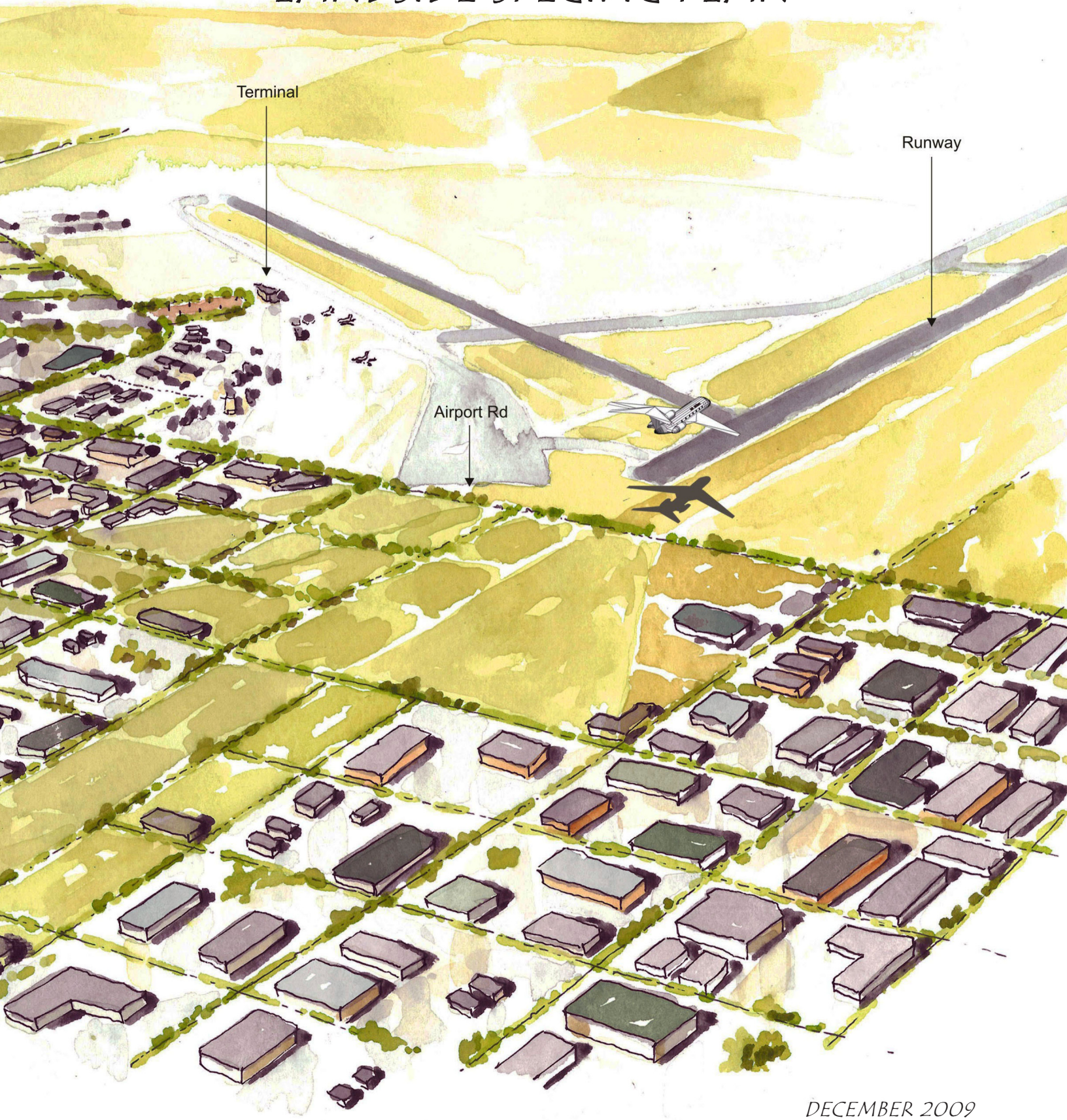
LOGAN-CACHE AIRPORT

LANDSIDE SPECIFIC PLAN



DECEMBER 2009

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SECTION ONE

INTRODUCTION & BASELINE DOCUMENTATION

SECTION ONE: INTRODUCTION & BASELINE DOCUMENTATION

INTRODUCTION

This land use plan was developed in conjunction with a master plan update for the airport facility. The objective of the land use plan is to provide an assessment of development opportunities that exist in the areas surrounding the Logan-Cache Airport property and to ensure that development is compatible with the future of the airport facility. An overview of the existing conditions in this area, a land use strategy for the area, and a land use concept plan are included within this master plan document.

The Logan-Cache Airport is a public airport located three miles northwest of Logan City. The airport is currently a General Aviation Airport and is governed by the Logan-Cache Airport Authority. The Authority was formed by an Interlocal Agreement between Cache County and Logan City in 1992. The Airport was previously owned by Cache County and managed by the County Commissioners.

The Authority is governed by a seven member board: The Mayor of Logan, the Cache County Executive, two members appointed by the Mayor, two members appointed by the County Executive and a seventh member appointed by the other board members. The mayor and county executive serve during their terms in elected office and the other five members serve for a period of two years and may be reappointed.

The airport has two fixed wing training schools, one sponsored by Utah State University's Aviation Technology programs, the other privately owned. Recently a rotorcraft school has also opened at the airport.

The airport currently consists of 602 acres and has two asphalt runways. Runway 17/35 is oriented north-south and is 100 feet wide and 9,095 feet long. It is the second longest runway in Utah, second only to the Salt Lake International airport's runway. Runway 10/28 is 75 feet wide and 5,005 long.

Logan-Cache Airport

PROJECT AREA DESCRIPTION

The Logan-Cache Airport is located at 2850 North Airport Road in Logan, Utah. Although the airport sits within the municipal boundaries of Logan City, a number of communities share the airport's boundary and are influenced by its operations. North Logan and Hyde Park are located to the east of the airport. The annexation declaration of Hyde Park will extend this community's boundary along the north boundary of the airport into the undeveloped lands to the west. Smithfield is located to the north of the airport. Much of the land surrounding the airport to the west is currently under the jurisdiction of Cache County. Logan City's annexation declaration covers the majority of this land. The unincorporated community of Benson is the closest community to the west. The study area is bounded approximately by North Main Street (Highway 91) and 400 West on the east, 2200 North on the south, 3600 West on the west, and 3800 North and 5000 North on the north. (See Map 1, below, and the Political Boundaries map on the next page.)

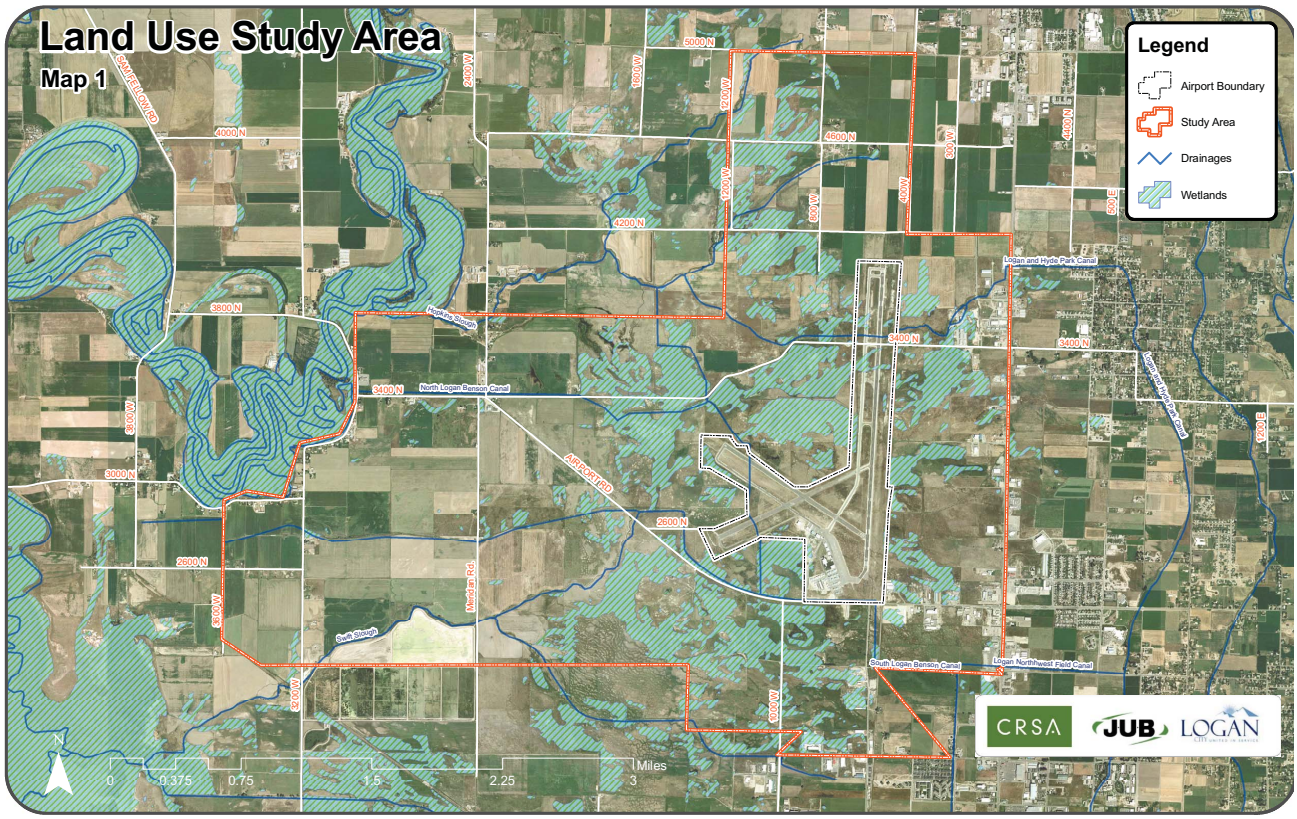
LAND USE STATUS

The airport, which consists of 602 acres, is bounded almost entirely by agricultural land. Much of this agricultural land is currently in production and actively being farmed. The following sections describe in more detail the current land use status for each of the areas surrounding the airport, the future land use plans, and their compatibility with the airport and its operations.

WEST OF AIRPORT

Current Land Use

Much of the undeveloped land to the west of the airport falls currently under county jurisdiction (see Map 3, Appendix A) and is primarily being used as active farmland. The Logan City municipal boundary was recently expanded to annex approximately 500 acres of undeveloped land directly west of the airport. Beyond this 500 acre section there is generally little development pressure in the area.



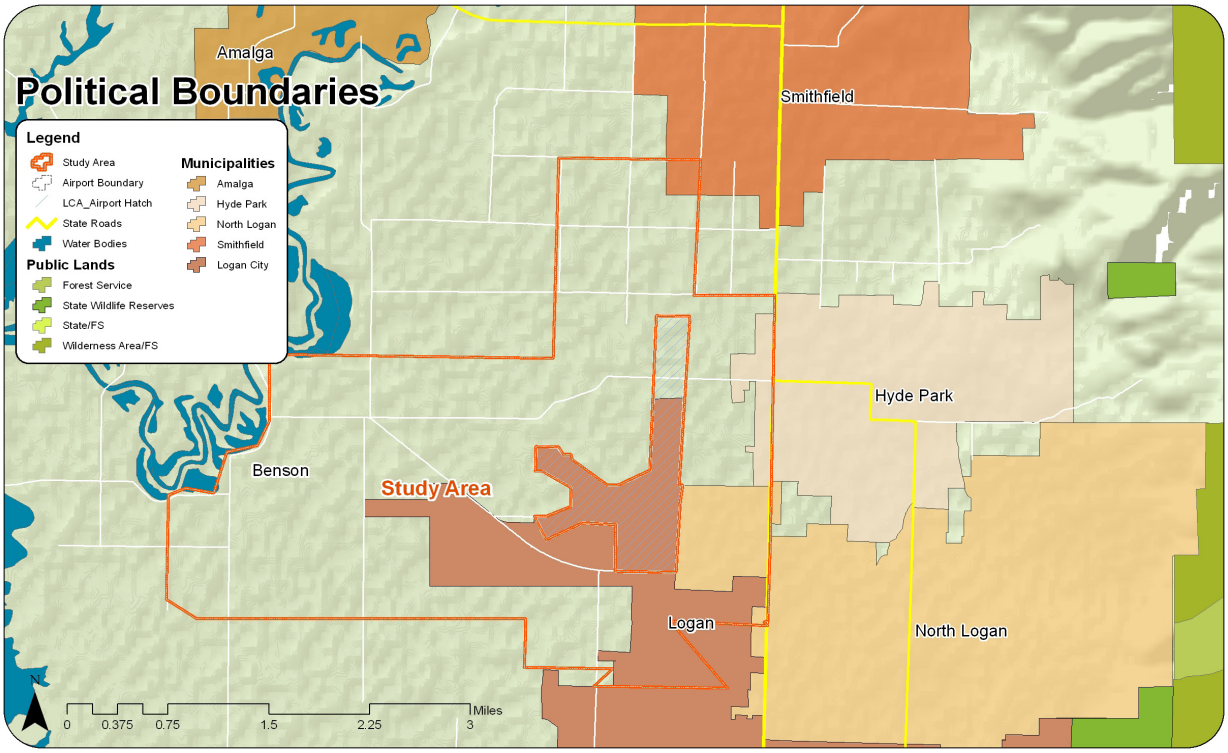
Aerial photograph showing study area boundaries

Future Land Use

The land is currently zoned for agriculture by Cache County. When annexed by Logan City, the future land use will be guided by the municipality. Logan City's current future land use plan suggests detached residential, mixed use, and green field development as the primary land uses within Logan City. The detached residential area would allow detached single-family structures at a net density that ranges from 4 to 6 dwelling units per acre. According to the 2007 Logan City General Plan, a variety of lot sizes and home sizes is desired in order to create stable, diverse neighborhoods. Innovative housing options, such as compact lot design with preservation of open space, may be allowed if they maintain the intent of owner-occupancy and if they are part of a well-designed overall development that provides diversity within the project. Additionally, other permitted uses allowed in detached residential areas may include religious institutions, parks and open areas, and community services. Conditional uses may include golf courses, tennis/swim clubs, bed & breakfast establishments, nursing homes, and various uses associated with city utilities and infrastructure.

Airport Compatibility

The airport buffer zones (see Vicinity & Airport Influence Map, Section Two) are designed to limit conflicts and encourage specific complementary uses. The buffer zones will provide the required protection of runway 10-28 along the west airport boundary. In general, residential land uses, especially large detached, single-family neighborhoods, are not considered to be complementary land uses to the airport. Adjustments will need to be made to the area's future land use plan in order to protect the airport from incompatible development encroachment. Additionally, wetland mapping indicates significant constraints in the area. Development will likely require mitigation before it can



Boundaries of Logan City and surrounding communities

occur or, more desirably, will incorporate the wetland areas as amenities.

SOUTH OF AIRPORT

Current Land Use

The south boundary of the airport is near Airport Drive (2500 North). This is currently the primary access to the airport. This area includes some industrial development at the southeast corner of the airport along Airport Road between Main Street and 1000 West. There is significant undeveloped land amidst the industrial development along Airport Drive on either side of the road starting at Main Street heading west to 1000 West.

Future Land Use

Current plans indicate future uses similar to those currently taking place in this area. 1000 West has recently become a popular second access point to the airport. This area is a natural location for increased industrial, commercial, and airport user services, although careful attention to land use planning is required due to the proximity to the south end of the runway.

Airport Compatibility

While the future land uses planned by Logan City are generally compatible with the airport as uses, height and specific use restrictions will be required to provide protection to the south end of the runway. (see Vicinity & Airport Influence Map, Section Two)

EAST OF AIRPORT

Current Land Use

Directly adjacent to the east boundary line of the airport property is a Union Pacific Rail Road line. To the east of this is agricultural land that is within North Logan or Hyde Park municipal boundaries. Some of this agricultural land is in production although much of the land between 100 West and the Union Pacific Rail Line is not currently farmed. The development that has occurred east of the airport is primarily commercial and light industrial uses along the Main Street corridor in North Logan and Hyde Park.

Future Land Use

Some of the agricultural land in this area has recently changed hands and has been removed from productive use as development speculation has increased due to the proximity to the Main Street Corridor. Additional commercial and light industrial development is likely to occur in this area within the near future. Access to the airport property is limited from the east side due to the Union Pacific Rail Road line on airport's east property line. There are two existing grade crossings at Airport Road and 4200 North. Wetland mapping indicates significant constraints in the area that will likely require mitigation before development can occur.

Airport Compatibility

The commercial and light industrial future land uses planned by North Logan and Hyde Park are generally compatible with the airport as uses. Height and specific use restrictions will be required to provide protection to airport functions. (see Vicinity & Airport Influence Map, Section Two)

NORTH OF AIRPORT

Current Land Use

The north boundary of the airport is near 4200 North. This area, which mostly consists of actively farmed agricultural land, is either within Smithfield's municipal boundaries or is unincorporated county land.

Future Land Use

Any development in this area to the north is likely to occur within Smithfield's municipal boundaries. Smithfield's future land use map currently indicates the potential of some commercial and light industrial development north of 5000 North or along the Main Street Corridor.

Airport Compatibility

Although development pressure appears to be limited currently, the proximity to the north end of the runway will require that land uses be carefully considered. The future commercial and light industrial land uses planned by Smithfield are generally compatible with the airport as uses. The nature of this type of development in Smithfield is likely to meet the height restrictions that provide protection to the north end of the runway. Specific use restrictions together with these height restrictions will allow development to occur while still protecting the airport's functions. (see Vicinity & Airport Influence Map, Section Two)

LAND USE STRATEGY

The Logan-Cache Airport has recently completed development of the majority of facilities within its 20 year master plan. As the airport seeks to define a new master plan, many opportunities exist to work with surrounding land holders to develop plans for the entire area that will be complementary to the airport's future. A 3.25 by 3.5 mile study area has been defined that includes the airport itself as well as much of the undeveloped land that surrounds it. Some of this land may be set aside for airport use, but the vast majority of it will be utilized by the private sector. As the airport is an asset to the entire Cache Valley community, airport officials are seeking to develop a new airport master plan that protects the facility from encroachment from outside development pressures and promotes land uses that would be harmonious with the airport's operations. To this end the airport has coordinated and will continue to coordinate with Logan City, North Logan, Hyde Park, Smithfield, and Cache County to develop a land use strategy for the defined study area.

Thus, a land use strategy has been created to provide guidance for accommodating future development in this area over the long-term while maintaining the airport as a valuable community resource.

GOALS AND OBJECTIVES

The first important step in creating a land use strategy is the development of goals and objectives. Working with the Technical Advisory Committee (TAC), five goals and objectives were developed in regard to land use and the opportunities surrounding the airport. Descriptions of the goals and objectives are as follows:

Goal One: Protect the Airport from encroachment

- Objective One: Create buffer zones around the airport.
- Objective Two: Develop land uses that are appropriate within the various types of buffers.

Goal Two: Develop land use patterns that complement the airport and support Logan's projected growth

- Objective One: Develop infrastructure improvements that will support recommended land use patterns.
- Objective Two: Develop land use patterns that complement planned infrastructure and support airport buffer zones.

Goal Three: Promote economic development

- Objective One: Develop land use patterns and infrastructure that will promote economic development for the community.

Goal Four: Collaborate with neighboring communities

Objective One: Develop land use patterns and infrastructure improvements that will be complementary to all local communities.

Goal Five: Build upon existing planning documents

Objective One: Consult existing planning documents from the surrounding communities for guidance on future development patterns.
Objective Two: Resolve any conflicts that may exist between existing planning documents and the airport master plan and landside plan.

DECISION MAKING CRITERIA

The second step in creating a land use strategy for the airport area is the development of decision-making criteria that will guide the implementation of the goals and objectives. These criteria are policy statements that may come in various forms. Policies are often straightforward written statements, while other times the policies are maps that have been developed through analysis tools. The policy may actually be an analysis tool itself, which acts as a system that considers the input variables and recommends a solution. The purpose of creating criteria is to develop a process for working through decisions on land use policy when conflicting goals and objectives may be in play.

The decision-making criteria for the airport were formulated to develop a proactive approach to evaluating the projected impact development would have on land in the study area. The following five policies utilize a combination of standard metrics for evaluating the development potential of land and specific tools and requirements in place for the airport and surrounding communities. The policies are listed from the most restrictive to the least restrictive and are intended to be assessed in that order. For example, the decision regarding the development suitability of a specific piece of land will start with policy one. If an assessment of this policy indicates the land may be suitable then the other policies will be assessed. If the more restrictive policies indicate that the land is not suitable for development then the other policies may not need to be assessed. The systematic review process is designed to avoid the creation of situations where extensive mitigation has been necessitated.

Policy One: Sensitive Lands

The proposed land can be developed without affecting sensitive lands. Refer to Map 6 in Appendix A for sensitive lands data.

Policy Two: Future Land Use Planning

The proposed development is compatible with the future land use plans and/or maps for the relevant community(ies) or jurisdiction(s).

Policy Three: Wetlands

Lands that are categorized as wetlands are automatically limited for development unless mitigation measures approved by the Army Corps of Engineers are implemented. Refer to Map 4 in Appendix A for current wetlands data.

Policy Four: Airport Buffer

Lands that are within the airport buffer zones must meet the requirements of the buffer zone even if they meet other development potential requirements. (see Vicinity & Airport Influence Map, Section Two)

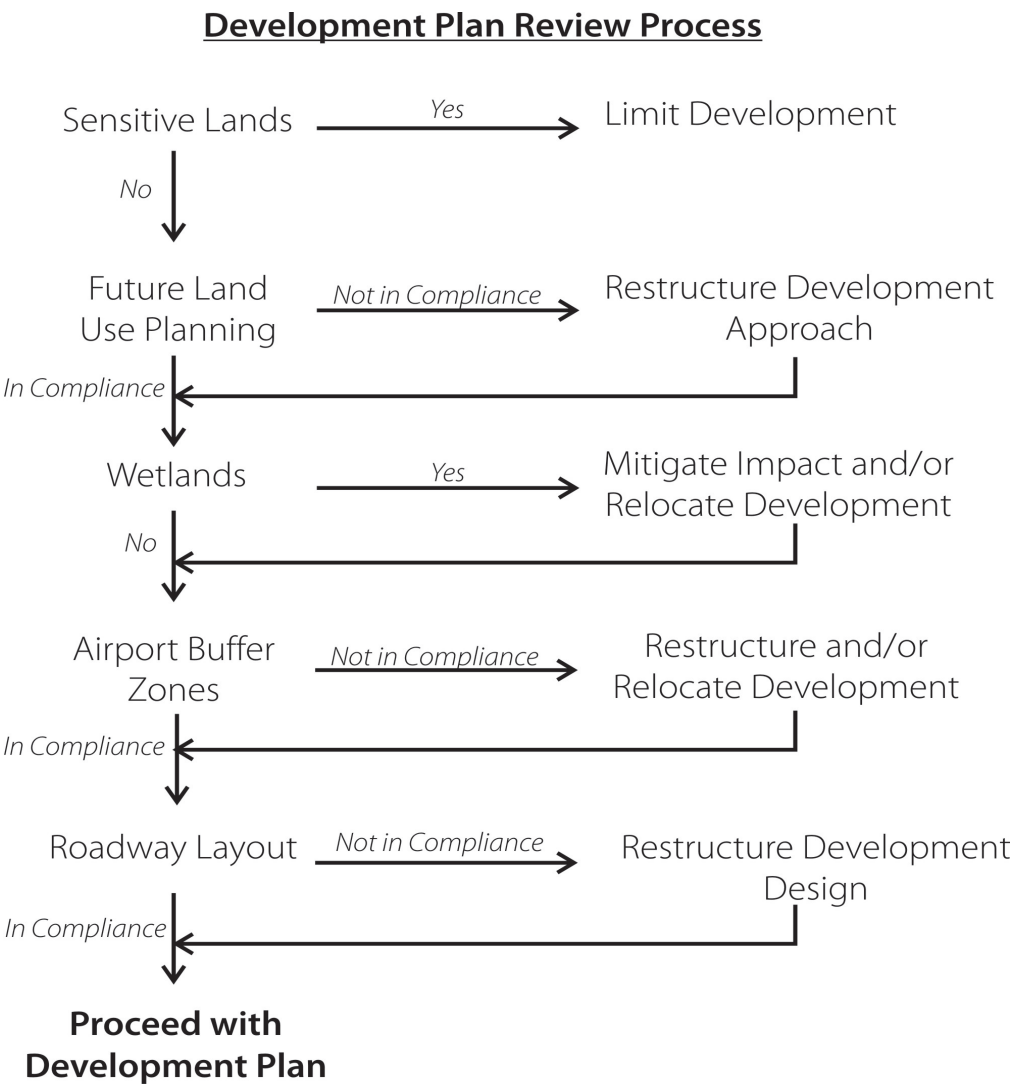
Policy Five: Roadway Layout

Roads may differ from the Logan City grid if physical land conditions exist that would prescribe a better route. Airport buffer requirements, wetlands existence, or land sensitivity are potential conditions that may affect roadway layout.

IMPLEMENTATION TOOLS

The third and final step in creating a land use strategy for the airport area is developing tools to implement the goals and objectives of the strategy. The following tools can be used to provide implementation and are discussed in more detail as part of the Land Use Recommendations in Section Four.

- General Plan
- Future Land Use Mapping
- Base Zoning
- Airport Overlay Zoning
- Plat language



SECTION TWO

LAND ANALYSIS

SECTION TWO: LAND ANALYSIS

In the process of developing land use mapping in the study area surrounding the airport, several factors have been considered. Each factor has unique opportunities and constraints associated with it. The analysis of these clarifies the approach used for the final land use plan by assuring that cross-compatibility with all factors has been considered in its development.

PHYSICAL FACTORS

Federal Aviation Administration Regulations

The FAA Airport Improvement Program (AIP) provides grants to airport sponsors for airport planning and development. Recipients of airport funds commit to protecting the airport from encroachment in two ways: 1) preventing height hazards from being established; and 2) taking appropriate land use action, including zoning, to restrict land uses in the vicinity of the airport to ones that are compatible with normal airport operations. While the FAA has no enforcement authority regarding compatible land use, violations can be sanctioned by withholding funds, which hurts the airport and the aviation community.

Height Hazards

Part 77 of the Federal Aviation Regulations (FAR) establishes standards for determining obstructions in navigable airspace, which may be objects of natural growth, terrain, or construction that is either permanent or temporary in nature, including the equipment and materials used in that construction. These standards were used to create the boundaries on the Airport Zoning map developed by Armstrong Consultants in 2001 and referenced in the Airport Overlay Zone adopted by Cache County, Logan City, and North Logan City.

Compatible Land Uses

For an airport, compatibility is established by creating an environment of land uses that are not detrimental to airport activities. Compatible land use planning should minimize constraints on the airport due to incompatible development and prevent the development of incompatible land uses that unnecessarily expose the general public to noise and risk. Charts 1 and 2 on the following pages outline, in general, those uses considered to be either compatible or incompatible with airport operations.

Airport Buffer Zones

Two buffer zones have been identified to indicate the land use compatibility factors taken into consideration during the development of the land use concept for the study area. The Red Zone is an aviation use only zone. The Yellow Zone is an aviation-compatible development zone. These are indicated on the Vicinity & Airport Influence Map (in this section). The buffer zone boundaries were determined by the airport boundary and traffic pattern zones of general aviation aircraft.

Chart 1: Compatible Land Uses
These land uses are generally COMPATIBLE with airports outside the runway approaches
Aviation Industry Uses • Air freight terminals • Air cargo forwarders • Aircraft and parts manufacturers • Aircraft repair shops • Aerial survey companies • Aviation schools • Aviation research and testing
Transportation and Airport Related Uses • Trucking terminals • Taxi and bus terminal • Parking facilities and auto storage • Car rental agencies • Gas stations • Motels and hotels • Restaurants • Convention centers • Night clubs
Open Space Uses • Golf courses • Picnic areas • Forests • Landscape nurseries • Arboretum • Agricultural • Mining and excavation • Cemeteries
Other Uses • Storage facilities • Warehouses • Wholesale distribution centers • Shopping centers • Banking services • Office buildings • Factories • Large retail sale

Red Zone (Aviation Use Only)

The red zone is the most restrictive land use zone around an airport. This zone includes everything inside the airport boundary and the Runway Protection Zones (RPZs) at each runway end. Development in this zone should be limited to aviation-related use only. This includes aviation hangars, aviation businesses (FBOs, repair, manufacturing of airplanes and aviation equipment, sales, etc.). This zone may also include businesses that aren't necessarily directly aviation but use aviation in their business. For example, air freight is a common land use where the business involves the shipping of products. Another land use option could even be a construction business where employees fly frequently to job sites. Business parks are a good option for catering to businesses that frequently use aviation. The buildings in such business parks are often hangars where the store or office front is on the land side and the rear of the building is a hangar with direct access to the taxiway system.

Yellow Zone (Aviation-Compatible Development Zone)

The yellow zone restricts development to uses that are compatible with the nearby airport and aviation. Property in this zone is usually not directly controlled by the airport. Thus, the ultimate goal is to incorporate these areas into City or County zoning ordinances to ensure that development proposals are reviewed by an appropriate process and that proposed uses in this zone are compatible with aviation. This aviation-compatibility review can take place at the review and/or permitting stage. The following chart offers suggestions of land uses that are generally considered to be either compatible or incompatible in the yellow zone. Special care should be taken for land uses that fall within the runway approaches.

Chart 2: Incompatible Land Uses
These land uses are generally INCOMPATIBLE immediately adjacent to airports
Residential uses • Residential housing • Apartment and condominium complexes • Mobile home and RV parks
Uses that result in congregations of people • Sports stadiums • Outdoor music venues • Amusement parks • Schools • Churches • Hospitals • Shopping malls
Structures that can interfere with flight • Multi-story buildings • Antennas • Smoke stacks
Wildlife attractants • Water bodies • Landfills • Certain agricultural uses • Golf courses
Uses that may generate excessive light emissions • Auto dealerships • Large lighted parking lots

Vicinity & Airport Influence Map

This map illustrates the boundaries of various zones and traffic pattern areas. These indicate the issues associated with the vicinity and the influence of the airport location on surrounding land uses. The two most restrictive of the FAA land use zones are indicated, the red zone, where development should be limited to aviation-related use only, and the yellow zone, where uses should be limited to those that are compatible with the airport. Additionally, the general aviation traffic pattern boundaries are indicated for both sets of runways. The low-flying nature of the general aviation aircraft will have a significant impact on surrounding land uses and are thus used to develop the boundary of the yellow zone. This map contributes to the layout and design of the land use concept discussed in Section Four.

ENVIRONMENTAL FACTORS

SENSITIVE LANDS/ENVIRONMENTAL

Hydrology

There are significant water related issues in the study area. Wetlands, ground water, and canals are the primary considerations in the area. Natural waterways also exist west of Benson, but are not a primary factor for the study area. 100 year flood plains are limited to the west edge of the study area and are not anticipated to be a factor. See Map 4 in Appendix A.

Man made canals provide water to agricultural lands in the study area. They also serve to catch storm water. Generally, all water drains from east to west and is caught by a canal.

For study-wide planning, the wetland mapping found in this document is sufficient to determine general land use sensitivity areas and developable land quantities. Wetland mapping, as provided by the State AGRC, has been developed by FEMA but is generally not considered accurate enough for site by site development consideration. As development decisions are made, specific wetland delineation will likely be needed at the individual parcel level.

Soils

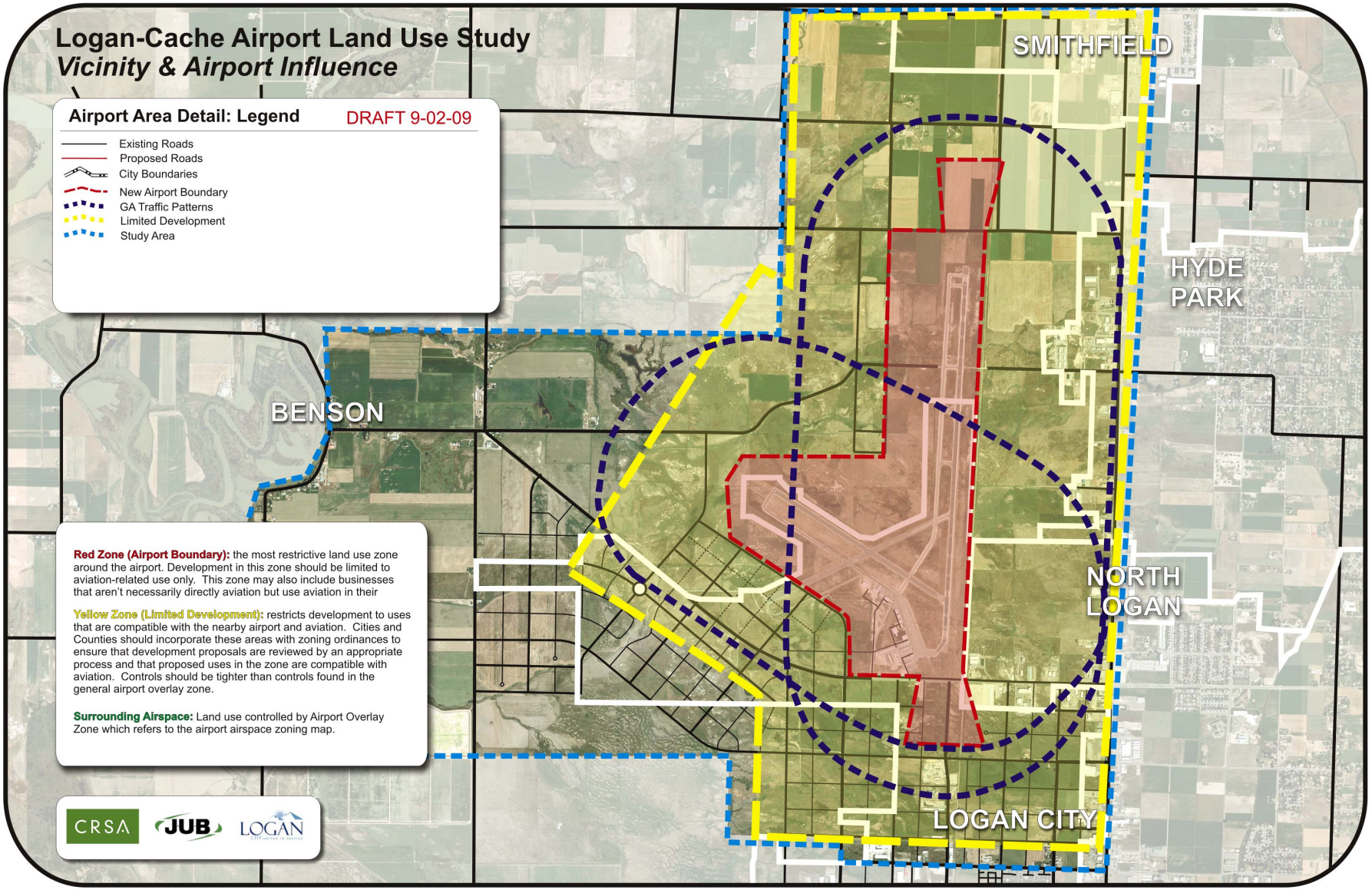
There are a number of soil designations in the study area. However, of most interest is the presence of prime or state farmlands. These lands are considered the best for agricultural use. These lands are generally the best drained (least likely to be wetlands) and most productive. Because of these characteristics prime and state farmlands are also generally considered the best for development as less mitigation is required to develop.

Farmland is designated by the United States Department of Agriculture. Prime farmland has the best combination of physical and chemical characteristics for producing crops. Other factors included in this designation are soil quality, area growing season and precipitation, and available irrigation water. Prime farmlands are less susceptible to erosion and flooding. State farmland is also highly productive. These lands are defined using a set of criteria unique to the local conditions. This land may be as productive as the prime lands in the setting they are located in.

The sizes and location of valuable agriculatural soils are indicated on the map below. A full version is included as Map 5 in Appendix A.

Canals and natural waterways are prevalent in the area

The majority of the surrounding land in the vicinty is productive agricultural land, with some areas having prime or state farmland soil classification


Logan-Cache Airport Land Use Study
Vicinity & Airport Influence
Airport Area Detail: Legend
DRAFT 9-02-09
Existing Roads
Proposed Roads
City Boundaries
New Airport Boundary
GA Traffic Patterns
Limited Development
Study Area
SMITHFIELD
HYDE PARK
BENSON
NORTH LOGAN
LOGAN CITY
Red Zone (Airport Boundary): the most restrictive land use zone around the airport. Development in this zone should be limited to aviation-related use only. This zone may also include businesses that aren't necessarily directly aviation but use aviation in their
Yellow Zone (Limited Development): restricts development to uses that are compatible with the nearby airport and aviation. Cities and Counties should incorporate these areas with zoning ordinances to ensure that development proposals are reviewed by an appropriate process and that proposed uses in the zone are compatible with aviation. Controls should be tighter than controls found in the general airport overlay zone.
Surrounding Airspace: Land use controlled by Airport Overlay Zone which refers to the airport airspace zoning map.
CRSA
JUB
LOGAN

OWNERSHIP

There are a number of categories of ownership to be considered within the study area. Both categories below may include lands that have some control by the airport. The airport owns some lands, and holds easements on others.

Owner Occupied

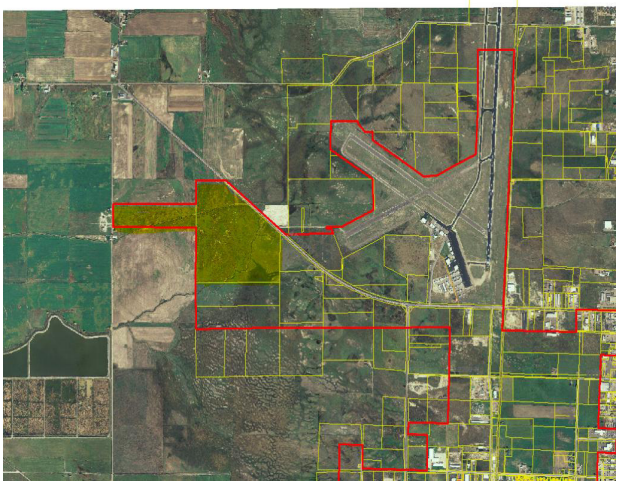
Although actual residences within the study area are few, there are many parcels that are owned by and utilized by local residents. These lands are primarily being used for agricultural purposes.

Absentee Owner

Properties with absentee landowners fall into two groups. The first group of properties includes land that is being leased to local agricultural users or, to a much lesser extent, to commercial users. The second group of properties is land that currently is not in meaningful production and is owned primarily for speculative purposes.

Long-term ownership of the land is a key characterization of properties in the study area. During a public design charrette held in January 2009, a survey was passed out to gather additional information on the use and ownership of the property surrounding the airport. Landowners were asked how long they have owned their property, the size, current use, and envisioned future use of their property, and how long they planned to use it. Surveys were completed by 28 respondents. A summary of the results is as follows.

The majority (54%) of landowners have owned the property for 16 years or longer. Over 21% have owned the property for more than 50 years. The majority (75%) of land is currently being used in an agricultural manner. Approximately 57% of the properties are over 10 acres in size. One-quarter of the respondents have properties that are over 50 acres. These large acreages of property in the study area are consistent with the agricultural use of the land. Only 25% of the respondents indicated that they currently live on their land. Nearly 40% of respondents planned to use their property for over 50 years, while 14% only planned to use it until it sells and 29% were unsure how long they planned to use the land. The majority of respondents envisioned the future use of their land to be either agricultural (43%) or commercial (39%), while the remainder were about evenly divided between residential, airport-related, or development uses. A complete summary of results is located in Appendix C.



Ownership in the area consists of a range of parcel sizes

ECONOMICS AND MARKETS

A key goal is to optimize future economic development opportunities for the area surrounding the airport. Recommendations have been made from an economic point of view regarding the highest and best mix and magnitude of land uses within the airport study area. These recommendations have been integrated into the overall decision-making process for developing the preferred land use scenario. The following findings and recommendations are a summary of the Landside Economic Analysis report prepared by Real Estate Economics. The full economic report is located in Appendix B of this document.

As part of the economic analysis, Logan City's planning department set parameters for the planning effort based on the adopted general plan. The first is the establishment of the study area at approximately 5,000 acres surrounding the current airport. The second is that the study area should be able to accommodate about 2,500 dwelling units of all types in the future. And last, that the average residential density should be no more than six dwelling units per gross buildable acre.

FINDINGS AND RECOMMENDATIONS

Residential

Currently, total average annual housing demand in Logan City is approximately 300 dwelling units of all types.

Future housing demand is driven by population growth. It is essentially measured by new household formations.

A fifty (50) year housing demand forecast model has been developed for Logan City and Cache County. It shows annual average demand and ignores short-run business cycles.

The study area will capture future residential demand at different rates inside Logan City versus Cache County.

Starting in 2010, annual housing demand in the study area is forecast at 90 dwelling units of all types—or a monthly average absorption of 7.5.

The housing absorption rate forecast shows that by 2033, the Logan City target of approximately 2,500 new residential units in the study area will be achieved.

Given this residential target, the conceptual land use plan should incorporate about 500 gross buildable acres for all types of residential uses.

Industrial

Industrial space to be developed within the study will be comprised of three product types: (1) warehouse distribution, (2) flex buildings, and (3) high tech R & D buildings.

Demand for these three industrial product types is based on the projected share of all workers per industrial sector that likely will work in these various types of industrial buildings.

Heavy industrial uses should not be allowed because of the proximity to residential neighborhoods as the study area develops.

An estimated 600 gross buildable acres of industrial land should be designed in the conceptual master plan for absorption in the landside study area during the 2010-2060 time period.

Of this total, an estimated 114 acres of study area

industrial land will be required by 2020 assuming that 15 percent of new countywide industrial jobs locate in this airport landside area.

Office

Land set-asides should be planned for the key gateway location to Logan Cache Airport to accommodate the development of multi-story Class A office space.

Another strategic intersection location may also be designated within the study area, if deemed appropriate from a land planning perspective.

The airport gateway location should be master planned to offer excellent access and exposure.

Assuming adequate market support, the intensity of this airport gateway office cluster will ultimately be controlled by Logan City zoning and FAA aviation-related safety issues.

Floor area ratios (FAR's) for suburban office building locations such as the airport gateway area typically fall in the .50 to .25 range.

The landside master plan should provide for approximately 40 to 60 acres of gross buildable land area for multi-story Class A office buildings to accommodate growth during the 2010-2060 period.

The conceptual plan should take into account that office parking will be in adjacent open lots. It is highly unlikely that airport gateway area land values will become sufficiently high to economically support structured parking.

Retail

The new population base and corresponding retail buying power resulting from residential development in the study area will eventually support a neighborhood size shopping center.

This center will be anchored by a grocery store offering convenience goods such as drugs and sundries, personal service outlets (dry cleaning, barber, shoe repair, etc.) and restaurants.

Approximately ten acres (10) of land should be designated to accommodate 100,000 square feet of convenience retail space. Neighborhood shopping centers normally range in size from 30,000 to 100,000 square feet.

This prescribed neighborhood center should only offer convenience goods (food, drugs, hardware, sundries) and personal service outlets so as not to draw away major buying power from the retail concentrations in downtown Logan and the Cache Valley Mall.

Transient

Enough land should be set aside at the airport gateway location to accommodate the development of several airport-related hotels during the 2010-2060 planning horizon.

Outlying hotel sites such as this can range in size from 2 to 6 acres.

Hotel development parcel sizing depends on such key factors as height limitations and whether food operations and conferencing facilities are integrated into the project.

For long range planning purposes, it is recommended that approximately 20 to 25 gross buildable acres be set aside for hotel uses at the airport gateway location.

DELIVERY OF SERVICES

INFRASTRUCTURE

Transportation/Accessibility

The general study area currently has limited access. Airport road is the primary access from the east, and provides direct access from North Logan to Benson. Other than Airport Road, access from the east is limited to 4200 North. 3200 West and Meridian Road (2400 West) are primary north south corridors. Meridian Road is the current preferred alternative for a future bypass highway. This road would bisect the study area and provide county wide access to the Benson area. Although less important, access from the west is available at 3000 North. The southeast corner of the study area has generally strong access from Main Street and 1000 West. (See Map 9, Appendix A).

Any significant development in the study area, other than along Main Street and the Airport Road corridor (between Main Street and 1000 West) will require roadway expansion. All current road access into the area is comprised of two lane rural access highways. Access into agricultural areas is primarily by gravel or dirt road. Roadway expansion would likely be a combination of expansion of existing roads and the construction of new roads. The traditional Logan City grid is the required framework for new roadway expansion. (See Section Three: Land Use Concept Development).

Utilities

The unincorporated areas of Cache County generally have no services available other than electricity. No storm sewer, sewer, or culinary water systems exist, with the exception of the developed areas along Main Street and along Airport Road (between Main Street and 1000 West). All these services will need to be added for significant development in the study area. (See Maps 7 and 8 in Appendix A). In the southeast corner of the study area, services are primarily provided by Logan City. Along Main Street services are provided by North Logan and Hyde Park. New services in the general study area will likely be provided by Logan City, except where Hyde Park's annexation declaration extends into the north portion of the study area. Some limited new service might be provided by Smithfield. The community of Benson is unincorporated and provides no services.

SECTION THREE

LAND USE CONCEPT DEVELOPMENT

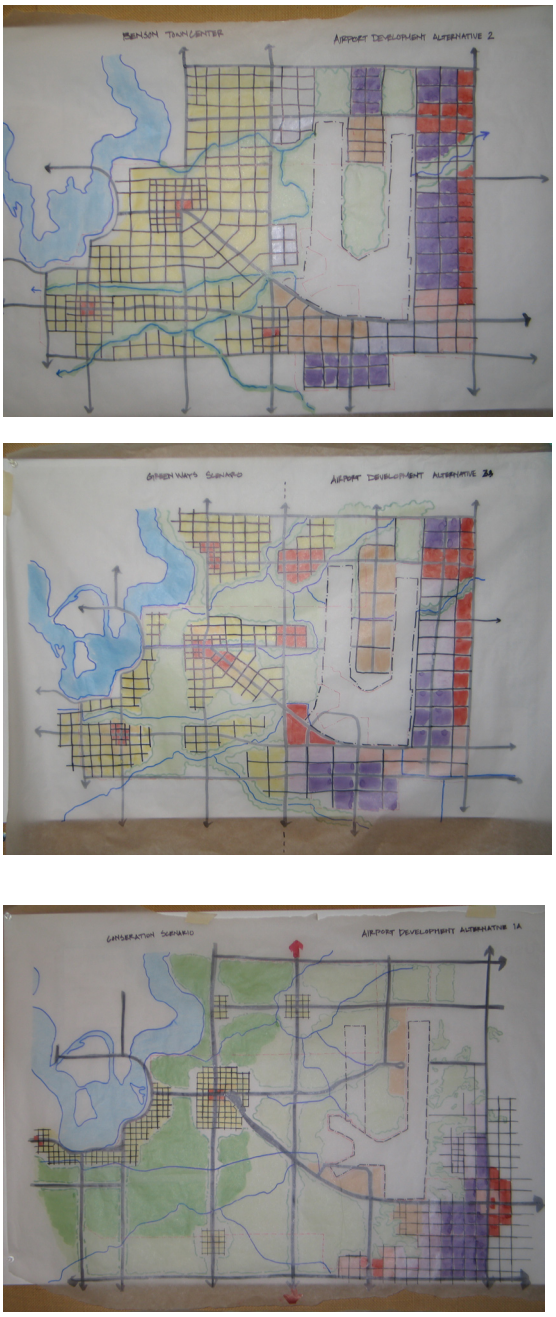
SECTION THREE: LAND USE CONCEPT DEVELOPMENT

CONCEPT DEVELOPMENT PROCESS

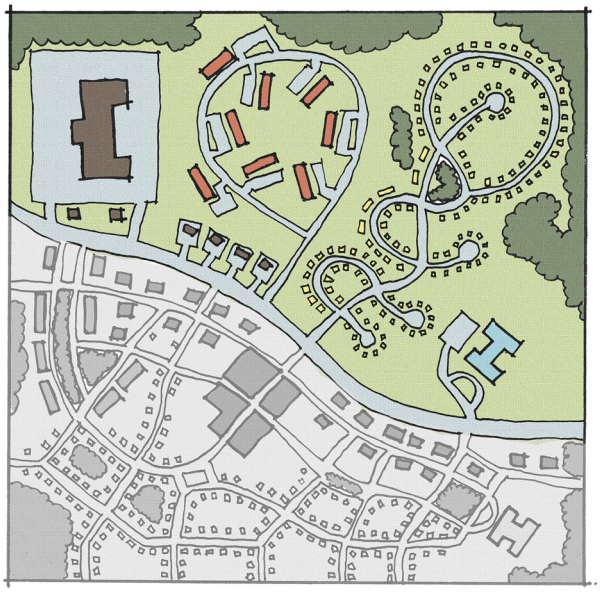
A Logan/Cache Airport Area Design Charette was held in January 2009 to elicit input from stakeholders and landowners in the study area surrounding the airport. The five goals and their related objectives described in the Baseline Documentation section and the information from the Land Analysis section were the foundation for discussion during the design charrette. The charrette process took place over three days and provided the opportunity for different stakeholder groups to receive information from the consultant team and to participate in the design process. The first session held was for landowners within the study area, and was attended by approximately 70 people. A second session was held for Logan City, Cache County, and Logan-Cache Airport staff. A third session was held for the TAC committee and a fourth was held for leaders/key officials in the adjacent communities of Benson, Hyde Park, North Logan, and Smithfield.

The feedback and discussions from the various stakeholder groups led to the final product of the design charrette: three land use concepts for the study area. The three scenarios were formalized and presented to the TAC. Following this a public open house was held to solicit feedback and comments on the three scenarios. The following physical components were addressed in each of the three land use scenarios:

- Function of the airport
- Future Land Use plans
- Internal and external circulation
- Service and Infrastructure systems



The three scenario sketches that were developed during the charrette process



This illustration contrasts conventional suburban development (top, highlighted in color) and traditional development (bottom) patterns

Examples of conventional development patterns: separated uses, housing subdivisions, big box shopping

DEVELOPMENT PATTERNS

When creating the land use concepts, two differing patterns of development were considered: Conventional Development and Traditional Development.

Conventional Development

Conventional development is characterized by a distinct separation of land uses. Often these uses are not interconnected and access between the land uses is limited to the automobile. The common term for this conventional type of development is sprawl, or suburban sprawl. The following discussion points evaluate why this conventional type of development is no longer considered desirable.

1. Consumptive of Land
   Sprawl continues to spread across formerly rural areas, converting open space and sensitive lands into new housing and shopping centers.
2. Bland
   The high development and infrastructure costs involved in building on the fringe results in low quality construction, and the "cookie cutter" homes that no one seems to care for. These subdivisions lack the basic elements that a neighborhood needs in order to develop into a true community with a distinct character.
3. Inherently inefficient
   Disconnected roads create interior roads that are largely unused, while funneling all traffic onto a few arterials that become overloaded, congested, and require expensive maintenance. Suburban roads are designed to be confusing, making wayfinding in sprawl development patterns difficult. Mandatory car use for every trip adds further cost to both the private and public sectors, even for the shortest of trips.
4. Fiscally unsustainable
   The largest cost to municipalities for new developments is extension of utility lines and streets. Further

maintenance of these facilities are becoming less and less feasible for city budgets. Levels of service for other needs, such as police, fire, and schools are reduced for everyone when sprawl continues. Cost per unit to the city increases substantially in sprawl developments compared to connected communities.

5. Socially and economically segregating
   Separates citizens into distinct socioeconomic groups. Suburbs are designed primarily for motorists, marginalizing those who are too young to drive, too old to drive, or unable to drive for other reasons (nearly 1/3 of the population).
6. Safety
   Wide residential streets in sprawl developments have higher fatality rates than narrower, traditional streets, due to higher design speeds. Emergency response times are much slower in cul-de-sac type development. Single use developments used for only part of the day (housing subdivisions, office parks, malls) are less safe during off hours with no "eyes on the street."
7. Health
   Numerous studies have looked at the link between obesity and sprawl style development. Suburbs discourage walking, often making walking unsafe, uncomfortable, or impossible. With mandatory car use, air quality is also negatively affected by sprawl.

Traditional Development

Traditional development is the converse of conventional development. In general, it is interconnected, with multiple methods of access and a mixture of uses. Traditional development represents the way that towns and cities developed for centuries. The suburban style of conventional development with separated uses has only occurred for the last 50 years. There is now a growing consensus that traditional development patterns function better than the more auto-centric conventional development patterns. Traditional development is based on just a few concepts that plan for a diversity of uses, users, connections, and choices. The conventional, sprawl development approach does the opposite: reduces the number of choices, reduces the number of connections, and creates large isolated pods of one kind of use and user. The following time-tested principles are simple and can easily be applied to any scale of development.

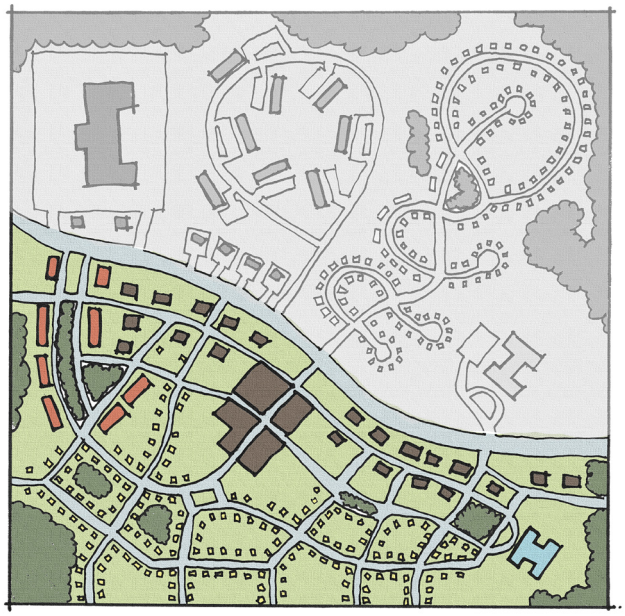
Traditional development principles:

1. The Center
   Each neighborhood has a clear center, focused on the common activities of commerce, culture, and governance. With a defined center, you have a community heart around which people gather, both psychologically and physically. With many suburban cities that have developed over the last 50 years, all these uses were scattered, "no place in particular," and these cities are now trying to create centers where the community heart can be.

2. The Five Minute Walk
   Most people are willing to walk ¼ mile or less to reach a school/church/commercial area. "Walkable" areas are defined as those areas that provide a wide number of options within ¼ mile. Planning the city around these village centers concentrates needed services in defined areas, creating distinct districts with differing character.

3. The Street Network
   Creating a refined network of roads is vital to a functional city. Predictable and legible pathways are important elements of way finding. Pathways create ease of flow and are simple to extend. Conventional development's hierarchy of streets limits transportation choices and marginalizes non-motorists.

4. Narrow, Versatile Streets
   Narrow streets are safer streets. Narrow streets help to foster and create life on the street and allow the streets to be places, not just a mechanism for



This illustration contrasts conventional suburban development (top) and traditional development (bottom, highlighted in color) patterns

Examples of traditional development patterns: mixed uses, town centers, narrow streets, wide sidewalks

automobile mobility. Streets are public places and can also serve as a mechanism for exercise (walking, jogging, bicycling) and multiple methods of mobility (bikes and pedestrians) that work in concert with automobile traffic. Narrower streets cost less to build and maintain, and encourage lower speeds by automobiles, making them safer.

5. Mixed Use

   Mixed use can refer to multiple uses in one building, along a street, or in a neighborhood. Homes can help us understand the "mixed-use" concept. A home is essentially a mixed-use building; it is not comprised only of bedrooms. The scale of mixed use can vary, from a small neighborhood that is mostly residential with some commercial uses mixed in, to a large-scale downtown development consisting of residential, office, and retail in one building or series of buildings.

6. Special Sites for Special Buildings

   The location of a building says a tremendous amount about the value a community places on a particular community asset. A community is strengthened by the placement of special buildings on distinctive sites; place identity is one of the positive outcomes. When place-identity and topological identity exist, the contribute to the well-being of the community through th econnection they provide.

LAND USE CONCEPTS

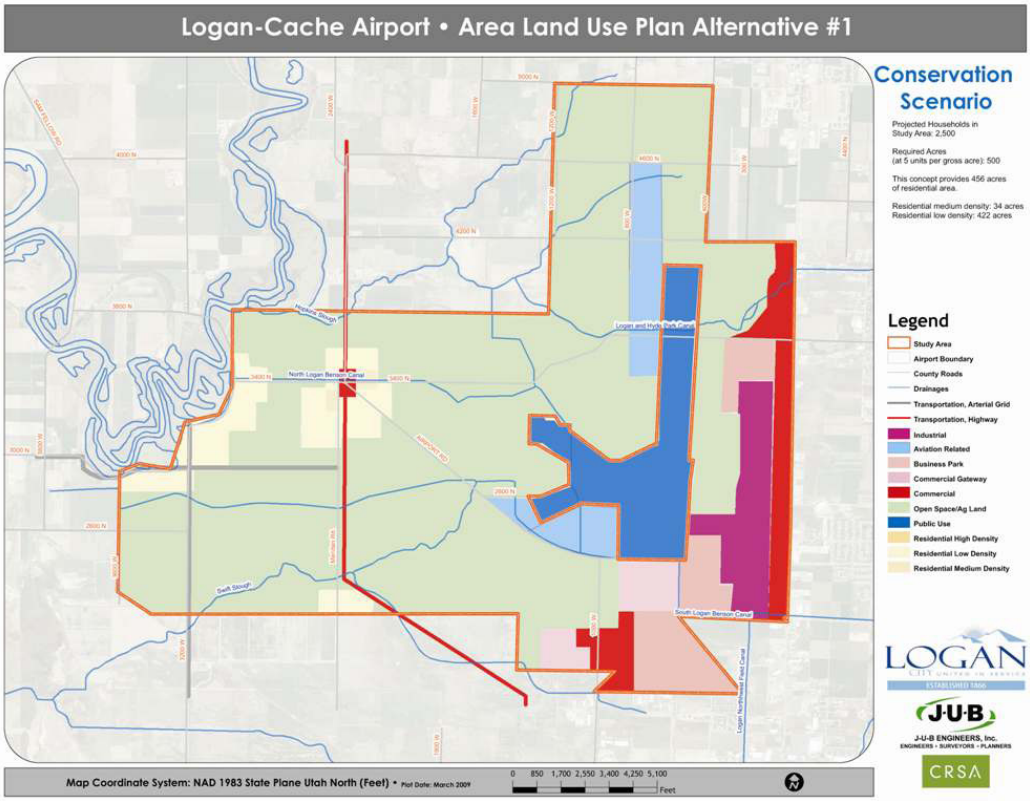
The three concept drawings reflect comments made by the landowners surrounding the Logan/Cache airport, the TAC and other community leaders and city officials. Each plan addresses development density and open space conservation that relates well to the airport grounds and to Logan City by possible annexation. Due to FAA standards, only certain types of land uses can occur around the airport. The concept drawings are categorized by development styles that try to accommodate land constraints. They are designated as follows: Conservation Scenario, Benson Town center, and Greenways Scenario.

Conservation Scenario

The main goal of this scenario was to conserve as much open space as possible in the study area, and retain productive agricultural land, thus requiring little mitigation of sensitive lands. This goal is a response to many of the landowners' concerns of seeing the current land use change from agricultural to residential. One of the tactics used to conserve open space is the centralization of all commercial, industrial and hospitality land uses near Main Street and Airport Road.

In the design, some high density growth was planned around key locations west of 1600 West, which keeps much of the current natural land and agriculture land open. This plan also accommodates for future airport growth and avoids conflicting land uses near the airport property.

Many airport services are located on 1000 West, which would extend into the southwest section of the airport property. Other airport-related business uses maxi-



Draft concept of the Conservation Scenario

mize the land south and east of the airport in areas already developed with commercial and light industrial uses. This continues to cluster development and preserve agriculture lands surrounding the airport.

Pros

- Growth is controlled
- Agriculture and natural lands preserved
- Local circulation system requires limited expansion, but is expandable
- Wetlands protected
- Land Uses complement airport and landscape

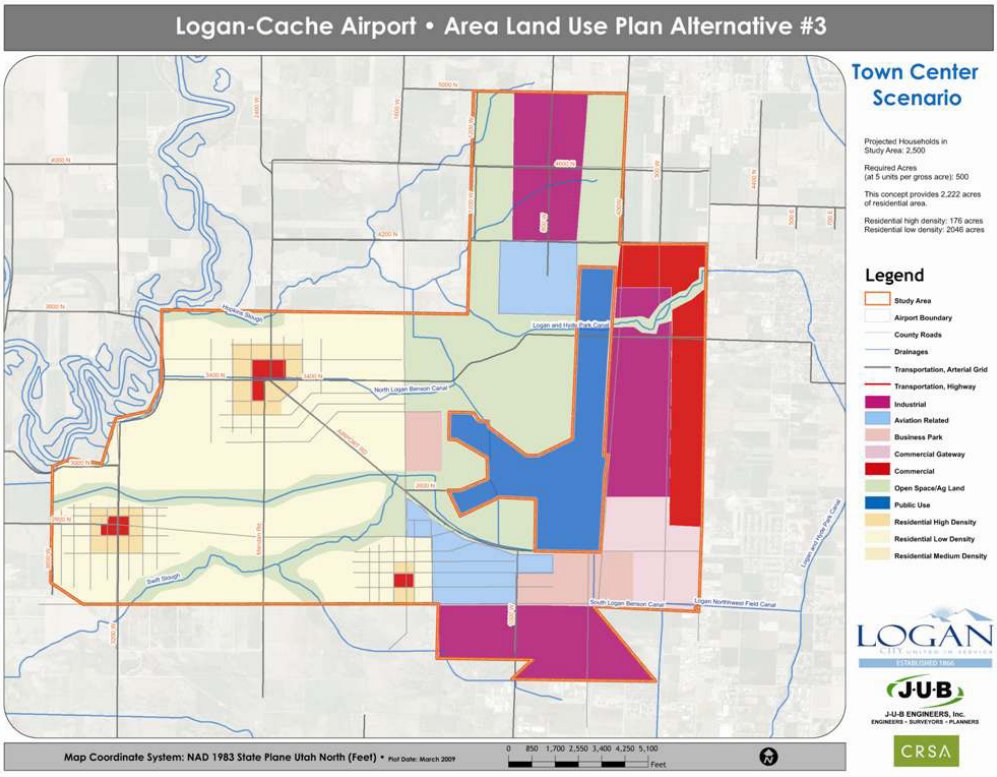
Cons

- Strict limitation on location of development
- Limited development opportunities
- Regional transportation system may become over taxed without grid
- Some wetland mitigation may be needed at development zones

Benson Town Center

The main goal of this scenario is to promote a town center/mixed-use style of development. This scenario assumes that wetlands and other sensitive land issues can be appropriatly mitigated. The goals would be to extend the grid, which creates a strong circulation plan, and maximize the land adjacent to the airport overlay zones. The Benson Town Center, a larger commercial core, would be enlarged around the 2600 West and Airport Road intersection where Darrell's Appliance store is currently located. Smaller neighborhood centers would also be created to support other areas of new development.

The airport overlay zone does not allow residential development and it also preserves the agricultural land and some business park zones immediately surrounding the airport property. Major waterways are buffered for storm water management and for use as recreation-



Draft concept of the Greenways Scenario

al trail systems. Additional service and light industrial development would be located on land north of the airport. Hospitality businesses and services are planned for the gateway area along Main Street and Airport Road.

Pros

- Maximizes development & economic use of land
- Arterial roads not taxed because of extended grid
- Development surrounding airport is evenly mixed

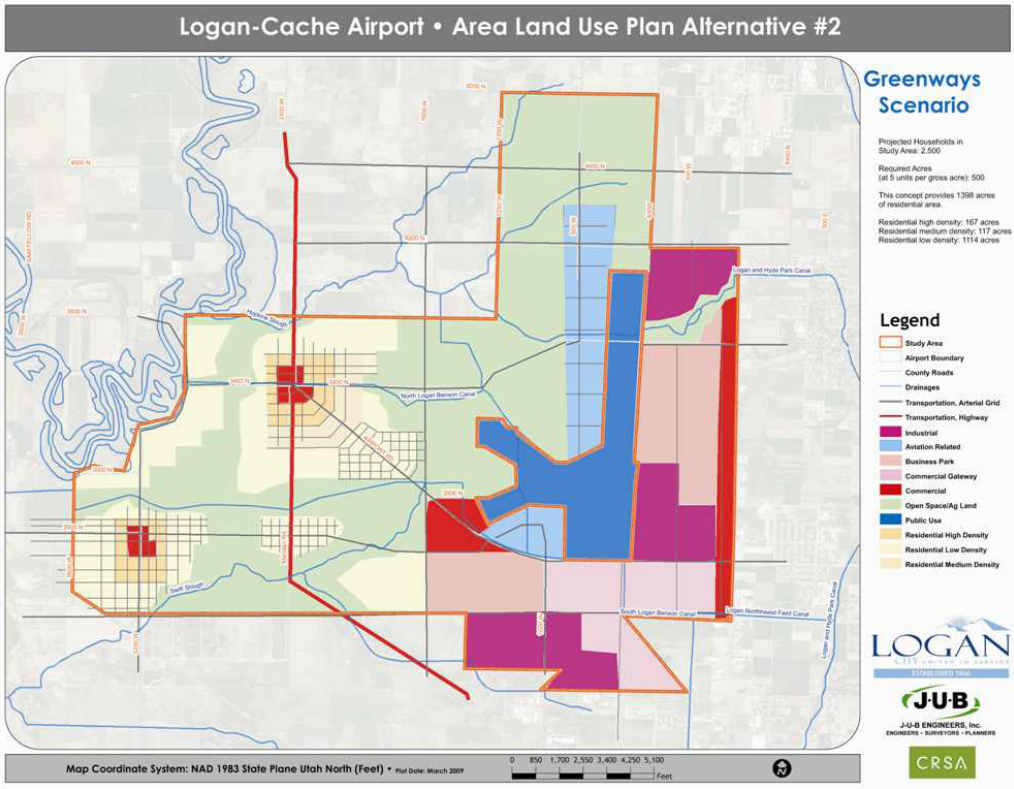
Cons

- Loss of prime farmland & wetlands
- Increased storm water run off
- North arterial road height restriction

Greenways Scenario

This scenario is a balance between the Conservation and Benson Town Center scenarios. The main goal for this concept plan is to have a mix of the approaches used for the other two plans, which strives to limit sensitive land mitigation while allowing a reasonable amount of development to occur. Creating multiple town centers and reinforcing the grid circulation system supports a balanced design between developed land and conservation of open space. The open space follows natural drainage areas and preserves land for viable agricultural use. Placing multiple village centers at strategic locations along the grid creates walkable neighborhoods and produces less vehicle congestion.

The airport's support services are located along the northwest side of the main runway. Circulation to access the airport would be designed for both the north



Draft concept of the Benson Town Center Scenario

and south ends of the property, allowing for flexibility in future development. Hospitality services are located south and east of the property along Main Street and Airport Road. Commercial and light industrial land uses would also be mixed south and east of the airport property.

Pros

- Medium size, well-connected open space areas
- Multiple neighborhood/village centers
- Mixture of land uses
- Flexible airport service development and circulation

Cons

- Some neighborhood/village centers may require additional roadway capacity
- Sensitive land preservation may push some development into existing low density areas, or near airport.

FINAL CONCEPT & DEVELOPMENT PATTERN SELECTION

Following the public open house and the TAC meeting at which the three scenarios were presented, a preferred scenario was chosen based on the feedback and discussion given. The Conservation Scenario was selected as the preferred base scenario as a future land use strategy for the area surrounding the airport. Modifications were made dudring the development of the preferred scenario to respond to comments gathered during the open house process. The following factors contributed to the selection of this option as the preferred scenario:

Public Preference

A majority of landowners in the area favored this scenario because it allowed for a balance between agricultural preservation and moderate development opportunities south of the airport. This balance would continue the rural character that defines the area while taking advantage of the economic opportunities offered by proximity to the airport. Feedback during the open house favored moving the bulk of the development further to the east to protect the rural character of Benson.

TAC/Airport Operations

The Technical Advisory Committee favored the layout of this scenario for its protection of open space directly around the airport, which in turn facilitates airport operations by protecting critical airspace.

Economic/Market Analysis

The economic analysis report completed by Real Estate Economics contributed to the decision-making process for the land use scenario as the proximity to the airport provides future economic opportunities. The results of the market analysis provide a recommendation of the highest and best mix and magnitude of land uses from an economic viewpoint. The conservation scenario is the one that most closely matches the acreage of land uses to the mix and magnitude of land uses in the market analysis. Thus, the land use concept aligns with current market absorbency rate predictions for the Logan-Cache County Airport region. The full economic report is included in Appendix B of this document.

SECTION FOUR

LAND USE PLAN

SECTION FOUR: LAND USE PLAN

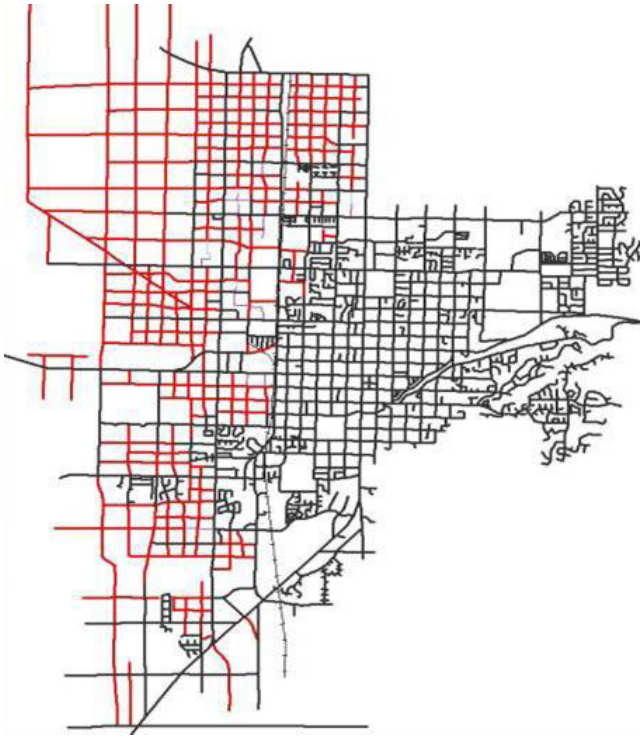
The preferred land use plan is based on the Conservation Scenario, which was chosen from the three concepts that were presented at the airport design charrette. The three options are discussed in detail in the prior section (Section Three) of this plan document. Modifications were made to the Conservation Scenario in the development of the final land use plan. These changes address comments made by the public at the open house and from the TAC. For example, the cluster of residential was moved from its western location in order to provide more buffer to the rural agricultural areas in that area of unincorporated Benson and to concentrate development closer to Logan and areas already associated with the airport.

PREFERRED SCENARIO DESIGN

The layout of the preferred land use scenario (see land use study map) took into consideration several design-related decisions. The first design application is the use of the rotated grid. The rotated grid orients with Airport Road and a second arterial to the south. It meets the general plan requirements of Logan City and is also beneficial for its avoidance of area wetlands.

In addition to meeting the grid system requirements of the Logan City general plan, the road layout used in the land use concept plan was designed to promote circulation and access to the airport and surrounding area. The bypass road is offset ¼ mile from Airport Road and uses the existing at-grade railroad crossing at 600 West. This road provides access from the west side all the way east to Main Street. The road that continues through the proposed roundabout connects from the bypass road and up to 3400 North. The county will be extending 3400 North to travel up and around the north end of the airport property.

The land use distribution is designed in order to promote a development pattern that will be compatible for an area that is in the vicinity of the airport. By locating residential uses to the south, the flight paths for lower flying general aviation planes have been avoided. Additionally, this has clustered the development density away from the airport while allowing for industrial uses to develop closer to the airport property. Clustering residential development and maintaining common open spaces throughout the area protects open space around water ways.



Extending the Logan City grid as the city grows is a general plan requirement

Land Use Study Map

In addition to the land uses that were developed as part of the preferred scenarios, the future land uses for each of the communities surrounding the airport were incorporated onto the land use study area map (see 11 x 17 map on following page). These were determined from existing future land use maps and general plans. In the case of Hyde Park, which does not presently have a future land use map, the current zoning map was used. A general plan update is underway for Hyde Park and discussions with city officials indicate that future land uses will likely follow current zoning for the area adjacent to the airport property.

INFRASTRUCTURE PLAN

As part of the conceptual land use plan, consideration for future utilities has been incorporated into the final design.

In April 2007, Logan City completed a city wide culinary water master plan overviewing the existing culinary water system and future water system needs. Later that year, the wastewater collection system master plan for Logan was completed. These documents utilized historic data and population projections to determine improvements and upgrades needed to provide future service. In addition, the City is currently completing a storm water master plan for predicting runoff from storms and planning infrastructure to convey flows through the community. This portion of the Logan-Cache Airport Landside Small Area Plan focuses specifically on utility needs including water, wastewater and storm water for the area covered in this plan.

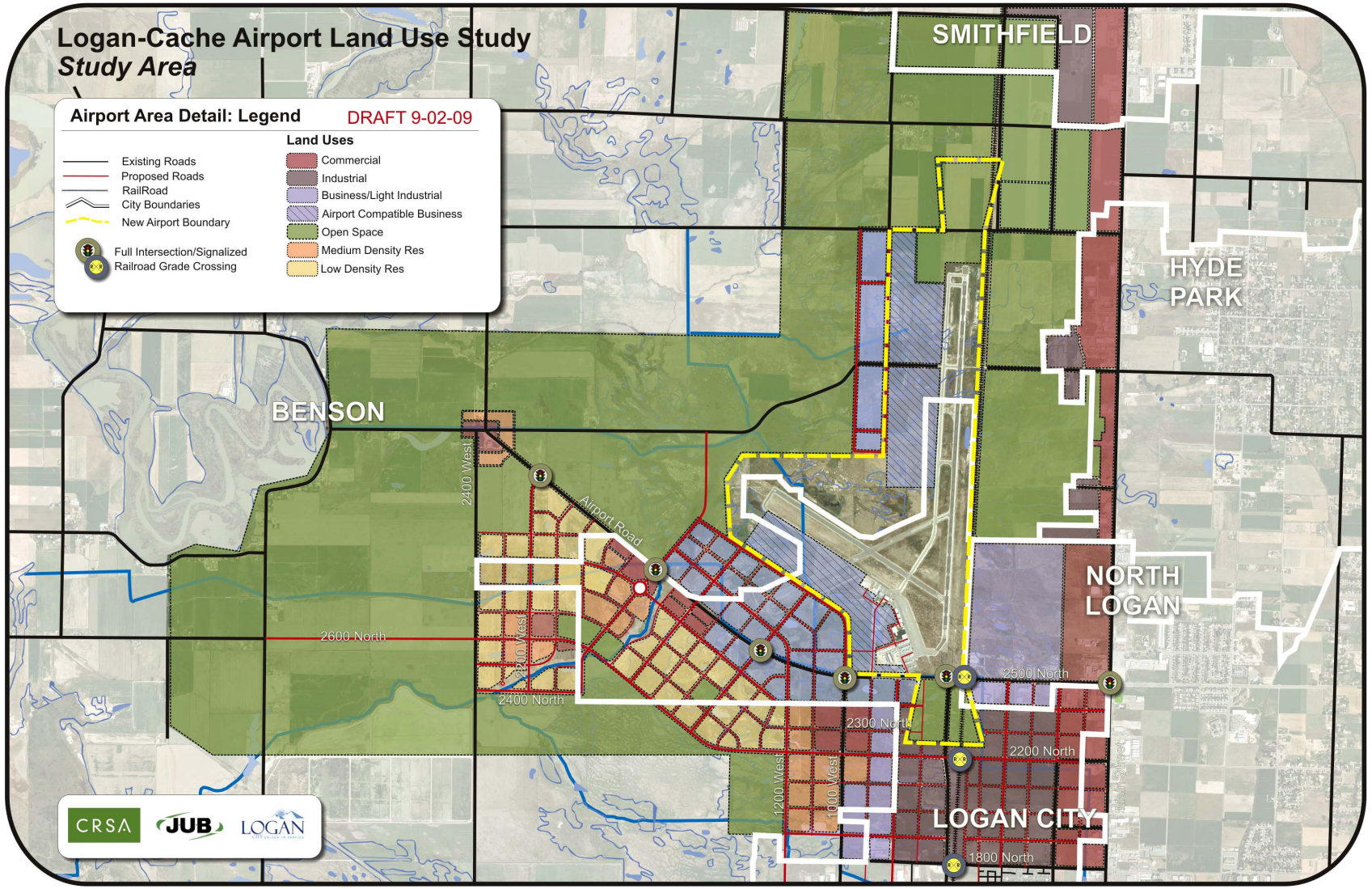
Culinary Water

The culinary water master plan includes water demands for existing and future needs along with State requirements for source, storage and pressure. Through this master plan, land areas have been planned for business, commercial, industrial and residential uses. Each of these uses has unique associated water demands. For this document, we have calculated the culinary water demands for the plan area so the city-wide model can be updated to determine effects on surrounding infrastructure needs. Specific requirements for source, storage and distribution systems will need to be determined from the larger scale model during detailed design. A map from the current Culinary Water System Master Plan for Logan City is provided on page 45.

Water demands per person or connection were determined using Utah Administrative Code (UAC) R-309. Afterward, the demands were converted to demand per acre by assuming land usage for each land use type. A detail of the conversion is found in Appendix D. A summary of the demands is shown below in Table 1.

Table 1: Peak Day Municipal and Industrial (M & I) Demands

Land Use Type	Total Acres	Peak Water Use (M&I) Gallons / Day
Airport and Compatible Business	342	197,000
Business / Light Industrial	674	389,000
Commercial	549	321,000
Industrial	723	123,000
Residential – Low Density	391	1,564,000
Residential – High Density	178	3,275,000
Total M&I Demand		***5,869,000***


Logan-Cache Airport Land Use Study
Study Area
Airport Area Detail: Legend
DRAFT 9-02-09
Existing Roads
Proposed Roads
RailRoad
City Boundaries
New Airport Boundary
Full Intersection/Signalized
Railroad Grade Crossing
Land Uses
Commercial
Industrial
Business/Light Industrial
Airport Compatible Business
Open Space
Medium Density Res
Low Density Res
SMITHFIELD
HYDE PARK
BENSON
NORTH LOGAN
LOGAN CITY
2400 West
Airport Road
2600 North
2500 North
2400 North
2300 North
2200 North
1800 North
1200 West
1000 West
CRSA
JUB
LOGAN

Culinary water was assumed to be used to irrigate each planned land use area. If pressure irrigation were to be used, less demand would be required on the culinary system and infrastructure requirements could be reduced accordingly. Irrigation demands per acre of irrigated area were again determined using UAC R-309. A percentage of landscaped area for each acre was assumed for each land use type. Appendix D contains details of these percentages. A summary of the peak day irrigation demands is found in Table 2, below.

By totaling the combined M&I and irrigation demands in Table 1 and 2, 8,440,000 gallons per day is required to serve the planned area.

Wastewater

Logan City has proactively master planned the area around the airport to be included in its sewer collection system. The overall master plan shows a mainly gravity flow sewer system with a regional lift station located west of the airport near 2400 West. Wastewater will be pumped from that lift station to the municipal treatment plant. A map from the current Wastewater Collection System Master Plan for Logan City is provided on page 45.

To further define wastewater system flows into the collection system, this plan computes a planned flow for the Airport Landside Small Area. The flows from the various land uses were developed using resources from the Utah Administrative Code. The wastewater collection master plan was also used for this analysis. Wastewater flows for commercial, business and industrial land uses, were assumed to be equivalent to the culinary water demand. Consumption of culinary water was assumed to be offset by inflow and infiltration into the wastewater collection system. Therefore the M&I demands for culinary water are equal to the wastewater flows.

The wastewater collection master plan was used to estimate residential wastewater flows. The master plan determined flows to be 70 gallons per capita per day (gpcd). Assuming 30 gpcd of inflow and infiltration and 2.92 people per connection (Logan Wastewater Collection System Master Plan pg IV-11), the total wastewater flow from residential areas would be 1,766,000 gallons per day. See Table 3 for a summary of this information. Appendix D contains the detailed information for wastewater flows.

The wastewater flows shown can be used as input into the existing city-wide model for further refinement of future designs.

Storm Water

The area included in the Logan-Cache Airport Landside Small Area Plan is undeveloped at this time. Therefore, storm water typically infiltrates into the soil or runs off into a nearby slough. Also, minor amounts of flow reach nearby canals. As development occurs in the

Table 2: Irrigation Demands

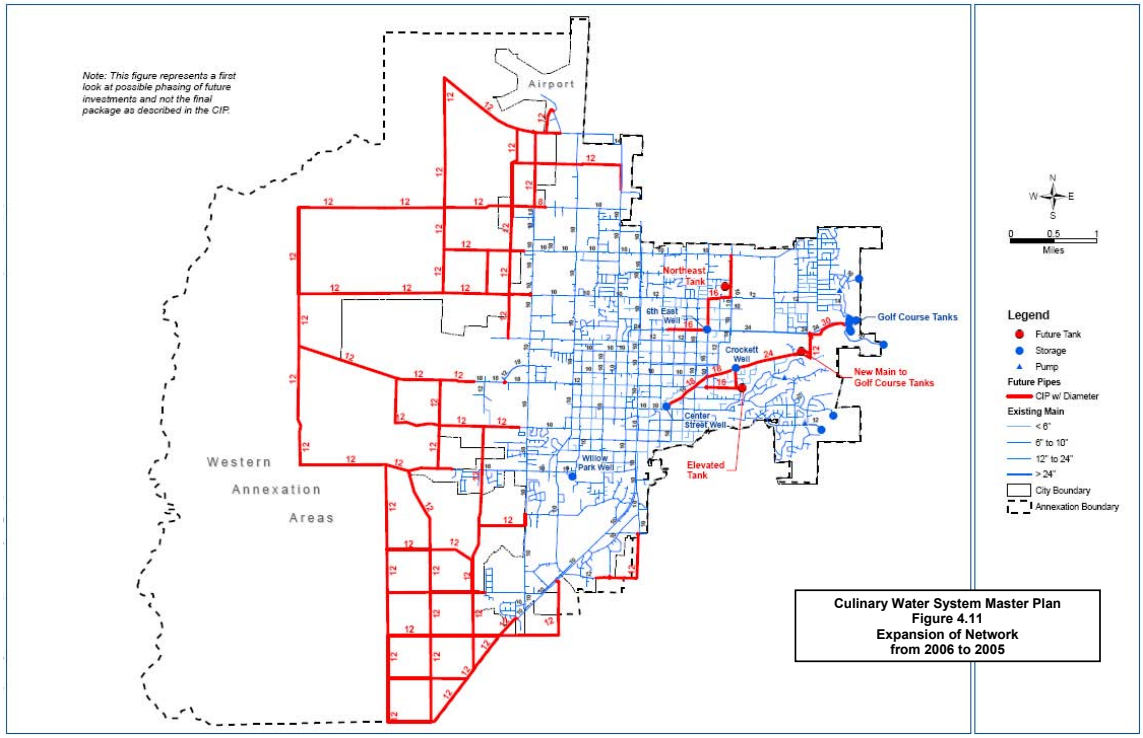
Land Use Type	Total Acres	Peak Water Use (Irrigation) Gallons / Day
Airport and Compatible Business	342	195,000
Business / Light Industrial	674	384,000
Commercial	549	313,000
Industrial	723	412,000
Residential – Low Density	391	1,115,000
Residential – High Density	178	152,000
Total Irrigation Demand		***2,571,000***

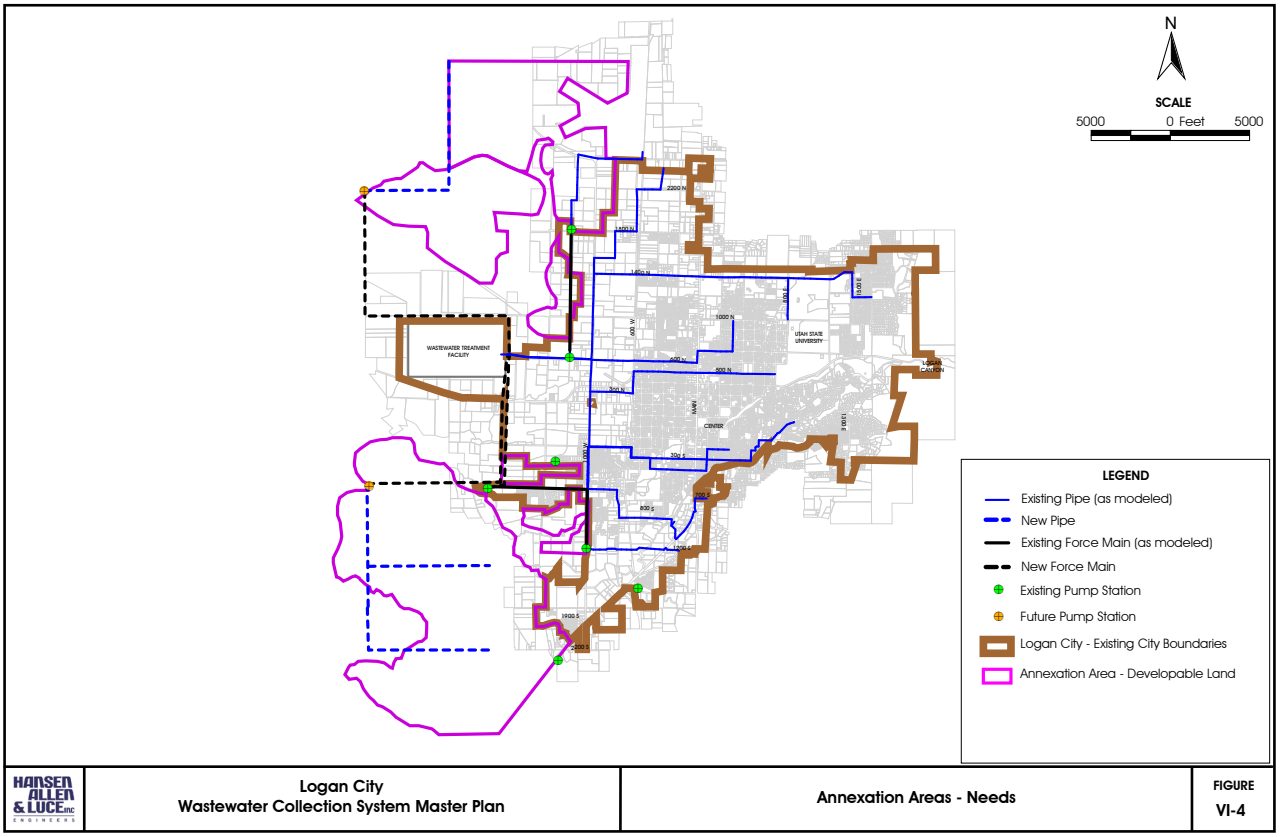
area of the plan, the development standards of Logan City will need to be followed.

At this time the standards state that runoff from any development should not exceed preconstruction flows. Basing storm water control on the design standards will require onsite retention and recharge facilities to be used. Minimal amounts of storm water may be allowed to flow into nearby sloughs or canals, but caution should be used to not increase flows in these areas and facilities because of existing capacity concerns. If it is determined that some discharge is desired into one of these locations, coordination with the appropriate stakeholders and government agencies should occur.

Table 3: Wastewater Flows

Land Use Type	Total Acres	Peak Day Flows Gallons / Day
Airport and Compatible Business	342	197,000
Business / Light Industrial	674	389,000
Commercial	549	321,000
Industrial	723	123,000
Residential – Low Density	391	571,000
Residential – High Density	178	1,200,000
Total Wastewater Flow		***2,230,000***


Note: This figure represents a first look at possible phasing of future investments and not the final package as described in the CIP.
Airport
Western
Annexation
Areas
Northeast Tank
6th East Well
Crockett Well
Center Street Well
Willow Park Well
Elevated Tank
Golf Course Tanks
New Main to Golf Course Tanks
N
W
E
S
0
0.5
1
Miles
Legend
Future Tank
Storage
Pump
Future Pipes
CIP w/ Diameter
Existing Main
< 6"
6" to 10"
12" to 24"
> 24"
City Boundary
Annexation Boundary
Culinary Water System Master Plan
Figure 4.11
Expansion of Network
from 2006 to 2005


N
SCALE
5000
0 Feet
5000
WASTEWATER TREATMENT FACILITY
UTAH STATE UNIVERSITY
CENTER
LEGEND
Existing Pipe (as modeled)
New Pipe
Existing Force Main (as modeled)
New Force Main
Existing Pump Station
Future Pump Station
Logan City - Existing City Boundaries
Annexation Area - Developable Land
HANSEN ALLEN & LUCE inc
ENGINEERS
Logan City
Wastewater Collection System Master Plan
Annexation Areas - Needs
FIGURE
VI-4

LAND USE RECOMMENDATIONS

The yellow zone, developed from the general aviation traffic pattern areas, is the area that will be most affected by airport operations, although the land is generally not directly controlled by the airport. As such, to promote the viability of the airport it is critical that the land uses within this zone are well-planned to be compatible with the airport. Rather than just utilizing the airport overlay zone, land within the yellow zone should be controlled by base zoning.

Future base zoning should coordinate with the uses proposed on the Land Use Study Map that fall within the yellow zone boundaries. In addition to agricultural/open space uses, included within the yellow zone are commercial, business, industrial, light industrial, and medium density residential.

As a land use category, medium density can cover a wide range of housing types and densities. For the purposes of compatibility with the airport, it is recommended that residential uses within the yellow zone not be detached, single-family residential, as these neighborhoods tend to be less tolerant of and incompatible with the noise associated with an airport. Opportunities for detached, single-family residential exist in the study area, but are located outside of the yellow zone to promote better long-term compatibility for the airport area. If residential uses do occur in the yellow zone they are recommended to be part of a mixed-use development and to be attached or multi-family, or assisted living centers.

IMPLEMENTATION TOOLS

Several implementation tools are available for achieving the goals and objectives of the airport land use master plan. The following are tools to be used by Logan City, Cache County, and the surrounding communities to protect and enhance the long-term viability of the airport from a land use perspective.

General Plan

Each community should include a discussion of the airport in their general plan text, with specific language regarding land use decisions and how they will affect the viability of the airport's future. The airport discussion should be included either as a short stand-alone chapter or as part of the transportation. Model language available for adoption by the communities is provided in Appendix E of this document.

Future Land Use Map

Each community should have a future land use map as part of their general plan. This map should include information that takes into consideration the buffer zones described in this document and the airport master plan regarding land uses and compatibility with airport operations. Currently, Logan City has the potential annexation area to the south identified in their future land-use map as single-family residential, which is considered a conflict due to the proximity to the airport. It is recommended that each community's future land use map consist of compatible land uses within the various buffer zones indicated on the Vicinity and Airport Influence Map (located in Section Two).

Base Zoning

The first layer of zoning tools for the airport vicinity should be appropriate base zoning by the county and surrounding communities. This will reduce the need for rectifying conflicts with an airport overlay zone and should speed the review process of land use proposals. It is recommended that base zoning not include any single-family detached residential zoning within the yellow zone boundaries. This will reduce the inherent conflict between low density residential neighborhoods and airport operations. Base zoning should include commercial uses with appropriate height limitations, industrial/light industrial, and medium to high-density residential that is associated with a mixed-use development area.

Overlay Zone

A model overlay zone has been adopted by Cache County, Logan City, and North Logan City. The overlay zone is an umbrella regulation tool that allows several different base zones to exist in the areas surrounding the airport vicinity. The overlay zone addresses height and light restrictions and discusses permitted and conditional uses within the various airport buffer zones. See the Airport Zoning Map in this section.

The overlay zone addresses land use compatibility sufficiently for the current and future needs of the airport as identified in the airport master plan. An updated map, prepared by JUB as part of the airport master plan process needs to be adopted to accompany the overlay zone language. It is recommended that each of the surrounding communities adopt the airport overlay zone to ensure a region-wide approach to protecting the airport from land use encroachment. For reference, North Logan City's Airport Limitation Overlay Zones ordinance (Ord. 02-13) has been included in Appendix F. It is recommended that communities evaluate specific uses as well as the general use categories, as shown in the North Logan use tables, to comprehensively apply the conditions of the overlay zone.

Plat Language

A final approach to protect the airport area from encroachment is for communites to include language on each plat recorded within the airport buffer zones indicating that the developers of the plat are aware of the airport's proximity and understands the noise implications of that proximity. This language would then carry forward with the plat if ever sold.

SECTION FIVE

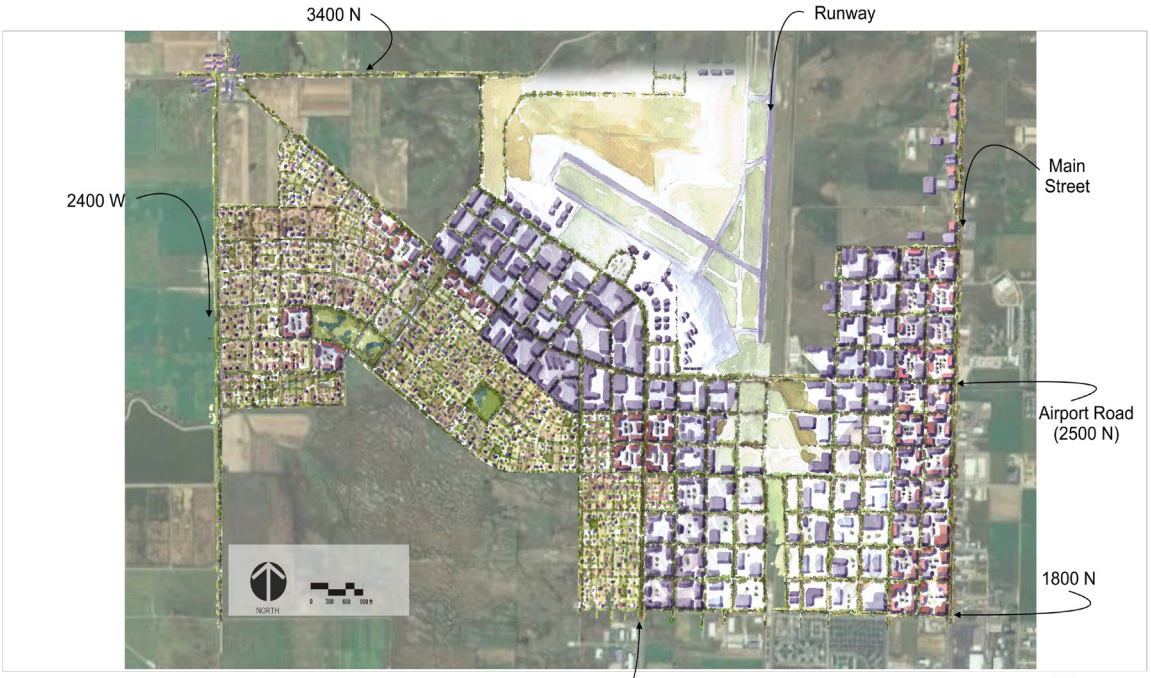
ILLUSTRATIVE PLAN

SECTION FIVE: ILLUSTRATIVE PLAN

The final vision for the airport and surrounding land uses has been rendered into a color illustration that provides a visual image of how the area might look when the land use concept plan has been implemented over time. In addition to the main illustrative plan, seven vignette renderings show additional detail of portions of the illustrative plan. The camera positions for the vignette perspectives are on the rendering key below. Descriptions of the vignettes are as follows:

1. View of potential residential development in the northwestern section, looking northeast
2. View of 1000 West, looking north toward the airport terminal
3. View of entire study area, looking northwest
4. View of potential new airport terminal
5. View of potential residential development and open space area, looking southwest from Airport Road
6. View of potential airside light industrial/manufacturing development, looking northeast
7. View of potential development at Main Street and Airport Road gateway, looking northwest

Logan Airport Landside Plan: Rendering Key



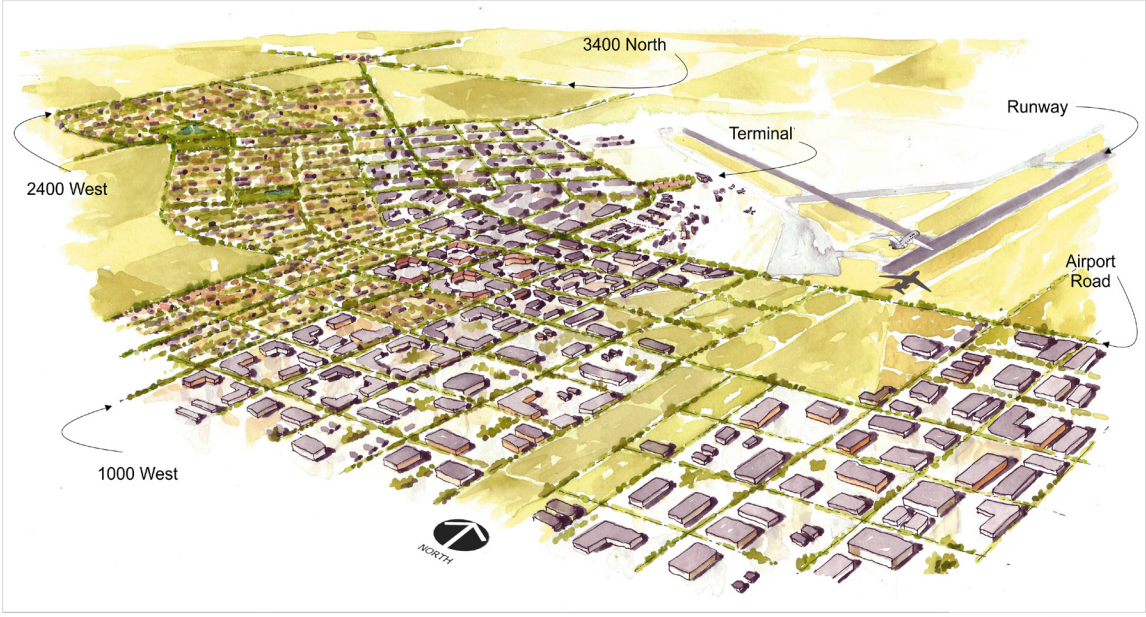
Logan Airport Landside Plan: Illustrative Plan

Logan Airport Landside Plan: Residential Development

1 Camera Position

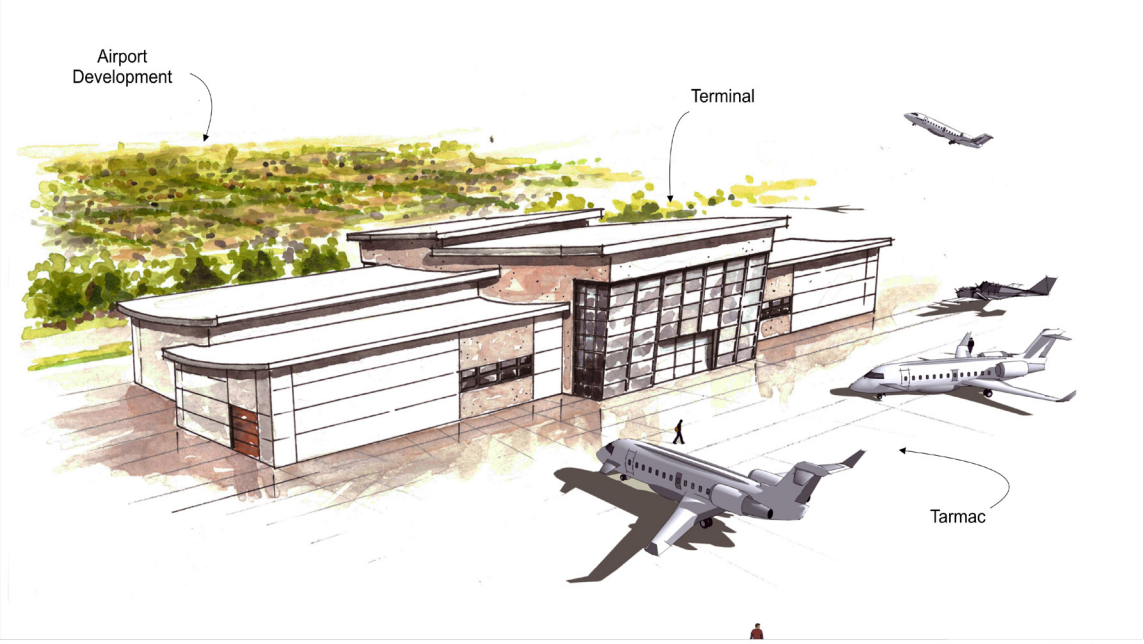
Logan Airport Landside Plan:
1000 West

2 Camera Position



Logan Airport Landside Plan:
Study Area Perspective

3 Camera Position



Logan Airport Landside Plan:
Airport Terminal

4 Camera Position

Logan Airport Landside Plan:
Residential Development

5 Camera Position

Logan Airport Landside Plan:
Airside Development

6 Camera Position

Logan Airport Landside Plan:
Airport Road Gateway

7 Camera Position

APPENDIX A: MAPS

Land Use Study Area

Map 1

Legend

- Airport Boundary
- Study Area
- Drainages
- Wetlands

SAM FELLOW RD
2400 W
1600 W
1200 W
5000 N
4600 N
4400 N
300 W
400W
500 E
4200 N
800 W
4000 N
3800 N
Hopkins Slough
Logan and Hyde Park Canal
3400 N
North Logan Benson Canal
3800 W
3000 N
AIRPORT RD
2600 N
Meridan Rd.
3600 W
Swift Slough
3200 W
1000 W
South Logan Benson Canal
Logan Northhwest Field Canal
1200 E

N

0 0.375 0.75 1.5 2.25 3 Miles

CRSA JUB LOGAN

Current Future Land Use Plan

Study Area

Map 2

SAM FF W
3800 W
3800 N
2400 W
4200 N
1200 W
800 W
400W
300 W
4600 N
3400 N
3400 N
AIRPORT RD
3000 N
2600 N
2600 N
Meridian Rd.
3600 W
3200 W
1000 W

Legend

- Study Area
- Airport Boundary

Study Area Land Use Description

- Airport Protection Zone
- Commercial
- DR-Exemption
- DR-GF
- Detached Residential
- GW-Exemption
- Gateway
- IP-Exemption
- Industrial Park
- Resource Conservation
- Rural Reserve
- Detached Residential Unannexed

N

0 0.25 0.5 1 1.5 2 Miles

CRSA JUB LOGAN

Existing Logan City & County Zoning Map

MAP 3

SAM FELLOW RD
3800 W
3800 N
2400 W
1200 W
4200 N
800 W
4600 N
400W
300 W
3400 N
3400 N
3000 N
AIRPORT RD
2600 N
2600 N
3600 W
3200 W
Meridan Rd.
1000 W

Legend

- Logan City Boundary
- Study Area
- Airport Boundary

Logan City Zoning

- Agriculture
- Commercial General
- Industrial
- Multi Family Housing
- Public

County Zoning

- Agriculture
- Commercial

N

0 0.25 0.5 1 1.5 2 Miles

CRSA JUB LOGAN

Area Hydrology

MAP 4

Legend

- Study Area
- Airport Boundary
- Drainages
- Water Bodies
- Wetlands
- 100 Year Flood

4000 N
4600 N
4200 N
3800 N
3400 N
3000 N
2600 N
SAM FELLOW RD
2400 W
1200 W
800 W
400W
300 W
3800 W
3600 W
3200 W
1000 W
Hopkins Slough
North Logan Benson Canal
AIRPORT RD
Meridan Rd.
Swift Slough
South Logan Benson Canal
Logan Northhwest Field Canal
ogan and Hyde Park Canal

N

0 0.25 0.5 1 1.5 2 Miles

CRSA JUB LOGAN

Area Soil Potential

Map 5

Legend

- Study Area
- Airport Boundary

Soil Potential Classification

- Prime Soils
- State Soils

4000 N
4600 N
4200 N
3800 N
3400 N
3400 N
3400 N
3000 N
2600 N
2600 N
SAM FELLOW RD
2400 W
1200 W
800 W
400W
300 W
3800 W
3600 W
3200 W
Meridian Rd.
AIRPORT RD
1000 W

N

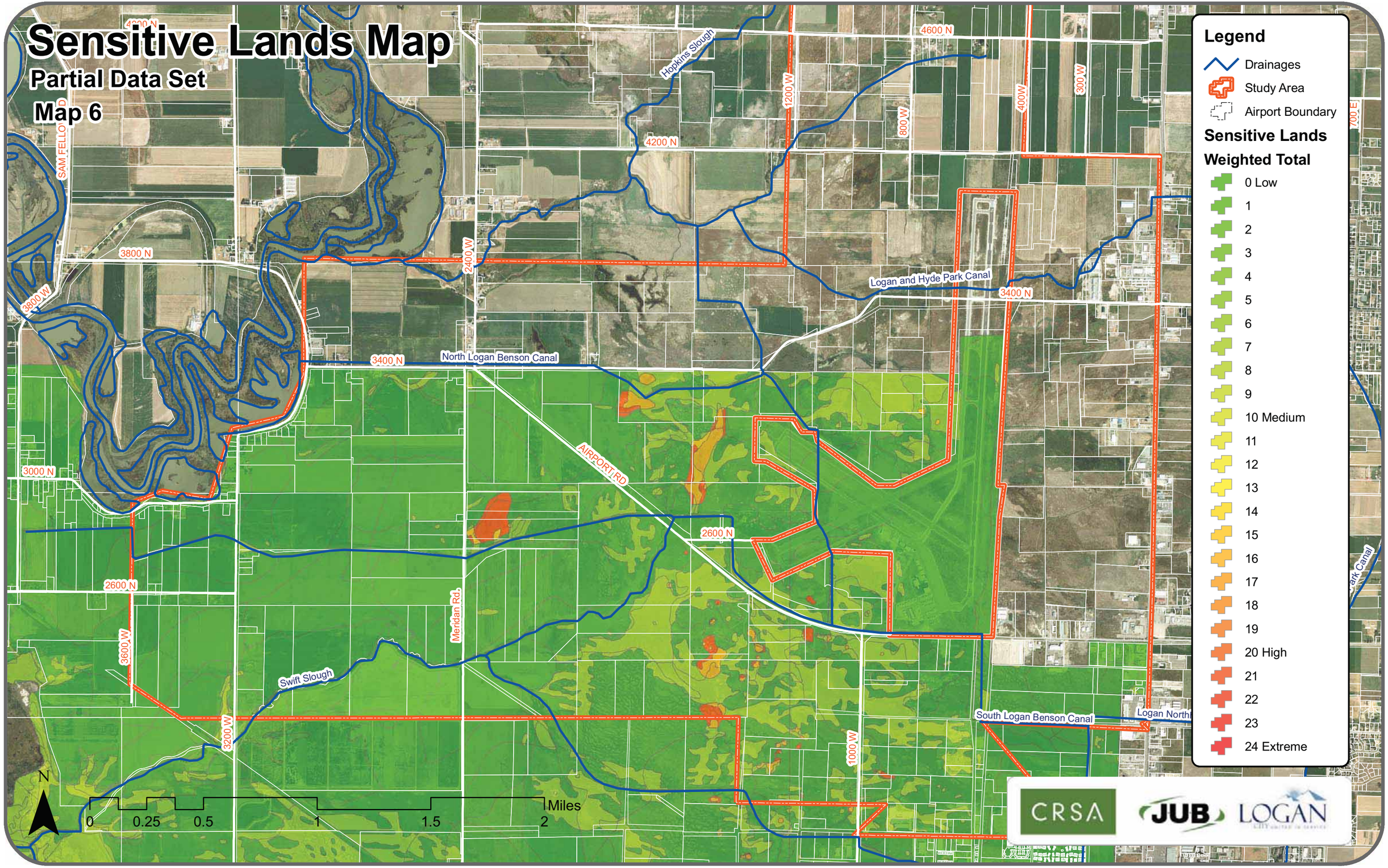
0 0.25 0.5 1 1.5 2 Miles

CRSA JUB LOGAN

Sensitive Lands Map

Partial Data Set

Map 6



Legend

- Drainages
- Study Area
- Airport Boundary

Sensitive Lands

Weighted Total

- 0 Low
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 Medium
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20 High
- 21
- 22
- 23
- 24 Extreme

CRSA JUB LOGAN

Existing Sewer Infrastructure

Map 7

Legend

- Study Area
- Airport Boundary
- North Logan Sewer Mains
- Logan Sewer Mains
- Smithfield Sewer Mains

CRSA JUB LOGAN

N

0 0.375 0.75 1.5 2.25 3 Miles

Existing Water Infrastructure

Smithfield data not available at time of printing

Map 8

Legend

- Study Area
- Airport Boundary
- County Roads
- North Logan Water Mains
- Logan Water Mains

CRSA JUB LOGAN

N

0 0.375 0.75 1.5 2.25 3 Miles

APPENDIX B: ECONOMIC ANALYSIS

LANDSIDE STUDY TASK 1.3.1

LANDSIDE ECONOMIC ANALYSIS

LOGAN CACHE AIRPORT

Prepared For:

LOGAN CITY
LOGAN CACHE AIRPORT

Logan, Utah

Prepared By:

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(208) 263-2104

(Produced in cooperation with the Economic Development Corporation of Utah)

July 2009

TABLE OF CONTENTS
LANDSIDE ECONOMIC ANALYSIS

(Produced in cooperation with the Economic Development Corporation of Utah)

LANDSIDE STUDY TASK 1.3.1

LANDSIDE ECONOMIC ANALYSIS
Logan Cache Airport

(Produced in cooperation with the Economic Development Corporation of Utah)

PURPOSE

The Logan community and Logan City officials have determined that a long term vision must be established now for the much larger area surrounding the airport in order to capitalize on future economic opportunities coupled with smart growth principles. The City's proposed "study area" geographically encompasses approximately 5,000 acres of land surrounding Logan Cache Airport. The ultimate goal is to create a sustainable long-term land use plan based on physical and economic realities rather than defaulting to uncontrolled development of this large area over time.

The purpose of this work element is to recommend the highest and best mix and magnitude of land uses from an economic point-of- view. Doing so optimizes future economic development opportunities for the landside study area surrounding the airport. This recommended and forecast land use mix is based on economic and real estate market factors. These recommendations will be integrated into the overall decision making process of developing a preferred land use development concept for the study area surrounding Logan Cache Airport. This landside economic analysis was prepared by Real Estate Economics—subcontractor to JUB, Inc.

Cooper Roberts Simonsen Associates (CRSA) of Salt Lake is concurrently preparing a conceptual land use plan for the study area under the guidance of JUB, Inc.--the prime contractor. Several alternative land use development concepts are being prepared by CRSA for the study area. Ultimately, a preferred land used development concept will be recommended. This work is being coordinated with that of Real Estate Economics.

LOGAN CITY PLANNING GOALS

Study Area Definition

The Logan City Planning Department has defined the landside "study area" as illustrated through the use of GIS technology. The vast majority of this area is undeveloped and located in Cache County. However, certain large land ownerships are situated within the current city limits of Logan City. The area also encompasses several large parcels inside North Logan in the far southeast corner of the study area.

City Planning Premises

Residential. Logan City planners have suggested that at full build-out, the study area should accommodate approximately 2,500 dwelling units of all types. An underlying planning goal is that the average density should be six (6) dwelling units per "gross acre". These assumptions translate into an eventual residential land requirement of about 420 buildable acres.

Industrial. Industrial space in the study area will essentially be comprised of three types of products: (1) warehouse distribution buildings, (2) flex buildings and (3) high tech R & D buildings. A key planning goal is to efficiently use industrially zoned land. For example, 28 foot clear height warehouse distribution buildings can be designed to incorporate mezzanines as well as limited ground floor office build-out. R & D buildings in many cases should be two or three story facilities.

Office. Multi-story Class A office buildings should be planned at key intersections or as key components of an airport gateway area.

Retail. The population base and attendant buying power resulting from this new residential community will eventually support a *neighborhood* size shopping center.

Transient. Similarly, land set asides for hotel pads should be integrated into the airport gateway master plan.

The following sections show recent growth conditions and set forth economic forecasts for Cache County and the Logan City urban area. These economic growth trends and forecasts will help serve as the basis for making long-term land use mix recommendations that are integrated into the preferred land use concept plan for the study area.

DEMOGRAPHICS AND RESIDENTIAL LAND USES

Recent Population Trends

Residential demand is driven by population growth. Specifically, housing demand is essentially measured by household formation rates and household sizes.[1] Recent demographic trends in Cache County and in Logan City reveal local housing demand trends since year 2000. Table 1 compares key relationships between population growth and housing demand in recent years.

During the 2000-2009 period, Logan City's population comprised an estimated 45 percent of countywide population. The City's population is growing rapidly—about twice as fast as the entire U.S. Growth rates within other areas of Cache County and statewide are even faster. For example, the Cache County area outside of Logan City is estimated to be growing over 150 percent faster than nationwide.

The number of households, their average size and rates of formation are essentially the key determinants of housing demand. As shown, Logan City currently has about 16,000 households. The current average household size is relatively large, averaging about 3.14 persons. This denotes a relatively large number of families with children compared to national averages where

[1] Household formation rates reflect the magnitude of housing demand and household sizes help establish the characteristics of homes demanded--such as number of bedrooms demanded.

households average below 2.5 persons. New household formations in Logan City averaged about 340 annually during the 2000-2009 period. This translates into current new housing demand approximating 350 dwelling units per year in Logan City.

TABLE 1

RECENT DEMOGRAPHIC GROWTH TRENDS

(2000 - 2009)

AREA	2000	2001	2002	2003	2004	2005	2006	2007	2008*	2009*	AARC**
POPULATION:											
Logan City	42,671	43,546	44,440	45,352	46,283	47,233	48,203	49,192	50,202	51,232	2.0527%
Cache County	91,897	93,372	95,460	98,176	100,182	103,564	105,671	109,022	112,141	114,920	2.5152%
State of Utah	2,246,553	2,305,652	2,358,330	2,413,618	2,469,230	2,547,389	2,615,129	2,699,554	2,781,954	2,856,158	2.7035%
HOUSEHOLDS:											
Logan City	12,933	13,230	13,531	13,815	14,083	14,370	14,665	14,973	15,458	15,968	2.3701%
Cache County	27,853	28,369	29,065	29,907	30,483	31,507	32,149	33,185	34,530	35,819	2.8343%
State of Utah	706,978	729,305	749,553	770,077	790,365	817,993	842,116	870,892	900,903	929,233	3.0839%
AVERAGE HH SIZE:											
Logan City	3.23	3.23	3.22	3.22	3.22	3.22	3.22	3.22	3.18	3.14	-0.3103%
Cache County	3.22	3.22	3.21	3.21	3.22	3.22	3.22	3.22	3.19	3.15	-0.2489%
State of Utah	3.12	3.10	3.09	3.08	3.07	3.06	3.05	3.05	3.03	3.02	-0.3647%

*Real Estate Economics estimates

*AARC is average annual rate of change

Source: Logan City Community Development , Governor's Office of Planning and Budget, 2008 Baseline Projections, U.S. Census, Real Estate Economics

Overall characteristics of the Cache County population compared to that statewide are presented in Table 2. These data reflect several key factors relative to existing and future housing demand in the study area. The median age structure of the local population is even younger than that statewide. The relatively low median population age of 24.7 years in Cache County suggests that most future housing demand will come from young families. This conclusion is reinforced by the fact that over 39 percent of households countywide are married couples with children under 18 years old. Moreover, prospective local home buyers are both family-oriented and highly educated. For example, nearly 43 percent of the Cache County population is college educated to some extent and over 35 percent possess at least a bachelor's degree.

Residential Land Demand Forecast

The long term forecast underpinning future residential demand in the study area is presented in Table 3. A fifty (50) year forecast of population, average household sizes, total households and new households per year is set forth for Logan City, Cache County and the State of Utah. As indicated, future housing demand is essentially measured by new household formations. The creation of these newly formed households is derived from projected population growth.[2] Table 3 shows that the new annual demand for housing in Logan City will average approximately 375 dwelling units (all types) in 2010. Assuming growth will continue at the same rate as the past decade, this annual average demand will gradually increase and reach an estimated 680 residential units in 2035 and 1,220 in 2060. Also, during this period, the average household size

[2] Logan City population and household forecasts were made by Real Estate Economics based on historic growth rates during the 2000-2009 period. The Cache County and Utah forecasts were made by the Governor's Office of Planning and Budget (2008 baseline projections).

will gradually decline from about 3.13 persons per households to 2.68. This latter demand characteristic is still reflective of relatively large families in the future.

Table 2
COMPARATIVE DEMOGRAPHIC PROFILE
Cache County vs Utah
(2007)

	Cache County		Utah	
	Number	**Percent**	**Number**	**Percent**
Total Popoulation	***108,887***	***100.0%***	***2,645,330***	***100.0%***
Under 5	11,560	10.6%	252,697	9.6%
5 to 9 years	9,494	8.7%	229,584	8.7%
10 to 14 years	8,840	8.1%	210,440	8.0%
15 to 19 years	9,876	9.1%	213,753	8.1%
20 to 24 years	15,620	14.3%	243,097	9.2%
25 to 34 years	17,981	16.5%	426,764	16.1%
35 to 44 years	10,968	10.1%	318,892	12.1%
45 to 54 years	9,707	8.9%	304,537	11.5%
55 to 59 years	3,695	3.4%	119,078	4.5%
50 to 64 years	2,917	2.7%	94,444	3.6%
65 to 74 years	4,185	3.8%	123,374	4.7%
75 to 84 years	2,455	2.3%	78,655	3.0%
85 years and older	1,589	1.5%	30,015	1.1%
Median age (years)	24.7		28.4	
Household by Type				
Total Households	32,219	100.0%	835,320	100.0%
Families	24,547	76.2%	629,901	75.4%
Married couple families	21,962	68.2%	520,164	62.3%
With own children under 18	12,595	39.1%	270,610	32.4%
Female householder, no husband	2,173	6.7%	76,736	9.2%
With own children under 18	1,492	4.6%	45,707	5.5%
Nonfamily households	7,672	23.8%	205,419	24.6%
Average Household Size	3.22		3.11	
Average Family Size	3.71		3.60	
School Enrollment				
Population 3 years and over enrolled in school	41,697	100.0%	839,582	100.0%
Nursery school, preschool	2,022	4.8%	51,160	6.1%
Kindergarten	1,501	3.6%	45,511	5.4%
Elementary (grades 1-8)	14,605	35.0%	345,890	41.2%
High School (grades 9-12)	5,815	13.9%	168,677	20.1%
College or graduate school	17,754	42.6%	228,344	27.2%
Educational Attainment				
Population 25 years and over	53,497	100.0%	1,495,759	100.0%
Less than 9th grade	1,148	2.1%	47,240	3.2%
9th to 12th grade	2,762	5.2%	99,688	6.7%
High school graduate (includes equivalency)	12,296	23.0%	398,932	26.7%
Some college, no degree	14,974	28.0%	386,562	25.8%
Associate degree	3,490	6.5%	133,937	9.0%
Bachelor's degree	11,974	22.4%	293,227	19.6%
Graduate or professional degree	6,853	12.8%	136,173	9.1%
Percent high school graduate or higher	92.7%		90.2%	
Percent bachelor's degree or higher	35.2%		28.7%	
Marital Status				
Population 15 years and over	78,993	100.0%	1,952,609	100.0%
Never married	27,011	34.2%	558,566	28.6%
Now married, except separated	44,964	56.9%	1,117,299	57.2%
Separated	245	0.3%	24,373	1.2%
Widowed	2,554	3.2%	76,824	3.9%
Divorced	4,219	5.3%	175,547	9.0%

Approximately three out of four *new* Cache County residential units are located outside of Logan City—whether in other local municipalities or scattered throughout Cache County proper. The proposed study area, which encompasses approximately 5,000 landside acres adjacent to the Logan Cache Airport, includes a large amount of land that is currently located in the county as well as a small amount of land in North Logan.

A projection of future "study area" residential demand is presented in Table 4. This forecast is a sensitivity model. As noted, projected annual new household formations currently average about 375 residential units in Logan City and 1,270 in all other areas of Cache County. Such annual household formations are essentially the proxy for annual housing demand. Given this aggregate demand, capture rates are imputed in the Table 4 sensitivity model resulting in annual new housing demand estimates for the study area alone. Specifically, it is estimated that the 5,000-acre study area will capture twenty (20) percent of all new homebuilding within Logan City and an additional three (3) percent of all Cache County area homes constructed outside of Logan City. In 2010, for example, the model forecasts that absorption demand will total 102 new residential units (all types) within the 5,000-acre airport landside study area. This translates to an average monthly absorption rate of 8.5 dwelling units.

The Table 4 fifty year residential demand forecast shows that average annual study area absorption will gradually increase. This is reflective of population growth. For example, annual demand for new residential units in the study area will increase from an estimated 102 units in 2010 to 281 units in 2060. Clearly, these study area projections are annual averages. They do not reflect the vicissitudes of unpredictable short-run business cycles over this fifty year period.

A projection of the demand for residential land is also presented in Table 4. Based on projections of countywide and Logan City new household formations and study area capture rates, estimated residential land requirements are forecast. A key Logan City Planning Department assumption is the average residential density acre should be *six DU's per gross buildable acre*. Table 4 reveals such cumulative land requirements at selected future date benchmarks. Under this capture rate scenario, Logan City's goal of accommodating 2,500 dwelling units would be met in about the year 2030.

A review of actual residential construction trends during 1998-2007 serves as a check on the reasonableness of the above housing *demand* forecasts for Logan City. Table 5 presents the annual average new *supply* of residential units in Logan City and in the rest of Cache County. The ten year annual average for Logan City was 288. This actual average number of dwelling units supplied is within reasonable proximity to the 337 average new household formation rate in Logan City during the 2000-2009 period. Thus, residential demand estimates for Logan City appears realistic, both from a supply and from a demand standpoint.

Table 3
COMPARATIVE POPULATION GROWTH FORECAST

AREA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
POPULATION:																										
Logan City	52,284	53,357	54,452	55,570	56,711	57,875	59,063	60,275	61,512	62,775	64,064	65,379	66,721	68,090	69,488	70,914	72,370	73,855	75,371	76,919	78,497	80,109	81,753	83,431	85,144	86,892
Cache County	117,758	120,786	123,847	126,986	130,177	133,409	136,621	139,822	143,006	146,186	149,322	152,432	155,545	158,676	161,836	165,036	168,260	171,550	174,922	178,379	181,921	185,555	189,309	193,172	197,158	201,251
State of Utah	2,927,643	2,999,816	3,071,748	3,144,044	3,216,563	3,289,506	3,362,344	3,434,916	3,507,503	3,580,081	3,652,547	3,725,094	3,797,736	3,870,473	3,943,426	4,016,770	4,090,426	4,163,959	4,238,040	4,312,789	4,387,831	4,463,249	4,539,198	4,616,100	4,693,959	4,772,204
HOUSEHOLDS:																										
Logan City	16,346	16,734	17,130	17,537	17,952	18,378	18,813	19,259	19,716	20,183	20,661	21,151	21,652	22,165	22,691	23,228	23,779	24,343	24,920	25,510	26,115	26,734	27,367	28,016	28,680	29,360
Cache County	37,088	38,246	39,451	40,626	41,732	42,873	44,027	45,243	46,530	47,822	49,168	50,546	51,995	53,480	54,993	56,526	58,074	59,633	61,185	62,739	64,292	65,837	67,389	68,937	70,484	72,038
State of Utah	958,165	986,500	1,015,238	1,043,092	1,070,540	1,098,753	1,126,739	1,155,049	1,183,650	1,212,660	1,242,459	1,272,535	1,303,122	1,333,975	1,365,202	1,397,008	1,428,949	1,460,841	1,492,770	1,524,857	1,556,949	1,589,058	1,621,154	1,653,166	1,685,206	1,717,224
AVERAGE HH SIZE:																										
Logan City	3.13	3.12	3.11	3.10	3.09	3.08	3.07	3.06	3.05	3.04	3.03	3.03	3.02	3.01	3.00	2.99	2.98	2.97	2.96	2.95	2.94	2.93	2.92	2.91	2.91	2.90
Cache County	3.14	3.13	3.13	3.12	3.11	3.10	3.10	3.09	3.08	3.07	3.06	3.06	3.05	3.04	3.03	3.03	3.02	3.01	3.00	3.00	2.99	2.98	2.97	2.97	2.96	2.95
State of Utah	3.01	3.00	2.99	2.98	2.97	2.96	2.94	2.93	2.92	2.91	2.90	2.89	2.88	2.87	2.86	2.85	2.84	2.83	2.82	2.81	2.80	2.79	2.78	2.77	2.76	2.75
NEW HH'S/YEAR:																										
Logan City	378	387	397	406	416	425	436	446	456	467	478	490	501	513	525	538	551	564	577	591	605	619	634	649	664	680
Cache County	1,269	1,158	1,205	1,175	1,106	1,141	1,154	1,216	1,287	1,292	1,346	1,378	1,449	1,485	1,513	1,533	1,548	1,559	1,552	1,554	1,553	1,545	1,552	1,548	1,547	1,554

Table 3 (Continued)
COMPARATIVE POPULATION GROWTH FORECAST
(2010 - 2060

AREA	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
POPULATION:																									
Logan City	29,962	30,577	31,205	31,846	32,499	33,166	33,847	34,542	35,251	35,975	36,713	37,467	38,236	39,021	39,822	40,639	41,473	42,325	43,193	44,080	44,985	45,908	46,851	47,812	48,794
Cache County	205,457	209,785	214,227	218,789	223,442	228,200	233,071	238,026	243,081	248,208	253,391	258,634	263,897	269,194	274,527	279,928	285,397	290,934	296,539	302,212	307,953	313,762	319,638	325,582	331,594
State of Utah	4,850,900	4,930,221	5,010,367	5,091,285	5,171,391	5,251,993	5,332,894	5,413,970	5,495,080	5,575,897	5,657,572	5,739,863	5,822,518	5,905,735	5,989,089	6,072,753	6,156,746	6,241,057	6,325,688	6,410,636	6,495,908	6,581,498	6,667,408	6,753,637	6,840,187
HOUSEHOLDS:																									
Logan City	30,056	30,768	31,497	32,244	33,008	33,790	34,591	35,411	36,250	37,109	37,989	38,889	39,811	40,755	41,720	42,709	43,721	44,758	45,819	46,904	48,016	49,154	50,319	51,512	52,733
Cache County	73,584	75,151	76,713	78,301	79,925	81,578	83,266	84,998	86,791	88,632	90,530	92,470	94,456	96,474	98,530	100,637	102,789	104,984	107,198	109,455	111,768	114,127	116,536	118,963	121,428
State of Utah	1,749,204	1,781,239	1,813,131	1,844,976	1,876,862	1,908,670	1,940,420	1,972,239	2,004,073	2,036,050	2,068,300	2,100,761	2,133,537	2,166,655	2,200,285	2,234,341	2,268,722	2,303,382	2,338,365	2,373,595	2,409,155	2,445,099	2,481,181	2,517,404	2,554,061
AVERAGE HH SIZE:																									
Logan City	2.89	2.88	2.87	2.86	2.85	2.84	2.83	2.83	2.82	2.81	2.80	2.79	2.78	2.77	2.76	2.76	2.75	2.74	2.73	2.72	2.71	2.71	2.70	2.69	2.68
Cache County	2.94	2.94	2.93	2.92	2.91	2.91	2.90	2.89	2.89	2.88	2.87	2.86	2.86	2.85	2.84	2.84	2.83	2.82	2.81	2.81	2.80	2.79	2.79	2.78	2.77
State of Utah	2.74	2.73	2.72	2.71	2.70	2.69	2.68	2.67	2.66	2.65	2.64	2.63	2.62	2.61	2.60	2.60	2.59	2.58	2.57	2.56	2.55	2.54	2.53	2.52	2.51
NEW HH'S/YEAR:																									
Logan City	696	712	729	747	764	782	801	820	839	859	880	900	922	944	966	989	1,012	1,036	1,061	1,086	1,112	1,138	1,165	1,193	1,221
Cache County	1,546	1,567	1,562	1,588	1,624	1,653	1,688	1,732	1,793	1,841	1,898	1,940	1,986	2,018	2,056	2,107	2,152	2,195	2,214	2,257	2,313	2,359	2,409	2,427	2,465

Source: Governor's Office of Planning and Budget, 2008 Baseline Projections, Real Estate Economics

INDUSTRIAL LAND DEMAND FORECAST

A comparative workforce profile is presented in Table 6. Cache County's workforce is compared to statewide Utah and U.S. 2007 data in terms of employment status, occupation, class of worker and income. A relatively large 71 percent share of the labor force is employed in Cache County compared to 69 percent statewide and only 64 percent across the U.S. This high labor force participation rate bodes well for attracting future employers to the Logan area. In terms of occupation distributions, a relatively high 17 percent of Cache County workers are employed in production/transportation/material handling. Across Utah and the U.S., only about 12 to 13 percent are employed in these occupations.

In contrast, a relatively small 8 percent of workers are employed in construction—substantially lower than Utah and U.S. averages. Also, in terms of class of workers, a relatively high 24 percent of the Cache County labor force works for the government—a reflection of the large number of public workers in the local public educational system.

Table 6 also shows that the 2007 median household income was 17 percent below the statewide average in Utah. This reflects the relatively large number of typically lower paying government jobs. Households earning Social Security income comprise a relatively low 18 percent in Cache County compared to 21 percent statewide and 27 percent across the U.S. This relative low share of transfer payment income reinforces the fact that the population in Cache County is relatively young and is comprised of many families with children.

A forecast of the industrial land requirement in the study area is now set forth. The requirement for industrial land is driven by complex local, national and global demand and supply factors. In essence, industrial buildings are constructed in order to house myriad productive economic activities. A key measure of the magnitude of industrial space required over time in a locality is the projected employment growth in those economic sectors that occupy industrial types of buildings. The following industrial land demand forecast for the landside Logan Cache Airport study area is therefore based on countywide sectorial employment growth forecasts.

Future industrial space developed within the study area will essentially be comprised of three distinct types of buildings: *(1) warehouse distribution, (2) flex buildings, and (3) high tech R & D buildings.* An industrial land requirement forecast model has been developed based on these three industrial product types. Demand for this industrial space is based on the forecast share of workers per economic sector that likely will work in these various types of industrial buildings.

Estimating study area industrial land requirements required development of a new computer forecast model. The validity of model output results are only as good as its input assumptions. The reasonableness of the assumptions in this model has been carefully weighted.

Table 4

STUDY AREA RESIDENTIAL DEMAND FORECAST

(2010 -2060)

STUDY AREA CAPTURE RATE ASSUMPTIONS:	
Logan City	20%
Rest of Cache County	3%

AREA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
HOUSEHOLDS:																										
Logan City	16,346	16,734	17,130	17,537	17,952	18,378	18,813	19,259	19,716	20,183	20,661	21,151	21,652	22,165	22,691	23,228	23,779	24,343	24,920	25,510	26,115	26,734	27,367	28,016	28,680	29,360
Cache County	37,088	38,246	39,451	40,626	41,732	42,873	44,027	45,243	46,530	47,822	49,168	50,546	51,995	53,480	54,993	56,526	58,074	59,633	61,185	62,739	64,292	65,837	67,389	68,937	70,484	72,038
Rest of Cache County	20,742	21,512	22,321	23,089	23,780	24,495	25,214	25,984	26,814	27,639	28,507	29,395	30,343	31,315	32,302	33,298	34,295	35,290	36,265	37,229	38,177	39,103	40,022	40,921	41,804	42,678
NEW HH'S/YEAR:																										
Logan City	378	387	397	406	416	425	436	446	456	467	478	490	501	513	525	538	551	564	577	591	605	619	634	649	664	680
Cache County	1,269	1,158	1,205	1,175	1,106	1,141	1,154	1,216	1,287	1,292	1,346	1,378	1,449	1,485	1,513	1,533	1,548	1,559	1,552	1,554	1,553	1,545	1,552	1,548	1,547	1,554
Rest of Cache County	891	771	808	769	690	716	718	770	831	825	868	888	948	972	988	995	997	995	975	963	948	926	918	899	883	874
STUDY AREA DEMAND:																										
Annual	**102**	**101**	**104**	**104**	**104**	**107**	**109**	**112**	**116**	**118**	**122**	**125**	**129**	**132**	**135**	**137**	**140**	**143**	**145**	**147**	**149**	**152**	**154**	**157**	**159**	**162**
Cumulative	**102**	**203**	**307**	**411**	**515**	**621**	**730**	**842**	**958**	**1,077**	**1,198**	**1,323**	**1,452**	**1,583**	**1,718**	**1,855**	**1,996**	**2,138**	**2,283**	**2,430**	**2,579**	**2,731**	**2,885**	**3,042**	**3,201**	**3,363**
ACREAGE DEMAND																										
Annual	**17**	**17**	**17**	**17**	**17**	**18**	**18**	**19**	**19**	**20**	**20**	**21**	**21**	**22**	**22**	**23**	**23**	**24**	**24**	**25**	**25**	**25**	**26**	**26**	**27**	**27**
Cumulative	**17**	**34**	**51**	**68**	**86**	**104**	**122**	**140**	**160**	**179**	**200**	**220**	**242**	**264**	**286**	**309**	**333**	**356**	**380**	**405**	**430**	**455**	**481**	**507**	**533**	**561**

STUDY AREA RESIDENTIAL DEMAND FORECAST (CONTD.)

(2010 - 2060

AREA	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
HOUSEHOLDS:																									
Logan City	30,056	30,768	31,497	32,244	33,008	33,790	34,591	35,411	36,250	37,109	37,989	38,889	39,811	40,755	41,720	42,709	43,721	44,758	45,819	46,904	48,016	49,154	50,319	51,512	52,733
Cache County	73,584	75,151	76,713	78,301	79,925	81,578	83,266	84,998	86,791	88,632	90,530	92,470	94,456	96,474	98,530	100,637	102,789	104,984	107,198	109,455	111,768	114,127	116,536	118,963	121,428
Rest of Cache County	43,528	44,383	45,216	46,057	46,917	47,788	48,675	49,587	50,541	51,523	52,541	53,581	54,645	55,719	56,810	57,928	59,068	60,226	61,379	62,551	63,752	64,973	66,217	67,451	68,695
NEW HH'S/YEAR:																									
Logan City	696	712	729	747	764	782	801	820	839	859	880	900	922	944	966	989	1,012	1,036	1,061	1,086	1,112	1,138	1,165	1,193	1,221
Cache County	1,546	1,567	1,562	1,588	1,624	1,653	1,688	1,732	1,793	1,841	1,898	1,940	1,986	2,018	2,056	2,107	2,152	2,195	2,214	2,257	2,313	2,359	2,409	2,427	2,465
Rest of Cache County	850	855	833	841	860	871	887	912	954	982	1,018	1,040	1,064	1,074	1,090	1,118	1,140	1,159	1,153	1,171	1,201	1,221	1,244	1,234	1,244
STUDY AREA DEMAND																									
Annual	**165**	**168**	**171**	**175**	**179**	**183**	**187**	**191**	**196**	**201**	**206**	**211**	**216**	**221**	**226**	**231**	**237**	**242**	**247**	**252**	**258**	**264**	**270**	**276**	**281**
Cumulative	**3,528**	**3,696**	**3,867**	**4,041**	**4,220**	**4,403**	**4,589**	**4,781**	**4,977**	**5,178**	**5,385**	**5,596**	**5,812**	**6,033**	**6,259**	**6,491**	**6,727**	**6,969**	**7,216**	**7,468**	**7,727**	**7,991**	**8,261**	**8,537**	**8,818**
ACREAGE DEMAND																									
Annual	**27**	**28**	**28**	**29**	**30**	**30**	**31**	**32**	**33**	**34**	**34**	**35**	**36**	**37**	**38**	**39**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**
Cumulative	**588**	**616**	**644**	**674**	**703**	**734**	**765**	**797**	**830**	**863**	**897**	**933**	**969**	**1,006**	**1,043**	**1,082**	**1,121**	**1,162**	**1,203**	**1,245**	**1,288**	**1,332**	**1,377**	**1,423**	**1,470**

Source: Governor's Office of Planning and Budget, 2008 Baseline Projections, Real Estate Economics

Table 5
RESIDENTIAL CONSTRUCTION TRENDS
Cache County and Logan City
(1998 - 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	10-Year Average
Cache County											
New Dwelling Units	894	735	692	774	614	831	1,284	1,008	899	910	864
New Residential ($000)	88,741.0	88,461.0	74,018.6	83,206.5	77,516.5	101,315.2	144,988.0	149,158.5	143,965.2	150,034.3	110,140
New Nonresidential($000)	28,343.0	32,963.3	37,245.2	36,283.4	34,921.1	42,581.2	37,011.5	32,583.8	38,934.9	64,048.9	38,492
Additions/Alterations/Repairs											
Residential ($000)	4,388.1	3,751.4	3,435.5	3,413.7	3,800.5	4,593.9	5,221.7	4,810.5	5,535.9	6,258.6	4,521
Nonresidential ($000)	10,286.3	21,887.8	10,972.7	8,024.6	10,665.9	18,195.2	9,412.3	6,073.2	60,260.9	19,120.4	17,490
Total ($000)	***131,758.4***	***147,063.5***	***125,672.0***	***130,928.2***	***126,904.0***	166,685.5	196,633.5	192,626.0	248,696.9	239,462.2	170,643
Logan City											
New Dwelling Units	383	175	140	370	190	301	448	357	205	306	288
New Residential ($000)	30,230.8	19,138.8	13,198.5	29,070.8	20,976.7	29,739.1	39,543.9	37,234.5	26,615.4	35,982.4	28,173
New Nonresidential($000)	11,968.5	20,790.1	20,009.3	18,903.1	23,888.7	28,892.4	17,390.1	12,366.1	11,080.0	43,351.4	20,864
Additions/Alterations/Repairs											
Residential ($000)	1,742.6	1,181.8	911.9	1,233.3	1,563.2	1,333.6	1,163.0	1,865.3	1,199.8	1,751.3	1,395
Nonresidential ($000)	9,834.7	21,477.0	10,325.2	7,203.3	9,175.5	17,497.6	8,508.9	4,595.2	57,417.5	13,747.9	15,978
Total ($000)	***53,776.6***	***62,587.7***	***44,444.9***	***56,410.5***	***55,604.1***	77,462.7	66,605.9	56,061.1	96,312.7	94,833.0	66,410
Logan's Share of Cache County											
New Dwelling Units	43%	24%	20%	48%	31%	36%	35%	35%	*23%*	*34%*	33%
New Residential ($000)	34%	22%	18%	35%	27%	29%	27%	25%	*18%*	*24%*	26%
New Nonresidential($000)	42%	63%	54%	52%	68%	68%	47%	38%	*28%*	*68%*	53%
Additions/Alterations/Repairs											
Residential ($000)	40%	32%	27%	36%	41%	29%	22%	39%	*22%*	*28%*	31%
Nonresidential ($000)	96%	98%	94%	90%	86%	96%	90%	76%	*95%*	*72%*	89%
Total ($000)	*41%*	*43%*	*35%*	*43%*	*44%*	*46%*	*34%*	*29%*	*39%*	*40%*	39%

Source: Utah Department of Workforce Services, Real Estate Economics

Table 6
COMPARATIVE WORKFORCE PROFILE
Cache County vs Utah and the U.S.
(2007)

	Cache County		Utah		United States	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Employment Status						
Population 16 years and over	77,724	100.0%	1,911,752	100.0%	236,416,572	100.0%
In civilian labor force	56,905	73.2%	1,323,772	69.2%	152,211,303	64.4%
Employed	55,304	71.2%	1,273,013	66.6%	142,588,118	60.3%
Unemployed	1,601	2.1%	50,759	2.7%	9,623,185	4.1%
Armed Forces	36	0.0%	5,718	0.3%	1,001,261	0.4%
Not in labor force	20,783	26.7%	582,262	30.5%	83,204,008	35.2%
Females 16 years and over	39,246		955,264		121,166,623	
In civilian labor force	25,532	65.1%	573,856	60.1%	70,901,745	58.5%
Occupation						
Employed civilian population 16 years and over	55,304	100.0%	1,273,013	100.0%	142,588,118	100.0%
Management/professional/related	17,712	32.0%	423,701	33.3%	49,290,852	34.6%
Service	8,385	15.2%	183,543	14.4%	23,883,286	16.7%
Sales and Office	14,749	26.7%	357,735	28.1%	36,471,369	25.6%
Farming/fishing/forestry	746	1.3%	5,200	0.4%	995,609	0.7%
Construction/extraction/maintenance	4,349	7.9%	145,487	11.4%	13,795,740	9.7%
Production/transportation/material moving	9,363	16.9%	157,347	12.4%	18,151,262	12.7%
Class of Worker						
Private wage and salary workers	40,011	72.3%	1,010,660	79.4%	112,071,285	78.6%
Government workers	13,068	23.6%	195,683	15.4%	20,626,159	14.5%
Self-employed, not in incorporated business	2,187	4.0%	63,939	5.0%	9,576,062	6.7%
Unpaid family workers	38	0.1%	2,731	0.2%	314,612	0.2%
Income						
Median household income	$45,695		$55,109		$50,740	
Median family income	$55,950		$62,432		$61,173	
Per capita income	$18,760		$22,603		$26,688	
Total Households	32,219	100.0%	835,320	100.0%	112,377,977	100.0%
With earnings	28,443	88.3%	720,854	86.3%	90,255,315	80.3%
With Social Security income	5,750	17.8%	173,671	20.8%	30,214,979	26.9%
With Supplemental Security Income	660	2.0%	20,975	2.5%	4,565,694	4.1%
With public assistance income	499	1.5%	10,659	1.3%	2,411,238	2.1%
With retirement income	4,811	14.9%	133,704	16.0%	19,689,391	17.5%

Source: U.S. Census Bureau; American Community Survey, Real Estate Economics

The methodology used in developing this model follows. A projected mix of the above three industrial product types was used to determine the weighted average space typically utilized per employee. The weighted average building ground coverage ratio for one-story industrial buildings was then estimated.[3] New employment growth by economic sector and the respective shares housed in industrial buildings were then forecast per decade throughout the 2010-2060 time span. Multiplying the weighted average square feet per industrial employee by the forecast number of new employees, results in the total amount of square feet required in the study area after certain adjustments are made. These adjustments include: (1) using the ground coverage ratios to determine net industrial lot and gross buildable industrial land area requirements, (2) imputing a land reserve multiple factor so prospective companies have industrial site choices in

[3]In the future, if a known share of industrial buildings exceed one story in height, the model would have to be adjusted to account for this using floor area ratio (FAR) factors.

the marketplace and (3) applying a targeted share of total new Cache County jobs for the landside study area.

Projected industrial land requirements are summarized in Table 7 for the Cache Logan Airport study area over the next 50 years. This forecast shows that by 2020, approximately 114 gross buildable acres of industrial land will be needed if 15 percent of countywide industrial jobs locate in this airport landside area. Under this capture rate assumption, by 2060 over 600 gross buildable acres of industrial land will be required. Thus, the CRSA conceptual land use plan should incorporate this estimated buildable industrial land requirement.

Study area industrial land requirements are based on projected employment by economic sector in Cache County. Such forecast data was prepared by the Utah Governor's Office of Planning and Budget. These data are shown in Table 8 broken down into economic sectors according to the NAICS.[4] Total Cache County employment is projected to grow from nearly 74,000 in 2010 to over 187,000 by 2060—a strong 1.9 percent average annual rate of growth. The second half of the table shows countywide industrial employment projections over this 50-year time span. They are based on estimates of the share of workers per sector that are forecast to work in industrial buildings.

Land set-asides should be planned for Class A multi-story office buildings at one (or perhaps two) strategic locations. The most important location is at master planned *gateway area* to Logan Cache Airport which will offer excellent access and exposure. This gateway concentration will reinforce the potential importance of the airport over time. Another possible location could eventually evolve at another key intersection within the landside study area.

The intensity of the office development will ultimately be controlled by the Logan City zoning code and other regulatory limitations. Since the gateway buildings will be near Logan Cache Airport, absolute limitations on building height will likely be imposed by the FAA due to aviation related safety issues.

OFFICE LAND DEMAND FORECAST

Office building height and density regulations limit the total amount of floor area that can be constructed on a site in relation to the size of the parcel. This is typically expressed as a floor area ratio standard.[5] For example, if the FAR at the airport gateway area is .5 and a particular site is 80,000 square feet (nearly two acres), a total of 40,000 square feet of gross building area could be constructed. FARs for suburban locations such as the airport area typically fall in the .25 to .50 range.[6]

The CRSA conceptual plan for office space at the airport gateway should assume that required parking will be in adjacent open lots because structured parking is prohibitive unless land values are very high. Office parking ratios are typically five spaces per 1,000 square feet of rentable office area.

[4] North American Industrial Classification System

[5] Floor area ratio (FAR) is defined as the maximum ratio allowed between the gross area of the building (GBA) and the net buildable area of the site (SA). FAR = GBA/SA.

[6] In high land value urban centers, FARs may fall in the 2.0 to 10.0 or greater range.

TABLE 7

NEW INDUSTRIAL LAND REQUIREMENTS
STUDY AREA

	Ten Year Periods				
New Industrial Land Demand In Study Area	**2010-2020**	**2020-2030**	**2030-2040**	**2040-2050**	**2050-2060**
Natural Resources & Mining	(0)	(0)	(0)	(0)	(0)
Construction	3	2	4	6	5
Manufacturing	54	60	67	54	68
Trade, Transportation & Utilities	11	7	6	6	14
Information	2	1	1	1	2
Financial Activity	7	7	8	9	9
Professional & Business Services	19	15	16	13	20
Education & Health Services	7	9	11	11	9
Leisure & Hospitality	2	2	3	4	3
Other Services	5	6	7	9	7
Government	4	3	4	4	4
Study Area Industrial Land Requirements:					
Per Ten-Year Period	**114**	**113**	**126**	**117**	**141**
Cumulative	**114**	**226**	**352**	**469**	**610**

Source: Real Estate Economics Industrial Land Requirements Model

TABLE 8

PROJECTED EMPLOYMENT BY SECTOR
CACHE COUNTY

	Total Cache County Employment					
Employment Sectors	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Natural Resources & Mining	1,965	1,785	1,605	1,444	1,303	1,162
Construction	4,073	5,123	5,849	7,068	9,038	10,489
Manufacturing	9,811	12,616	15,757	19,235	22,074	25,618
Trade, Transportation & Utilities	11,040	13,161	14,420	15,528	16,732	19,418
Information	1,124	1,482	1,683	1,866	1,983	2,302
Financial Activity	4,336	5,380	6,486	7,808	9,152	10,622
Professional & Business Services	11,979	15,499	18,405	21,390	23,782	27,601
Education & Health Services	7,379	10,564	14,795	19,791	25,062	29,087
Leisure & Hospitality	5,922	7,767	9,799	12,456	16,170	18,766
Other Services	4,054	5,282	6,680	8,357	10,398	12,067
Government	11,941	15,618	18,507	22,122	25,893	30,007
TOTALS	73,624	94,277	113,986	137,065	161,587	187,139

	Industrial Employment Share In Cache County					
Industrial Building Employees	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Natural Resources & Mining	197	179	161	144	130	116
Construction	611	768	877	1,060	1,356	1,573
Manufacturing	8,830	11,354	14,181	17,312	19,867	23,056
Trade, Transportation & Utilities	2,760	3,290	3,605	3,882	4,183	4,855
Information	337	445	505	560	595	691
Financial Activity	1,301	1,614	1,946	2,342	2,746	3,187
Professional & Business Services	2,995	3,875	4,601	5,348	5,946	6,900
Education & Health Services	738	1,056	1,480	1,979	2,506	2,909
Leisure & Hospitality	296	388	490	623	809	938
Other Services	811	1,056	1,336	1,671	2,080	2,413
Government	597	781	925	1,106	1,295	1,500
TOTALS	19,472	24,807	30,107	36,027	41,511	48,138

Source: Utah Governor's Office of Planning and Budget, Real Estate Economics

Ultimately, the amount of office space constructed at the landside area gateway to Logan Cache Airport will be determined by the local market. Similar to industrial buildings, the demand for office space is a function of future employment opportunities where the market requires that workers be located in office space. Continued strong growth in business and government services in the Logan City area suggests that good office space demand will continue. As always, however, site location is critical to economic success.

Given a certain amount of developed office space, the corresponding potential number of employees can be estimated. Office building space is normally measured in terms of gross building area (GBA), rentable area (RA) and usable area (UA). The efficiency factor is the usable area to gross building area and should be at least 80 percent. Then, by use of a *load factor*, an office building can achieve a rentable area of 90 percent or better. Imputing an average 250 square feet of rentable area per employee, a potential total employee count for the building can be estimated. For example, if the rentable area (RA) of a two story airport gateway office building is 50,000 square, at full occupancy the building would be the place of work for approximately 200 employees.

The CRSA conceptual land use plan should set aside approximately 40 to 60 acres of gross buildable land area for multi-story Class A office building construction during the 2010-2060 period. Besides market factors, the Logan City regulatory prescription regarding office building floor-area ratios (FARs) is a critical determinant as to how much land should be set aside in the conceptual master plan. This policy decision should be evaluated as part of the current landside master planning process.

RETAIL LAND DEMAND FORECAST

The population base and attendant buying power resulting from this new residential community will eventually support a neighborhood size shopping center anchored by a grocery store and complementary convenience retailers (e.g. drugstore, personal services, restaurants, etc). A land set-aside of ten (10) acres will accommodate 100,000 square feet of convenience retail space. Community shopping centers normally range in size from 30,000 to 100,000 square feet. The study area center size will fall at the high end of this range. However, it should only offer convenience goods (groceries, drugs, hardware, and sundries) so as not to draw away major buying power from the retail concentrations in downtown Logan and the Cache Valley Mall.

TRANSIENT LAND DEMAND FORECAST

CRSA should set aside enough land to accommodate the development of several airport-related hotels during the 2010-2060 planning horizon. They should be integrated into the airport gateway master plan. Outlying hotel sites such as this can range in size from approximately 2 to 6 six acres. For long range planning purposes, we recommend setting aside approximately 20 to 25 gross buildable acres for hotel uses. Hotel development parcel sizing depends on such key factors as height limitations, whether food service is combined with the hotel operation and whether complementary conferencing facilities are developed. The airport gateway area of the master plan should also set aside adequate land to accommodate other airport-related facilities such as car rental agencies and other possible landside transport activities.

In the near term, airport hotel room night demand is quite limited. Demand for the first hotel at the airport will typically lag until enough other activity generators like nearby Class A office space, car rental outlets and other airport transport-related projects are developed.

APPENDIX C: PUBLIC SURVEY RESULTS

Logan Airport Charrette

Survey Results:

1) How long have you owned property in this area? (Years)

	# Responses	% of Total
No Answer	2	7.14%
0-5	7	25%
6-10	4	14.29%
11-15	0	0%
16-20	1	3.57%
21-30	4	14.29%
31-50	4	14.29%
51+	6	21.93

2) How large is your property? (Acres)

	# Responses	% of Total
No Answer	2	7.14%
0-5	5	17.86%
6-10	5	17.86%
11-15	3	10.71%
16-20	1	3.57%
21-30	3	10.71%
31-50	2	7.14%
51+	7	25%

3) Do you live on the property?

	# Responses	% of Total
No Answer	1	3.57%
Yes	7	25%
No	20	71.43%

4) How is the property currently used?

	# Responses	% of Total
No Answer	1	3.57%
Agriculture	21	75.00%
Residential	5	17.86%
Commercial	2	7.14%
Airport Related	1	3.57%
Vacant	2	7.14%

5) How long do you plan to use the property for this use? (Years)

	# Responses	% of Total
No Answer	3	10.71%
0-5	0	0%
6-10	1	3.57%
11-15	0	0%
16-20	1	3.57%
21-30	0	0%
31-50	0	0%
51+	11	39.29%
Not Sure	8	28.57%
Until it Sells	4	14.29%

6) What do you envision the future use of your property to be in the next 5/10/20 years?

	# Responses	% of Total
No Answer	1	3.57%
Agriculture	12	42.86%
Residential	3	10.71%
Commercial	11	39.29%
Airport Related	3	10.71%
Development	2	7.14%

7) What are the special characteristics of your property that should be considered?

No Answer
Hydrology/ Wetlands
Soils
Agricultural Use
Good Access
Drier Ground
Wildlife Habitat
Open Space
Food Production
Rural Setting
Good Air Quality
Near Airport
Airport Protection Area
Ready for Development

Additional Comments

1. The USA loses 2 million acres of farmland every year. Agriculture is one of the top economics for the Cache Valley (someday we will all go hungry). If you put the farmland into development, how do we feed all the people? You can't grow food on asphalt and cement. We need to stop being greedy for big development bucks and start using some wisdom and long-term planning to ensure the security of the population. A starving population is not secure, or happy, or successful no matter how may businesses they own.
2. My business is style-designed for a rural setting.
3. We have clean air most of the time! Please make development plans that will not pollute the air – or make the roads (Benson/Airport Rd) more congested!
4. Property has been owned as a farming property for over a century
5. Wetland designation
6. We as property owners have a livelihood too. Please remember to consider our rights as citizens.
7. We are a commercial concrete company. We are growing with the community and will stay in business as long as it is profitable. We want to expand and update the plant.
8. Keep Logan in Logan, and leave us alone. We live where we live because we don't want people all around us. This is agricultural land. Leave it that way. Feel free to call me.
9. As a property owner by the airport, that isn't wetlands, I would like to be able to build low buildings for storage and limited use. My property I'm concerned about is on 6th West, the east side. With all the hangers and etc. at the airport I would see no reason why this wouldn't work.
10. Limit development to current available with Newton, Clarkston, Trenton, Cornish, and Idaho already using it. If development is allowed, make sure roads are built to keep roads flowing. Don't shut down roads for flights. Keep controlled development area RURAL!
11. Why not use it to grow beef and some food. Build on ground that doesn't provide.
12. Respect us

Map Comments Summary

1. Start with a commercial center between the airport and the railroad tracks
2. Conference centers
3. Anywhere the airport may expand should stay agricultural
4. Some smaller airports have a restaurant that attracts fly-in business. There was a restaurant that we liked to fly to from our home in Mesa to have breakfast.
5. Southeast corner – 2500 N and 1000 W – for a conference center, hotel, retail, gas
6. Most development likely to happen near airport entrance
7. Airport more likely to be an industrial area than a commercial area.
8. City must follow-through on plans
9. New access road near Benson
10. Preserve agriculture near Benson
11. Conflicts occur between farming and residential uses. Traffic and tractors do not mix
12. Provide space for horse boarding facility – riding lessons, veterinary teaching, tree farms, etc.
13. Locate warehousing, golf course, roads, water, and power along a new major highway bypass

14. Hospitality only near highway not near Benson
15. Industrial and hospitality near the airport entrance
16. Poor farmland southwest of airport
17. Limit development on new N/S
18. Limit curbcuts on major roads
19. Sidewalks and very walkable
20. Airport development – homes and hangars
21. Want to drive to goods and services once a month
22. Oil and natural gas drilling
23. Limit high density
24. Local school (smaller size)
25. Lots of natural gas in this area
26. More green (parks)
27. More mom and pop stores
28. Airport campus near current entrance
29. Office park off of 4th west
30. Benson town center at Darrell's
31. Preserve open space near Benson
32. Air training and education facilities
33. Delineate man-made v. natural wetlands – drainage maintenance may help drain some areas
34. Logan City has created a Greenfield land use category which encourages neighborhood centers in various areas as opposed to sprawl
35. Identify wetland protection areas
36. Establish a line beyond which no residential development can occur to minimize conflicts with airport. Keep residential development east of approximately 1800 W
37. Identify airport development areas near the existing and future runway areas.
38. Keep area near Benson rural
39. The area between Meridian Rd and Airport Rd is underwater in the spring
40. 4-way light at 1000 W and 2500 N for new Airport entrance
41. Air quality concerns
42. Don't extend 10-28 runway
43. Next and only runway at roughly 300 W
44. Airport is currently meeting the needs of Cache Valley. Expansion of the airport will not improve the quality of life. Commercial air service will only serve a small segment of the valley residential at the expense of the rest.
45. Develop business and industry on east side of runway towards Hyde Park and North Logan. And then Residential beyond that.
46. Air Quality needs to be a top priority
47. Protect Agriculture West of the Airport
48. Densify the current population area, and limit the footprint
49. Roadways are not designed to handle the traffic that housing and business would bring
50. How are the sewers going to work with the high water and corrosive soils?
51. The water table is a major problem for building homes. We live way away from the wet areas and we all have pumps to keep our basements dry. People buying a home with so many problems will not be happy with you.
52. May I ask how you expect to feed all these people if you put all the farmland under cement and asphalt?
53. We don't need urban sprawl. Keep the development close to town.
54. Keep car emissions lower with fewer travel miles – keeping town in town.
55. The roads in the County cannot support larger populations
56. Protect agriculture west of the airport
57. Utilize the area in town better – put in high-rises. Let people use their established transportation systems, and sewer, power, water, etc.
58. Fog is a major traffic hazard in the winter because of open water ways

59. Traffic on the airport is already backed up 3 blocks at the main street light. If you add housing developments of 1088 homes they would still mostly empty into the main airport road and the traffic congestion would be unbearable.
60. You have listed many problems with development of the airport, the perfect answer to your problems would be agriculture, no height, no noise, and no security problems.
61. Where will you get water for all of the houses?
62. Have you ever experienced the mosquitoes that are out here? They won't go away when you build houses?
63. Are you even going to listen to us?
64. Agriculture is one of Cache Valley's largest economic sectors. Putting it under cement would be a big economic blow to our community at large.
65. The land around the airport is unsuitable for most building.
66. The further west you expand Logan the more driving people will do, and the worse our air quality will be. Develop Logan inside of Logan. Make Logan so that you don't have to drive.
67. A hog farm exists in the project area. New residential home owners will not appreciate the smell of spreading manure.
68. Compensation of land
69. Development in general – don't like it
70. County declared 100-year flood plain in areas we are not showing
71. Density may need to come down
72. Water and other effects of growth area a concern for neighbors
73. Agriculture and open space has value on its own
74. More inclusion of current land owners
75. High density to off-set open space
76. Water quality is an issue
77. Shrink the airport
78. LRMP –CMPO – regional plans. 4th west expand north. Intercept railroad bed. Meridian road/2400 w connect to Preston
79. Sewer – meridian rd @ south boundary (2200 N) major lift station needed.
80. Gravity sewer service flows west and south from airport @ south
81. Existing lift station @ 1900 N needs improvement soon.
82. Many/most wetlands may be results of poor ag management – if well and ag irrigation systems are cleaned and maintained, many wetlands may become dried out and possible mitigation is no longer required.
83. Look at possible preservation of future runway. Cheaper to preserve and acquire today than later
84. How might space/aeronautic research impact development of technology in this area?
85. Limitations in fire flow capability of waterlines
86. Water pressure zoning. Pressure is high due to location of….
87. Roads – 2500, 2200, 1800 identified as main roads into service area
88. Working on preserving a 2-block grid spacing as overarching network. 1 block and smaller is preferable but not for major arteries.
89. Other resources – water, wastewater, stormwater in city master plan. Transportation city and CMPO master plans.
90. Swift Slough cannot handle existing runoff
91. Outside of study area…water quality of Cutler Dam is already an issue. This will not make it better.
92. Benson's well is located at approximately 4600 N and 2000 W. locate higher density near airport road and 1000 W.

Logan-Cache Airport Master Plan and Area Land Use Plan
Open House Comments
March 10, 2009

Stakeholder Alternatives Preference

Following are the results of stakeholder voting on the preliminary alternatives presented at the open house. Three alternatives each were presented for the Airport Master Plan and Area Land Use Plan.

Airport Master Plan
Alternative 1: **8**
Alternative 2: **15**
Alternative 3: **11**
Alternative 1 or 2: **2**
None: **10**
Total: **46**

Area Land Use Plan
Alternative 1: **18**
Alternative 2: **3**
Alternative 3: **7**
Alternative 1 or 2: **1**
None: **17**
Total: **46**

Stakeholder Comment Summary

Following is a summary of topics of concern expressed by open house attendees.

- Wetlands Impacts
- Drainage
- Noise Impacts
- Air Quality Impacts
- Pollution
- Wildlife Impacts
- Safety
- Access Roads
- Traffic Flow Around Airport
- Airport Rescue and Fire Fighting (ARFF) Accommodations
- Helicopter Accommodations
- Cost of Improvements
- Fair Treatment of Landowners
- Compensation for Impacts
- Need for Airport Expansion
- Economic Feasibility of Airport Expansion
- Maintenance of Rural Lifestyle
- Opposition to Development
- Preference for Open/Green Space
- Location of Commercial and Residential Development Around Airport
- Preservation of Farmland
- Benson Not Fairly Represented

Logan-Cache Airport Master Plan and Area Land Use Plan Open House Comments March 10, 2009

A comprehensive summary of all written comments is contained in the following spreadsheet. All comments will be addressed by the project team as the study progresses. Extra emphasis will be placed on highlighted comments.

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
1	No selection	No selection	More research is needed to determine the validity of airport expansion. An unbiased study of the number of flights arriving and departing is needed. Valuable wetlands and ecosystem diversity will be lost with airport expansion. Noise pollution is a concern. Airport expansion only benefits the wealthy who can afford to use it. The airport is fine the way it is. Funds should be used for mass transit in the valley such as TRAX.	Due to its unincorporated status, Benson is given little say in annexation proposals. Landowners adjacent to the airport are not being fairly represented. The proposed bypass will be useless since it leads away from businesses. This plan only hurts the people of Benson. Golf courses and landfills are NOT wildlife attractants. Land proposed for annexation is habitat for trumpeter swans.	Benson
2	Alternative 1	Alternative 1	This seems more like a 20-year than 50-year plan. The airport is in a poor location. A better location would be south of Hyrum. Wetland concerns need to be addressed. Are you going to dry them up?	No alt. provides good access roads. Water concerns need to be addressed. Limiting population growth in the valley is a better option than airport expansion. Logan will turn into a Silicon Valley if growth isn't	Benson

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
			I don't like overdevelopment. Eliminating access to roads near the airport will require school children to be bused longer distances.	contained. We need farmland instead of houses.	
3	Alternative 1	Alternative 1	Growth is inevitable but I am concerned over farmland being lost. Closing roads to schools will complicate the busing system. I have had my privacy invaded upon one day while I was swimming in my pool by a small aircraft circling my house. I live in Benson because of the open spaces. We have had land in the family for over 10 years.	We need to preserve land and water. How are you going to get water to all the new housing and development? Logan is self-interested. They only help others if it helps them. Landowners in the Benson area have not been sufficiently involved in the study. Public notification about the open house was insufficient in the Benson area.	Benson
4	Alternative 2	Alternative 1	Expansion of the airport has no benefits to me and the lifestyle that I want for my children or future generation. Airport expansion benefits only a very small group of people. The wants or needs of the current residents are being ignored.	Keep the growth centralized in existing towns first. I would like to see as much effort put into limiting growth and preserving the high standard of life that we currently enjoy. Development will destroy quality of life. It will not improve air quality, water, traffic, crime or taxes. The new proposed highway should be considered.	Benson
5	Alternative 2	Alternative 1	I think you are being overly optimistic on the growth of business need and demand with the failing economy and commercial airlines on the brink of financial collapse.	I'm Impressed at the Envision Cache Valley meetings by the overwhelming majority of the people who want to keep growth concentrated where populations already exist and maintain open space and agriculture. Spreading populations out over the valley floor will increase commute times and associated air pollution. Eliminating farmland land will not help feed the	Benson

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
				American people.	
6	No selection	No selection	Envision Cache-Valley recommends putting development on the east side. The proposal of a bypass road through Benson is not feasible. There are houses all along 2400 W. Pollution is a concern.	Leave the land like it is - no commercial or residential development in Benson. Expand to the south side of the airport. There is nothing there for miles.	Benson
7	No selection	No selection	I am not in favor of more commercial airlines coming to Cache Valley. I prefer rail. The SLC airport is close enough to meet our needs. Airport expansion would benefit very few people. Not many in the valley can afford to fly. The flight path of bigger planes is detrimental to quality of life in our area.	Keep development in established towns, out of the west wetlands. Cut down on roads and population. "Satellite Neighborhoods" will increase traffic and pollution. The bypass on 2400 West seems to be a waste when the majority of the business and population is on the east side.	Benson
8	Alternative 2	Alternative 1	Keep the airport close to Logan and eliminate urban sprawl.	Growth needs to stay where it is now. By spreading out, we increase air pollution, raise taxes to build new roads and cause more problems with more police needed to cover a larger area. Taking farmland for housing takes away jobs, clean air and wildlife habitat. Farming contributes over $250 million a year to the local economy.	Benson
9	No selection	No selection	Vision for the future is important but the airport will never be a main hub. The airline industry has been near collapse for years. I don't want any more expansion. Keep it the way it is.	Keep Logan in Logan and stay out of Benson. Airport expansion and urban sprawl will worsen air quality and quality of life.	Benson
10	Alternative 3	No selection		All plans are disagreeable as they would change the look and feel of Airport Road. Quality of life and rural setting would be destroyed.	Benson

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
11	Alternative 2	Alternative 1		Keep as much open space as possible. A large part of the area is wetlands in spring and on 100 year floodplain. Houses with basements are not allowed in the area as the water table is too high.	Benson
12	No Selection	No Selection	Leave the airport as it is. Airport expansion is not economically viable with mass transit to SLC Airport becoming a reality.	Logan City is not giving Benson residents a voice. Benson needs to become incorporated to control its own destiny.	Benson
13	No Selection	No Selection	Airport expansion benefits a select few – the wealthy and sport aviators. The community large does not benefit. I see a way of life in danger for the farming families. Their jobs and way of living are at risk.	Leave things as they are. I'm worried about noise and pollution. Blocking our road passages for the airport makes it more difficult for those who live here. Where will the semi trucks go? Wildlife will be adversely affected. Improvements to the rail system are more important than aviation.	Benson
14	Alternative 2	Alternative 1	Airport expansion is not justified and will benefit a limited portion of valley residents. Families will be displaced and tax burdens will rise.	2400 West should not become a highway.	Benson
15	Alternative 2	Alternative 1	Limited development around the airport is better. There's no need for light industrial or commercial at the airport.	Keep present agricultural use and stay away from business development. Limited residential is acceptable.	Benson
16	Alternative 2	Alternative 1			Benson
17	Alternative 2	Alternative 1		Benson should remain rural.	Benson
18	No Selection	No Selection	Against expansion	Against annexation or development	Benson
19	Alternative 1	No Selection	I am against development. Preserve farmlands Noise and smells from farms will impact future	I farm and do not want development. Existing culinary water resources and sewer capabilities will not support future development.	Benson

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
			development. Eliminating access roads will make school children spend more time on buses and require more fuel and time to travel to town. Commercial service isn't needed. Shuttle service to the SLC Airport suffices. Wetland, pollution and noise impacts are concerns.	I like my open spaces and my abilities to raise animals and my children.	
20	Alternative 2	No Selection	Limiting hard surfaces will limit water run-off, which is a problem. Drainage improvements are needed.	Cluster homes in existing Logan City limits. The Benson Zoning Board should plan Benson, not Logan.	Benson
21	Alternative 1	Alternative 1	Alt. 1 is best because it spreads out the traffic flow for vehicles. Not everything will exit on Airport Road.	I prefer more open space. Development on Airport Road will require widening and drainage improvements. Closing access roads will slow down traffic flow to and from the Benson area, including emergency access.	Benson
22	Alternative 1	Alternative 1		Prefer to see as much green space as possible. Growth needs to happen but it's bad to see farmland disappear.	Benson
23	No Selection	No Selection			Benson
24	No Selection	No Selection	Preserve farmlands rather than cater to the elitist few. Use our resources to improve existing infrastructure, sewer, water, transportation, schooling, etc.	The SLC Airport is close enough. Preserve farmland and rural way of life in Benson.	Benson
25	Alternative 3	Alternative 3	Alt. 3 seems to offer the most logical road access and business development around the airport.	Why is the parcel located close to the intersection of 2600 N. and Airport Road notated in white? Compensation should be provided to landowners for restrictions imposed. None of the plans addresses potential noise impacts over Smithfield, Hyde Park, etc.	Hyde Park

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
				I like Alt. 3 because it has less housing and more commercial development around the airport, which is an advantage. Have you considered putting in an airpark or houses for General Aviation?	
26	Alternative 3	Alternative 3	Alt. 3 provides enhanced access and traffic flow and accommodates more functions vital to successful expansion. Commercial terminal location shown in Alt. 3 provides the best access.	Alt. 2 doesn't show in-depth planning for the future.	Hyde Park
27	Alternative 1	Alternative 1			Hyde Park
28	Alternative 2	No Selection	Keeping airport limited to existing size is needed. The benefit for expansion in the foggiest part of the valley will benefit an elite few and burden many. Logan has pushed flight patterns to the south and west to benefit them.	I prefer less land affected than is being suggested. Disrupted water flow, extended travel and increased noise are concerns.	Hyde Park
29	No selection	No Selection	The study shouldn't determine the use of private land unless there are plans to purchase it.		North Logan
30	No selection	No selection	Believes planning for anticipated changes is a good idea. Would not like to see an increased use of the airport for commercial purposes.		North Logan
31	Alternatives 1 and 2	No selection	Logan Fire Dept. needs to keep the ARFF station at a location where it can be a dual use station. Alts. 1 & 2 put the ARFF station a good location for dual use, which is preferred. Logan Airport may never get large enough to staff a full time fire station. A dual use fire station could be staffed, giving the airport full-time fire department coverage.		Logan

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
			The FAA requires ARFF to be at the midpoint of the runway within 3 minutes, and any part of the airport in 4 minutes. The ability to respond to emergencies both on and off the airport is a very high priority for the fire department.		
32	Alternative 2	Alternative 2	The additional buildings to the northwest of the airport are on farmland. A new main entrance to the airport at 1000 W. is the best plan with a 4-way light on 2500 N.	There should be a lot of high density housing to the southwest of the airport.	Logan
33	Alternative 3	Alternative 1	Disappointed by the housing projections because of owned land that the stakeholder wants to develop residentially.		Logan
34	Alternative 1 or 2	Alternative 1 or 2	A parallel runway causes issues for helicopters. Helicopters need to be able to access the runway and taxiways for training. Putting the helicopters in conflict with the airplane pattern will cause problems.	Do not allow residential use under the pattern. Skypark (BTF) had issues with the residential area. People started complaining of air traffic after they had moved in, already knowing that the airport existed.	Logan
35	Alternative 3	Alternative 1	Enjoyed the open house.	Alt. 1 includes lots of open building space.	Smithfield
36	Alternative 3	Alternative 1	Alt. 3 leaves more land.		Smithfield
37	Alternative 3	Alternative 1			Smithfield
38	Alternative 2	Alternative 2	Alt. 2 is not as close to home.	Alt. 2 would be cheaper.	Smithfield
39	Alternative 1	Alternative 3	Alt. 1 is more fun.	Alt. 3 is best because it provides lots of open space.	Smithfield
40	Alternative 2	Alternative 2	Future development would best be served coming off Airport Road. Ground water and traffic flow are big concerns. Safety would best be served with structures along the south side of airport.	4600 W. area is not suitable for industrial as shown on Alt. 3. Alt. 1 - Access would have to come off 800 N., which is not suited for traffic.	Smithfield
41	Alternative 3	No Selection	Keep airport as is for as long as possible.		Smithfield
42	Alternative 3	Alternative 3	The airport should purchase land just south of	Each plan has a different use for land south of	Nibley

Comment Number	Airport Alternative Chosen	Land Use Alternative Chosen	Airport Master Plan Comments	Area Land Use Plan Comments	City of Residence
			runway on 2500 N. Commercial development should not be right next to the taxi-way.	runway on 2500 N. Commercial Gateway in area shouldn't be in line with runway. Concerned about additional building height requirements.	
43	Alternative 2	Alternative 1			Preston (Idaho)
44	Alternative 3	Alternative 3			Glendale (Arizona)
45	Alternative 3	Alternative 3			Blackfoot (Idaho)
46	Alternative 2	Alternative 2	Appreciative that the public was given an opportunity to have a voice concerning the plan		

APPENDIX D: WATER DEMAND ANALYSIS

Peak Day Water Usage

Municipal and Industrial Demands (M&I)

Land Use Type	SF Office / Employee*	SF Parking / Employee**	Clients / Employee Using Restroom/Day	SF Parking / Client**	Gallons / Day / Employee***	Gallons / Day / Visitor	Landscape % of Site	SF / Employee	Gallons / Day / Acre	Total Acres	Peak Water Use Gallons / Day
Airport Compatible Business	300	500	1	400	15	3	10	1,320	578	342	197,505
Business/Light Industrial	300	500	1	400	15	3	10	1,320	578	674	389,235
Commercial	250	500	1	400	15	2	10	1,265	585	549	321,380
Industrial	2,500	1,000	0	400	15	3	10	3,850	170	723	122,703
										2,288	1,030,823

Land Use Type	Dwellings per Acre	Supply ERC Gallons / day***	Gallons / Acre	Total Acres	Peak Water Use Gallons / Day
Low Density	5	800	4,000	391	1,564,000
High Density	23	800	18,400	178	3,275,200
				569	4,839,200

Irrigation [1] Demand 3.96 gpm***

	Landscape % of site	SF Irrigated /Acre Developed	Total Acres	Irrigated Acres	Peak Water Use Gallons / Day
Airport Compatible Business	10	4,356	342	34	195,022
Business/Light Industrial	10	4,356	674	67	384,342
Commercial	10	4,356	549	55	313,062
Industrial	10	4,356	723	72	412,284
Low Density	50	21,780	391	196	1,114,819
High Density	15	6,534	178	27	152,254
					2,571,782

*Adapted from Land Development Code table 17.38.030

**Includes approaches and access area

*** Utah Administrative Code R-309

M & I + Irrigation
Peak Water Use / Day (Gallons) 8,441,806

Assumptions

1. Irrigation is provided solely by culinary water sources

Appendix D2

Wastewater Flow

Municipal and Industrial Flows (M&I)

Land Use Type	SF Office / Employee*	SF Parking / Employee**	Clients / Employee Using Restroom/Day	SF Parking / Client**	Gallons / Day / Employee***	Gallons / Day / Visitor	Landscape % of Site	SF / Employee	Gallons / Day / Acre	Total Acres	Peak Flow Gallons / Day
Airport Compatible Business	300	500	1	400	15	3	10	1,320	578	342	197,505
Business/Light Industrial	300	500	1	400	15	3	10	1,320	578	674	389,235
Commercial	250	500	1	400	15	2	10	1,265	585	549	321,380
Industrial	2,500	1,000	0	400	15	3	10	3,850	170	723	122,703
										2,288	1,030,823

Land Use Type	Dwellings per Acre	ERC Gallons / day****[1]	Gallons / Acre	Total Acres	Peak Water Use Gallons / Day
Low Density	5	292	1460	391	570,860
High Density	23	292	6716	178	1,195,448
				569	1,766,308

*Adapted from Land Development Code table 17.38.030
**Includes approaches and access area
*** Utah Administrative Code R-309
**** Logan WW Collection System Master plan pg 4-11

Total Wastewater Flow
Gallons / Day **2797131**

Assumptions
1. 70 gpcd + 30 gpcd (I&I) x 2.92 persons / dwelling

APPENDIX E: GENERAL PLAN LANGUAGE

General Plan Language: Logan-Cache Airport

Existing Conditions:

The Logan-Cache Airport is a public airport located three miles northwest of Logan, Utah. Located at 2850 North Airport Road in Logan, the airport is currently a General Aviation Airport and is governed by the Logan-Cache Airport Authority. The Authority was formed by an Interlocal Agreement between Cache County and Logan City in 1992. The Airport was previously owned by Cache County and managed by the County Commissioners.

Although the airport sits within the municipal boundaries of Logan City, a number of communities share the airport's boundary and are influenced by its operations. North Logan and Hyde Park are located to the east of the airport. Hyde Park will extend their city limits along the north boundary of the airport into the undeveloped lands to the west as land is annexed into the city. Smithfield is located to the north of the airport. Much of the land surrounding the airport to the west is currently under the jurisdiction of Cache County. Logan City's annexation declaration covers the majority of this land. The unincorporated community of Benson is located to the west of the airport. The airport, which consists of 602 acres, is bounded almost entirely by agricultural land. Much of this agricultural land is currently in production and being actively farmed.

The airport has two asphalt runways. Runway 17/35 is oriented north-south and was recently expanded to allow commercial jets access to the airport. At 100 feet wide and 9,095 feet long it is the second longest runway in Utah, second only to the Salt Lake International airport's runway. Runway 10/28 is 75 feet wide and 5,005 long. The airport has two fixed wing training schools, one sponsored by Utah State University's Aviation Technology programs, the other privately owned. Recently a rotorcraft school has also opened at the airport.

Land Use Strategy:

The airport is a valuable resource and serves as an asset to the entire Cache Valley community. The airport recently updated its airport master plan to develop policies and plan for future growth over the next 20 years. While some of the undeveloped land surrounding the airport may be incorporated into the airport property, the vast majority will be utilized by the private sector. As part of the master plan update a land use strategy was created to provide guidance for accommodating future development in this area over the long-term while maintaining the viability airport. This strategy involved the coordination of the airport and surrounding communities to develop goals and objectives in regard to land use and the opportunities surrounding the airport.

Goal One: Protect the Airport from encroachment

Objective One: Create buffer zones around the airport.

Objective Two: Develop land uses that are appropriate within the various types of buffers.

Goal Two: Develop land use patterns that complement the airport and support Logan's projected growth

Objective One: Develop infrastructure improvements that will support recommended land use patterns.

Objective Two: Develop land use patterns that complement planned infrastructure and support airport buffer zones.

Goal Three: Promote economic development

Objective One: Develop land use patterns and infrastructure that will promote economic development for the community.

Goal Four: Collaborate with neighboring communities

Objective One: Develop land use patterns and infrastructure improvements that will be complementary to all local communities.

Goal Five: Build upon existing planning documents

Objective One: Consult existing planning documents from the surrounding communities for guidance on future development patterns.

Objective Two: Resolve any conflicts that may exist between existing planning documents and the airport master plan.

Compatible Land Uses:

For an airport, compatibility is established by creating an environment of land uses that are not detrimental to airport activities. Compatible land use planning should minimize constraints on the airport due to incompatible development and prevent the development of incompatible land uses that unnecessarily expose the general public to noise and risk. Charts 1 and 2 outline, in general, those uses considered to be either compatible (outside the runway approaches) or incompatible with airport operations.

Policies and Implementation Tools:

A proactive approach is the best measure for establishing policies and tools that will evaluate the projected impact of future development on land in the airport vicinity. Development projects need to be evaluated for their impact on airport operations and coordinate with the objectives of the airport master plan. Implementation tools include adopting a future land use map that shows compatible land uses in the airport vicinity, appropriate base zoning to ensure

compatible development of land, an airport overlay zone that provides additional protection of airspace from height-related obstructions and light pollution, and language to be recorded on plats that discusses the proximity of the airport so that future buyers and developers are made aware of the airport and have an understanding of the noise implications of its proximity.

Chart 1: Compatible Land Uses

Aviation Industry Uses

- Air freight terminals
- Air cargo forwarders
- Aircraft and parts manufacturers
- Aircraft repair shops
- Aerial survey companies
- Aviation schools
- Aviation research and testing

Transportation and Airport Related Uses

- Trucking terminals
- Taxi and bus terminal
- Parking facilities and auto storage
- Car rental agencies
- Gas stations
- Motels and hotels
- Restaurants
- Convention centers
- Night clubs

Open Space Uses

- Golf courses
- Picnic areas
- Forests
- Landscape nurseries
- Arboretum
- Agricultural
- Mining and excavation
- Cemeteries

Other Uses

- Storage facilities
- Warehouses
- Wholesale distribution centers
- Shopping centers
- Banking services
- Office buildings
- Factories
- Large retail sale

Chart 2: Incompatible Land Uses

Residential uses

- Residential housing
- Apartment and condominium complexes
- Mobile home and RV parks

Uses that result in congregations of people

- Sports stadiums
- Outdoor music venues
- Amusement parks
- Schools
- Churches
- Hospitals
- Shopping malls

Man-made and natural structures that can interfere with flight

- Multi-story buildings
- Antennas
- Smoke stacks

Wildlife attractants

- Water bodies
- Landfills
- Certain agricultural uses
- Golf courses

Uses that may generate excessive light emissions

- Auto dealerships
- Large lighted parking lot

APPENDIX F: SAMPLE OVERLAY ORDINANCE

8. Buildings heights shall be in accordance with 12C-1002.
9. Parking spaces shall be in accordance with 12C-303 and 12C-307. An applicant may submit a traffic analysis study where the requirements of these sections are excessive. Such studies will be evaluated and the number of stalls may be modified when deemed appropriate for the facility.

(Ord. 97-09, Ord. 92-3, Ord 01-03)

CHAPTER 12C-1200 AIRPORT LIMITATION OVERLAY ZONES (Ord. 02-13)

12C-1201 Purpose The Airport Limitation Overlay Zones are intended to establish standards assuring the long-range, safe, and beneficial use of the Logan-Cache County Airport as it relates to the North Logan Code of Revised Ordinances.

12C-1202 General Provisions

(1) These regulations reinforce specific provisions in the Logan-Cache Airport Master Plan (August 11, 1992) and Cache Countywide Comprehensive Plan (January 27, 1998), and the North Logan City General Plan, each plan as amended.

(2) The boundary of any officially recognized Airport Limitation Overlay Zones shall be as it appears on a map and/or other documents approved by the North Logan City Council.

12C-1203 Definitions as used in this Ordinance, unless the context otherwise requires:

(1) Airport: The Logan-Cache Airport or any area of land designated and used for the landing and taking off of aircraft.

(2) Airport Elevation: The highest point of an airport's usable landing area measured in feet from mean sea level. This elevation is 4,457 feet MSL as of the date of this ordinance.

(3) Airport Hazard: Any structure or use of land which actually or potentially obstructs the airspace required for the safe flight of air craft in landing or taking off at an airport.

(4) Approach Surface: A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section 12C-1209 of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

(5) Approach, Transitional, Horizontal, and Conical Zones: These zones are set forth in 12C-1208 of this Ordinance.

(6) Conical Surface: A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(7) F.A.R. Part 77: Federal Aviation Administration regulations pertaining to height and obstruction criteria within prescribed distances from an airport as these regulations currently exist and as may be amended from time to time. Part 77 Regulations may also affect lands located outside the boundaries of the defined Airport Influence Area.

(8) Hazard to Air Navigation: An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

(9) Height: For the purpose of determining the height limits in all zones set forth in Section 12C-1209(D) and shown on the zoning map, the datum shall be the mean sea level (MSL) elevation unless otherwise specified.

(10) Heliport Primary Surface: The primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

(11) Horizontal Surface: A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

(12) Larger than Utility Runway: A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

(13) Ldn: Yearly day-night average sound level.

(14) MSL: Mean Sea Level.

(15) Nonconforming Use: Any pre-existing structure, object of natural growth, or use which is inconsistent with the provisions of this Ordinance or an amendment thereto.

(16) 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 procedure has been approved or planned. It also means a runway for which a non-precision approach system is planned and is so indicated on an approved Airport Layout Plan or any other planning document.

(17) Obstruction: Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section 12C-1209(D) of this Ordinance.

(18) Person: An individual, firm, partnership, corporation, company, association, joint stock association, or governmental entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.

(19) Precision Instrument Runway: A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), a Precision Approach Radar (PAR), a Global Positioning System (GPS), a Transponder Landing System (TLS), or other systems providing both horizontal and vertical guidance. It also means a runway for which a precision approach system is planned and is so indicated on an approved Airport Layout Plan or any other planning document.

(20) Primary Surface: A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section 12C-1208(E) of this Ordinance. The elevation of any

point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

(21) Runway: A defined area on an airport prepared for landing and takeoff of aircraft along its length.

(22) Structure: An object, including a mobile object, constructed or installed by man, including but not limited to, buildings, towers, cranes, smokestacks, earth formation, and overhead transmission lines.

(23) Transitional Surfaces: These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.

(24) Tree: Any object of natural growth.

(25) Utility Runway: A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

(26) Visual Runway: A runway intended solely for the operation of aircraft using visual approach procedures.

12C-1204 Airport Zoning Commission

(1) Commission established. The North Logan City Planning Commission is designated as the "North Logan Airport Zoning Commission" as prescribed in Utah Code 72-10-405. In this Title and State law, any references to the "Airport Zoning Commission" shall also mean the North Logan City Planning Commission. If the Planning Commission is empowered in this Title to take actions that are duties of the Airport Zoning Commission as prescribed in Utah law, the Planning Commission shall be presumed to be functioning as the Airport Zoning Commission.

(2) Duties. The Airport Zoning Commission shall recommend boundaries of the various zones to be established and the regulations to be adopted pertaining to any airport hazard area and to perform such other duties as may be assigned to it by the North Logan City Council or Utah law.

12C-1205 Airport Board of Adjustment. The North Logan Administrative Appeals Hearing Officer is designated as the "Airport Board of Adjustment" as prescribed in Utah Code 72-10-408. In this Title and State law, any references to the "Airport Board of Adjustment" shall mean the North Logan Administrative Appeals Hearing Officer. If the Appeals Hearing Officer is empowered in this Title to take actions that are duties of the Airport Board of Adjustment as prescribed in Utah law, the Appeals Hearing Officer shall be presumed to be functioning as the Airport Board of Adjustment. (Ord. 06-19)

TITLE 12.C. LAND USE - ZONING

12C-1206. Uses The following table indicates the uses and conditions required of those uses within the five designated zones for the airport.

Airport Overlay Zone **Land Use Description**	Airport Influence Area (AIA)	Traffic Pattern Zone (TPZ)	Approach Zone (AZ)	Inner Approach Zone (IAZ)	65 Ldn Noise Area (NA)
Dwellings & Accessories to Dwellings					
Single Family Residence	C(6)	C(4)	C(3,4)	X	X
Two Family Residence	C(6)	C(4)	C(3,4)	X	X
Three or Four Family Residence	C(6)	C(4)	C(3,4)	X	X
Boarding or Rooming House	C(6)	C(4)	C(3,4)	X	X
Multiple Family Apartment (More than Two)	C(6)	C(4)	C(3,4)	X	X
Accessory Storage for Multiple Family Residences	C(6)	C(4)	C(3,4)	X	X
Accessory Dwelling	C(6)	C(4)	C(3,4)	X	X
Hotel or Motel	C(6)	C(4)	C(3,4)	X	X
Dormitory, Fraternity or Sorority	C(6)	C(4)	C(3,4)	X	X
Mobile Home or Trailer Park	C(6)	C(4)	C(3,4)	X	X
Residential Accessory Building	C(6)	C(4)	C(3,4)	X	X
Cabins (Seasonal, Single Family Res.)	C(6)	C(4)	C(3,4)	X	X
Residential Facility for Elderly	C(6)	C(4)	C(3,4)	X	X
Residential Facility for Handicapped Persons	C(6)	C(4)	C(3,4)	X	X
Non-Disruptive Home Occupation	C(6)	C(4)	C(3,4)	X	X
Potentially-Disruptive Home Occupation	C(6)	C(4)	C(3,4)	X	X
Seniors Housing	C(6)	C(4)	C(3,4)	X	X
Institutional Dwellings					
Assisted Living Facility	C(6)	C(4)	C(3,4)	X	X
Nursing Care Facility	C(6)	C(4)	C(3,4)	X	X
Small Residential Health Care Facility	C(6)	C(4)	C(3,4)	X	X
Home Providing Residential Care for Minors	C(6)	C(4)	C(3,4)	X	X
Group Home for Homeless or Transients	C(6)	C(4)	C(3,4)	X	X

Community Support Services	Airport Influence Area (AIA)	Traffic Pattern Zone (TPZ)	Approach Zone (AZ)	Inner Approach Zone (IAZ)	65 Ldn Noise Area (NA)
Church or Other Religious Facility	C(6)	C(4)	C(3,4)	X	X
Health Care Facility (Other than those listed above)	C(6)	C(4)	C(3,4)	X	X
Post Office	P	C(2,5)	C(4)	C(1)	C(1)
Public/Private Library, or Museum	C(6)	C(4)	C(3,4)	X	X
Private or Public School, College or University	C(6)	C(4)	C(3,4)	X	X
Proprietary School	C(6)	C(4)	C(3,4)	X	X
Cemetery, Mausoleum	P	P	P	C(5)	C(2,5)
Private Club (Alcohol may be served)	C(6)	C(4)	C(3,4)	X	X
Lodge, Fraternal Societies (No alcohol served)	C(6)	C(4)	C(3,4)	X	X
Private Day Nursery / Kindergarten (not home)	C(6)	C(4)	C(3,4)	X	X
Government Admin. Office	P	C(2,5)	C(4)	C(1)	C(1)
Municipal Fire or Police Station	P	C(2,5)	C(4)	C(1)	C(1)
Airport	P	P	P	P	P
Heliport	P	P	P	P	P
Correctional Facility	P	C(2,5)	C(4)	C(1)	C(1)
Solid Waste Facility	X	X	X	X	X
City Administrative Office	P	C(2,5)	C(4)	C(1)	C(1)
Public/Private Utility & Trans. Systems					
Distribution Elements for Utility/Trans. Systems	P	C(2,5)	C(4)	C(1)	C(1)
Support Facilities for Utility/Trans. Systems	P	C(2,5)	C(4)	C(1)	C(1)
Business Offices for Utility/Trans. Systems	P	C(2,5)	C(4)	C(1)	C(1)
Telecommunications Facilities					
Utility Tower					

Sports and Recreation Facilities	Airport Influence Area (AIA)	Traffic Pattern Zone (TPZ)	Approach Zone (AZ)	Inner Approach Zone (IAZ)	65 Ldn Noise Area (NA)
Public Access Recreation Facility	P	P	P	P	C(2)
Private/Commercial Recreation Facility	P	P	P	P	C(2)
Go-Kart Track	P	P	P	P	C(2)
Golf Course	P	P	P	P	C(2)
Rec. Vehicle (Travel Trailer) Overnight Park	C(6)	C(4)	C(3,4)	X	X
Riding Stable, Equestrian Park	P	P	P	P	C(2)
Dude Ranch	P	P	P	P	C(2)
Theater	P	C(2,5)	C(4)	C(1)	C(1)
Manufacturing & Construction					
Light Impact Manufacturing	P	C(2,5)	C(4)	C(1)	C(1)
Moderate Impact Manufacturing	P	C(2,5)	C(4)	C(1)	C(1)
High Impact Manufacturing	P	C(2,5)	C(4)	C(1)	C(1)
Mines, Quarries, and Gravel Pits	P	C(2,5)	C(4)	C(1)	C(1)
Construction Trade Shops	P	C(2,5)	C(4)	C(1)	C(1)
Heavy Construction Shops/Yards	P	C(2,5)	C(4)	C(1)	C(1)
High Tech. Manufacturing & Research	P	C(2,5)	C(4)	C(1)	C(1)
Wholesale and Storage Business					
Small, Multi-unit Storage	P	C(2,5)	C(4)	C(1)	C(1)
Large, Warehouse-type Storage	P	C(2,5)	C(4)	C(1)	C(1)
Wholesale Sales	P	C(2,5)	C(4)	C(1)	C(1)

Commercial Services, Retail, & Related Uses	Airport Influence Area (AIA)	Traffic Pattern Zone (TPZ)	Approach Zone (AZ)	Inner Approach Zone (IAZ)	65 Ldn Noise Area (NA)
Automobile Service	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
General Sales and Services	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Heavy Sales & Service	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Rental Service Stores	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Commercial Parking Facility	P	P	P	C[(5)]	C[(2,5)]
Mortuary or Crematorium	C[(6)]	C[(4)]	C[(3,4)]	X	X
Professional Office/Service	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Wedding Chapels, Reception Centers	C[(6)]	C[(4)]	C[(3,4)]	X	X
Food Service	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Restaurant With Liquor License	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Restaurant With On-Premise Beer License	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Fireworks Stands	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Adult Oriented Businesses or Adult Business	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Agricultural, Animal/Related Uses					
Household Pets	C[(6)]	C[(4)]	C[(3,4)]	X	X
Kennel or Cattery	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Animal Rights	C[(6)]	C[(4)]	C[(3,4)]	X	X
Accessory Buildings for Agriculture	P	P	P	P	P
Veterinarian/Animal Clinic/Pet Hospital	P	C[(2,5)]	C[(4)]	C[(1)]	C[(1)]
Agricultural Production	P	P	P	P	P

(1) If allowed, avigation easements and disclosure must be required as a condition of development.

(2) Any structures associated with uses allowed in the 65 Ldn Noise Contour must be located outside the 65 Ldn Noise Contour.

(3) If no reasonable alternative exists, use should be located as far from extended centerline as possible.

(4) If allowed, disclosure of airport proximity must be required as a condition of development. An avigation easement should be considered based on proximity to runway centerline.

(5) Transportation facilities in the 65 Ldn Noise Contour (i.e. roads, railroads, waterways) must be configured to comply with part 77 requirements.

(6) Disclosure

12C-1207. Airport Master Plan. All uses and regulations pertaining to the Airport Limitation Overlay Zone shall be in compliance with and subject to the provisions of the Airport Master Plan, Airport Layout Plan, and Noise Contour Map as adopted by the Logan-Cache Airport Authority Board or as amended and is incorporated into this chapter by reference as it pertains to airport land uses.

12C-1208. Airport Zones. In order to carry out the provisions of this Ordinance, there are hereby created and established certain zones which include all of the land lying beneath the Approach Surfaces, Transitional Surfaces, Horizontal Surfaces, and Conical Surfaces as they apply to the Logan-Cache Airport. Such zones are shown on the Logan-Cache Airport-Part 77" Airspace Drawing consisting of two sheets, prepared by Armstrong Consultants, and dated March, 1997, which are attached to this Ordinance and made a part hereof. An area located in more than one (1) of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

(1) Airport Influence Area (AIA): An area within the incorporated portions of North Logan City proximate to an airport, which is recognized by the North Logan City Council as containing lands which might be affected by noise and/or safety hazards associated with aircraft operations associated with Logan-Cache Airport. The AIA extends from the airport to the outer edge of the conical surface.

(2) Traffic Pattern Zone (TPZ): This zone extends from the airport to the outer edge of the horizontal surface.

(3) 65Ldn Noise Area (NA): The area within the 65 decibal yearly day-night average sound level.

(4) Inner Approach Zone (IAZ): The inner edge of this zone coincides with the width of the primary surface of Runway 17/35 and is 1,000 feet wide. It extends at a uniform width of 1,000 feet to a horizontal distance of 5,000 feet from the primary surface. The centerline of the Inner Approach Zone is a continuation of the centerline of Runway 17/35.

(5) Approach Zone (AZ): The area within the FAR Part 77" Approach Surface for each Runway.

(A) Runway Precision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach surface expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. The centerline of the approach zone is the continuation of the centerline of the runway. This is the planned condition at the approach end to Runway 17.

(B) Runway Non-precision Instrument Approach Zone (Larger than Utility Aircraft) - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway. This is the condition at the approach end to Runway 35.

(C) Visual Runway Approach Zone (Larger than Utility Aircraft) - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The

approach surface expands uniformly to a width of 1,500 feet at a horizontal distance of 5,000 feet from the primary surface. The centerline of the approach zone is a continuation of the centerline of the runway. This is the condition at the approach end to Runway 10 and 28.

(6) Transitional Zones - The transitional zones are the areas beneath the transitional surfaces.

(7) Horizontal Zones - The horizontal zone is established by swinging arcs of 10,000 feet radii from the center of each end of the primary surface of Runway 17/35 and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

(8) Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet.

12C-1209. Regulations

(1) Conforming uses only. All uses in the Airport Limitation Overlay zones shall be subject to the regulations of this Chapter and prescribed development standards within the Airport Master Plan as amended.

(2) Creation of airport hazards prohibited. No variance, permit, or use shall be allowed in the airport hazard area that would create or enhance an airport hazard.

(3) Use and operational limitations within the Airport Limitation Overlay zones. No use shall be permitted which:

(A) Creates or tends to create electrical interference to navigational devices and communication between aircraft and airports.

(B) Creates or tends to create gas, smoke, dust, glare, or other visual hazards in the atmosphere around airports or in the airport hazard area.

(C) Creates or tends to create structures that interfere with aircraft safety.

(D) Creates or tends to create any type of hazard for the airport that would inhibit or constrain safe and acceptable airport operations.

(4) Height limitation. Except as exempted in Paragraph (5) of this Section or otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

(A) Runway Precision Instrument Approach Zone - Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet and continues on for a distance of 40,000 feet at a slope of forty (40) feet outward for each foot upward along the extended runway centerline. (Approach to Runway 17.)

(B) Runway Non-precision Instrument Approach Zone (Larger than Utility Aircraft) - Slopes

thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline. (Approach to Runway 35.)

(C) Visual Runway Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline. (Approach to Runway 10 and 28.)

(D) Transitional Zones - Slope seven (7) feet outward for each 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 seven (7) feet outward for each 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. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.

(E) Horizontal Zone - Established at 150 feet above the airport elevation or at a height of *4,607* feet above mean sea level (MSL).

(F) Conical Zone - Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation (4,607 ft. MSL) and extending to a height of 350 (*4,807* ft. MSL) feet above the airport elevation.

(5) Exemptions to height limitation:

(A) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(B) Structures up to and including 35 feet in height above the ground level at its site where the ground elevation at its site is less than or equal to 35 feet below the height limitations defined in Section D of this Ordinance, and is beyond all reasonable doubt that the structure will not adversely affect safety in air navigation. If in doubt, submission of FAA Form 7460-1, Notice of Proposed Construction (as described in Section 12C-1210 of this Ordinance) shall be used to determine its effect on safety in air navigation.

12C-1210 Notification.

(1) Except as provided in Paragraph (2), and in addition to all other local notification and permitting requirements, each person who proposes any of the following construction or alteration shall complete and submit an FAA Form 7460-1, Notice of Proposed Construction, to the local

jurisdiction and to the Federal Aviation Administration in accordance Federal Aviation Regulation Part 77, Object Affecting Navigable Airspace.

(A) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(B) Any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway at the Logan-Cache Airport.

(2) Exemptions from notification.

(A) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(B) Any antenna structure of 20 feet or less in height except one that would increase the height of any antenna structure.

(3) Time of notice. The notice required under Paragraph (1) must be submitted at least 30 days before the earlier of the following dates:

(A) The date the proposed construction or alteration is to begin.

(B) The date an application for a construction permit is to be filed.

12C-1211. Development Standards for Property Within the Airport

It is recognized by the North Logan City Council that The Cache County Council may adopt by resolution or enact by ordinance uniform development standards and procedures for facilities within the airport property itself because the airport is not located within the corporate limits of North Logan City. If that changes and any airport property is within the corporate limits of North Logan City, the North Logan City Council shall adopt appropriate ordinances for construction in that area.


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