 %
TkoThresh : 0 ft
AppThresh : 0 ft

CASENAME: EXISTING
RwyWind : 8.0 kt

CASENAME: EXISTING
RwyWind : 8.0 kt

STUDY HELIPADS
16H
Latitude : 39.745213 deg

Longitude : -111.870060 deg
Xcoord : 0.0000 nmi
Ycoord : 0.5174 nmi

34H
Latitude : 39.727923 deg
Longitude : -111.870000 deg
Xcoord : 0.0028 nmi
Ycoord : -0.5192 nmi

STUDY TRACKS

RwyId-OpType-TrkId

Sub	PctSub	TrkType	Delta(ft)
16-APP-L1			
0	100.00	Vectors	0.0
16-DEP-T1			
0	100.00	Vectors	0.0
16-TGO-TG1			
0	100.00	Vectors	0.0
16H-APP-HL1			
0	100.00	Points	0.0
16H-DEP-HT1			
0	100.00	Points	0.0
34-APP-L2			
0	100.00	Vectors	0.0
34-DEP-T2			
0	100.00	Vectors	0.0
34-TGO-TG2			
0	100.00	Vectors	0.0
34H-APP-HL2			
0	100.00	Points	0.0
34H-DEP-HT2			
0	100.00	Points	0.0

STUDY TRACK DETAIL

RwyId-OpType-TrkId-SubTrk

#	SegType	Dist/Angle	Radius(nmi)
16-APP-L1-0			
1	Straight	5.0000 nmi	
16-DEP-T1-0			
1	Straight	5.0000 nmi	
16-TGO-TG1-0			
1	Straight	1.5368 nmi	
2	Left-Turn	90.0000 deg	0.2500
3	Straight	0.7500 nmi	
4	Left-Turn	90.0000 deg	0.2500
5	Straight	2.7868 nmi	
6	Left-Turn	90.0000 deg	0.2500
7	Straight	0.7500 nmi	
8	Left-Turn	90.0000 deg	0.2500
9	Straight	1.2500 nmi	
16H-APP-HL1-0			
1	Points	1.2504 nmi	-0.0063
2	Points	1.2504 nmi	2.0209
3	Points	-0.0016 nmi	2.0164
4	Points	0.0000 nmi	0.5174
16H-DEP-HT1-0			
1	Points	0.0000 nmi	0.5174
2	Points	-0.0038 nmi	1.2639
3	Points	-1.2544 nmi	1.2639
4	Points	-1.2536 nmi	-0.0019
34-APP-L2-0			
1	Straight	5.0000 nmi	
34-DEP-T2-0			
1	Straight	5.0000 nmi	
34-TGO-TG2-0			
1	Straight	1.5368 nmi	
2	Left-Turn	90.0000 deg	0.2500

3	Straight	0.7500 nmi	
4	Left-Turn	90.0000 deg	0.2500
5	Straight	2.7868 nmi	
6	Left-Turn	90.0000 deg	0.2500
7	Straight	0.7500 nmi	
8	Left-Turn	90.0000 deg	0.2500
9	Straight	1.2500 nmi	

34H-APP-HL2-0

1	Points	-1.2536 nmi	-0.0019
2	Points	-1.2421 nmi	-2.0215
3	Points	0.0052 nmi	-2.0186
4	Points	0.0028 nmi	-0.5192

34H-DEP-HT2-0

1	Points	0.0028 nmi	-0.5192
2	Points	0.0073 nmi	-1.2717
3	Points	1.2637 nmi	-1.2628
4	Points	1.2504 nmi	0.0070

AIRCRAFT GROUP ASSIGNMENTS

STUDY AIRPLANES

BEC58P	Standard data
CNA500	Standard data
CNA55B	Standard data
COMSEP	Standard data
DHC6	Standard data
MU3001	Standard data

STUDY SUBSTITUTION AIRPLANES

USER-DEFINED NOISE CURVES

USER-DEFINED METRICS

USER-DEFINED PROFILE IDENTIFIERS

USER-DEFINED PROCEDURAL PROFILES

USER-DEFINED FIXED-POINT PROFILES

USER-DEFINED FLAP COEFFICIENTS

USER-DEFINED JET THRUST COEFFICIENTS

USER-DEFINED PROP THRUST COEFFICIENTS

USER-DEFINED GENERAL THRUST COEFFICIENTS

STUDY MILITARY AIRPLANES

USER-DEFINED MILITARY NOISE CURVES

USER-DEFINED MILITARY PROFILE IDENTIFIERS

USER-DEFINED MILITARY FIXED-POINT PROFILES

STUDY HELICOPTERS

S70	Standard data

USER-DEFINED HELICOPTER PROFILE IDENTIFIERS

USER-DEFINED HELICOPTER PROCEDURAL PROFILES

USER-DEFINED HELICOPTER NOISE CURVES

USER-DEFINED HELICOPTER DIRECTIVITY

CASE FLIGHT OPERATIONS - [EXISTING]

Acft	Op	Profile	Stg	Rwy	Track	Sub	Group		Day	Evening	Night
BEC58P	APP	STANDARD	1	34	L2	0	---		0.7546	0.0000	0.0397
BEC58P	APP	STANDARD	2	16	L1	0	---		1.1319	0.0000	0.0596
BEC58P	DEP	STANDARD	1	16	T1	0	---		1.1319	0.0000	0.0596
BEC58P	DEP	STANDARD	1	34	T2	0	---		0.7546	0.0000	0.0397
CNA500	APP	STANDARD	1	16	L1	0	---		0.0560	0.0000	0.0029
CNA500	APP	STANDARD	1	34	L2	0	---		0.0373	0.0000	0.0020
CNA500	DEP	STANDARD	1	16	T1	0	---		0.0560	0.0000	0.0029
CNA500	DEP	STANDARD	1	34	T2	0	---		0.0373	0.0000	0.0020
CNA55B	APP	STANDARD	1	16	L1	0	---		0.0280	0.0000	0.0015
CNA55B	APP	STANDARD	1	34	L2	0	---		0.0187	0.0000	0.0010
CNA55B	DEP	STANDARD	1	16	T1	0	---		0.0280	0.0000	0.0015
CNA55B	DEP	STANDARD	1	34	T2	0	---		0.0187	0.0000	0.0010
COMSEP	APP	STANDARD	1	16	L1	0	---		0.3714	0.0000	0.0195
COMSEP	APP	STANDARD	1	34	L2	0	---		0.2476	0.0000	0.0130
COMSEP	DEP	STANDARD	1	16	T1	0	---		0.3714	0.0000	0.0195
COMSEP	DEP	STANDARD	1	34	T2	0	---		0.2476	0.0000	0.0130
COMSEP	TGO	STANDARD	1	16	TG1	0	---		1.1728	0.0000	0.0000
COMSEP	TGO	STANDARD	1	34	TG2	0	---		0.7819	0.0000	0.0000
DHC6	APP	STANDARD	1	16	L1	0	---		1.9808	0.0000	0.1043
DHC6	APP	STANDARD	1	34	L2	0	---		1.3205	0.0000	0.0695
DHC6	DEP	STANDARD	1	16	T1	0	---		1.9808	0.0000	0.1043
DHC6	DEP	STANDARD	1	34	T2	0	---		1.3205	0.0000	0.0695
MU3001	APP	STANDARD	1	16	L1	0	---		0.0339	0.0000	0.0018
MU3001	APP	STANDARD	1	34	L2	0	---		0.0226	0.0000	0.0012
MU3001	DEP	STANDARD	1	16	T1	0	---		0.0339	0.0000	0.0018
MU3001	DEP	STANDARD	1	34	T2	0	---		0.0226	0.0000	0.0012
S70	APP	STANDARD	1	16H	HL1	0	---		0.4110	0.0000	0.0000
S70	APP	STANDARD	1	34H	HL2	0	---		0.2740	0.0000	0.0000
S70	DEP	STANDARD	1	16H	HT1	0	---		0.4110	0.0000	0.0000
S70	DEP	STANDARD	1	34H	HT2	0	---		0.2740	0.0000	0.0000

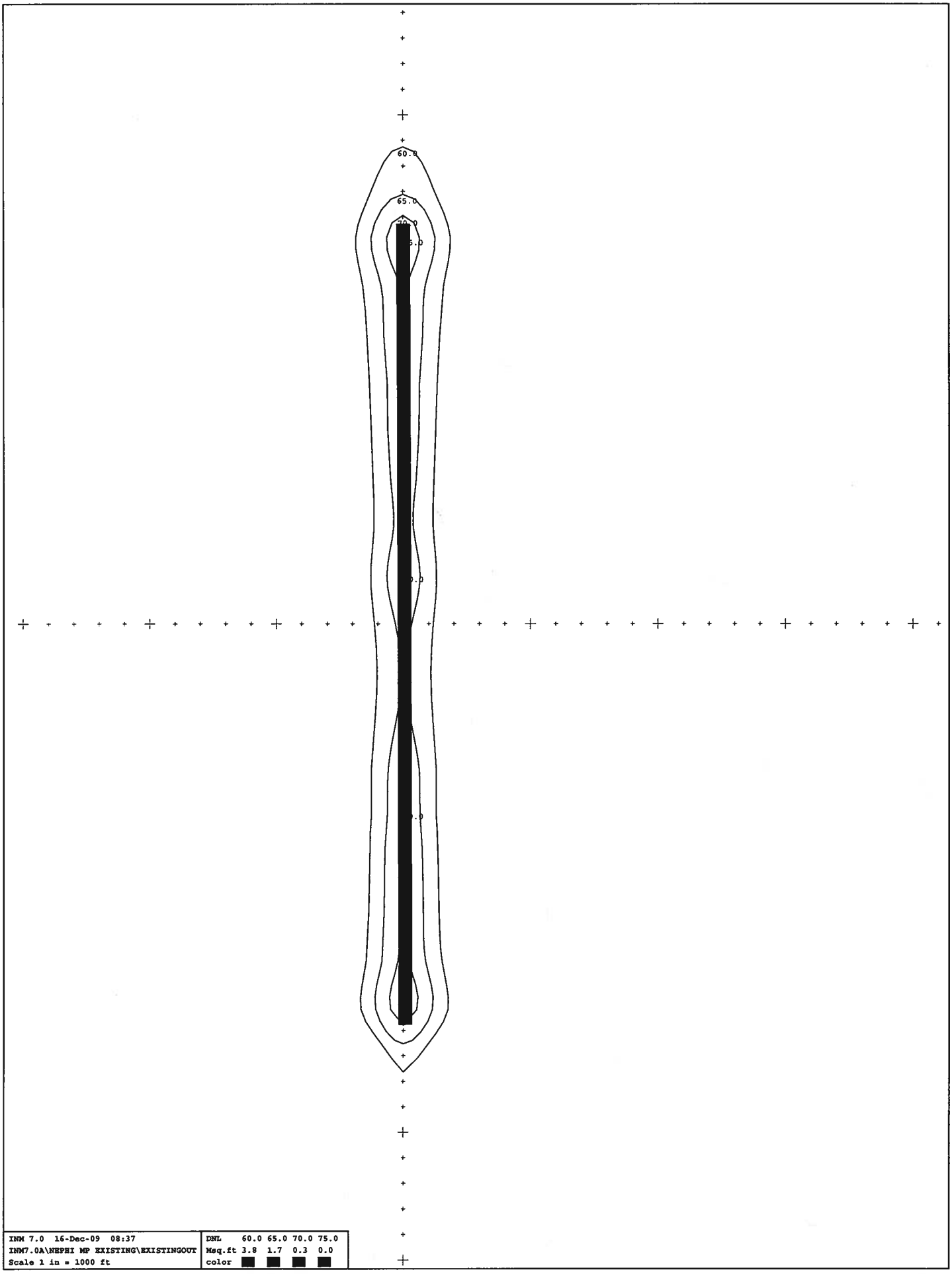
CASE RUNUP OPERATIONS - [EXISTING]

SCENARIO RUN OPTIONS
- Run Type : Single-Metric
- NoiseMetric : DNL
- Do Terrain : No Terrain
- Do Contour : Recursive Grid
- Refinement : 8
- Tolerance : 0.25
- Low Cutoff : 60.0
- High Cutoff : 75.0
- Ground Type : All-Soft-Ground
- Do Population : No
- Do Locations : No
- Do Standard : No
- Do Detailed : No
- Compute System Metrics:
  - DNL : No
  - CNEL : No
  - LAEQ : No
  - LAEQD : No
  - LAEQN : No
  - SEL : No
  - LAMAX : No
  - TALA : No
  - NEF : No
  - WECPNL : No
  - EPNL : No

PNLTM : No
TAPNL : No
CEXP : No
LCMAX : No
TALC : No

SCENARIO GRID DEFINITIONS

Name	Type	X(nmi)	Y(nmi)	Ang(deg)	DisI(nmi)	DisJ(nmi)	NI	NJ	Thrsh	dAmb	(hr)
CONTOUR	Contour	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	85.0	0.0	0.00


60.0
65.0
INM 7.0 16-Dec-09 08:37
INM7.0A\NEPHI MP EXISTING\EXISTINGOUT
Scale 1 in = 1000 ft
DNL 60.0 65.0 70.0 75.0
Msq.ft 3.8 1.7 0.3 0.0
color

```
INM 7.0 SCENARIO RUN INPUT REPORT  21-Apr-10 10:14

STUDY: C:\PROGRAM FILES\INM7.0A\NEPHI MP FUTURE\
   Created     : 15-Dec-09 11:20
   Units       : English
   Airport     :
   Description :
      Nephi Municipal Airport Master Plan

SCENARIO: Future2028
   Created      : 15-Dec-09 16:14
   Description  : Future INM Noise Contours
   Last Run     : 16-Dec-09 08:31
   Run Duration :  000:00:01

STUDY AIRPORT
   Latitude    : 39.736583 deg
   Longitude   : -111.870060 deg
   Elevation   : 5022.1 ft


CASES RUN:

CASENAME: FUTURE
   Temperature : 93.0 F
   Pressure    : 29.92 in-Hg
   AverageWind : 8.0 kt
   ChangeNPD   : No

STUDY RUNWAYS
   16
      Latitude  : 39.745213 deg
      Longitude : -111.870060 deg
      Xcoord    : 0.0000 nmi
      Ycoord    : 0.5174 nmi
      Elevation : 4987.0 ft
      OtherEnd  : 34
      Length    : 7198 ft
      Gradient  : 0.50 %
      TkoThresh : 0 ft
      AppThresh : 0 ft

CASENAME: FUTURE
      RwyWind   : 8.0 kt

CASENAME: FUTURE
      RwyWind   : 8.0 kt
   34
      Latitude  : 39.725452 deg
      Longitude : -111.869969 deg
      Xcoord    : 0.0042 nmi
      Ycoord    : -0.6673 nmi
      Elevation : 5023.1 ft
      OtherEnd  : 16
      Length    : 7198 ft
      Gradient  : -0.50 %
      TkoThresh : 0 ft
      AppThresh : 0 ft

CASENAME: FUTURE
      RwyWind   : 8.0 kt

CASENAME: FUTURE
      RwyWind   : 8.0 kt

STUDY HELIPADS
   16H
      Latitude  : 39.745213 deg
      Longitude : -111.870060 deg
      Xcoord    : 0.0000 nmi
      Ycoord    : 0.5174 nmi
   34H
      Latitude  : 39.725452 deg
      Longitude : -111.869969 deg
      Xcoord    : 0.0042 nmi
```

Ycoord : -0.6673 nmi

STUDY TRACKS

RwyId-OpType-TrkId

Sub	PctSub	TrkType	Delta(ft)
16-APP-L1			
0	100.00	Vectors	0.0
16-DEP-T1			
0	100.00	Vectors	0.0
16-TGO-TG1			
0	100.00	Vectors	0.0
16H-APP-HL1			
0	100.00	Points	0.0
16H-DEP-HT1			
0	100.00	Points	0.0
34-APP-L2			
0	100.00	Vectors	0.0
34-DEP-T2			
0	100.00	Vectors	0.0
34-TGO-TG2			
0	100.00	Vectors	0.0
34H-APP-HL2			
0	100.00	Points	0.0
34H-DEP-HT2			
0	100.00	Points	0.0

STUDY TRACK DETAIL

RwyId-OpType-TrkId-SubTrk

#	SegType	Dist/Angle	Radius(nmi)
16-APP-L1-0			
1	Straight	5.0000 nmi	
16-DEP-T1-0			
1	Straight	5.0000 nmi	
16-TGO-TG1-0			
1	Straight	1.6849 nmi	
2	Left-Turn	90.0000 deg	0.2500
3	Straight	0.7500 nmi	
4	Left-Turn	90.0000 deg	0.2500
5	Straight	2.9349 nmi	
6	Left-Turn	90.0000 deg	0.2500
7	Straight	0.7500 nmi	
8	Left-Turn	90.0000 deg	0.2500
9	Straight	1.2500 nmi	
16H-APP-HL1-0			
1	Points	1.2504 nmi	-0.0063
2	Points	1.2504 nmi	2.0209
3	Points	-0.0016 nmi	2.0164
4	Points	0.0000 nmi	0.5174
16H-DEP-HT1-0			
1	Points	0.0000 nmi	0.5174
2	Points	-0.0045 nmi	1.2574
3	Points	-1.2533 nmi	1.2726
4	Points	-1.2536 nmi	-0.0019
34-APP-L2-0			
1	Straight	5.0000 nmi	
34-DEP-T2-0			
1	Straight	5.0000 nmi	
34-TGO-TG2-0			
1	Straight	1.6849 nmi	
2	Left-Turn	90.0000 deg	0.2500
3	Straight	0.7500 nmi	
4	Left-Turn	90.0000 deg	0.2500
5	Straight	2.9349 nmi	
6	Left-Turn	90.0000 deg	0.2500
7	Straight	0.7500 nmi	
8	Left-Turn	90.0000 deg	0.2500
9	Straight	1.2500 nmi	
34H-APP-HL2-0			
1	Points	-1.2536 nmi	-0.0019
2	Points	-1.2516 nmi	-2.1749
3	Points	0.0025 nmi	-2.1749
4	Points	0.0032 nmi	-0.6637
34H-DEP-HT2-0			
1	Points	-0.0006 nmi	-0.6675

2	Points	0.0070 nmi	-1.4199
3	Points	1.2673 nmi	-1.4122
4	Points	1.2504 nmi	0.0070

AIRCRAFT GROUP ASSIGNMENTS

STUDY AIRPLANES

BEC58P	Standard data
CNA500	Standard data
CNA55B	Standard data
CNA750	Standard data
COMSEP	Standard data
DHC6	Standard data
MU3001	Standard data

STUDY SUBSTITUTION AIRPLANES

USER-DEFINED NOISE CURVES

USER-DEFINED METRICS

USER-DEFINED PROFILE IDENTIFIERS

USER-DEFINED PROCEDURAL PROFILES

USER-DEFINED FIXED-POINT PROFILES

USER-DEFINED FLAP COEFFICIENTS

USER-DEFINED JET THRUST COEFFICIENTS

USER-DEFINED PROP THRUST COEFFICIENTS

USER-DEFINED GENERAL THRUST COEFFICIENTS

STUDY MILITARY AIRPLANES

USER-DEFINED MILITARY NOISE CURVES

USER-DEFINED MILITARY PROFILE IDENTIFIERS

USER-DEFINED MILITARY FIXED-POINT PROFILES

STUDY HELICOPTERS

S70	Standard data

USER-DEFINED HELICOPTER PROFILE IDENTIFIERS

USER-DEFINED HELICOPTER PROCEDURAL PROFILES

USER-DEFINED HELICOPTER NOISE CURVES

USER-DEFINED HELICOPTER DIRECTIVITY

CASE FLIGHT OPERATIONS - [FUTURE]

Acft	Op	Profile	Stg	Rwy	Track	Sub	Group	Day	Evening
BEC58P	APP	STANDARD	1	16	L1	0	---	1.9387	0.0000
BEC58P	APP	STANDARD	1	34	L2	0	---	1.2925	0.0000
BEC58P	DEP	STANDARD	1	16	T1	0	---	1.9387	0.0000
BEC58P	DEP	STANDARD	1	34	T2	0	---	1.2925	0.0000
CNA500	APP	STANDARD	1	16	L1	0	---	0.2412	0.0000
CNA500	APP	STANDARD	1	34	L2	0	---	0.1608	0.0000
CNA500	DEP	STANDARD	1	16	T1	0	---	0.2412	0.0000
CNA500	DEP	STANDARD	1	34	T2	0	---	0.1608	0.0000
CNA55B	APP	STANDARD	1	16	L1	0	---	0.1206	0.0000
CNA55B	APP	STANDARD	1	34	L2	0	---	0.0804	0.0000
CNA55B	DEP	STANDARD	1	16	T1	0	---	0.1206	0.0000
CNA55B	DEP	STANDARD	1	34	T2	0	---	0.0804	0.0000

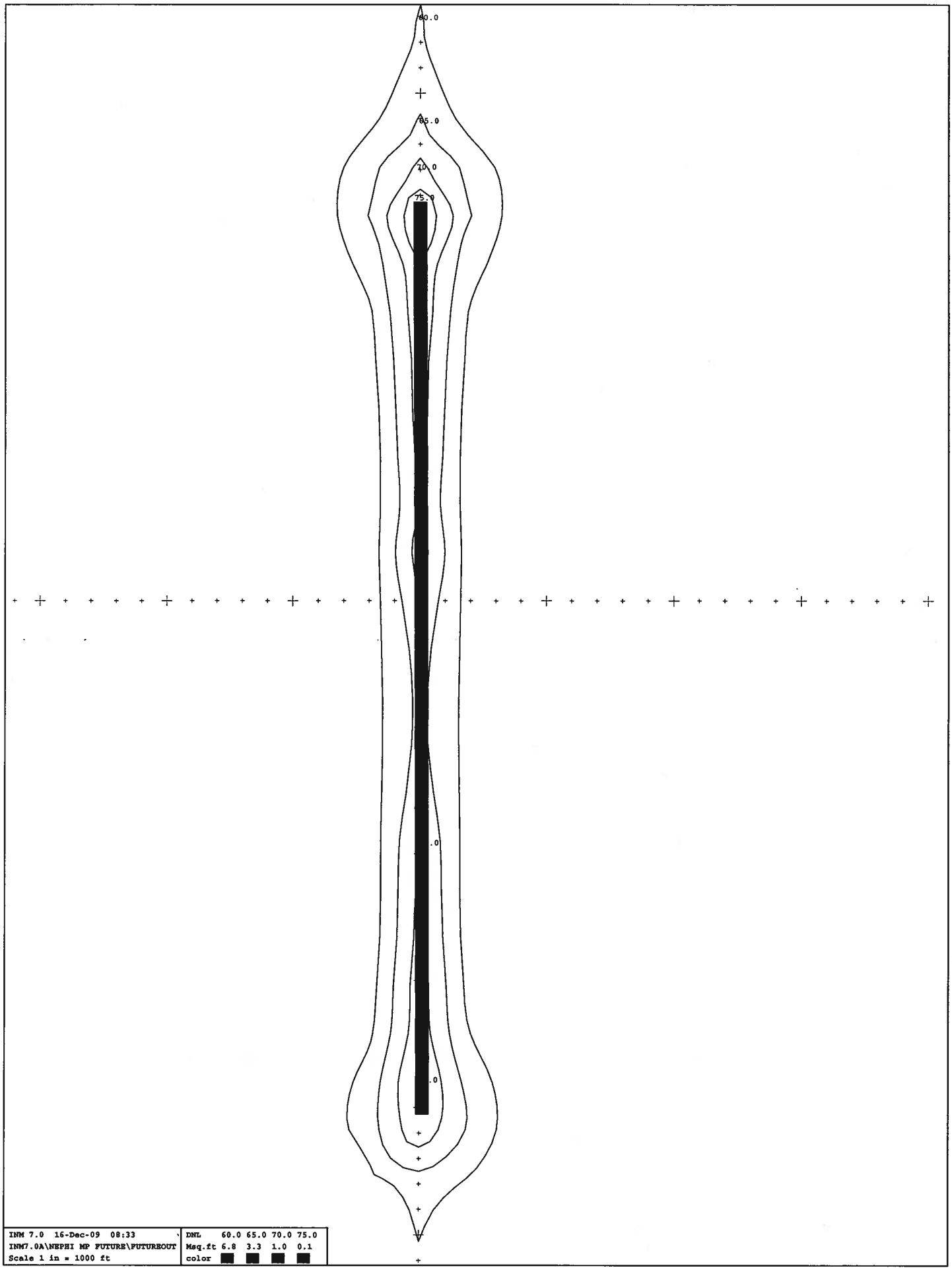
CNA750	APP	STANDARD	1	16	L1	0	---	0.0340	0.0000
CNA750	APP	STANDARD	1	34	L2	0	---	0.0227	0.0000
CNA750	DEP	STANDARD	1	16	T1	0	---	0.0340	0.0000
CNA750	DEP	STANDARD	1	34	T2	0	---	0.0227	0.0000
COMSEP	APP	STANDARD	1	16	L1	0	---	1.2767	0.0000
COMSEP	APP	STANDARD	1	34	L2	0	---	0.8511	0.0000
COMSEP	DEP	STANDARD	1	16	T1	0	---	1.2767	0.0000
COMSEP	DEP	STANDARD	1	34	T2	0	---	0.8511	0.0000
COMSEP	TGO	STANDARD	1	16	TG1	0	---	1.3439	0.0000
COMSEP	TGO	STANDARD	1	34	TG2	0	---	0.8959	0.0000
DHC6	APP	STANDARD	1	16	L1	0	---	4.3975	0.0000
DHC6	APP	STANDARD	1	34	L2	0	---	2.9317	0.0000
DHC6	DEP	STANDARD	1	16	T1	0	---	4.3975	0.0000
DHC6	DEP	STANDARD	1	34	T2	0	---	2.9317	0.0000
MU3001	APP	STANDARD	1	16	L1	0	---	0.1716	0.0000
MU3001	APP	STANDARD	1	34	L2	0	---	0.1144	0.0000
MU3001	DEP	STANDARD	1	16	T1	0	---	0.1716	0.0000
MU3001	DEP	STANDARD	1	34	T2	0	---	0.1144	0.0000
S70	APP	STANDARD	1	16H	HL1	0	---	3.2877	0.0000
S70	APP	STANDARD	1	34H	HL2	0	---	2.1918	0.0000
S70	DEP	STANDARD	1	16H	HT1	0	---	3.2877	0.0000
S70	DEP	STANDARD	1	34H	HT2	0	---	2.1918	0.0000

CASE RUNUP OPERATIONS - [FUTURE]

SCENARIO RUN OPTIONS
- Run Type : Single-Metric
- NoiseMetric : DNL
- Do Terrain : No Terrain
- Do Contour : Recursive Grid
- Refinement : 8
- Tolerance : 0.25
- Low Cutoff : 60.0
- High Cutoff : 75.0
- Ground Type : All-Soft-Ground
- Do Population : No
- Do Locations : No
- Do Standard : No
- Do Detailed : No
- Compute System Metrics:
  - DNL : No
  - CNEL : No
  - LAEQ : No
  - LAEQD : No
  - LAEQN : No
  - SEL : No
  - LAMAX : No
  - TALA : No
  - NEF : No
  - WECPNL : No
  - EPNL : No
  - PNLTM : No
  - TAPNL : No
  - CEXP : No
  - LCMAX : No
  - TALC : No

SCENARIO GRID DEFINITIONS

Name	Type	X(nmi)	Y(nmi)	Ang(deg)	DisI(nmi)	DisJ(nmi)	NI	NJ	Thrsh	dAmb	(hr)
CONTOUR	Contour	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	85.0	0.0	0.00


60.0
65.0
70.0
75.0
INM 7.0 16-Dec-09 08:33
INM7.0A\NEPHI MP FUTURE\FUTUREOUT
Scale 1 in = 1000 ft
DNL 60.0 65.0 70.0 75.0
Msq.ft 6.8 3.3 1.0 0.1
color