3.8.7 Snow Removal Facilities

Snow removal on airport facilities is provided by the City of Kalispell's road maintenance department.

3.8.8 Utilities

Because the airport is located in a semi-urban area on the south end of Kalispell, all major utilities are available on site or nearby. This includes City water and sewer, electrical, gas, phone, and cable. The City Wastewater treatment plant is located across Airport Way, to the south of the main airport entrance.

3.8.9 Airport Access and Parking

The majority of the airport can be accessed by car on the west end off Airport Way/Airport Road. There is parking throughout the facility near all hangars, offices, and aprons. Red Eagle Aviation has an access road and parking lot located through the east fence and Diamond Aire has a similar entrance on the West side of the airport.

3.9 Airspace

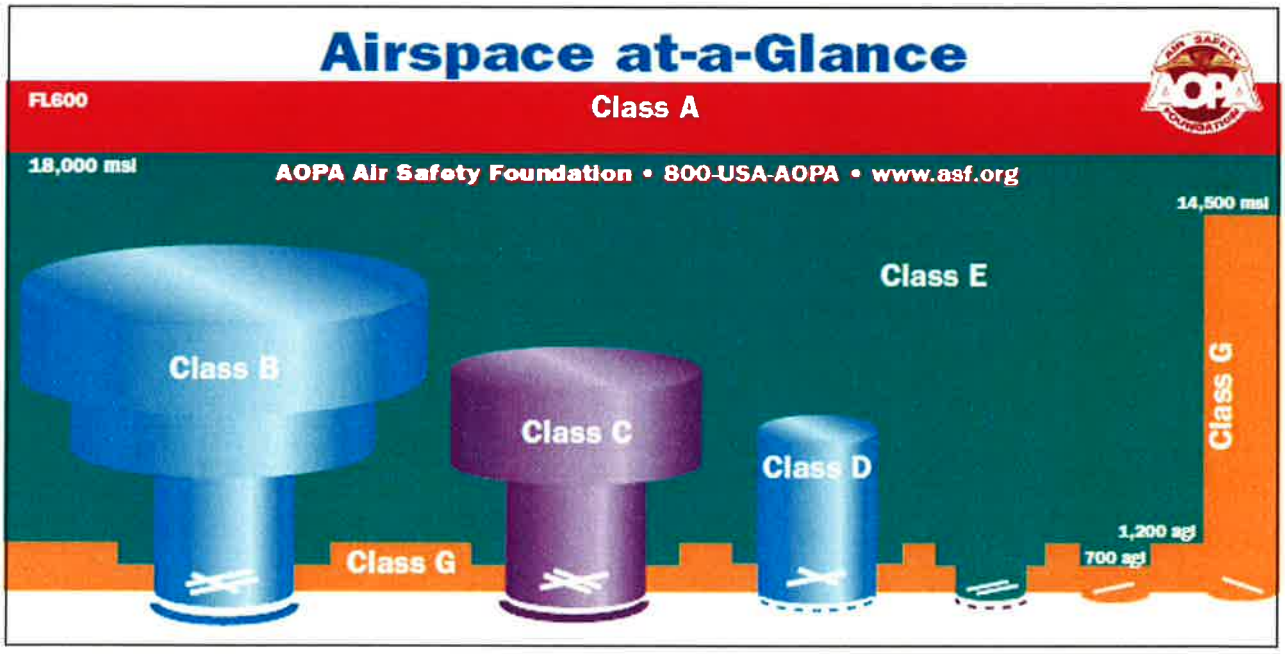
The Federal Aviation Administration (FAA) Act of 1958 established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA has established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS covers the common network of U.S. airspace, including: air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. The system also includes components shared jointly with the military.

3.9.1 Airspace Structure

Airspace within the United States is broadly classified as either "controlled" or "uncontrolled". The difference between controlled and uncontrolled airspace relates primarily to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated in the United States as shown on **Exhibit 3-11**. Airspace designated as Class A, B, C, D, or E is considered controlled airspace.

3.9.1.1 Class A Airspace

Class A airspace includes all airspace from 18,000 feet mean sea level (MSL) to flight level (FL) 600 (approximately 60,000 feet MSL). This airspace is designated in Federal Aviation Regulation (F.A.R.) Part 71.193, for positive control of aircraft. The Positive Control Area (PCA) allows flights governed only under IFR operations. The aircraft must have special radio and navigation equipment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.



Communication Requirements and Weather Minimums

	Class A	Class B	Class C	Class D	Class E	Class G
Minimum Pilot Qualification	Instrument Rating	Student*	Student*	Student*	Student*	Student
Entry Requirements	IFR: ATC Clearance VFR: Operations Prohibited	ATC Clearance	IFR: ATC Clearance VFR: Two Way Communication w/ATC	IFR: ATC Clearance VFR: Two Way Communication w/ATC	IFR: ATC Clearance VFR: None	None
VFR Visibility Below 10,000 msl**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	Day: 1 Statute Mile Night: 3 Statute Miles
VFR Cloud Clearance Below 10,000 msl	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horiz.***
VFR Visibility 10,000 msl and Above**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	5 Statute Miles	5 Statute Miles
VFR Cloud Clearance 10,000 msl and Above	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal

*Prior to operating within Class B, C, or D airspace (or Class E airspace with an operating control tower), student, sport, and recreational pilots must meet the applicable FAR Part 61 training and endorsement requirements. Solo student, sport, and recreational pilot operations are prohibited at those airports listed in FAR Part 91, appendix D, section 4.

**Student pilot operations require at least 3 statute miles visibility during the day and 5 statute miles visibility at night.

***Class G VFR cloud clearance at 1,200 agl and below (day): clear of clouds.

EXHIBIT 3-11 – Airspace Classification

3.9.1.2 Class B Airspace

Class B airspace has been designated around some of the country's major airports to separate arriving and departing aircraft. Class B airspace is designed to regulate the flow of uncontrolled traffic, above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports. There is no Class B airspace in Montana.

3.9.1.3 Class C Airspace

The FAA has established Class C airspace at 120 airports around the country, as a means of regulating air traffic in these areas. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports.

To operate inside Class C airspace, the aircraft must be equipped with a two-way radio, an encoding transponder, and the pilot must have established communication with ATC. Aircraft may fly below the floor of the Class C airspace, or above the Class C airspace ceiling without establishing communication with ATC. There is no Class C airspace in the vicinity of Kalispell City Airport.

The nearest Class C airspace is Logan International Airport in Billings.

3.9.1.4 Class D Airspace

Class D airspace is controlled airspace surrounding airports with an operating Air Traffic Control Tower (ATCT). The Class D airspace typically constitutes a cylinder with a horizontal radius of four or five nautical miles (NM) from the airport, extending from the surface up to a designated vertical limit, typically set at approximately 2,500 feet above the airport elevation. If an airport has an instrument approach or departure, the Class D airspace sometimes extends along the approach or departure path. The airspace surrounding Glacier Park International (GPI) Airport is defined as Class D airspace and is a factor in evaluating aviation operations at the Kalispell City Airport due to it's close proximity to GPI.

3.9.1.5 Class E Airspace

Class E airspace consists of controlled airspace designed to contain instrument flight rules (IFR) operations near an airport, and while aircraft are transitioning between the airport and enroute environments. Unless otherwise specified, Class E airspace terminates at the base of the overlying airspace. Only aircraft operating under IFR are required to be in contact with air traffic control when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities, they can only be conducted in visual flight rules (VFR) conditions. Kalispell City Airport lies on the fringe of Class E airspace which extends from the ground surface to Class A airspace; and lies beneath Class E airspace which extends from 700 feet above the ground to Class A airspace.

3.9.1.6 Class G Airspace

Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G, airspace. Air Traffic Control does not have the authority or responsibility to exercise control over air traffic within this airspace. Class G airspace lies between the surface and the overlaying Class E airspace (700 to 1,200 feet above ground level [AGL]). Class G airspace extends below the 700 foot floor of the Class E airspace overlying the Kalispell City Airport.

Because most operations at Kalispell City Airport are from small aircraft and all operations are under visual flight rule (VFR) conditions, most aircraft operate within Class G airspace without any contact to Air Traffic Control.

Federal regulations specify minimum altitudes for flight. F.A.R. Part 91.119, Minimum Safe Altitudes: generally states that except when necessary for takeoff or landing, pilots must not operate an aircraft over any congested area of a city, town, or settlement, or over any open air assembly of persons, at an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Over less congested areas, pilots must maintain an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. Finally, this section states that helicopters may be operated at less than the minimums prescribed above if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the FAA.

3.9.1.7 Special Use Airspace

Special use airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. These areas include Military Areas, Military Training Routes, Wilderness Areas, and Victor Airways.

The Kalispell City Airport is well-located for access to the existing low altitude airway route structures. As shown in **Exhibit 3-12**, there are three (3) primary VOR (VHF Omnidirectional Range) routes connected to Glacier Park International: V-536 connects to Mullan Pass and Great Falls, V-448 connects to VOR-DME (VHF Omnidirectional Range–Distance Measuring Equipment) Cour d' Alene, and V-231 connects to VOR-DME Missoula. VOR routes use VOR, VORTAC (VOR and TACtical Air Navigation), or VOR-DME navigational aids to define low altitude airways from 1,200 feet AGL to 18,000 feet MSL. The 8-nautical mile wide routes are designated with an alphanumeric code and a number. Victor airway entry does not require clearance or communication, although an awareness of potential air traffic is necessary.

3.9.1.8 Airspace Control

The FAA is responsible for the control of aircraft within the Class A, Class C, Class D, and Class E airspace described above. The Salt Lake City Air Route Traffic Control Center (ARTCC) located in Salt Lake City, Utah, provides air traffic control service to aircraft operating on instrument flight rules (IFR) flight plans within controlled airspace. The Salt Lake City ARTCC provides approach and departure service to Glacier Park International Airport as well as enroute service in controlled airspace. The area of jurisdiction for the Salt Lake City center encompasses most of the Northwest including Montana. The Spokane Terminal Radar Approach Control (TRACON) facility, based at Spokane International Airport, provides part-time approach and departure services for IFR flights in and out of Glacier Park International Airport.

The Glacier Park Airport Traffic Control (ATC) provides ground service, initial departure service, and final approach service to IFR flights at Glacier Park International Airport. The tower is only part-time, operating between 8:00 AM and 12:00 AM.

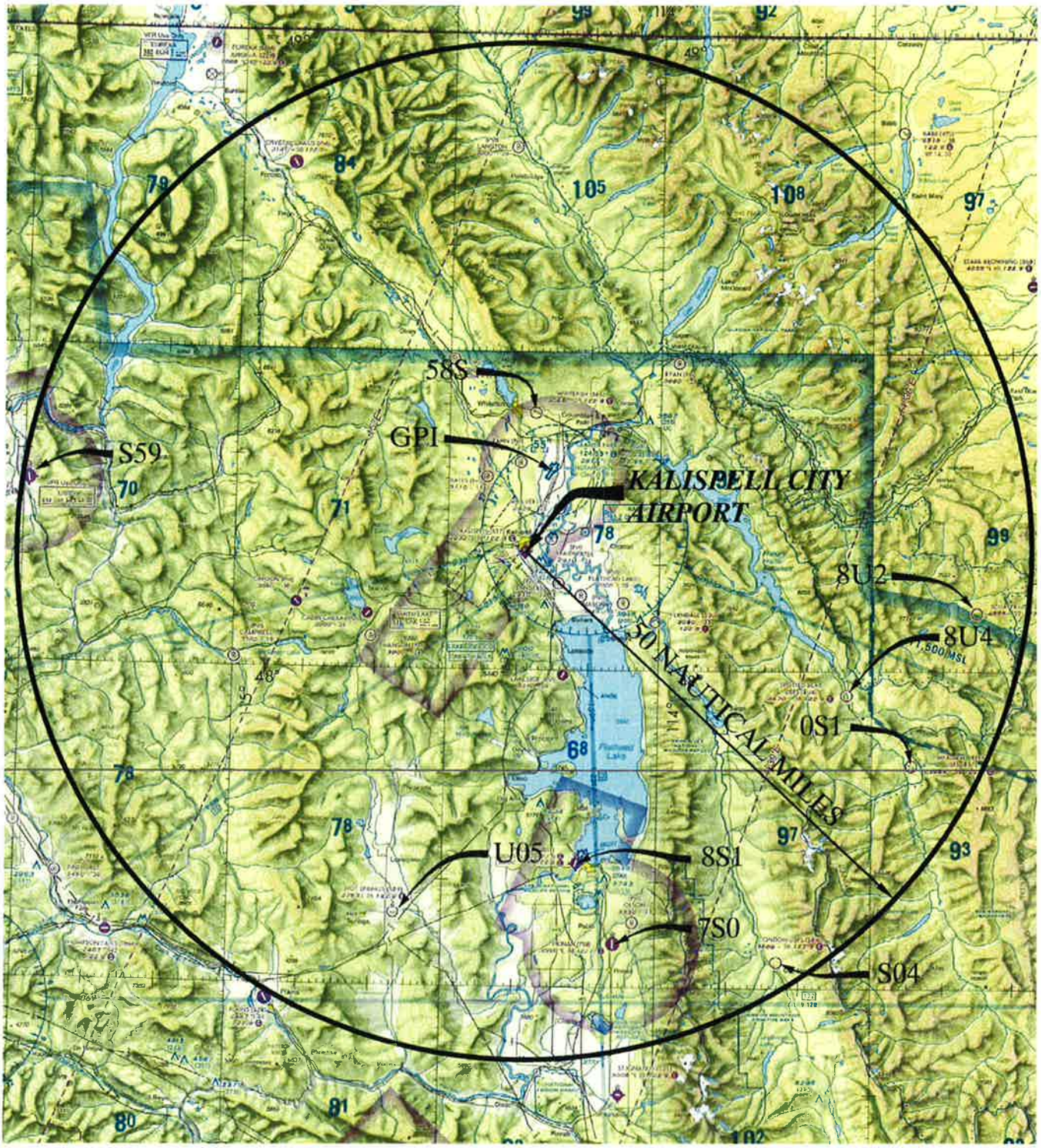


EXHIBIT 3-12 – Aeronautical Chart

3.9.1.9 Navigational Aids

GPS (Global Positioning System) was initially developed by the United States Department of Defense for military navigation around the world. However, GPS is now used extensively for a wide variety of civilian uses, including civil aircraft navigation. GPS uses satellites placed in orbit around the globe to transmit electronic signals, which pilots of properly equipped aircraft use to determine altitude, speed, and navigational information. This provides more freedom in flight planning and allows for more direct routing to the final destination.

A GPS modernization effort is underway by the FAA and focuses on augmenting the GPS signal to satisfy requirements for accuracy, coverage, availability, and integrity. For civil aviation use, this includes the development of the Wide Area Augmentation System (WAAS), which was launched on July 10, 2003. The WAAS uses a system of reference stations to correct signals from the GPS satellites, for improved navigation and approach capabilities. The present GPS provides for enroute navigation and instrument approaches with both course and vertical navigation. The WAAS upgrades are expected to allow for the development of approaches to most airports with cloud ceilings as low as 250 feet above the ground and visibilities restricted to three-quarters mile, after 2015.

3.9.2 FAR Part 77

The FAA has established standards for determining obstructions to airports in Part 77 of the Federal Aviation Regulations. These standards set up "civil imaginary surfaces" which are discussed in greater detail in **Chapter 5**. Objects that extend above these surfaces are considered obstructions and should be removed or marked and lighted, depending on the nature of the obstruction and the feasibility of its removal.

Dimensional criteria related to these "surfaces" vary according to the critical aircraft (weight and approach speed) using the airport. Runway 13/31 at the Kalispell City Airport is considered a "Utility and Visual Runway". Part 77 defines a Utility Runway as "a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less". A Visual Runway is defined as "a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan..." From this basis, the following was found concerning the "civil imaginary surfaces" described under Part 77.

3.9.2.1 Primary Surface

The **primary surface** is a surface longitudinally centered on the runway and extends 200 feet beyond each end of the runway. The primary surface for Runway 13/31 at Kalispell City Airport is 250-feet by 4,000-feet.

3.9.2.2 Approach Surfaces

Approach surfaces extend outward from the primary surface at each end of the runway. The visual approach surfaces for Runway 13 and Runway 31 extend outward and upward at a 20:1 slope from a point which is located 200 feet beyond the threshold and at the same elevation as the threshold. A 20:1 approach means that for every 20 feet measured outward (horizontally), the approach surface slopes upward (vertically) one foot. The surface expands outward from an inner width of 250 feet to a width of 1,250 feet at a distance of 5,000 feet.

3.9.2.3 Horizontal Surface

The **horizontal surface** is a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway end and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is 5,000 feet for all runways designated as utility or visual.

3.9.2.4 Conical Surface

The **conical surface** extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet.

3.9.2.5 Transitional Surfaces

Transitional surfaces extend outward from the edge of the primary surface and approach surfaces at a 7:1 slope until they intersect the horizontal or conical surfaces. Transitional surfaces parallel to Runway 13/31 begin 125 feet either side of runway centerline.

3.9.3 Area Airports

Public airports within 50 nautical miles (nm) of the Kalispell City Airport are summarized in **Table 3-4** and shown in **Figure 3-12.** Airport Master Record (Form 5010) forms for each airport are included in **Appendix D**.

TABLE 3-4

Public Airports Approximately 50 Nautical Miles from Kalispell City Airport

Airport Name (Loc. ID)	Distance	Airport Type	Runway Facilities
Glacier Park International (GPI)	8	Commercial	150' x 9,007' (Paved) 75' x 3,504' (Paved)
Whitefish (58S)	13	GA	75' x 2,560' (Turf)
Ferndale (53U)	14	GA	95' x 3,500' (Turf)
Polson (8S1)	30	GA	75' x 4,195' (Paved) 500' x 4,000' (Water)
Spotted Bear USFS (8U4)	33	GA	78' x 3,800' (Turf)
Hot Springs (S09)	36	GA	45' x 3,550' (Paved)
Ronan (7S0)	38	GA	75' x 4,800' (Paved)
Meadow Creek USFS (0S1)	42		100' x 2,830' (Turf)
Schafer USFS (8U2)	43	GA	60' x 3,200' (Turf)
Condon USFS (S04)	46	GA	135' x 2,575' (Turf)
Libby (S59)	48	GA	75' x 5,000' (Paved)

3.10 Flight Procedures

3.10.1 Instrument Approach Procedures

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be for the pilot to complete the approach.

Kalispell City Airport does not have a published instrument flight procedure.

3.10.2 Visual Flight Procedures

All flights at Kalispell City Airport are conducted under visual flight rules (VFR). Under VFR, the pilot is responsible for maintaining aircraft separation. While VFR aircraft arriving and departing Kalispell City Airport are not required to contact the Spokane TRACON or Salt Lake City ARTCC, they may do so to expedite their progress through the area. Kalispell Airport is located under Class E airspace; therefore, aircraft approaching or departing the airport must remain clear of the Class E airspace or obtain an ATC clearance before entering.

In most situations, under VFR, the pilot is responsible for navigation and choosing the arrival and departure flight paths to and from the airport. The results of individual pilot navigation for sequencing and collision avoidance are that aircraft do not fly a precise flight path to and from the airport. Therefore, aircraft can be found flying over a wide area around the airport for sequencing and safety reasons.

While aircraft can be expected to operate over most areas of the airport, the density of aircraft operations is higher near the airport. This is the result of aircraft following the established traffic patterns for the airport. The traffic pattern is the traffic flow that is prescribed for aircraft landing or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

- Upwind Leg - A flight path parallel to the landing runway in the direction of landing.
- Crosswind Leg - A flight path at right angles to the landing runway off its departure end.
- Downwind Leg - A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.
- Base Leg - A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.
- Final Approach - A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway.

Essentially, the traffic pattern defines which side of the runway aircraft will operate. For example, at Kalispell City Airport, Runway 13 and Runway 31 have an established left-hand traffic pattern. For these runways, aircraft make a left turn from base leg to final for landing. Therefore, aircraft on approach to Runway 13 will be west of the airport on downwind and north of the airport on base and

final. Similarly, aircraft on approach to Runway 31 will be west of the airport on downwind and south of the runway on base and final.

While the traffic pattern defines the direction of turns that an aircraft will follow on landing or departure, it does not define how far from the runway an aircraft will operate. The distance laterally from the runway centerline an aircraft operates or the distance from the end of the runway is at the discretion of the pilot, based on the operating characteristics of the aircraft, number of aircraft in the traffic pattern, and metrological conditions. The actual ground location of each leg of the traffic pattern varies from aircraft operation to aircraft operation for reasons of safety, navigation and the sequencing described above. The distance that the downwind leg is located laterally from the runway will vary based mostly on the speed of the aircraft. Slower aircraft can operate closer to the runway as their turn radius is smaller.

The direction which aircraft approach and depart is generally dependent on wind conditions. Both approaches and departures should be performed into the predominant wind direction. When wind is not a factor, approach and departure runways are typically at the discretion of the pilot unless there are local flight regulations prescribing otherwise. At Kalispell City Airport, local flight regulations are in place to limit the noise over the south areas of the City. When wind is not a factor, pilots are encouraged to make departures on Runway 31.

3.11 Meteorological Conditions

3.11.1 Winds

Winds are the traditional factor in determining runway alignment. Generally the runways align with the direction of the prevailing wind. The FAA recommends that an airport have a minimum of 95 percent wind coverage for a 13-knot cross wind component. If 95 percent coverage cannot be realized on one runway, a crosswind runway may be justified and eligible for Federal participation. Wind coverage is typically analyzed by the percent of time a wind comes from a certain direction and the wind velocity.

Historically, there has not been a wind study performed at Kalispell City Airport, but there is wind data available at Glacier Park International Airport, approximately 8 nautical miles to the northeast. A wind rose was prepared for Runway 13/31 on the 1999 Airport Layout Plan Update. This wind rose indicates that Runway 13/31 has a 95.9 percent wind coverage for a 13-knot cross wind component and a 93.0 percent wind coverage for a 10.5-knot cross wind component.

3.11.2 Temperatures & Precipitation

Average climatic data for the Kalispell area was acquired from the Weatherbase.com website for a 48-year period. Average monthly temperatures and precipitation are summarized in **Table 3-5**.

TABLE 3-5

Average Monthly Temperatures and Precipitation

Month	Temperatures (°F)			Precipitation (inches)
	Daily Max	Daily Min	Mean	
January	28	13	21	1.5
February	35	18	27	1.1
March	43	23	33	0.9
April	55	31	43	1.1
May	65	39	52	1.9
June	72	45	59	2.4
July	81	48	65	1.3
August	80	47	64	1.3
September	69	39	54	1.2
October	55	30	43	1.0
November	39	24	32	1.4
December	31	17	24	1.6
Annual	*55*	*31*	*43*	*16.8*