

Chapter Two
Inventory of Existing Facilities

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2.1. Context

2.1.1. History

The existing airport at Brookings, South Dakota is actually the second such facility that the city has had. The first facility was located two miles south of the city, and was predominately a general aviation and military pilot training turf field until 1945. At that time the city's Chamber of Commerce decided that it would be in the best interest of the community to develop a new airport closer to the downtown, the predominant goal being to achieve commercial air service.

A study resulted in the current site being selected, and upon approval by the South Dakota Aeronautics Commission and the Civil Aeronautics Administration the land was obtained for \$37,000. According to the 1978 Master Plan by Banner and Associates, the first infrastructure development commenced in 1948 in the form of a bituminous runway (75' x 4,000'), taxiway (50' x 500'), apron (150' x 200'), and two turf landing strips. This work was completed and the airport opened in 1949. Inland Airways began commercial service into Brookings in July of 1950, with four daily flights. Various levels of commercial activity have existed since that time.

Today, the Brookings Regional Airport (BKX) is owned and operated by the city, under the direction of the full-time airport manager. This position, created in 2003, is responsible for the management of the facility and the coordination for city-provided services such as grounds and building maintenance and emergency response, and contracted services such as snow removal.

The Airport's existing primary features (based on information collected mainly in 2004) will be described in detail below. They consist of Runway 12-30, the primary runway (100' x 5,231', bituminous), Runway 17-35, the crosswind runway (60' x 3,599', bituminous), adjoining taxiways, private hangar area, FBO, terminal building, and support buildings for maintenance and other functions. A precision instrument approach exists for Runway 30. Chapter Three provides a summary of based aircraft and annual operations.

The Federal Aviation Administration (FAA) classifies the Airport as a transport facility. Airport development is currently guided by the Airport Layout Plan approved by the FAA in 1999.

2.1.2. Location

The Airport is located within Brookings city limits, a mile west of downtown and along the city's western boundary. The Airport covers over 500 acres. Land use on the north is industrial, commercial and residential on the east, residential and agricultural on the

south, and on the west, agricultural and wetland areas. *Figure 2-1* shows the Airport's existing location relative to the City of Brookings and the surrounding communities. Thirteen general aviation airports are located within approximately 50 miles of the Airport. Additionally, the commercial service airports of Huron, Watertown and Sioux Falls are located within 75 miles of Brookings. Of these, Huron and Watertown have single air carrier service and Sioux Falls, the largest airport in the state of South Dakota, offers service to Minneapolis, Denver, Cincinnati, Las Vegas, Phoenix and Chicago.

Figure 2-2 shows the Airport's geographic context and relation to other area airports. There is currently significant leakage of potential passengers to Watertown and Sioux Falls from Brookings. This is in large part due to the limited frequency of scheduled service into Brookings and the convenience of the I-29 corridor to the two competing airports. Mesa Airlines, which began air service in July 2004 under the Essential Air Service program, is currently offering less frequent service than its predecessor Great Lakes Aviation, and is still ramping up its operational tempo in terms of arrival and departure performance. Please see Chapter 3 for more discussion about commercial service trends and issues at Brookings.

2.1.3. Role

The Airport, according to the FAA, is classified as a "Transport" airport, capable of accommodating "large aircraft and turboprop and turbojet airplanes with approach speeds of 121 knots or higher", with runway length, width and strength characteristics appropriate for the airport's critical aircraft. As an air carrier airport, it is certified to be served by scheduled or unscheduled passenger flights with aircraft having 30 or more seats.

The South Dakota Department of Transportation's Division of Air, Rail and Transit, or "DART" classification for Brookings is "AC", or "Air Carrier" airport. Brookings is one of 72 publicly- owned airports in the state, of which nine are "AC"-classified. Of those nine, Watertown, Huron, Mitchell and Sioux Falls are within two hours drive from Brookings. DART's management of the South Dakota air system is guided by their Aviation System Plan (last updated in 1996). This document depicts Brookings as an airport that suffered a typical impact upon deregulation in 1978, with a downgrade of aircraft gauge to 19 seat aircraft. The System Plan forecast steady enplanement growth for Brookings, but with no increase in aircraft equipment gauge.

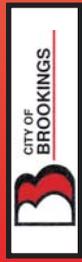
Brookings is within close proximity to Sioux Falls and is located on the I-29 and US 14 corridors. As a result of this, leakage has been a problem for the Airport. In 2003, Brookings had 670 enplanements, which ranked last among the South Dakota commercial service airports. A downward trend has continued since 1998. This will be discussed more in Chapter 3.

Brookings Regional Airport Location

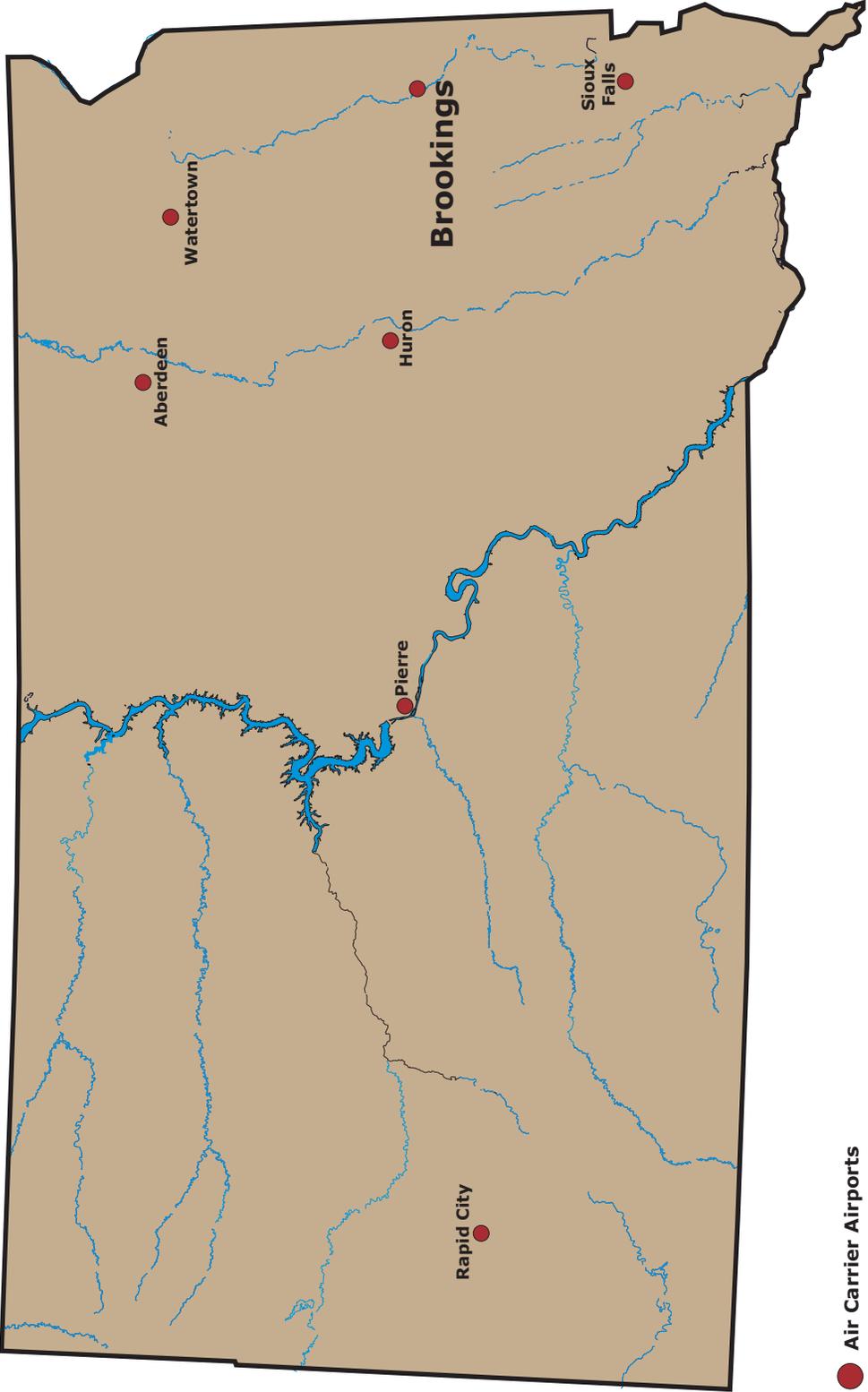


Airport Master Plan Brookings Regional Airport

Figure 2-1



Area Airports



● Air Carrier Airports



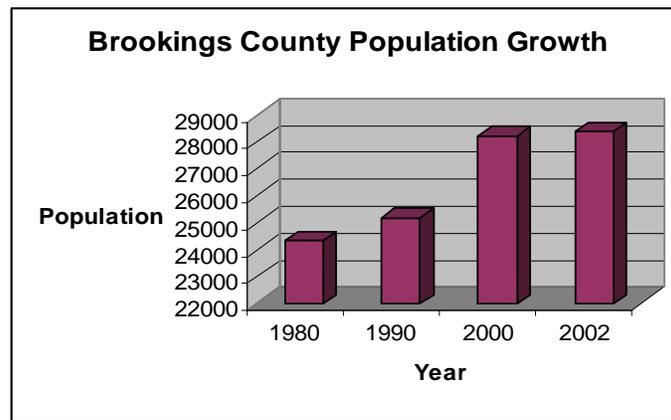
Airport Master Plan Brookings Regional Airport

In addition to traditional general aviation and commercial air service, Brookings is also host to the growing South Dakota State University aviation program. This program currently has over 80 enrolled students training for Part 61 private pilot license or Part 141 flight instructor certification. This program, growing in much the same way as University of North Dakota's program, accounts for a majority of operations on the airport and is projected to steadily increase and push airport capacity over the planning period of this master plan.

2.1.4. Local Economy

The City of Brookings is a community of 18,703 (as of 2002), with the County of Brookings' population at 28,392 as of the same period. See *Figure 2-3* for growth trends of the area since 1980. Continued growth is exhibited by the steady increase in the rate of building permits issued since 2000. Residential permits have almost doubled from 1998 to 2002.

Figure 2-3 Area Growth Trends



Source: BEDC Community Profile

Brookings is a progressive, financially secure city with a high quality of life. The city, with an annual \$8.7 million budget in 2004, has a strong focus upon the continued growth of its local economy. It is focusing efforts on revenue enhancement through its tax base primarily by increasing sales tax from new retail and manufacturing business growth. This goal is being recognized despite the lack of a state or local corporate income tax or inventory tax base.

The residents of the City of Brookings have an “Inter-City Cost of Living Index” equal to 97, with the national average being 100. South Dakota is one of the most favorable states in the US in terms of cost of doing business. This is exhibited by the fact that on average five businesses a week make inquiries about locations within Brookings.

Another testimony to the strength of the Brookings area and its commitment to growth is the presence of several engaged organizations charged with driving Brookings' economic vehicle. These include the Brookings Area Development Corporation, the Ron Reed

Economic Development Center, the Brookings Area Chamber of Commerce and the Brookings Economic Development Corporation.

In addition to SDSU's employment of almost 2,100 Brookings area residents, other large employers include Daktronics (1,500), 3M (800), Larson Manufacturing (780), Rainbow Play Systems (500), and Walmart (203), among others. Within the geographic region (Brookings, Hamlin, Moody, Deuel, and Kingsbury Counties in South Dakota and Lincoln County in Minnesota), the total labor force is 32,258 with an underemployed rate of 3.6%, well below the national average.

Certainly such demonstrated growth and workforce strength is in large part facilitated by the transportation network offered by the community. In the case of Brookings, I-29 and US-14 provide the surface vehicle network, and Dakota, Minnesota and Eastern Railroad supports rail. The challenge is to optimize the aviation network to promote continued network growth, which in turn fuels the economic growth of the community. An airport such as Brookings can achieve this by providing an easy-to-access multi-modal transportation center serviced by adequate frequency. This allows the leisure traveler the opportunity to reach any desired destination through various hub networks, and the business traveler the speed of process and convenience of schedule. Brookings, while seemingly disadvantaged by the proximity of Watertown and Sioux Falls, can position itself to attract high-tempo business through the enhancement of its aviation facilities, selling convenience and level of service.

2.1.5. South Dakota State University

South Dakota State University (SDSU) is located within the city limits and with an enrollment of over 10,500 in 2003, is an important contributor to the local economy and recently became Division I within NCAA. This in itself will result in supplemental economic stimulation for the city's retail and hospitality sectors. SDSU also is developing a comprehensive research park program which will focus on agricultural and alternative fuels research. This park, as it is recognized, will generate more transient traffic for the area.

SDSU received Division I NCAA status in 2004 and was pursuing membership into the Big Sky Conference (whose members are Weber State, Montana, Montana State, Eastern Washington, Portland State, Northern Arizona, Sacramento State and Idaho State). NDSU, Northern Colorado and Southern Utah have also applied. Should SDSU's application ultimately be denied, then SDSU will remain an independent. SDSU is expecting 16,000 students by the year 2030. The school athletic program's impact on the airport will be discussed in more detail in subsequent chapters, but brief Division I membership has resulted in six private charters and one commercial flight (A320 and B-757) in 2004 just to support the football team's first Division I season schedule.

It is expected that four incoming and four outgoing charters will apply during the season. Currently, these charters fly into Sioux Falls and bus to Brookings. SDSU has indicated that this is a financial burden they would prefer to eliminate with an enhanced Brookings Regional Airport. Other sports would not charter aircraft, but would use commercial service either from Sioux Falls or Brookings through 30 seat aircraft.

Master Plan Update

SDSU is also in the midst of developing a comprehensive research park that over a 20 year period will be federally subsidized (\$20 million/year) to perform beta testing for new alternative fuel and agricultural initiatives. This is expected to increase demand upon the Airport.

2.2. Aviation Services

2.2.1. Commercial Passenger Service

Great Lakes Aviation, through a code share with United Express, provided service into Brookings until the summer of 2004. This service provided hub access into Minneapolis-St. Paul International Airport (MSP). Mesa Airlines subsequently obtained the Essential Air Service (EAS) program subsidy and commenced service in July 2004. Mesa serves Brookings with two flights every weekday to Omaha, NE as well as one flight each day on weekends. The current fare structure is quite competitive and affords the traveler access to the low-cost carrier Southwest Airlines' system. Flights have historically been on Beechcraft 1900 aircraft. Mesa's lease with the City of Brookings is in effect until August of 2009 and the existing EAS subsidy expires in 2006.

2.2.2. Fixed Base Operator Services

The current fixed based operator (FBO) is Big Sioux Aviation. In addition to traditional passenger charter, fuel sales, and private pilot training, Big Sioux provides aircraft for use by the SDSU aviation program. Employing 15 instructors, three mechanics, five administrative and five line personnel, Big Sioux operates out of a 10,416 SF, two-story building containing the standard amenities for an FBO facility (pilot lounge, weather station, pilot planning). Aircraft owned by Big Sioux and based at the Airport include:

- Cessna Skyhawk 172-S (4 each)
- Cessna Skyhawk 172-N (2 each)
- Piper Seminole (1 each)
- Beech Sierra (1 each)
- Beech Musketeer (1 each)

Big Sioux's largest hangar facility is 4,300 square feet, with approximately 65,000 square feet of apron area. This does not include the surface area in front of the terminal area, reserved for commercial airline operations.

Big Sioux provides 100LL AvGas (one-2,000 gallon and two-6,000 gallon underground storage tanks) and Jet-A fuel (1-10,000 gallon underground tank). The 6,000 gallon and 10,000 gallon tanks are owned by the City of Brookings and leased out to users. This fuel is delivered 37 times a year (7,500 gallons each delivery). Big Sioux currently operates one 800 gallon AVGAS truck and one 2,000 gallon Jet A truck. Big Sioux has one tug, one tractor, and no auxiliary power units (APUs). They do perform light maintenance, but do not have capability to do avionics repairs.

2.2.3. Cargo Services

Brookings has not been serviced historically by aviation-based bulk carrier or passenger aircraft belly-cargo air cargo service. This is due to the presence of I-29 and the easy access to Sioux Falls afforded to UPS, Fed-Ex and other cargo carriers using trucks. The trend is not expected to change, and therefore is not a focus of this Master Plan.

2.2.4. SDSU Flight School

Big Sioux provides the aircraft and instructors for SDSU's aviation program. The aircraft most commonly used are five Cessna 172s, a Sierra and a Seminole. There is a possibility of a small Citation jet or a King Air being donated to the program in upcoming years. The current enrollment for SDSU's aviation program is 67 students for Part 61 license training and 12 students for certified flight instructor Part 141 certification. There are also three non-SDSU students in the aviation program. SDSU's goal is to grow the program to 150 active students over the next ten years.

2.3. Airside Facilities

The current airfield at BKX is comprised of:

- A northwest-southeast runway designated as 12-30 (Primary)
- A north-south runway designated as 17-35 (Crosswind)
- A system of parallel, cross field and connecting taxiways
- Various navigational aids
- Airfield lighting systems
- Pavement markings and directional signage.

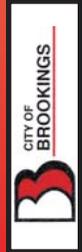
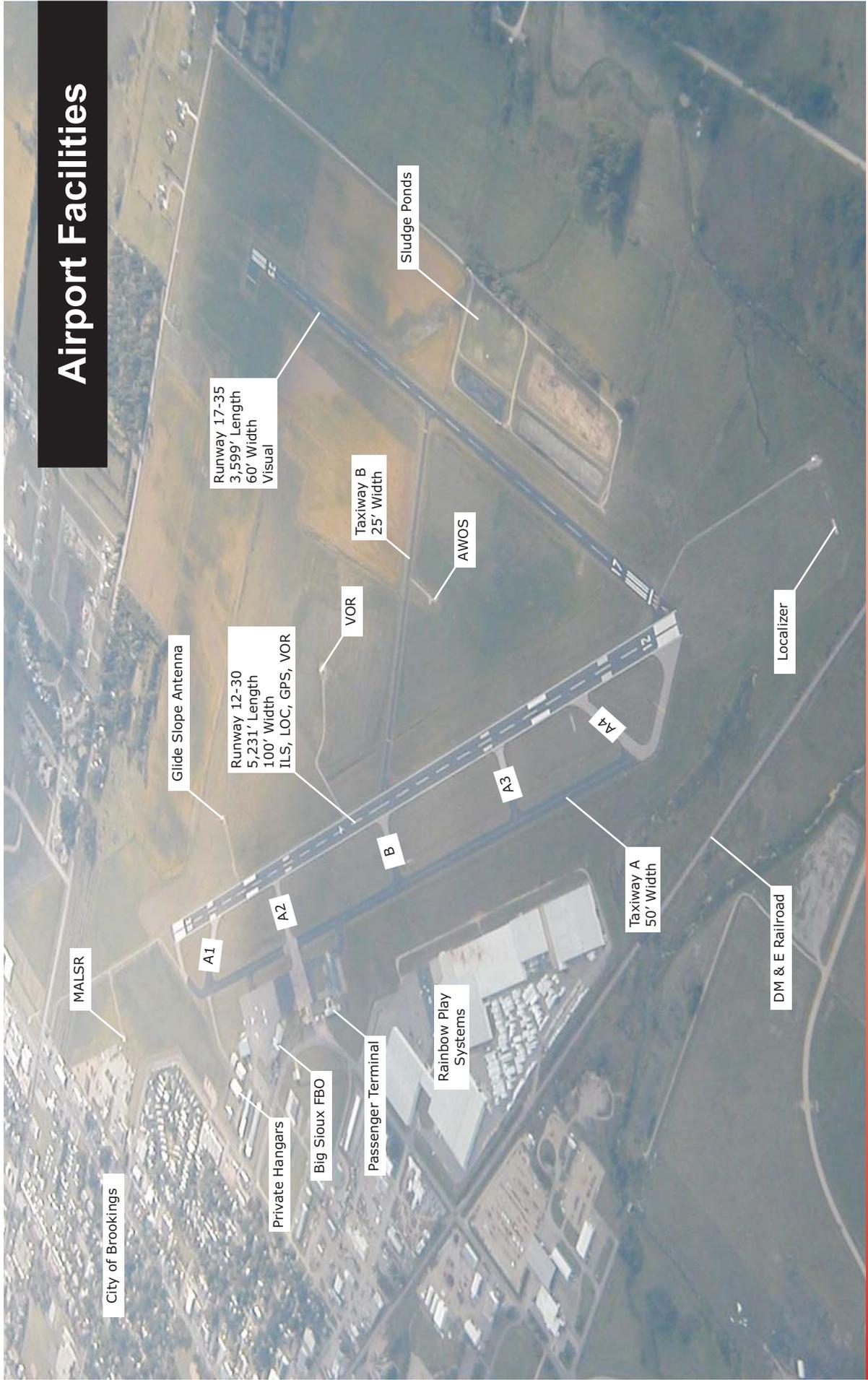
These will be described in detail below and are depicted in *Figure 2-4*.

2.3.1. Runways

The primary runway is bituminous, 5,231 feet long and 100 feet wide. *Table 2-1* notes the Pavement Condition Index (PCI) rating for that runway based on the most recent PCI report (see *Figure 2-5*). In 1998 the surface was overlaid with 2" of P-401, a 1" cap and sealer. The underlying section, constructed in 1968, is 8" of subgrade, 6" each of subbase and basecourse, and two 3" lifts of P-401 bituminous pavement. The current design strength of the runway will have to be evaluated in this report once the critical aircraft is established. A reconstruction may be required if the critical aircraft designation warrants it. This will be discussed more in Chapter Four.

The crosswind runway is also bituminous and is 3,599 feet long and 60 feet wide. As *Table 2-1* shows, this runway's PCI is less than 12-30. This runway is used primarily by the SDSU students when wind conditions do not favor the primary runway. In 1998 the runway received the same overlay and cap that 12-30 received. Its underlying section was constructed in 1988 and is 6" of compacted subbase, 10" of P-208 base course and a 3" lift of P-401 bituminous pavement. The runway is hence only rated to a single wheel 12,500 lb weight loading. There is a grade adjustment at the approximately mid-point of the runway.

Airport Facilities



Airport Master Plan Brookings Regional Airport

Figure 2-4



PCI Rating

4305: SCHEDULED FOR 2006 REMOVAL

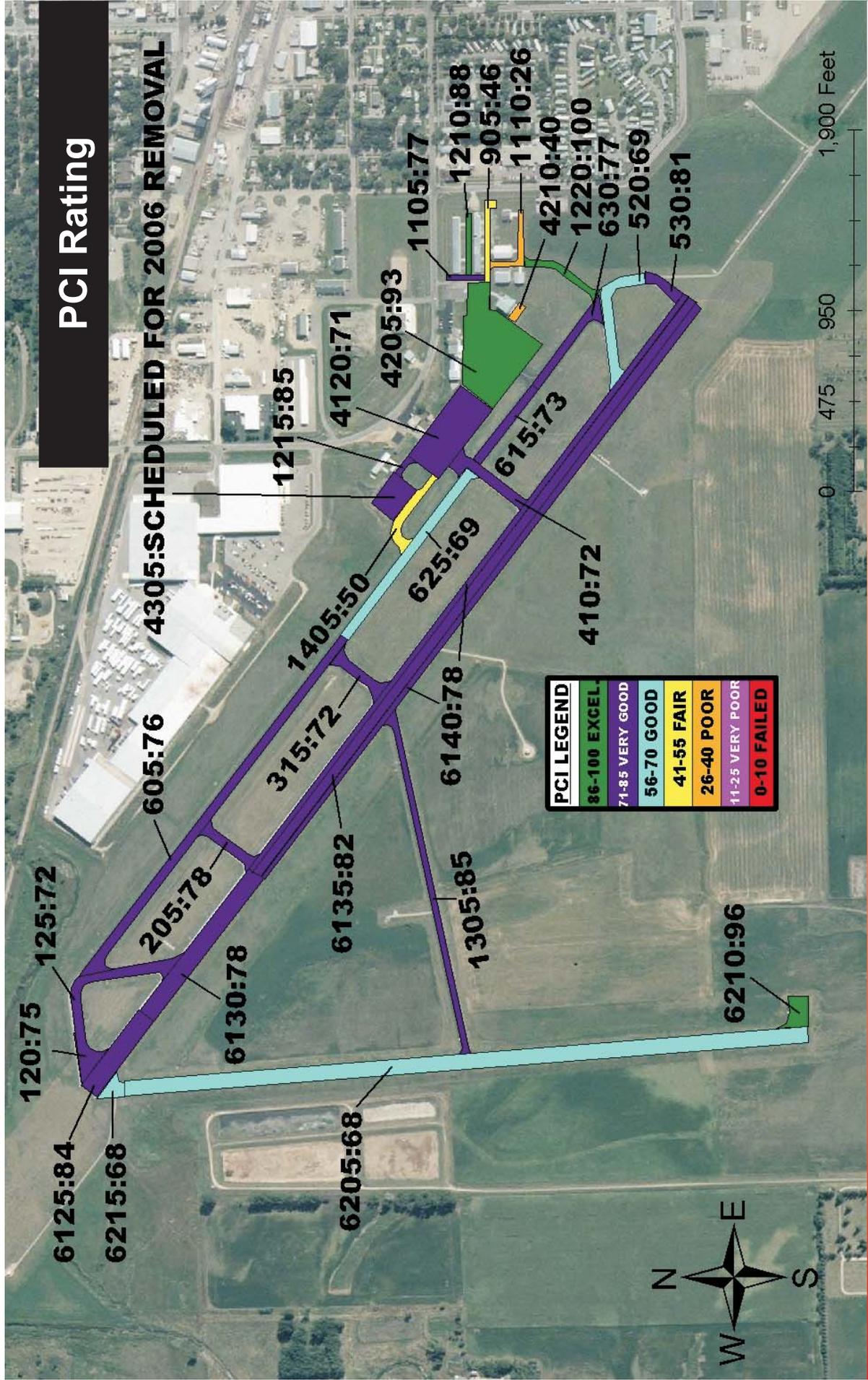
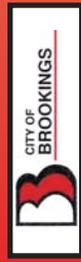


Figure 2-5
HNTB

Airport Master Plan
 Brookings Regional Airport



It should be noted that PCI surveys are exclusively visual and therefore may miss significant irregularities in the pavement structure below grade. A more detailed study using specialized pavement testing equipment should be pursued.

Table 2-1 Runway Characteristics

	Runway 12-30	Runway 17-35
Designation	Primary	Crosswind
Length	5,231 feet	3,599 feet
Width	100 feet	60 feet
Displaced Threshold	None	None
Runway Surface	Bituminous	Bituminous
PCI Index Rating	78-84 (Very Good)	68 (Good)
Pavement Strength		
Single Wheel	39,000 lbs	12,500 lbs
Dual Wheel	54,000 lbs	N/A
Dual Tandem	76,000 lbs	N/A

2.3.2. Runway Configuration

The thresholds for Runways 17 and 12 are very near each other, but do not intersect. This means that the pavement of Runway 12 is actually in the approach to Runway 17. The FAA considers such ‘non-intersecting’ runways and taxiways to be inherently less safe than those that do intersect. Ways to address this safety concern will be discussed in later chapters of this Master Plan.

2.3.3. Navigational Aids, Lighting and Pavement Markings

Navigational aids (NAVAIDS), runway lighting and pavements markings all serve to provide the pilot with clear guidance on the airfield and in the airport’s traffic pattern. They are designed to clearly delineate existing alignment, routings, and procedures in place.

NAVAIDS

Runway 30 has an Instrument Landing System (ILS). The two primary components of the ILS are the localizer, located 1000 feet off of the runway 12 end, which provides horizontal approach guidance, and the glide slope indicator, which provides vertical slope information. Combined, these two NAVAIDS provide pilots with both horizontal and vertical guidance. This type of approach (called a precision approach) increases the utility of an airport by making it easier and safer for a properly equipped aircraft to navigate to, and land at, the airport. Precision approaches typically provide lower minimums than non-precision approaches (for example, ½ mile visibility and 200-foot decision height). This allows the airport to remain open during a wider variety of weather conditions.

An approach lighting system (known as a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights or MALSR) exists on Runway 30, and extends 2,400 feet from the runway's threshold. The system, made up of a combination of flashing and steady burning lights, gives a pilot visual guidance during the transition from instrument to visual flight rules. No other runway ends at Brookings have a MALSR or other approach lighting system.

Global Positioning System (GPS)

GPS as an airborne guidance system is steadily gaining acceptance within the FAA as being an alternative to ground-based guidance systems in use at Brookings, specifically VOR/DME (VHF Omnidirectional Range/Distance Measuring Equipment navigational system), and ILS. In the future there may be some applicability for a precision GPS approach (possibly with WAAS (Wide Area Augmentation System).

All runway approaches have Precision Approach Path Indicator (PAPI) systems to provide descent angle information. They use a combination of red and white lights, which are only visible at certain decent angles. All four are four-light systems that are set for a three degree glide path, and are located on the left side of the runway from an approach perspective.

Runways 12, 17 and 35 have Runway End Identifier Lights (REILs), which provide synchronized flashing light information to assist the pilot in locating runway end during approach. Runway 30 has threshold lighting in conjunction with the MALSR that provides the same function.

The primary runway has High Intensity Runway Lights (HIRLs), which provides enhanced runway edge identification during night operations or periods of reduced visibility. These lights are clear, yellow, red or green, depending on their location on the runway.

The crosswind runway has Medium Intensity Runway Lights (MIRLs), which is used for runways with visual approaches such as 17-35. Again, lens colors of the lights depend on the location along runway. A summary of the existing NAVAIDS and lights is summarized in **Table 2-2**.

Table 2-2 NAVAIDS, Lighting, Marking

	NAVAIDS	Lighting	Marking
Runway 12	GPS, VOR	HIRL, REIL, PAPI	Non-precision Instrument
Runway 30	ILS, GPS, VOR	HIRL, MALSR, PAPI	Precision Instrument
Runway 17		MIRL, REIL, PAPI	Non-precision Instrument
Runway 35		MIRL, REIL, PAPI	Non-precision

2.3.4. Taxiways

Taxiway A in its original configuration was constructed in 1973 and lengthened in 1982 and 1989 to its current configuration. The original section was 21” of subbase and base with a 4” P-401 overlay, with the newer sections 22.5” of subgrade and base with 4” P-401 pavement. The older section received a 2” overlay subsequent to 1982. The taxiway is 50 feet wide and adequate to service the existing aircraft fleet mix. Taxiway A also includes the primary runway end entrance taxiways. They were both built in 1968 with 14+” of subgrade and base, with 6” - 7” of bituminous pavement. Taxiway A-4 was also built in 1969 has a subbase and base section of 23”, with a 4” bituminous overlay.

Taxiways A2 and A3 are bituminous with unknown structural composition. Taxiway B was constructed in 1988, and is 18” of subgrade and base with a total of 5” of P-401 pavement. This taxiway is 25 feet in width and hence has minimal utility. The section of Taxiway B northeast of Runway 12-30 is of unknown composition other than it has a bituminous top.

The very end of Runway 17 has only a “good” PCI rating. The pavement is only 16” of subbase and base, with a total of 6” of P-401 pavement. This area will require addressing. The taxiways leading to the building and hangar areas are all in very good or excellent shape (the taxiway leading to the T-Hangar area is new). See **Table 2-3** for a summary of the taxiway system and **Figure 2-4** for a graphic depiction.

Table 2-3 Taxiway Characteristics

	Widths	PCI	Surface
Taxiway A	50 feet	69-76 (Good to Very Good)	Bituminous
Taxiway A-1	50 feet	69 (Good)	Bituminous
Taxiway A-2	50 feet	72 (Very Good)	Bituminous
Taxiway A-3	50 feet	78 (Very Good)	Bituminous
Taxiway A-4	50 feet	72 (Very Good)	Bituminous
Taxiway B	25 feet	86 (very good)	Bituminous
Hangar Access	25 feet	100 (Excellent)	Bituminous

2.3.5. Taxiway Separations

Runways, taxiways and taxilanes require a certain amount of separation between them and adjacent buildings, runways or other taxiways. Some of the taxiways and taxilanes in the existing hangar area do not meet the applicable object free area standard and Taxiway A does not meet the applicable separation standard from Runway 12-30. Ways to address these safety concerns will be discussed in later chapters of this Master Plan.

2.3.6. Aprons

The northwestern terminal area apron was constructed in 1994 with a 14” subbase and base and 4” bituminous layer. The apron is in poor condition and has drainage issues. To the southeast toward Big Sioux’s complex, the bituminous pavement is of unknown

composition, but is in very good condition. This area would be redone if the terminal building area is redeveloped. The apron area is currently proposed for expansion to accommodate a proposed corporate hangar development. The Big Sioux apron/tie-down area is in excellent condition, and was reconstructed in 2002 with 24” of P-208 and P-209 base and 4” of P-401 pavement.

2.4. Critical Planning Criteria

2.4.1. Runway Protection Zones

Runway Protection Zones (RPZs) restrict land use off runway ends to help ensure the safety of people and property on the ground. The land use restriction is focused on residential and facilities of public assembly, although the FAA prefers that no structures, roads or railroads be located within the zones.

The dimensions for each runway’s RPZ are based on the type of aircraft and the visibility minimums associated with a given runway end. Brookings’ existing RPZ dimensions are noted in **Table 2-4** below. It should be noted that all RPZs at Brookings begin 200 feet off the end of the runway. They are all sized consistently with FAA criteria.

Table 2-4 Runway Protections Zones

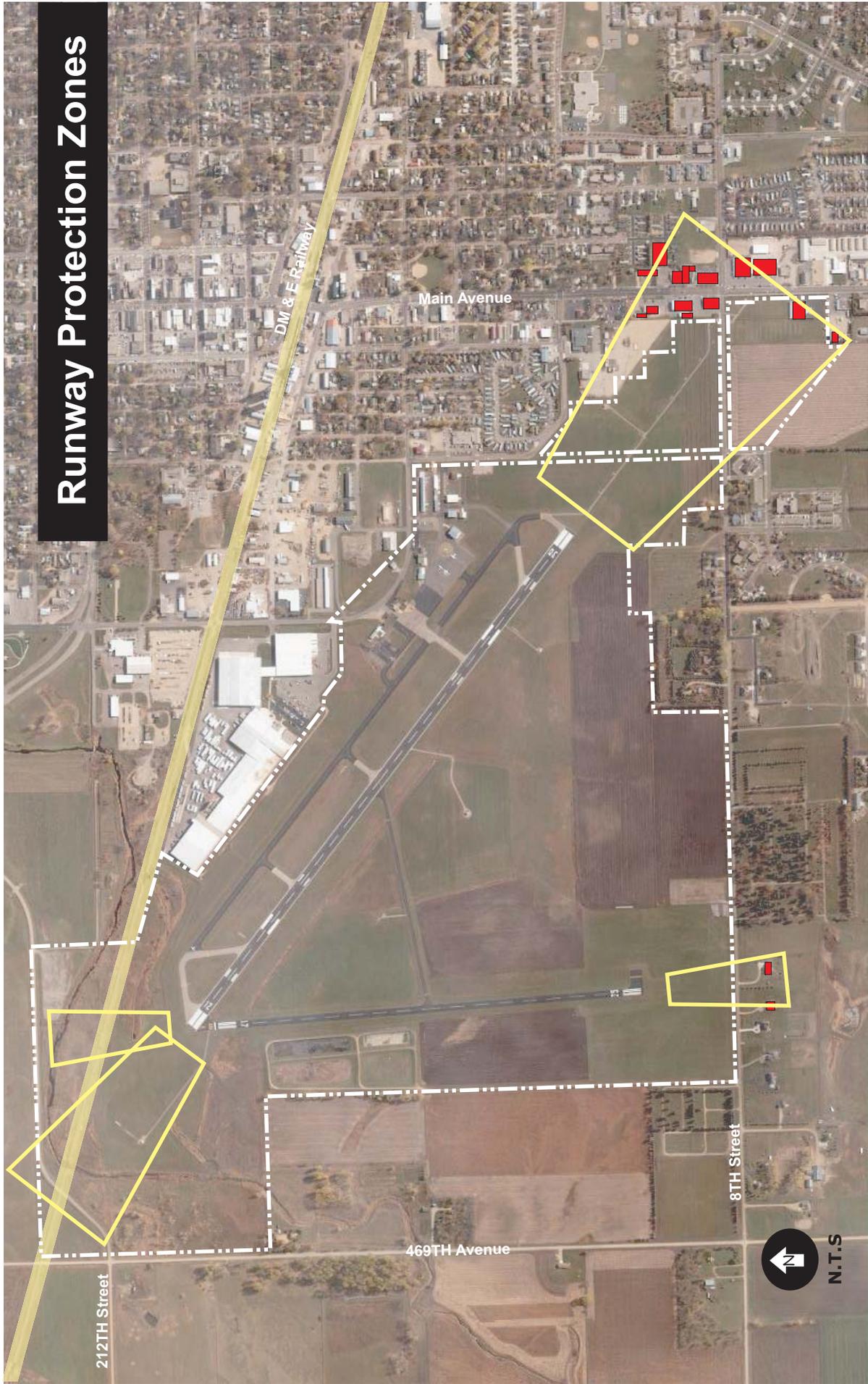
Runway	Dimensions
Runway 12	500’ x 1,700’ x 1,010’
Runway 30	1,000’ x 2,500’ x 1,750’
Runway 17	250’ x 1,000’ x 450’
Runway 35	250’ x 1,000’ x 450’

Dimensions are (inner width) x (length) x (outer width)

The FAA strongly recommends that an airport own or have functional zoning control over these RPZs. It should be noted that Brookings is not fully compliant to this standard. Runway 35’s RPZ is encroached upon by 8th Street South and by limited residential development. Runway 17’s RPZ is partially encroached by an airport service road. Runway 12’s RPZ contains a railroad, airport service road, Township Road and Six Mile Creek. Lastly, Runway 30’s RPZ contains Division and Main Avenues, 8th Street South, and at least 12 commercial and industrial buildings. This development is causing serious concern from the FAA. The City has attempted to enforce zoning in the RPZ, has been sued and lost the case. Addressing the safety issue related to development within the RPZs is one of the goals of this master plan.

Of the four RPZs, only Runway 17 is completely within airport property, Aviation easements exist in a limited form for the remaining RPZs. This is apparent in **Figure 2-6**, taken from the city’s Comprehensive Plan.

Runway Protection Zones



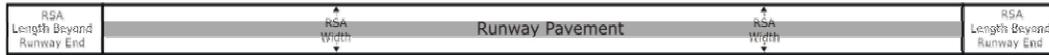
Airport Master Plan
Brookings Regional Airport



Figure 2-6

2.4.2. Runway Safety Areas

Runway Safety Areas (RSAs) are also required by the FAA per Advisory Circular 150/5300-13, and are intended to protect against overshoots and landing short situations. The runway safety areas are also based upon the runway's critical aircraft type (airplane design grouping) as well as visibility minimums. The concept of an RSA is depicted below:



The RSAs for both the primary and the crosswind runways meet FAA standards.

2.4.3. Runway Object Free Areas

Runway Object Free Areas (ROFAs) are similar to RSAs, but are slightly wider and slightly less restrictive. The crosswind runway ROFA meets FAA standards but the primary runway ROFA does not due to the railroad near Runway 12. Ways to address this safety concern will be explored in later chapters.

2.4.4. Threshold Siting Surface (TSS)

According to the FAA Advisory Circular 150/5300-13, Appendix 2, the threshold siting surface is used to evaluate potential obstructions off a runway end. The dimensions of the TSS vary per runway/aircraft characteristics. See *Table 2-5* for existing TSS dimensions. There are four steps recognized when a TSS penetration exists.

- The object is removed or lowered to preclude penetration of applicable TSS
- The threshold is displaced to preclude object penetration of applicable TSS, with a resulting shorter landing distance
- Visibility minimums are raised in accordance with Terminal Instrument Procedure (TERPS)
- Prohibit night operations

For Brookings, it should be noted that all TSS Surfaces are obstruction free in accordance with the FAA Advisory Circular 150/5300-13, Appendix 2 criteria. However, alternatives discussed in later chapters of this Master Plan will need to be evaluated using the TSS. The FAA Circular 150/5300-13, Appendix 2 criteria explains that threshold displacement or relocation should be undertaken only after a full evaluation reveals that displacement or relocation is the only practical alternative. This will be discussed further in the concepts chapter. Currently, there are not any obstructions to the threshold siting surface off any runway end.

Table 2-5 Threshold Siting Surface Dimensions

Runway	Distance from Threshold	Dimensions
Runway 12	200	800' x 10,000' x 3,800'
Runway 30	200	800' x 10,000' x 3,800'
Runway 17	0	250' x 5,000' x 700'
Runway 35	0	250' x 5,000' x 700'

Dimensions are (inner width) x (length) x (outer width)

There are two other surfaces contained in Appendix 2. These are the departure and the one-engine in operative surfaces. While obstructions to these surfaces may affect airport operations, their impacts is largely limited to departure procedures and are therefore less likely to have a dramatic negative effect on operations. Therefore, they are beyond the scope of this Master Plan, but they should be included in any future ALP updates.

2.5. Airspace Management System

The airspace around the Airport is defined by FAA classification, air traffic control designation, navigational aids, other surrounding airports, and flight rules specific to BKX. The Federal Aviation Act of 1958 gave jurisdiction of all US airspace to the FAA. The National Airspace System (NAS) was hence established to manage this system safely and efficiently among commercial, general aviation, military and other competing users. It is a common network of NAVAIDS, airport and landing sites, charting and information, procedures, regulations, technical support, and resources. *Figure 2-7* shows the NAVAIDS and airports in the vicinity of BKX.

2.5.1. Airspace Structure

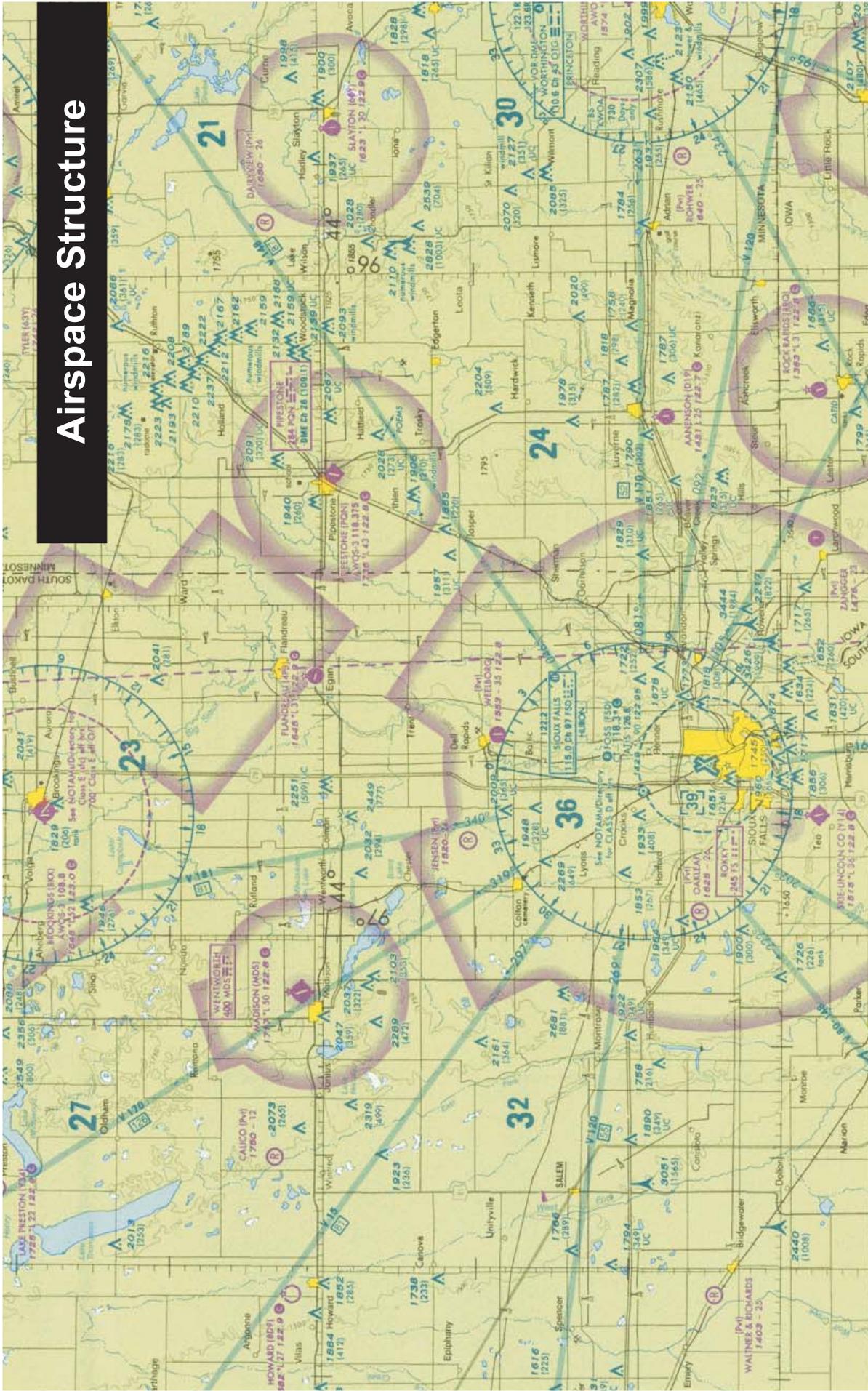
Airspace is either controlled or uncontrolled. Controlled airspace is managed by ground-to-air communications, NAVAIDS and air traffic services. Brookings is considered controlled airspace (Class E). This is common for airports without controlled air traffic control towers (ATCTs). Class E airspace extends to 18,000 feet at sea level. Pilots rated only for VFR (Visual Flight Rules) cannot operate in Class E airspace should Instrument Meteorological Conditions (IMC) apply. See *Figure 2-8*.

2.5.2. Delegation of Air Traffic Control Responsibilities

Brookings is within controlled airspace, but does not have its own Air Traffic Control Tower (ATCT). Instead, air traffic control services are provided by Minneapolis Route Traffic Control Center (ARTCC) in Farmington, MN and the Flight Service Station (FSS) at Huron, South Dakota (frequency 122.65).

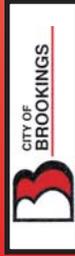
Aircraft operating at BKX are advised to broadcast their intentions and monitor Common Traffic Advisory Frequency (CTAF) frequency 123.00, which is also the UNICOM frequency. Pilots can use this frequency to control the intensity of the airfield lighting. NOTAM-D service is available for advisories.

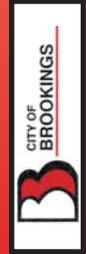
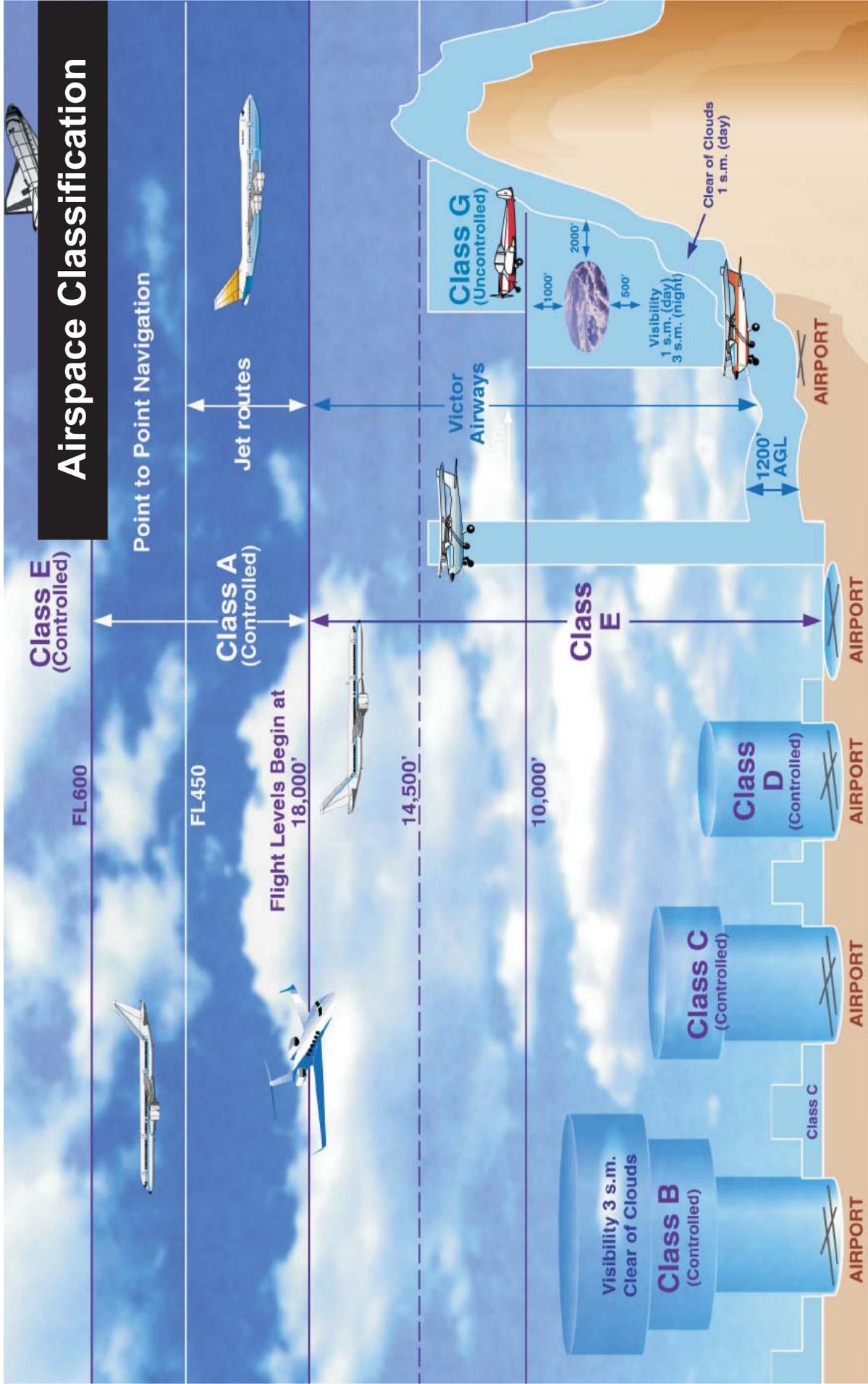
Airspace Structure



Airport Master Plan
Brookings Regional Airport

Figure 2-7





Airport Master Plan
 Brookings Regional Airport

2.5.3. En Route Navigational Aids

En route NAVAIDS utilize ground-based transmission facilities to provide navigational fix information to properly-equipped aircraft. Brookings has one Very High Frequency Omni-Directional Range station (VOR). It transmits radio signals 360 degrees in azimuth on frequency 108.80. This information provides yet another tool for pilots to navigate point-to-point within the NAS. This is particularly useful for low altitude and high altitude airway vectoring through the airspace surrounding the airport, as well as transition navigation into or out of the en route airspace structure at BKX.

The Brookings VOR is combined with Distance Measuring Equipment (DME), allowing aircraft so-equipped to take advantage of additional approach procedures. An exchange of pulse between the ground and the aircraft allows for the measurement of distance to the VOR station. Hence, the presence of a VOR at Brookings, in addition to providing en-route navigational assistance to aircraft, also allows for non-precision approaches for Runway 12 and Runway 30, thereby enhancing the capability of the airport.

Local Air Traffic Control Procedures

There are two different types of flight rules set out in FAR Part 91. Visual Flight Rules (VFR) applies in generally good weather conditions based on visibility. Instrument Flight Rules (IFR) come into play when visibility levels fall to less than three statute miles and certain cloud cover minimums are not present.

Visual Flight Rules Procedures

There are no special clearances or flight procedures for VFR operations at Brookings other than the “declaration of intentions” noted above. Traffic to and from the airport utilize a left-hand traffic pattern for the primary runway.

Instrument Flight Rules Procedures

Aircraft with IFR instrumentation can utilize established approach procedures at Brookings. IFR flight rules have specific departure and arrival instructions, flight routing, altitude assignment, and communication procedures that are required. As stated, it allows a pilot to operate in controlled airspace and operate in poor weather at appropriately-equipped airport facilities such as Brookings. There are five different instrument approach procedures established for Brookings, one of which is a precision approach (for which horizontal and vertical approach alignment altitude information is available) and the rest are non-precision approaches. They are as follows (and are shown on **Figures 2-9** through **2-13**):

- ILS Runway 30
- VOR Runway 12
- VOR Runway 30
- GPS Runway 12
- GPS Runway 30

ILS or LOC RWY 30

BROOKINGS, SOUTH DAKOTA

AL-969 (FAA)

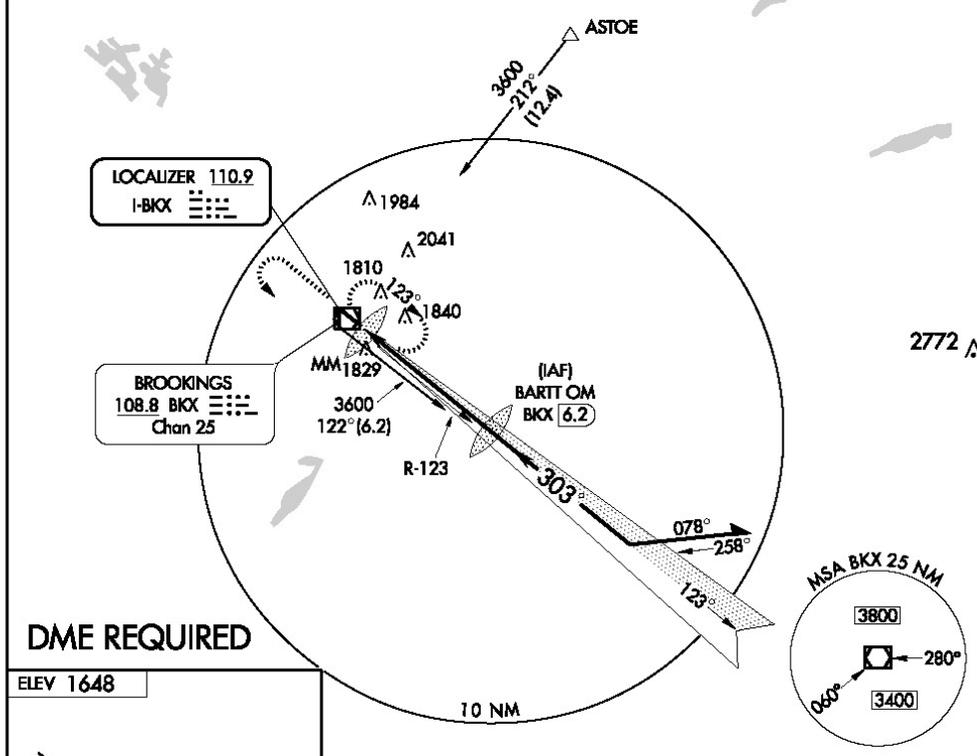
LOC I-BKX 110.9	APP CRS 303°	Rwy Idg 5231	TDZE 1629
		Apt Elev 1648	

ILS or LOC RWY 30
BROOKINGS REGIONAL (BKX)

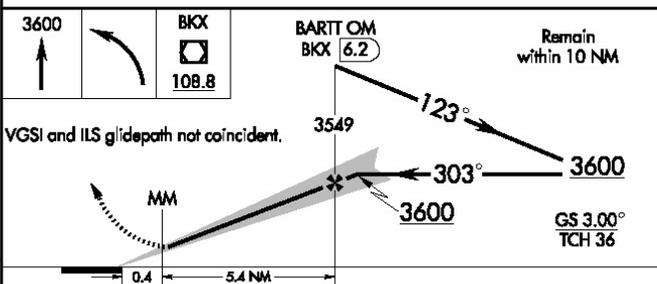
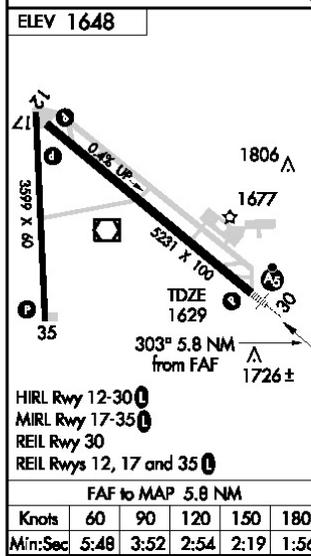
△NA	MALS R 	MISSED APPROACH: Climb to 3600 then left turn direct BKX VOR/DME and hold.
AWOS-3 108.8	HURON RADIO 122.65	UNICOM 123.0 (CTAF) 0

NC-1, 16 FEB 2006 to 16 MAR 2006

NC-1, 16 FEB 2006 to 16 MAR 2006



DME REQUIRED



CATEGORY	A	B	C	D
S-ILS 30	1829-½ 200 (200-½)			
S-LOC 30	2040-½	411 (400-½)	2040-¾	411 (400-¾)
CIRCLING	2140-1	492 (500-1)	2140-1½	2200-2 492 (500-1½) 552 (600-2)

BROOKINGS, SOUTH DAKOTA

BROOKINGS REGIONAL (BKX)

Orig-A 06047

44°18'N - 96°49'W

ILS or LOC RWY 30



VOR RWY 12

BROOKINGS, SOUTH DAKOTA

AL-969 (FAA)

VOR/DME BKK	APP CRS	Rwy Idg	5231
108.8	138°	TDZE	1620
Chan 25		Apt Elev	1648

VOR RWY 12 BROOKINGS REGIONAL (BKK)

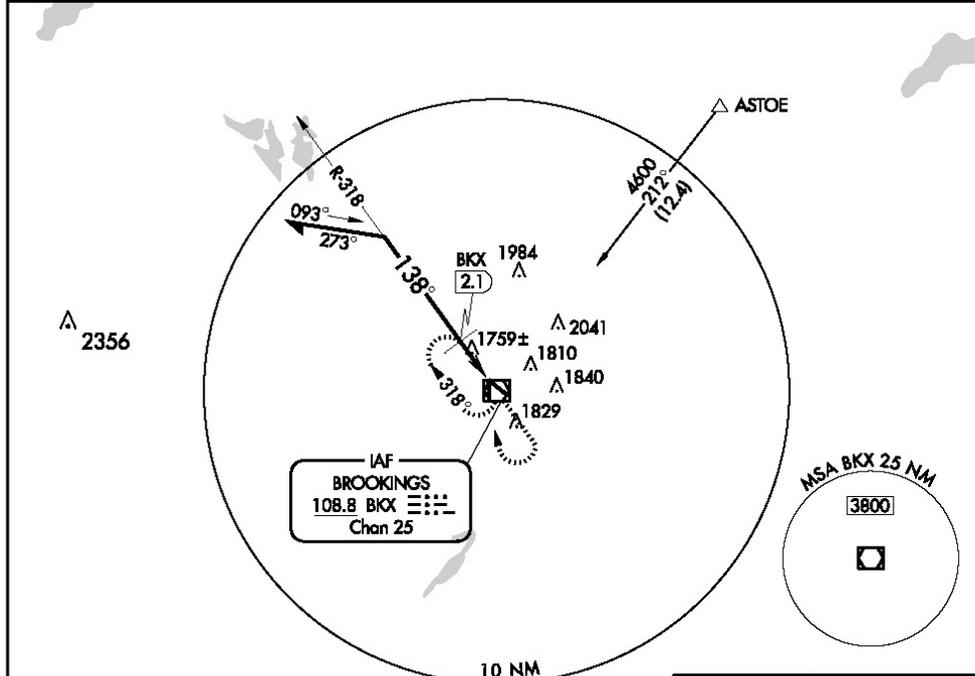
MISSED APPROACH: Climb to 3300 then right turn direct BKK VOR/DME and hold.

AWOS-3
108.8

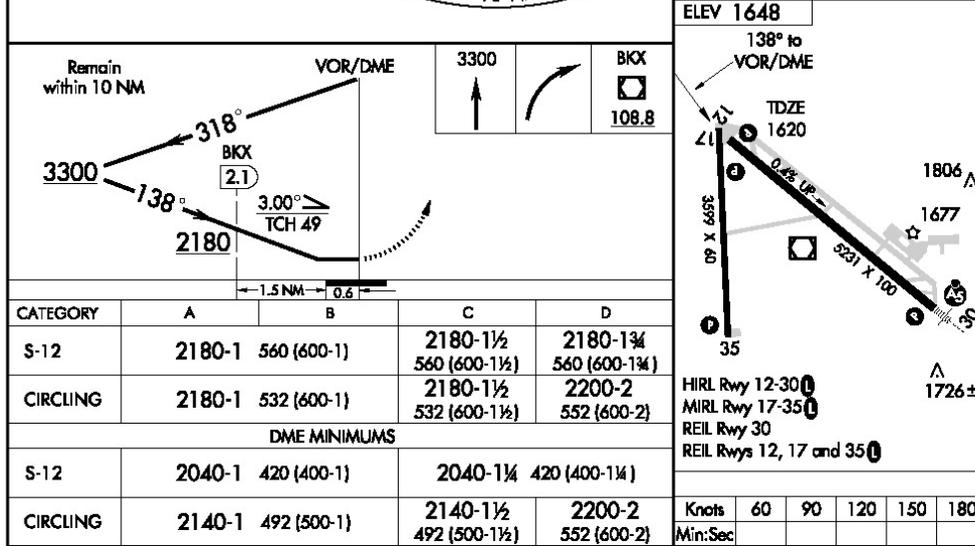
HURON RADIO
122.65

UNICOM
123.0 (CTAF) 0

NC-1, 16 FEB 2006 to 16 MAR 2006



NC-1, 16 FEB 2006 to 16 MAR 2006



BROOKINGS, SOUTH DAKOTA
Amdt 12 06047

44°18'N - 96°49'W

BROOKINGS REGIONAL (BKK)
VOR RWY 12



Airport Master Plan Brookings Regional Airport

Figure 2-10



VOR RWY 30

BROOKINGS, SOUTH DAKOTA

AL-969 (FAA)

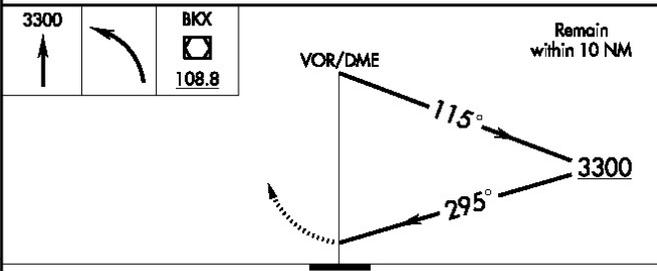
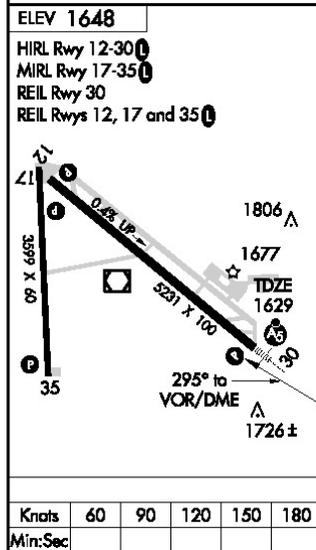
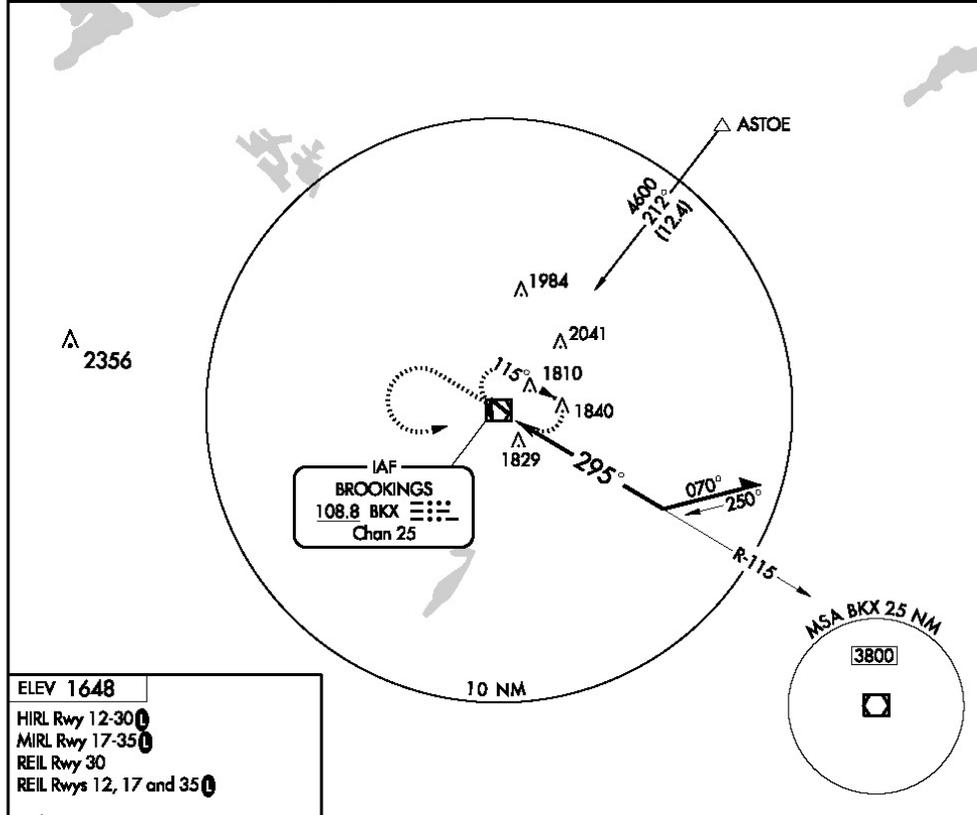
VOR/DME BKK	APP CRS	Rwy Idg	5231
108.8	295°	TDZE	1629
Chan 25		Apt Elev	1648

VOR RWY 30
BROOKINGS REGIONAL (BKK)

		MISSED APPROACH: Climb to 3300 then left turn direct BKK VOR/DME and hold.
AWOS-3 108.8	HURON RADIO 122.65	UNICOM 123.0 (CTAF)

NC-1, 16 FEB 2006 to 16 MAR 2006

NC-1, 16 FEB 2006 to 16 MAR 2006



BROOKINGS, SOUTH DAKOTA
Amdt 11A 06047

44°18'N - 96°49'W

BROOKINGS REGIONAL (BKK)
VOR RWY 30

CATEGORY	A	B	C	D
S-30	2660-3/4 1031 (1100-3/4)	2660-1 1031 (1100-1)	2660-2 1/2	1031 (1100-2 1/2)
CIRCLING	2660-1 1/4 1012 (1100-1 1/4)	2660-1 1/2 1012 (1100-1 1/2)	2660-3	1012 (1100-3)



GPS RWY 12

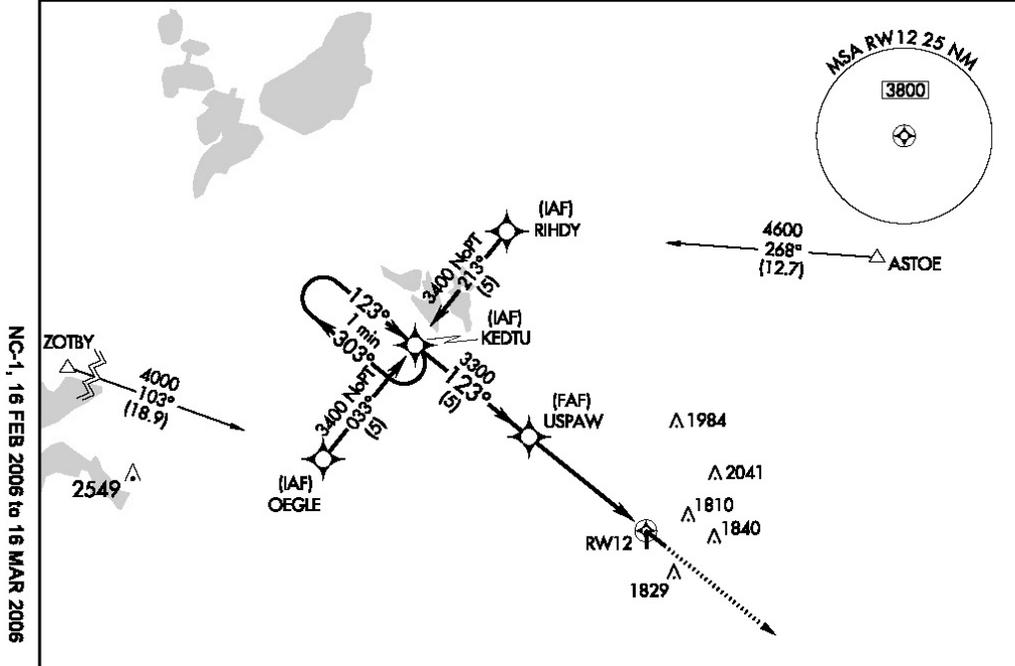
BROOKINGS, SOUTH DAKOTA

AL-969 (FAA)

APP CRS	Rwy Idg	5231
123°	TDZE	1620
	Apt Elev	1648

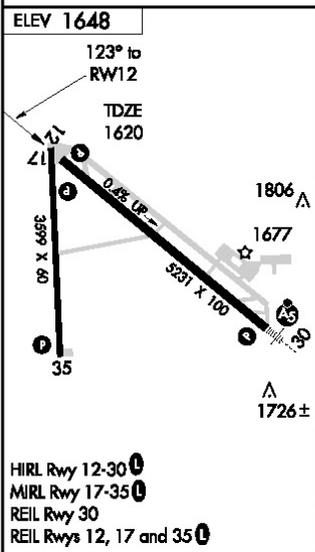
GPS RWY 12 BROOKINGS REGIONAL (BKX)

△ NA	MISSED APPROACH: Climb to 3400 direct KAPOA WP and hold.	
AWOS-3 108.8	HURON RADIO 122.65	UNICOM 123.0 (CTAF) 0

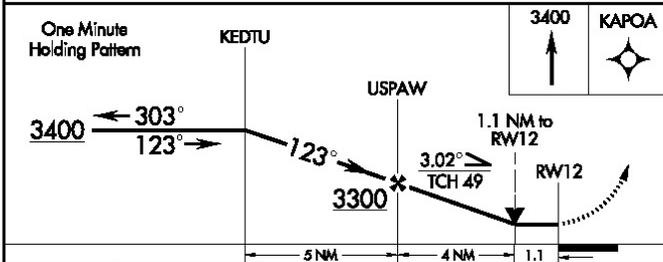


NC-1, 16 FEB 2006 to 16 MAR 2006

NC-1, 16 FEB 2006 to 16 MAR 2006



- HIRL Rwy 12-30 0
- MIRL Rwy 17-35 0
- REIL Rwy 30
- REIL Rws 12, 17 and 35 0



CATEGORY	5 NM			4 NM		1.1 NM	
	A	B	C	D	E	F	G
S-12	2020-1 400 (400-1)			2020-1¼ 400 (400-1¼)			
CIRCLING	2140-1 492 (500-1)		2140-1½ 492 (500-1½)		2200-2 552 (600-2)		

BROOKINGS, SOUTH DAKOTA

BROOKINGS REGIONAL (BKX)

Orig 06047

44°18'N - 96°49'W

GPS RWY 12



Airport Master Plan Brookings Regional Airport

Figure 2-12



GPS RWY 30

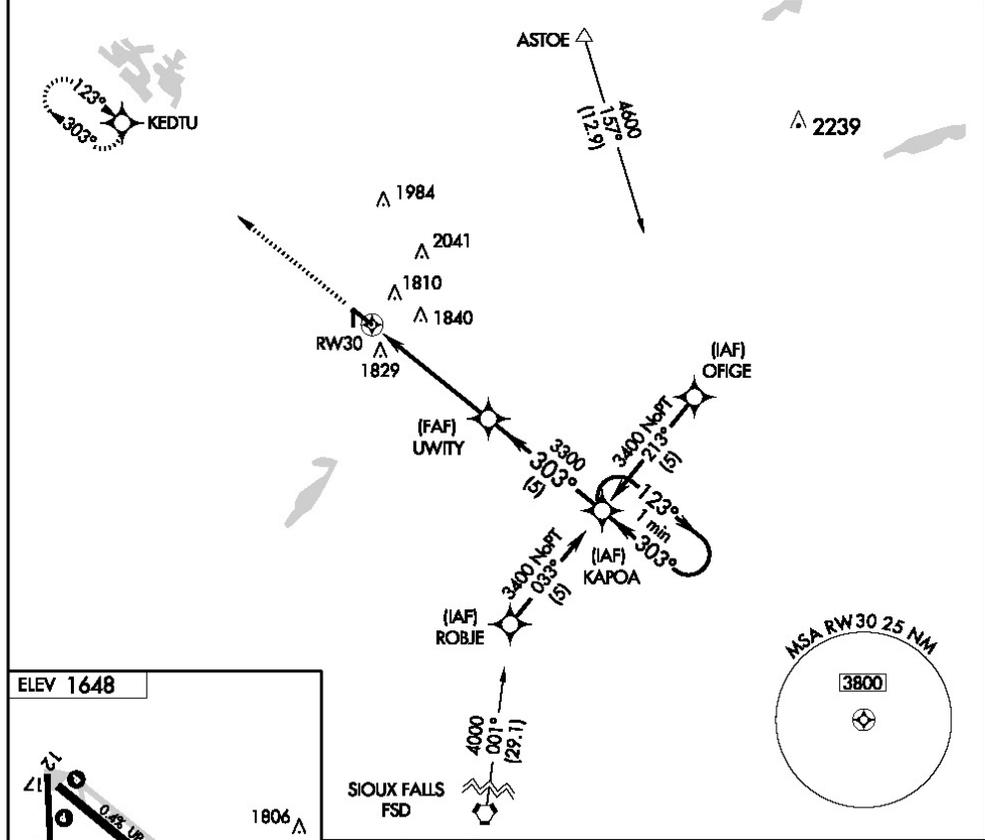
BROOKINGS, SOUTH DAKOTA

AL-969 (FAA)

GPS RWY 30 BROOKINGS REGIONAL (BKX)

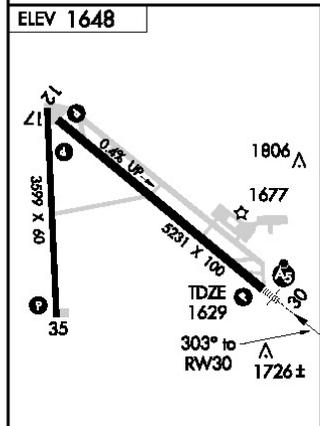
APP CRS	Rwy Idg	5231
303°	TDZE	1629
	Apt Elev	1648

AWOS-3 108.8	HURON RADIO 122.65	UNICOM 123.0 (CTAF) 0
------------------------	------------------------------	---------------------------------

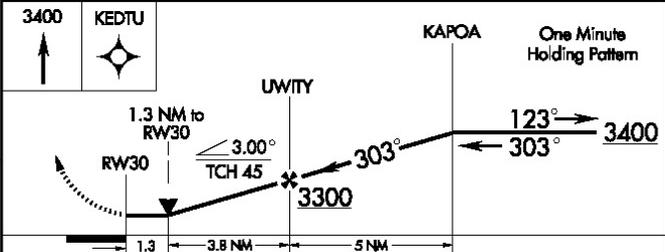


NC-1, 16 FEB 2006 to 16 MAR 2006

NC-1, 16 FEB 2006 to 16 MAR 2006



- HIRL Rwy 12-30 0
- MIRL Rwy 17-35 0
- REIL Rwy 30
- REIL Rws 12, 17 and 35 0



CATEGORY	A	B	C	D
S-30	2080-½	451 (500-½)	2080-¾ 451 (500-¾)	2080-1 451 (500-1)
CIRCLING	2140-1	492 (500-1)	2140-1½ 492 (500-1½)	2200-2 552 (600-2)

BROOKINGS, SOUTH DAKOTA
Orig 06047

44°18'N - 96°49'W

BROOKINGS REGIONAL (BKX)
GPS RWY 30

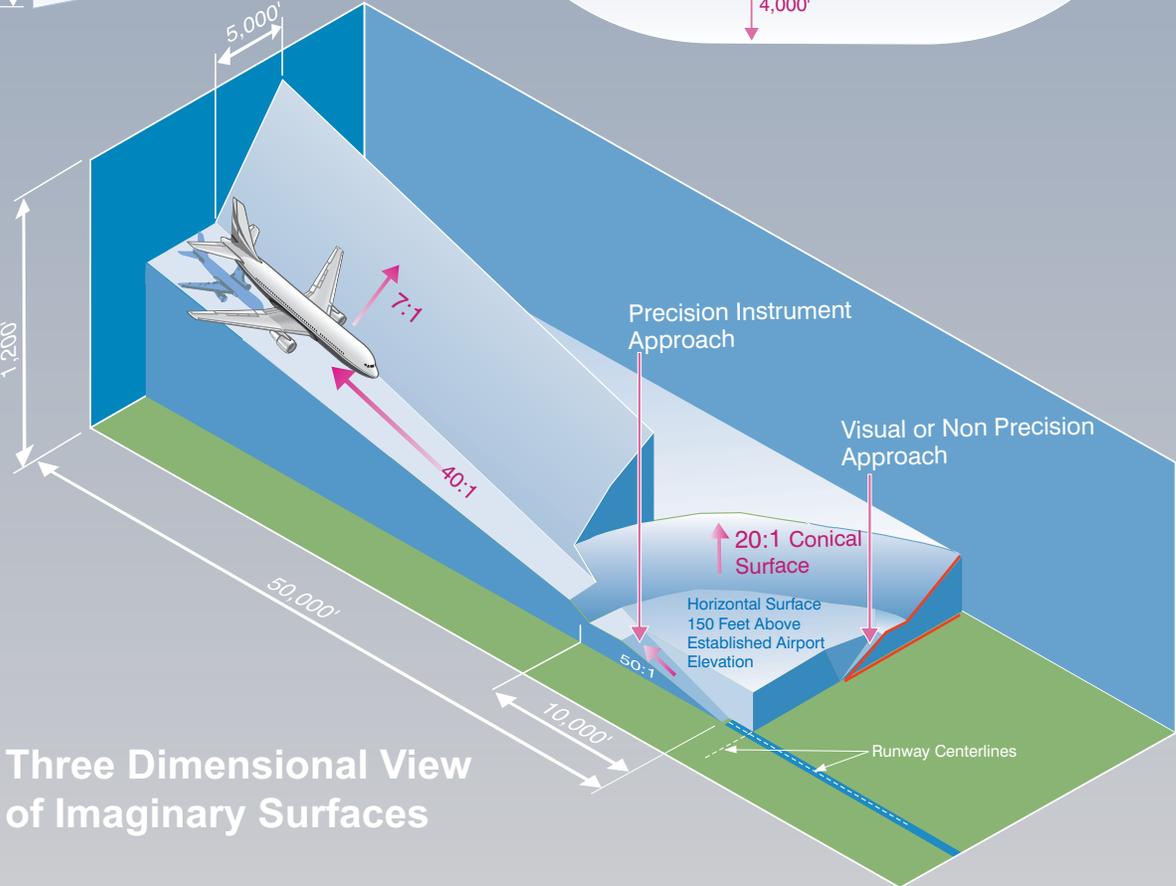
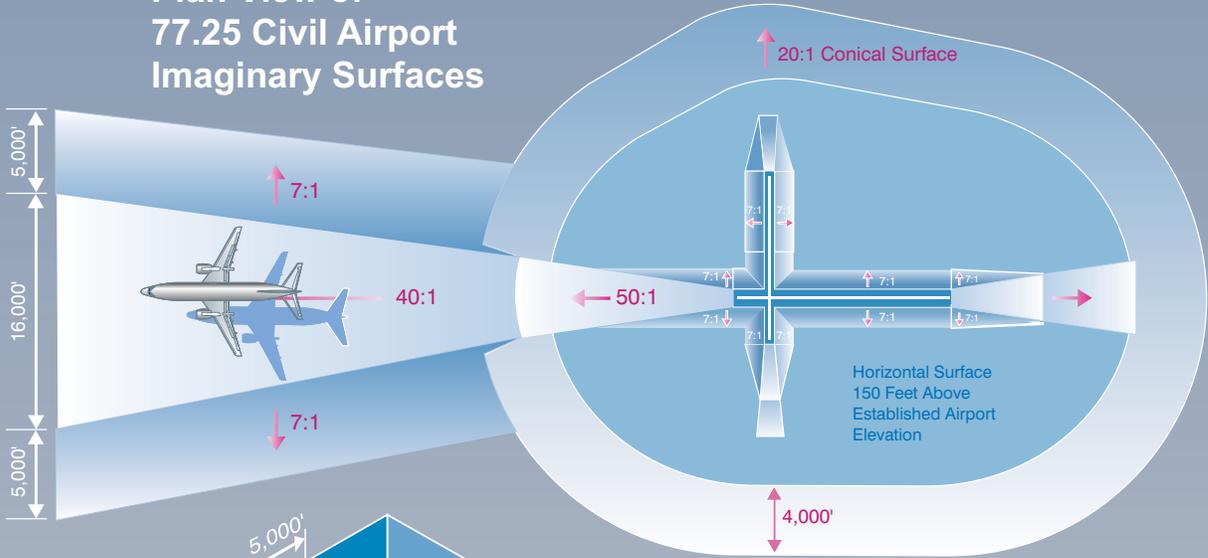


2.5.4. Imaginary Surfaces and Obstructions

FAR Part 77 is the guidance used to determine obstructions to navigational airspace. The surfaces are comprised of approach, transitional, primary, secondary and conical three-dimensional imaginary surfaces. (See *Figure 2-14*) Their exact configuration varies based upon the approach type of runway. All obstructions must be catalogued and their disposition noted. There are approximately 45 obstructions to these surfaces in the area immediately surrounding the airport (largely approach and transitional surface penetrations) and an additional nine further away from the airport (largely horizontal surface penetrations). The 2006 Airport Layout Plan (ALP), published separately from this Master Plan, shows the location of these obstructions.

Part 77 Surfaces

Plan View of 77.25 Civil Airport Imaginary Surfaces



Three Dimensional View of Imaginary Surfaces

2.6. Landside Facilities

Existing landside facilities are described below and depicted in *Figure 2-4*.

2.6.1. Passenger Terminal Building

The passenger airline terminal was built in 1950 and modified in various forms to its current layout. Records of these rehabilitations and renovations are available at City Hall. The current structure is 1,891 square feet. The layout has provisions for one airline, with ticket counter and a small lobby area to accommodate queuing only. The airline operations area is comprised of a small 102 square foot office and an adjoining baggage storage area.

The main lounge was designed for approximately 646 square feet. However, in the wake of the passenger screening requirements resulting from the 9/11 terrorist attacks (which required that all small airports perform passenger screening whereas before such screening could be performed in the connecting hub airport), a temporary wall was put in place to separate the sterile lounge area from the non-sterile pre-screening terminal area (e.g. ticket counter). The lounge area is therefore reduced about 80%.

The terminal building is served by restrooms, a utility room, and a small vending area. There are no provisions for accommodating any airport staff. All aircraft are ramp-boarded. There is no rental car or other passenger support facilities at the building.

The existing terminal facility has capacity for one carrier only, and the associated operations space is nominal, based upon typical commuter carrier facility planning guidelines for a one-gate station. The ticket lobby is undersized and can support queuing for only approximately ten passengers. It includes an area for the required Explosive Trace Detection (ETD) bag screening equipment and two Transportation Security Administration screening personnel. The waiting lounge area is nominally sized for the Beech 1900 aircraft, but any larger aircraft would exceed capacity. The circulation space resulting from the temporary wall constructed to separate the screening area from the remainder of the terminal area is inadequate for persons with bags and is not fully compliant with the provisions of the American with Disabilities Act (ADA).

2.6.2. Ground Access

The airport is accessed from Western Avenue, which becomes Second Street South in downtown Brookings. Western Avenue connects to US 14, which is the main corridor connecting the City to Interstate I-29. The terminal and FBO areas are both immediately off Western Avenue.

2.6.3. Parking

Terminal Area

The Airport has one main parking area immediately adjacent to the FBO building, as well as nominal parking adjacent to the terminal building. The parking is adequately sized for existing facilities but is inadequate for any projected expansion or new facilities.

Employee Parking

There is currently no designated employee parking at the Airport. Employees of the airport and the FBO utilize the FBO parking area.

Rental Car Parking

There currently is limited rental car activity at the airport, operated by GP Auto and coordinated by Big Sioux Aviation. This service is used about four times per month and is available for commercial passengers as well. GP's automobile is parked in Big Sioux's parking lot.

Other Parking

There is a small parking area off Division Avenue, intended for parking of GA-based aircraft users.

2.6.4. Support Areas

Police

Police coverage is provided by the City of Brookings as required by Part 139 certification. The airport is regularly patrolled and is available for response as requested. A law enforcement officer is on site for outbound commercial flights.

Fire

The City of Brookings provides fire coverage for the airport per the requirements of the airport's Part 139 certification. The City Hall fire station is less than ½ mile from the airport. The fire department does not currently have a foam truck, but one is being programmed for purchase in 2006 (one ton pick-up chassis). The City's fire department is comprised of two full time employees and 45 volunteers. There are a total of four stations within the city limits, including the aforementioned station at City Hall. The City is aware of the new Part 139 Certification requirements for fire protection on airports, and these will be discussed in subsequent chapters of this report. A new ARFF building has also been scheduled for construction in 2006.

Airport Maintenance Facilities

The airport out-sources its snow removal to a City vendor, and receives its grounds and building maintenance from City staff. There is a building on airport for storage of on-site products and equipment to accomplish grounds maintenance (north of Big Sioux FBO complex and east of the terminal building).

General Aviation Area Facilities

The airport currently has 26 general aviation aircraft hangared, not including Big Sioux aircraft discussed previously. Four are hangared by Big Sioux in their hangars, with the remaining 22 housed in 21 individual hangar spaces. Total hangar space is just less than 54,000 square feet (not including Big Sioux). There is currently a plan to develop a corporate general aviation hangar on airport, and other informal inquiries regarding new hangar developments are made regularly to the airport manager. The current rental rate for private hangars is \$.05/sf/yr with an increase to \$.08/sf/yr planned in 2006.

Master Plan Update

2.7. Land Use, Zoning and Development Plans

2.7.1. Existing Land Use

Existing land use adjacent to the Airport and parallel to the Runway 12-30 on the northeast is heavy industrial. Surrounding the airport, other uses are heavy commercial, light commercial, light industrial, medium/high density residential and undeveloped agricultural. Please refer to *Figure 2-15*.

The Dakota, Minnesota and Eastern Railway (DM&E) is located north of the heavy industrial and airport runways. Northeast of the DM&E Railway is the central business district located along Main Avenue, and further north and east is low density residential interspersed with some medium/high density residential. South Dakota State University (SDSU) is located north of this residential area.

The airport encompasses 578 acres and has influenced land uses near the approaches to the runways. Industrial expansion has continued to the north of the airport, and commercial and residential developments have continued to the south of the airport. One of Brookings industrial growth areas has been north of the Airport along the Highway 14 diagonal in the northwest corner of the city. This area has experienced a major expansion by one manufacturing facility, as well as warehousing and service industries.

The level and proximity of development in the Airport area will make some types of airport expansion challenging. This will be discussed in later chapters.

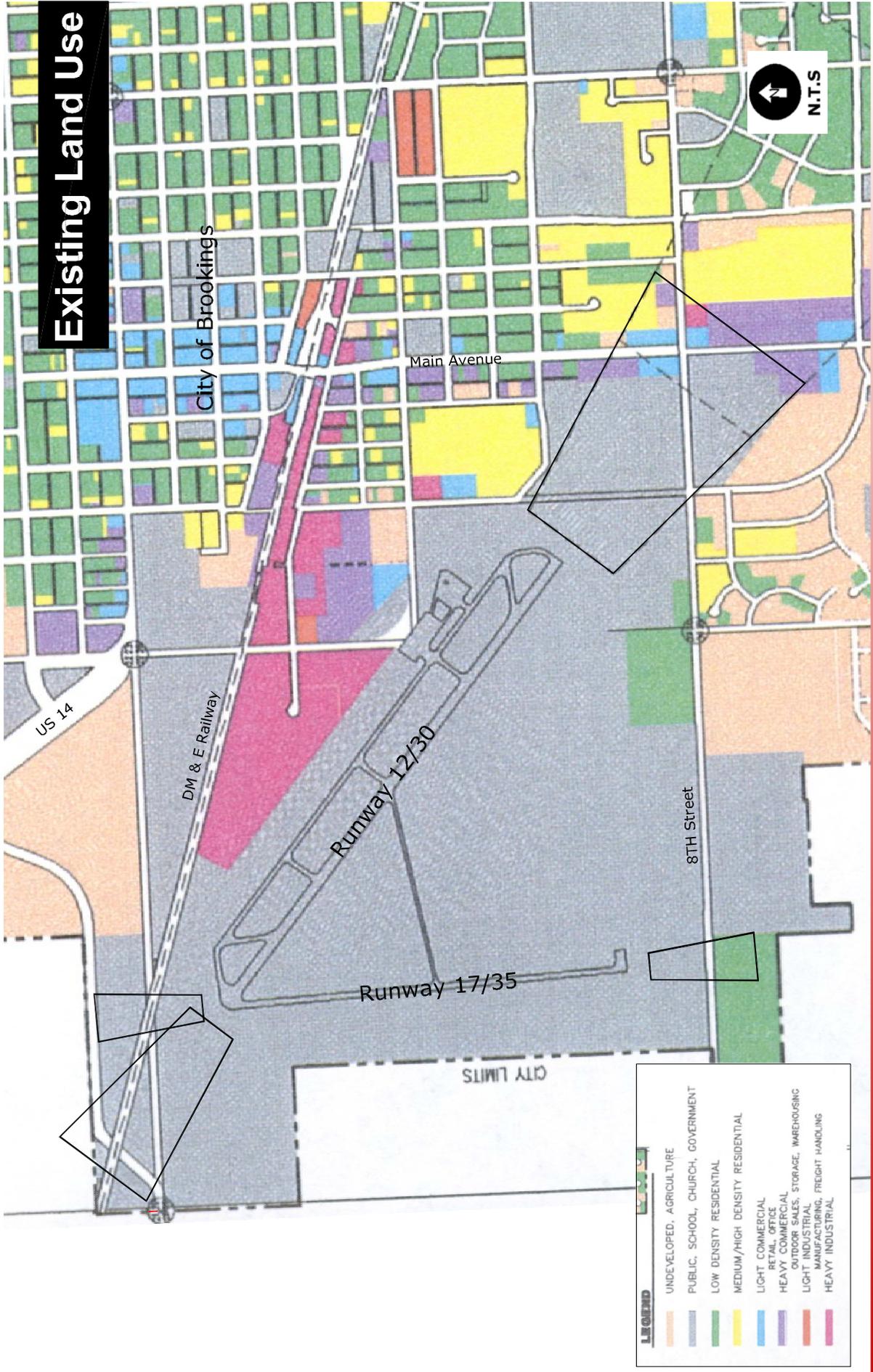
2.7.2. City of Brookings Comprehensive Plan

Vision 2020, the Comprehensive Plan for the City of Brookings, includes a section on the airport master plan. It summarizes previous planning activities related to the airport and identifies future issues for the airport as well as aesthetic enhancements for this gateway into the community.

Zoning Change Proposals

Zoning changes suggested in the 2020 Vision plan in the vicinity of the airport included two parcels for down-zoning, a less intensive use, within the approach zones of the Airport.

Existing Land Use



LEGEND

[Orange]	UNDEVELOPED, AGRICULTURE
[Grey]	PUBLIC, SCHOOL, CHURCH, GOVERNMENT
[Green]	LOW DENSITY RESIDENTIAL
[Yellow]	MEDIUM/HIGH DENSITY RESIDENTIAL
[Blue]	LIGHT COMMERCIAL RETAIL, OFFICE
[Purple]	HEAVY COMMERCIAL OUTDOOR SALES, STORAGE, WAREHOUSING
[Red]	LIGHT INDUSTRIAL MANUFACTURING, FREIGHT HANDLING
[Pink]	HEAVY INDUSTRIAL

Figure 2-15



Airport Master Plan Brookings Regional Airport



2.7.3. Brookings Regional Airport Zoning Ordinance, Sec. 94-164

The purpose of the Airport Zoning Ordinance is to prevent the creation of an airport obstruction that has the potential of endangering the lives and users of the Airport and the property of occupants of land in the vicinity of the airport.

The Brookings Regional Airport Zoning Map, May 1978, is a part of the ordinance. It establishes airspace obstruction zones and height limitations for the Airport. Airspace zones include all of the land lying beneath the approach, transitional, horizontal and conical Part 77 surfaces. No structure shall be erected, altered or maintained, and no tree shall be allowed to grow in any airspace zone created by the ordinance to a height in excess of the applicable height limitations. Uses that could cause interference with radio or electronic operations and communications, difficulty in distinguishing between airport lights and other lights, or impaired visibility in the vicinity of the airport are prohibited.

Safety zones are established in the ordinance to restrict uses that may be detrimental to airport operations and to allow enough open space in case of an accident. The ordinance limits land uses to varying degrees depending on which safety zone encompasses a given parcel. See the Zoning Ordinance for specific restrictions in each of the zones (Appendix A) and *Figure 2-16* for a depiction of the safety zones.

Enforcement of the restrictions in the safety zones has been inconsistent and the City is contemplating whether Zone B should continue to be part of the zoning ordinance. This is discussed further in the Concepts chapter.

2.7.4. 1978 Airport Master Plan

An Airport Master Plan was adopted by the Brookings City Commission in 1978. The recommended three-phase program has been essentially completed. The program included land acquisition, paving and lighting, approach aids, terminal expansion, and other improvements. An off-airport land use study was done in conjunction with the Master Plan to ensure a compatible relationship between the airport and adjacent uses

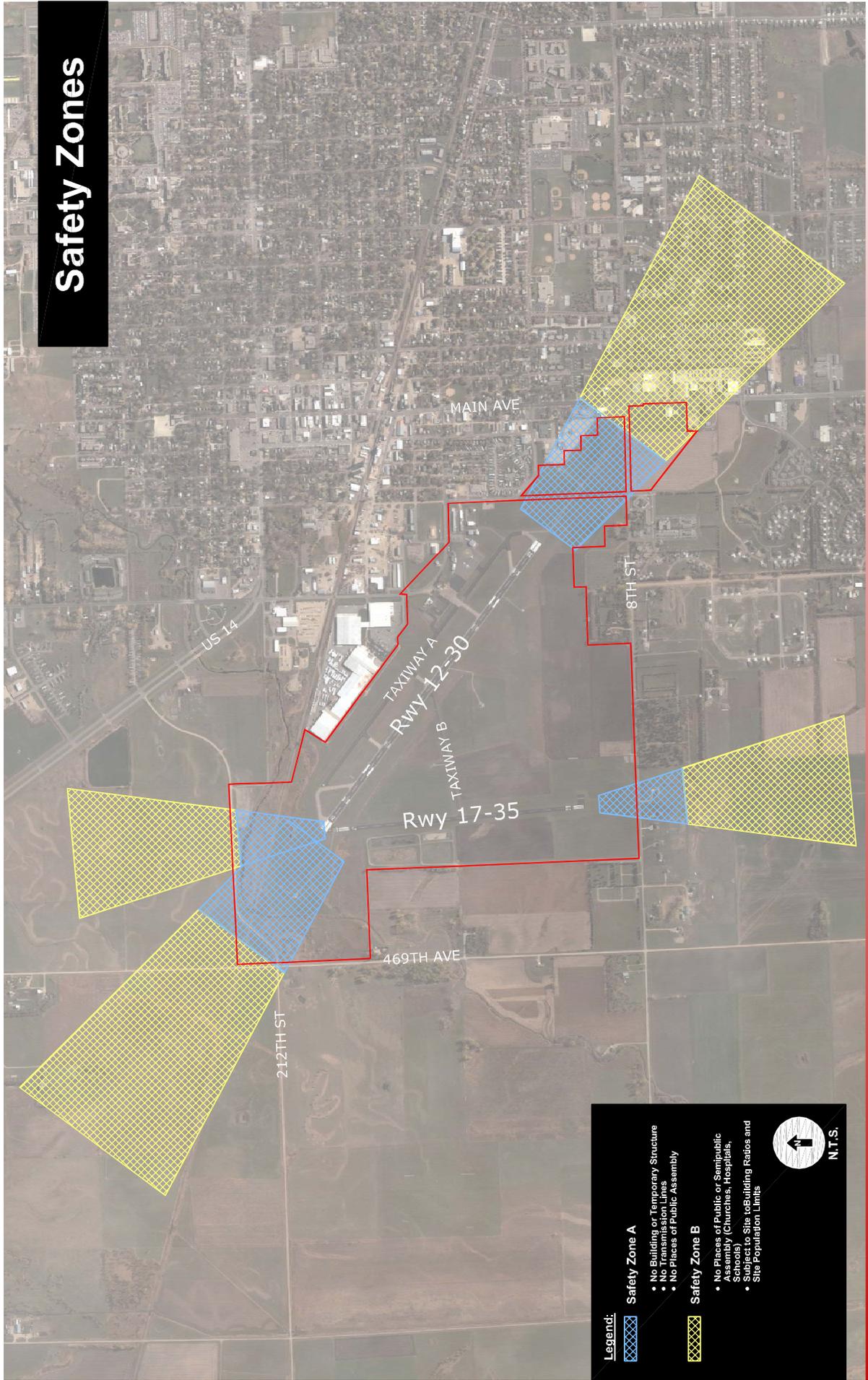
2.7.5. 1990 South Dakota NAVAIDS and Weather Facility System Plan-

In 1990, the State of South Dakota completed the South Dakota NAVAIDS and Weather Facilities System Plan. Two of the air carrier airports, Brookings and Mitchell, were the sites for installation of the Automated Weather Observation System (AWOS-3).

2.7.6. 1996 South Dakota Airport System Plan

The Airport is one of 73 airports in the existing South Dakota airport system, as outlined in the South Dakota Aviation System Plan, 1996, prepared by the South Dakota Department of Transportation. The planning horizon in the Plan is 2015. The Airport is designated as one of the nine air carrier airports in the system receiving scheduled airline passenger service. Plan recommendations included adding three new airports in the Basic Utility I category for a total of 76 airports in the airport system.

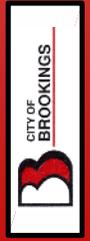
Safety Zones



Legend:

- Safety Zone A**
 - No Building or Temporary Structure
 - No Transmission Lines
 - No Poles of Public Assembly
- Safety Zone B**
 - No Places of Public or Semipublic Assembly (Churches, Hospitals, Schools)
 - Subject to Site to Building Ratios and Site Population Limits

N.T.S.



Airport Master Plan Brookings Regional Airport

2.8. Environment

In April 2001, a USDA biologist conducted a one-day site visit to the airport at the request of the Airport Manager. The purpose was to identify potential wildlife hazards to aircraft. Besides touring the surrounding area to observe wildlife and habitats, an evening spotlight survey was conducted. The following summarizes the findings of this visit.

Habitats

Wildlife find cover and nesting habitat in trees, brush, weedy fields, tall grass, urban structures, burrows and stream side vegetation. Identifying these attractants and removing them from airport property is a key to reducing wildlife hazards at airports. The operating area at the Airport consists mainly of short and mid-sized grasses, alfalfa, and cropland planted with soybeans and corn. Several large trees are located at various places and a living snow fence, consisting of several small trees and shrubs, is located on the south east side. A marshy creek bottom on the north contains cattails, willows, small trees and tall grass. Four sewage lagoons are located on the north side. Although these lagoons are no longer used for sewage, two of them are filled with runoff water and create wetlands lined with cattails. Structures such as buildings, signs, lights, antennae, and a perimeter fence are present.

Vegetation Management

Grass management is important to the overall wildlife hazard management strategy developed on the airport. There are no general requirements for grass height and vegetation type at airports. Guidelines are to use a vegetation cover and mowing regime that does not result in the buildup of rodent numbers, or the production of seeds, forage or insects desired by birds. Whether it is short grass, mid-size grass, or long grass, each of these have their advantages and disadvantages in attracting or dis-attracting wildlife hazards at airports. Grasses at the Airport includes alfalfa which attracts deer, coyotes, jackrabbits, badger, pheasants and three raptor species; all hazardous to airport safety.

Water Management

Two of the four lagoons located on the west side of the airport typically fill with water and cattails and provide attractive habitat for waterfowl, blackbirds, raccoons and muskrats. These areas should be eliminated or covered to prevent use by wildlife.

Ducks commonly nest in the marshy creek that lies north of the approach to Runway 12, providing wetland habitat. The creek should be diverted away from the airport or routed through a culvert so there is no open water within 1,000 feet of the runways.

Airport Buildings and Structures

Airport buildings did not seem to have significant use by birds. There is a 10-foot tall fence on two sides of the airport perimeter. On the other two sides the fence height varies between four and six feet. This is not sufficient to keep the deer and other wildlife hazardous to airport operations out of the airport property. Acknowledging this, in the fall

of 2003 the City developed an action plan to keep the deer off of the airport property which included:

- Escorting the deer out by means of dogs and ATVs.
- Working with SDSU wildlife and fisheries students to relocate the deer.
- Add two or three strands of barbed wire to increase the height of the fence.
- Consider the use of bow hunters or, as a last resort, issue a Kill Permit.

Surrounding area

Two cemeteries, rural residences and agricultural lands provide considerable arboreal habitat immediately adjacent to the airport, and attract raptors, crows and blackbirds, as well as deer, coyotes, fox, raccoons, skunks, and rabbits which wander onto airport property. The adjacent agricultural lands and wetlands attract gulls and waterfowl.

- *Birds*
 - Large birds such as waterfowl, gulls, raptors and upland game birds, which are common at the Airport, present the most serious risk to aircraft.
- *Gulls*
 - Gulls are often attracted to the runways at the Airport due to the large numbers of worms after a rain, or for warming and loafing. Gulls are a major threat to aircraft and need to be controlled.
- *Waterfowl*
 - Waterfowl are common in the area. Removing wetland habitat will reduce waterfowl activity at the Airport.
- *Raptors*
 - Several species of raptors are present in the Brookings area who like habitat where rodents, rabbits, and insects are readily available, such as the alfalfa areas adjacent to the airport. Habitat management to remove the alfalfa and replace it with grasses will help, and all raptor perches should be removed or eliminated.

Wetlands

According to the National Wetlands Inventory map, there are a few wetlands on airport property. Six Mile Creek is located northwest of the airport property. Adjacent to the crosswind runway there are two sludge ponds and two waste water ponds. Wetland impacts will need to be evaluated as the preferred alternative goes forward. **Figure 2-17** shows the topography and **Figure 2-18** shows the wetlands in the airport area. It should be noted that the National Wetlands Inventory map (used as the basis for Figure 2-18, does not always depict wetlands accurately. For example, the two large blue wetlands (actually sewage treatment ponds) straddling the crosswind runway are about one-third of the size shown. Nevertheless, the Inventory map is a good starting point for analyzing wetlands. Impacts to wetlands will be considered in the development of future facilities at the Airport, but in general the FAA prefers that any potential bird attractants not be located on or near an Airport. Given this, the City should pursue the relocation of these ponds if the opportunity arises.

Cemeteries

There are two cemeteries located adjacent to the airport. Any expansion activity would be limited so as not to impact the cemeteries.

Flora and Fauna

Calls to the South Dakota Departments of Environment and Natural Resources and Game Fish and Parks indicated that there are no currently threatened or endangered species of plants or wildlife in the area surrounding the airport. There are no wildlife production areas in the vicinity of the airport, nor is the land considered to be wintering areas for deer or breeding areas for grouse. In addition, there are no monitored plants within airport property nor is native vegetation a concern as the majority of vegetation on airport property is cultivated. See Chapter Six for an overview of these factors. The Topeka Shiner Minnow is found in the area, but not on the airport.

2.9. Summary

This inventory uncovered several issues that will need to be addressed in the upcoming chapters.

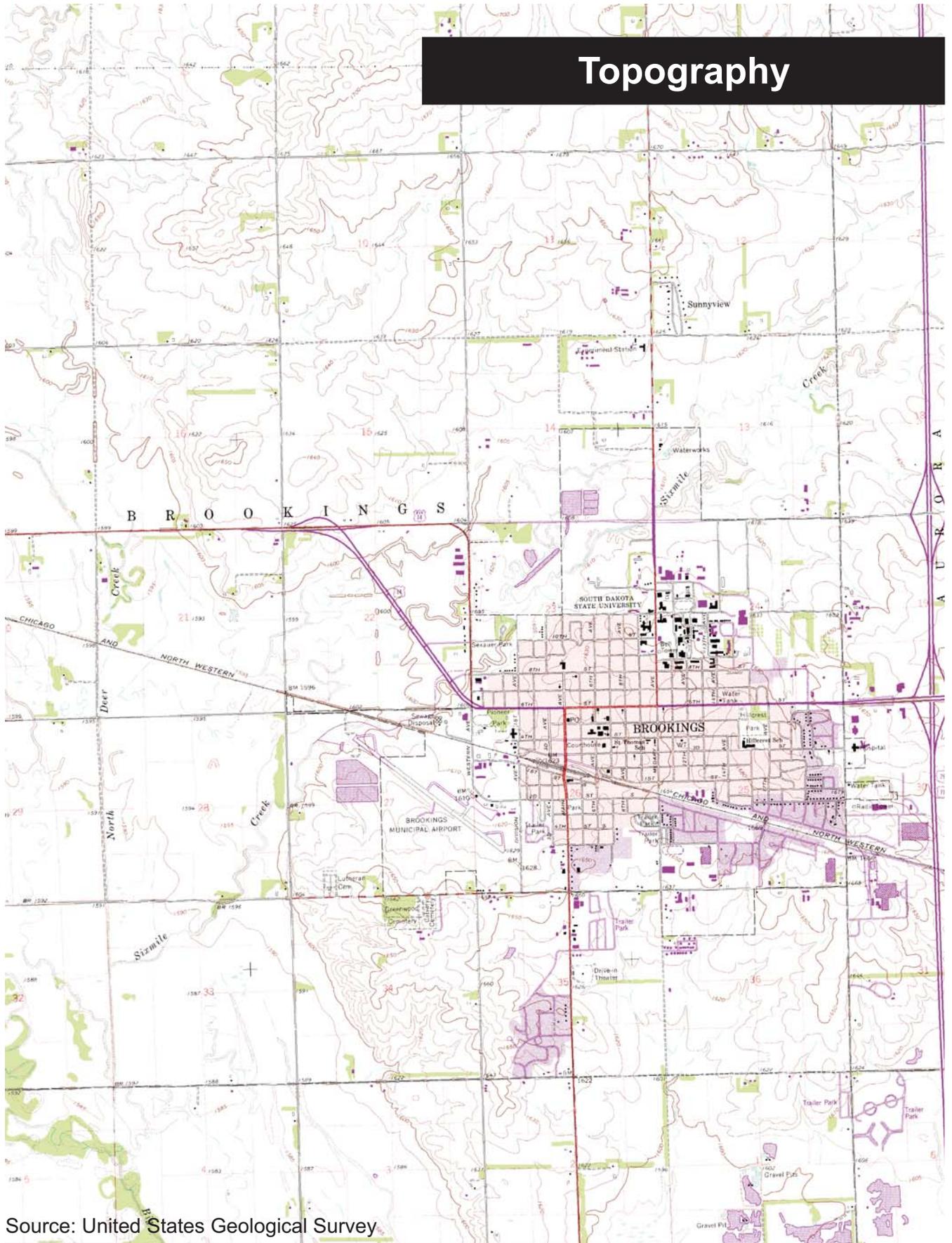
2.9.1. Safety-related issues

- There are approximately 50 penetrations to Part 77 surfaces in the vicinity of the airport.
- Taxiway Object Free Area standards are not met in some areas of the general aviation hangar area
- Separation standards are not met for Taxiway A to the primary runway.
- The Primary and Crosswind Runways do not intersect; a configuration that the FAA feels is inherently less safe than those that do intersect.
- Two of the four RPZs at the airport contain significant incompatible uses and these are increasing off Runway 30.
- The Runway 12 OFA is substandard, due to the presence of the railroad to the north of the Runway.

2.9.2. Capacity-related issues

- Any future expansion of the airfield or hangar areas will be challenging due to the topography and development in the area surrounding the airport.
- The ticketing and waiting lounge in the passenger terminal appear to be undersized or barely adequate.

Topography



Source: United States Geological Survey



Airport Master Plan Brookings Regional Airport

Figure 2-17



Wetlands

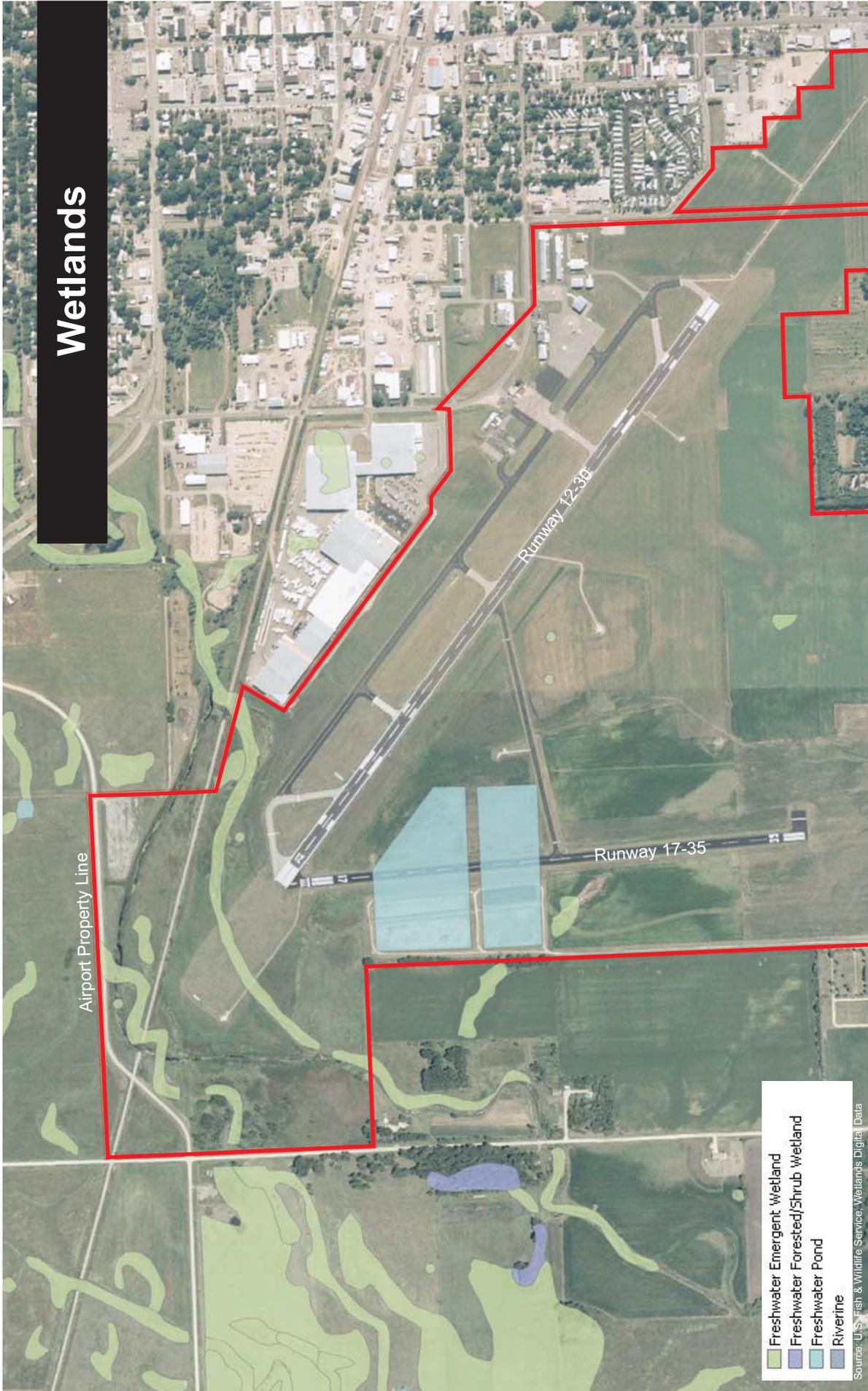


Figure 2-18
HNTB

Airport Master Plan Brookings Regional Airport

