

TECHNICAL REPORT

PRELIMINARY

**SAFETY RISK ASSESSMENT
FOR SKYDIVING ACTIVITIES AT THE
VANCE BRAND AIRPORT (LMO)**



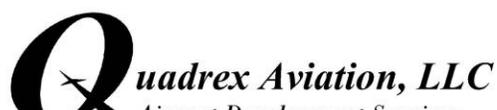
prepared for:



City of Longmont, Colorado

April 2019

prepared by:



Executive Summary

The City of Longmont, Colorado owns and operates the Vance Brand Airport (LMO). The airport is situated on a 261 acre parcel located 3 miles southwest of the City. The airport has one 4,799 foot runway and is home to 284 aircraft including 4 jets and 4 helicopters. FAA estimates that 71,491 aircraft operations (takeoffs and landings) occurred in 2017 and is expected to growth 8.3 percent within the next 4 years.

Since 1995, Mile-Hi Skydiving Center (MHSC) has offered commercial skydiving services at the Airport and operates as a USPA sanctioned training center for skydiving instruction. The MHSC primarily uses a 338,000 square-foot drop zone for all classes of skydivers, including novices, students, intermediate and experts, as well as tandem jumps. There is also a separate swoop pond which is used occasionally by expert skydivers to skim across the surface before landing.

Over the years, skydivers landing outside the drop zone, overflying the runway, and other conflicts which have raised safety concerns among other airport users. In January 2019, the City commissioned a study to evaluate the ability of LMO to safely accommodate skydiving activity and to recommend strategies to mitigate any risks associated with the co-existence of skydiving and other aeronautical activities. The study identified two primary areas where safety could be enhanced. These include the location of the drop zone and the update and distribution of Skydiving Standard Operating Procedures (SOP's).

The current drop zone is slightly undersized for parachute landing area for novice and student skydivers. The shape of the drop zone also precludes the use of all the area set aside for skydive landings. The closest edge of the drop zone is only 350 feet from the centerline of the runway which during certain wind conditions forces skydivers to approach from the east and overfly the runway.

Three alternative sites were evaluated against a set of criteria to determine the practicality of relocating to an area free of obstructions and large enough to accommodate a full-size drop zone as recommended by the US Parachute Association (USPA). A recommended drop zone site was identified among the three alternatives.

The second area of concern was the current skydiving SOPs which were developed in 1995, do not address all of the safety and operational concerns that have been expressed or observed. SOPs are important not only for the skydivers to understand what is expected of them as users of the Airport, but also to help other users to understand about how skydiving activity is supposed to interact with fixed wing and helicopter operations. This is paramount since among all the users of the airport, skydivers are not required to undergo any formal training regarding how to operate in an airport environment. There is no evidence that even the 1995 SOPs are being communicated to all skydivers to ensure that they understand and agree to abide by them. Updating the set of SOPs is recommended.

A safety risk management meeting has been planned for airport management, the skydive operator, and representatives among the tenants and users to discuss opportunities to enhance safety at the airport.

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A. BACKGROUND

1. General

The City of Longmont, Colorado is the owner of the Vance Brand Airport (LMO). LMO is classified by the FAA as having “regional”¹ significance. While not officially designated as a reliever airport to the Denver International Airport (DIA) located 29 nautical miles to the southeast, LMO functionally serves as such among other general aviation airports in the region including support as a training airport for flight instruction. LMO can be characterized as a busy general aviation airport supporting a diverse range of general aviation aircraft types that generate an estimated 71,000+ operations annually. The Airport is host to a variety of commercial aeronautical services including a commercial skydiving operation.

In January 2019, the City engaged a professional aviation consulting services firm to evaluate the ability of LMO to safely accommodate the skydiving activity and to recommend strategies to mitigate risks. The following report narrative presents the observations, findings, and recommendations of the assessment. While the facts speak for themselves, the observations, comments, opinions and recommendations expressed in this report are those exclusively of Quadrex Aviation and do not reflect the position of the Federal Aviation Administration or that of any other federal, state, or local agency.

2. Airspace and Airfield

The Airport is located three miles southwest of the city of Longmont. LMO has a single runway oriented along a northwest-southeast alignment. Runway 11/29 is 4,799 feet long and 75 feet wide and constructed of concrete. Both runway directions have standard left-hand traffic patterns. Runway 29 has a Global Positioning System (GPS) based instrument approach with minimums down to 300 feet in 1 mile visibility.

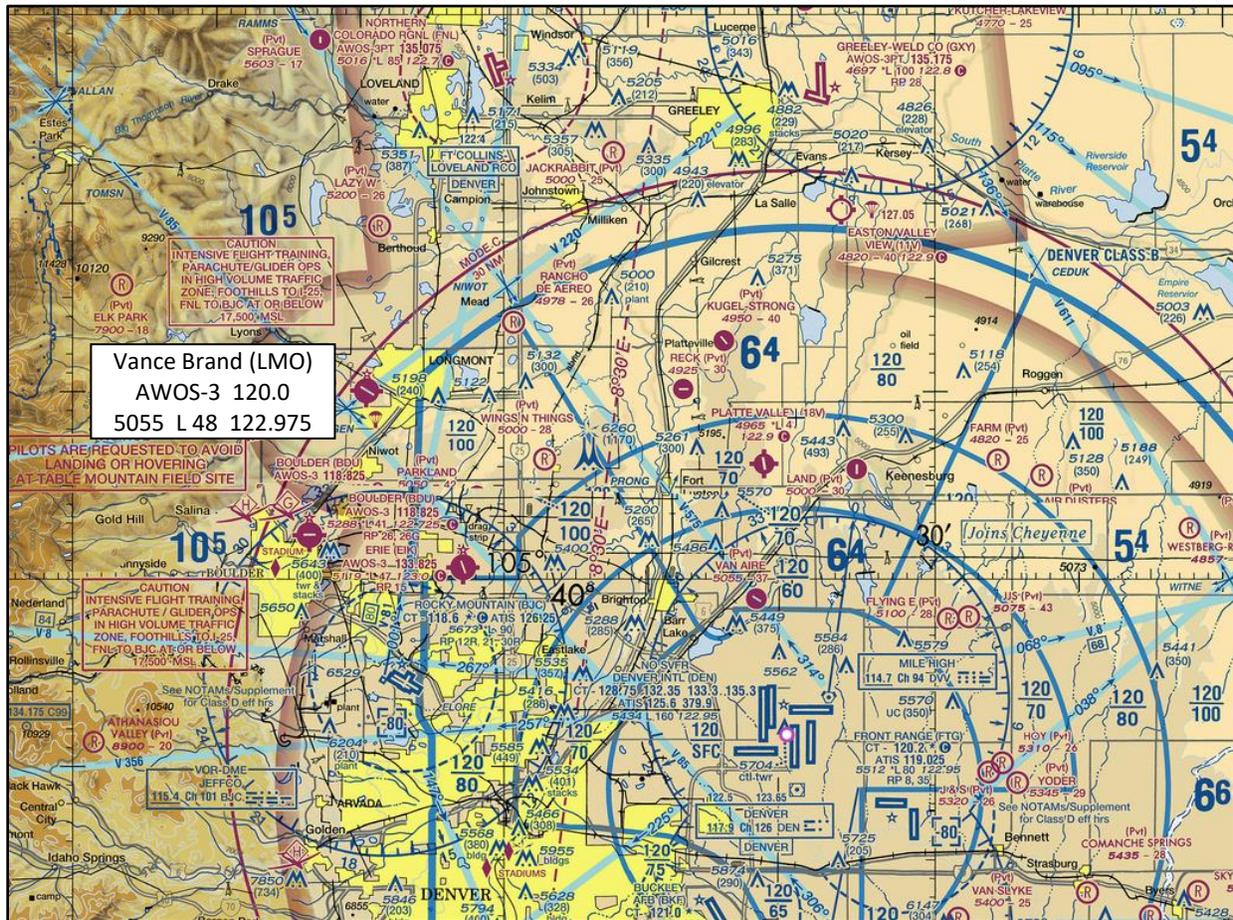
LMO is home to 284 FAA-registered aircraft, the majority of which are small single-engine piston (257 – 90%). There are also 19 multi-engine aircraft, 4 jets, and 4 helicopters based at the airport. **Figure 1** depicts the Airport in relation to the area’s airspace and other nearby airports.

As Figure 1 illustrates, LMO is located in the northwest quadrant of the Denver airspace, just outside the Class B airspace of Denver International Airport. A special information box on the aeronautical chart alerts pilots regarding intensive aircraft operations including skydiving along the foothills of the Rocky Mountains between the Northern Colorado Regional Airport (FNL) 19 miles to the northeast of LMO and the Rocky Mountain Metropolitan Airport (BJC) 15 miles to the south. Immediately southwest of LMO is the airway intersection “HYGEN” where Victor Airways² V85 and V220 intersect. The parachute icon just below the airport symbol indicates that skydiving operations are present at the Airport.

¹ FAA characterizes “regional” general aviation airports as having high levels of activity with some jets and multi-engine propeller aircraft averaging about 90 total based aircraft including 3 jets.

² Victor Airways are standard routes of flight between ground-based navigational aids that have been identified for aircraft flying below 18,000 feet MSL.

Figure 1
Area Airports & Airspace



<u>Legend</u>			
Airport name (ID)	Vance Brand (LMO)	Runway Information	4,800' (lighted)
Weather information (Freq)	AWOS-3 120.0 (VHF)	Communications	122.975 (CTAF)
Airport Elevation (MSL)	5,055'		

Source: SkyVector.com

Figure 2 is an aerial photograph which illustrates the Airport's facilities. Most of the airport has been developed along the northeast side of the runway. However, to handle the growing demand for T-hangars, the southwest side of the airport has been opened up for development, including the recent addition of a taxilane to accommodate additional hangars. The Airport's approved master plan calls for Runway 11/29 to ultimately be extended 1,000 feet to the northwest; however no timetable has been set for the project. A copy of the Airport Layout Plan is included in Attachment A.

3. Skydiving Activity

Mile-Hi Skydiving Center (MHSC), a commercial skydiving operator began offering commercial skydiving services at Vance Brand Airport in 1995. Today, Mile-Hi provides a number of services including lifts to altitude for sport skydiving as well as training for novice and intermediate skydivers. Tandem skydiving is also available as well as sales and services for skydiving equipment and accessories. Mile-Hi operates two aircraft used for skydiving – a Beech King Air A90 and a de Havilland DHC-6 Twin Otter. Both aircraft have had the passenger seats removed and FAA-approved

restraints installed to accommodate more skydivers than for normal certificated operations more skydivers. The King Air can hold up to 15 skydivers while the Twin Otter can hold up to 22 skydivers each depending on weight, loading, and aircraft performance variables.

Figure 2
Airport Layout



Source: Google Earth Pro

Mile-Hi operates out of an office and hangar located on near the north end of the Airport's terminal area. They also hold a lease for a small parcel located on the southwest side of the airport that includes a Quonset hut structure used for parachute packing and storage. Near the hut leasehold is an area generally used for loading skydivers into the jump plane and after completing their jumps, transporting skydivers back to the main property for repacking parachutes. Transportation to and from the southwest side area is generally via a truck-towed trailer that traverses the northern service road.

A parachute drop zone (DZ) is located immediately northwest of Mile-Hi's hut lease and consists of a 338,000 square-foot irregular area as shown in Figure 2. The use of the drop zone is governed through a separate non-exclusive use agreement with the City. (See Attachment B)

A separate "swoop pond" roughly 380 feet long, 180 feet wide and approximately 4 feet deep is located west of the drop zone. The swoop pond is used for primarily for competitive events that involve the skydiver rapidly descending to pick up speed and then skim along the pond's surface and to land softly on the other side. Because of the inherent risks, only very experienced skydivers are allowed to compete in swooping events. The use and maintenance of the swoop pond is also governed by a separate letter of agreement. (See Attachment B)

A Letter of Agreement (LOA) was established in April 2007 between Mile-Hi and the FAA's Denver TRACON (Approach Control) regarding airspace procedures for using LMO for skydiving (see Attachment C). The Agreement outlined the geographic boundaries of the "climb box" located southwest of the Airport. The climb box was established to ensure the jump plane remains clear of

Denver's Class B airspace and other potential conflicts during the climb to altitude. The actual skydiving drop operation generally will occur at altitudes up to 17,900 feet above sea level (approximately 13,000 feet above ground level) with the aircraft to remain within a radius of 2 nautical miles of the Airport.

4. On-Site Observations

On-site observations were conducted February 1-2, 2019 to witness skydiving activity at the Airport. Even though it was during winter, the weather was conducive to skydiving and several jumps were made during those days. Data from the observations are presented in **Attachment C**.

B. POLICY GUIDING DOCUMENTS REVIEW

1. Rules and Regulations (Longmont Municipal Code 13.39)

The City's Code includes specific regulations regarding the skydiving operations at the Airport.

Section 13.39.040(J.) Skydiving operations.

1. All skydive operations will comply with applicable state and federal statutes, regulations, advisory circulars, the United States Parachute Association (or other nationally recognized skydiving organization's) Basic Safety Requirements (BSRs), and Parachute Licensing Procedures.
2. The skydive Aircraft will announce on the Vance Brand Airport CTAF frequency, as frequency congestion allows, Skydivers jumping two minutes before the jump and when jumpers exit the Aircraft.
3. Skydive Operators must provide the Airport Manager with a copy of their Standard Operating Procedures (SOPs) which set forth the procedures they will utilize to minimize and prevent Unauthorized Landings. These SOPs will be used by the City Manager or designee, including the Airport Manager, to evaluate Unauthorized Landings and determine if there has been a violation of these Regulations.
4. The Airport Manager shall designate the authorized parachute landing area. All parachute landings outside of this area are unauthorized unless specifically authorized by the Airport Manager.
5. Skydive Operators and Skydivers shall take every reasonable measure to prevent and refrain from Unauthorized Landings. It is an affirmative defense to a charge of violating this subsection that the Unauthorized Landing resulted from an emergency that neither the Skydive Operator nor the Skydiver could avoid.
6. Unauthorized offsite landings by Skydivers shall be reported to the Airport Manager by the responsible Skydive Operator within 24 hours after learning of the event.
7. Each Skydiver must acknowledge, in a form approved by the Airport Manager, Risk Manager, and City Attorney that the City bears no liability for any loss, injury, death, or damage to persons or property arising from the Skydiver's activities and operations whether such loss, injury, or death occurs at the time of the incident or follows as a result of such incident.
8. Each Skydiver must agree, in a form approved by the Airport Manager, Risk Manager, and City Attorney, to indemnify and hold harmless the City and each of its Council members, officers,

officials, representatives, agents, employees, successors and assigns against all claims, demands, liabilities, damages, suits, actions, judgments, fines, penalties, losses, and expenses, including attorney fees by the Skydiver or others, arising from the Skydiver's activities and operations.

- 9. Each Skydive Operator shall comply with administrative procedures, which the Airport Manager may issue, and shall keep and produce for inspection and copy such records and reports as the Airport Manager may require.*

Some of these provisions appear in the current (1995) Standard Operating Procedures which will be discussed separately as well as recommendations for amending the code.

2. Minimum Standards for Commercial Aeronautical Activities

Like Rules and Regulations, Minimum Standards are designed to articulate the City's policies governing the use of the airport for commercial aeronautical purposes. It provides a framework for promoting fair business practices and avoiding allegations of economic discrimination among existing and prospective service providers. Prior to receiving permission to conduct an aeronautical activity on the airport, the entity proposing to perform the activity must meet the applicable minimum requirements for the type and size of facilities along with the quality and level of services they are proposing to offer to the public.

The City adopted its most recent set of Minimum Standards in May 2016 and include commercial skydiving activity.

Section 10 – Commercial Skydiving

Statement of Concept

A skydiving SASO or FBO approved for this operation or activity engages in the transportation of persons for skydiving, instruction in skydiving, and rental and sales of skydiving equipment.

Minimum Standard

- 1. The company shall have available for skydiving, either owned or under written lease to the company, at least one properly certificated and airworthy aircraft.*
- 2. The jump plane pilot must hold an appropriate pilot certificate and be appropriately rated for the aircraft being operated.*

Recommendations for amending the Skydiving Operator's minimum standards as currently stated will be addressed in a subsequent section.

3. Aircraft Operations

The Vance Brand Airport does not have an air traffic control tower (ATCT) that would otherwise provide an accurate aircraft activity count. FAA maintains an estimate of aircraft operations at LMO as shown in **Table 1**. The FAA also forecasts aviation activity based on regional and national trends. Their current outlook for the Airport indicates, using 2017 as the base year, that they anticipate aircraft operation to increase 8.3 percent within the four years.

C. DROP ZONE SITE ANALYSIS

1. Dimensional Criteria

In 2012, the FAA’s Airport Technology Branch of their Aviation Research Division published Technical Report DOT/FAA/AR-11/30, *Development of Criteria for Parachute Landing Areas on Airports* which included research regarding the appropriate size and location of PLAs³ on airports and provide guidance material. Their findings concluded that the experience of the parachutist and the type of parachute used should be considered in establishing the area encompassing the boundaries of the PLA. It was also determined that the edge of the PLA should be located no closer than 40 feet from any obstructions (trees, building, etc.) that could create a potential hazard for parachutists from approaching the PLA from any direction. In addition, the report included recommendations for establishing operational procedures and practices for the PLA. Draft standards for parachute landing areas were prepared for inclusion as Appendix 18 of AC 150-5300-13, *Airport Design* but were not been adopted.

Table 1
Base and Forecast Aircraft Operations [1]
Vance Brand Airport

Year	Itinerant [2]				Local [3]		Total
	Air Carrier	Air Taxi	General Aviation	Military	General Aviation	Military	
2017	-	-	21,028	420	50,043	-	71,491
2018	-	-	21,548	420	50,971	-	72,939
2019	-	-	22,081	420	51,916	-	74,417
2020	-	-	22,627	420	52,879	-	75,926
2021	-	-	23,176	420	53,865	-	77,461
2022	-	-	23,740	420	54,869	-	79,029

Notes:

[1] Operation = one aircraft takeoff or landing

[2] Itinerant operation - aircraft arriving from or departing to another airport

[3] local operation - aircraft staying within the traffic pattern or within 20-miles

Source: FAA 2018 Terminal Area Forecast for LMO

FAA originally published Advisory Circular 105-2 *Sport Parachuting* in 1968 to provide guidance regarding parachute operations and throughout the years, the AC has been updated up to the latest version 105-2E which was published in December, 2013. In the current version, the only mention of PLAs is found in Section 5(f):

Parachute Landing Areas. The FAA recommends that areas used as parachute landing areas remain unobstructed, with sufficient minimum radial distances to the nearest hazard. The guidelines in the USPA’s BSRs can be used in determining if the landing area is adequate.

While not officially approved as a design standard, the USPA’s Basic Safety Requirements (BSRs) are considered by the FAA as industry best practices and widely accepted for use by individuals and parachute centers.

Closely following the FAA’s earlier research, the USPA adopted recommended standards for parachute drop zone (DZ) dimensions based on levels of the skydiver’s proficiency. The current USPA

³ The term “parachute landing areas (PLAs) and “drop zone” are used interchangeably throughout

recommended unobstructed drop zone dimensions (radii) are presented in **Table 2** and graphically in relative scale in **Figure 3**.

Table 2
USPA Parachute Drop Zone Guidelines

<u>Class</u> ^[1]	<u>Proficiency or Activity</u>	<u>DZ Radius (Radius)</u>	<u>Area</u>
I	Solo students & A-license holders	330 ft	7.85 ac
II	B- and C-license holders and tandem skydives ^[2]	165 ft	1.96 ac
III	D-license holders	40 ft	0.12 ac

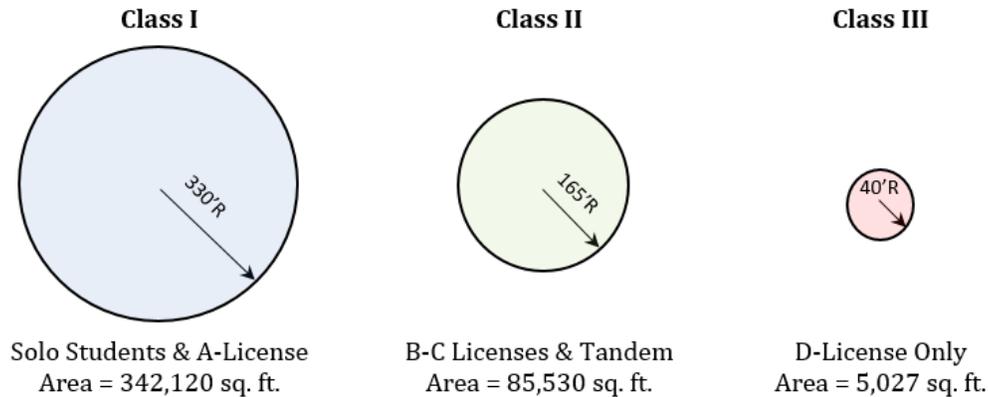
[1] Classes added to differentiate between various DZ activity & dimensions

[2] Tandem jumps involve two skydivers using one parachute

Source: USPA 2019–2020 Skydiver's Information Manual (Section 2-1[1])

As Table 2 demonstrates, a Class I drop zone requires a minimum of almost 8 acres of unobstructed property to support a full range of skydiving activity including initial training and accelerated free-fall jumps. This is substantially more space (400 percent) to provide an adequate landing area and a margin from obstacles than a Class II drop zone which is suited for skydivers with a B-license or greater plus tandem skydiving. The area needed for a Class 3 drop zone is negligible but would be restricted for use by only skydivers holding a D-license.

Figure 3
Recommended Parachute Drop Zone Dimensions



2. Airport Considerations

In addition to siting a DZ to avoid obstacles, considerations for the placement of a drop zone include the proximity of active runways and taxiways. While the FAA's proposed guidance was not implemented, it was recommended that the drop zone be located outside protected areas such as runway protection zones and object free areas of runways and taxiways. The runway protection zones are trapezoid shaped areas located beyond the ends of each runway. Runway/taxiway object free areas extend the length of each pavement and outward laterally along their respective centerlines.

At Vance Brand Airport, the RPZs for both the Runway 11 and 29 ends have an inner width of 500 feet and extends outward 1,000 feet to an outer width of 700 feet. The runway object free area extends outward along the centerline of Runway 11/29 at a distance of 500 feet. The taxiway object free areas for both Taxiway A and B extend outward 65.5 feet from the taxiway centerlines. These

criteria establish the general boundaries for considering remaining airport property suitable for siting a drop zone.

LMO has standard traffic patterns for the use of Runway 11/29 which involve left-hand turns for crosswind, downwind, and base legs of a complete takeoff and landing circuit. LMO's traffic pattern altitude is 1,000 feet above ground level (6,050 feet mean sea level or MSL) for smaller aircraft while high-performance jets will generally use 1,500 feet (6,550 feet MSL) as their pattern altitude. **Figure 4** illustrates the current traffic patterns for the Airport.

Because of the relatively high elevation of the airport (5,050 feet MSL), aircraft aerodynamic and engine performance is diminished compared to the same aircraft operating at sea level. In effect, aircraft on the ground behaves as if it were approaching its maximum cruise altitude. In addition, aircraft performance is affected by air temperature and to a lesser degree humidity, which both can be further diminish performance especially during the summer months. Known as density altitude, warmer air is less dense than cooler air which affect both engine and aerodynamic performance. At times, density altitude on the surface at LMO can reach 8,000 to 9,000 feet MSL which can adversely affect the ability for aircraft to takeoff, climb, and maneuver. By extension, density altitude can also affect parachute performance and should be considered as well, especially to avoid skydiving activity near aircraft using the runway and traffic patterns.

3. Drop Zone Evaluation Criteria

There are areas of undeveloped airport property west of Runway 11/29 that is currently being used to support skydiving activity. However, there are certain factors that should be considered for evaluating the suitability for an optimum drop zone site.

As previously discussed, the USPA's recommended drop zone size and shape needed for supporting all types of skydiving is a circular with a 330 foot radius (342,120 square feet). The circular shape is primarily to provide a unidirectional opportunity to approach the drop zone. The drop zone location should be as far away as practicable from Runway 11/29 to allow enough airspace to allow unidirectional approach patterns with an emphasis on prevailing winds so as to avoid overflights and potentially interfering with aircraft using the runway. The extensive area requirements for the drop zone should not encumber otherwise developable property in order to avoid having to relocate the drop zone in the future if the property becomes marketable. Other more criteria specific to LMO include (1) proximity to the swoop pond and (2) walking distance to the loading zone. These criteria were used to evaluate the current drop zone as well as for alternative sites.

4. Current Drop Zone

In November 2018, the City identified the current boundaries of the designated drop zone. As depicted on **Figure 2**, the drop zone has a total area of 338,000 square feet with squared corners and a small cut-out to avoid a non-standard wind direction indicator. The drop zone area also includes a 175-foot square extension (30,625 square feet) immediately south of the swoop pond.

As currently laid out, there are several concerns with the existing drop zone. The drop zone area does not meet the USPA BSR standard for a Class I drop zone. In addition, the extension of the DZ that abuts the south end of the swoop pond is generally unusable for novice skydivers and further constrains the amount of area available for all skydivers. The squared off area of the DZ also leaves portions of the drop zone unusable in a practical sense. Skydivers are generally not going to aim for the corners to land in the DZ. Attempting to place a Class I drop zone centered within the current DZ does not fit.

Figure 4
Airport Traffic Pattern/Drop Zone

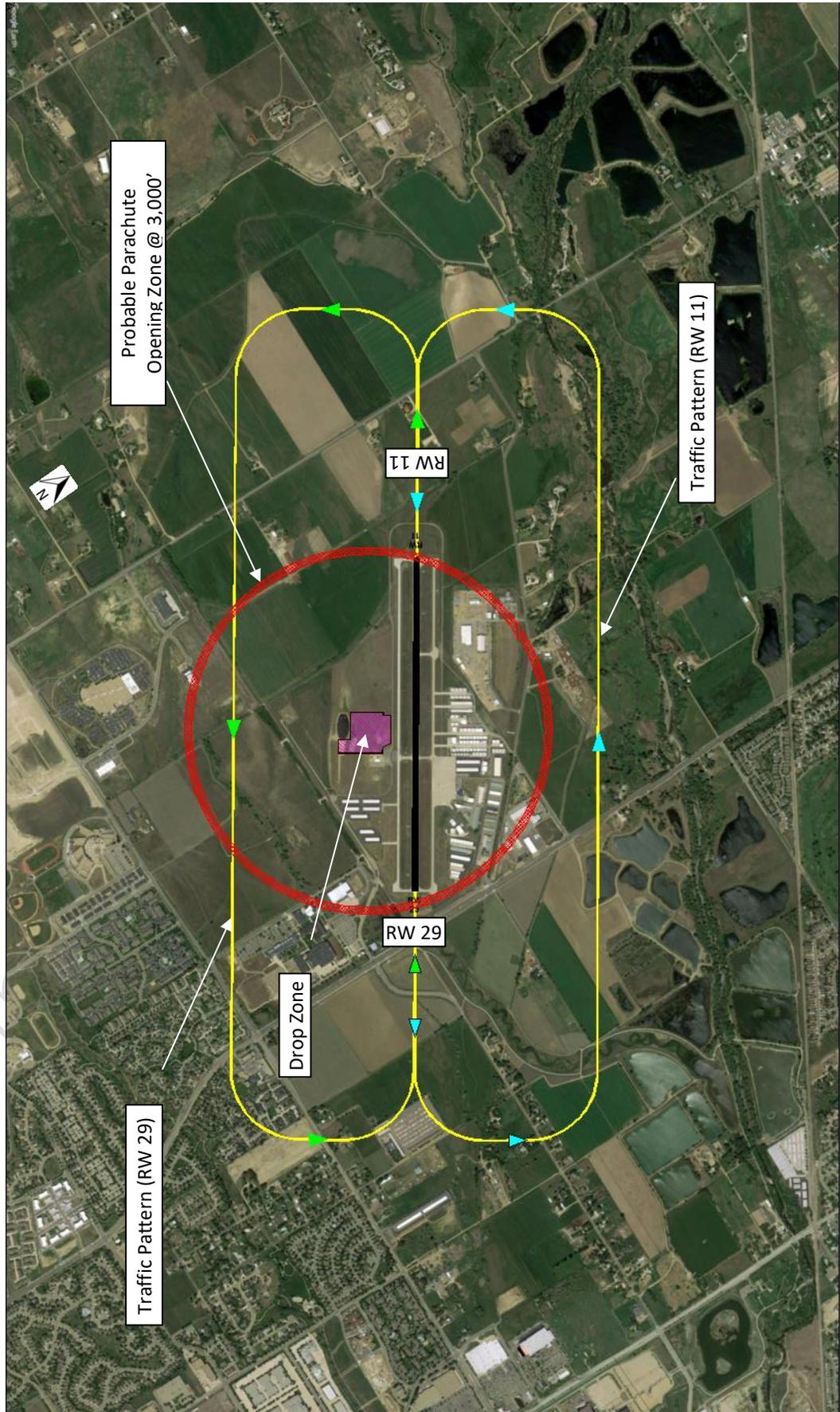
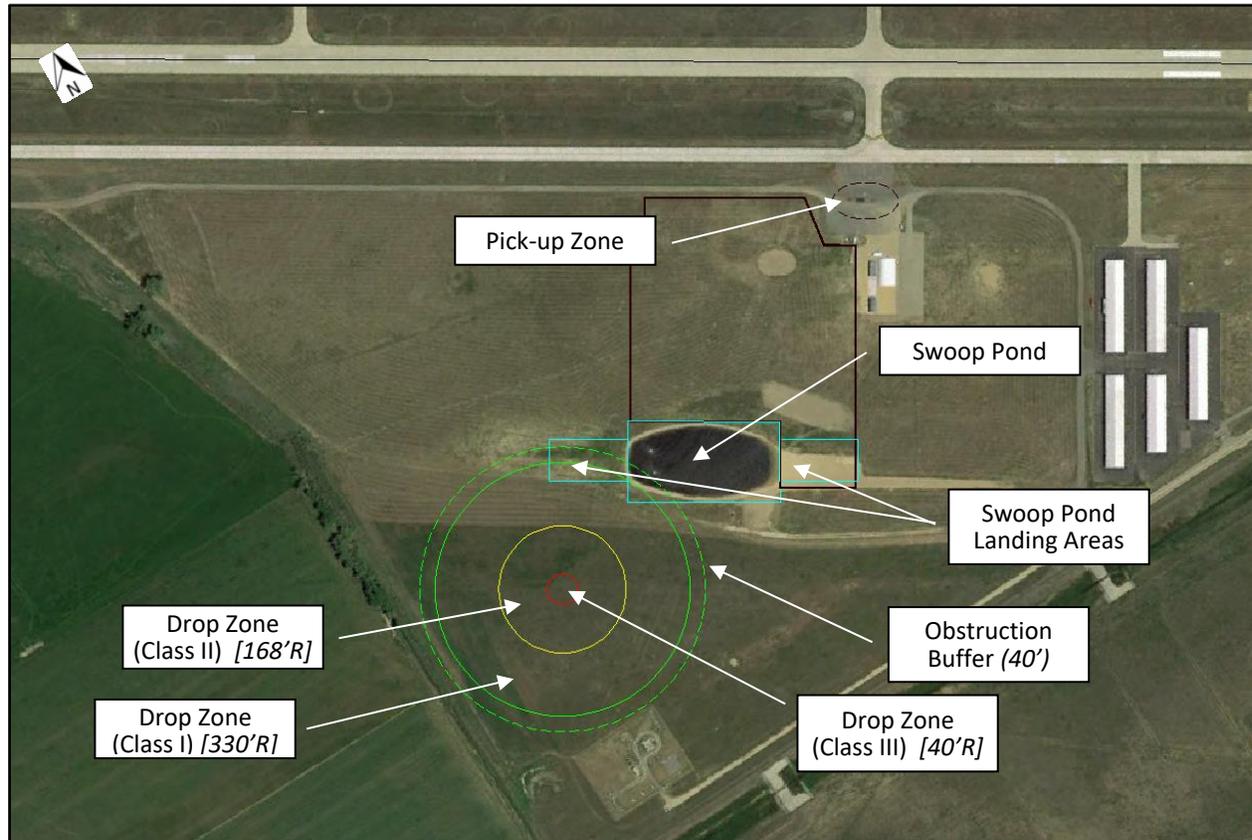


Figure 5
Alternate Drop Zone 1



The northeastern edge of the drop zone is located only 350 feet from the centerline of Runway 11/29. As a result, overflights of the runway sometimes occur presumably by skydivers attempting to approach the drop zone from the northeast due to wind conditions. The location of the drop zone occupies prime frontage property that could accommodate future aeronautical development (T-hangars, etc.). The swoop pond is located adjacent to the drop zone and the walking distance from the farthest edge of the drop zone to the loading area is approximately 840 feet.

5. Alternate Drop Zones

Based on the limitations of the current drop zone to meet the preferred criteria, a number of alternative locations and layouts were evaluated for consideration as a suitable drop zone site.

Alternate Drop Zone No. 1

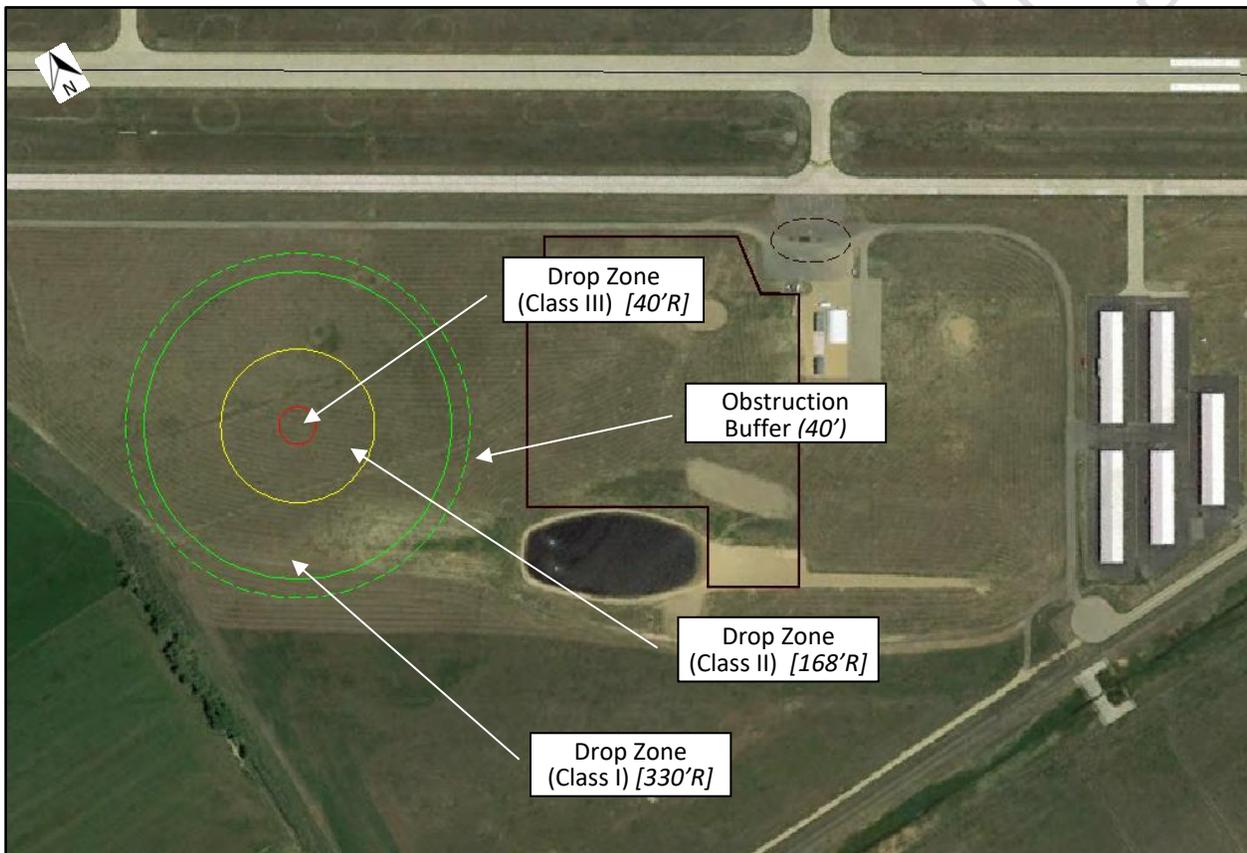
Alternate Drop Zone 1 (DZ 1) is located along the western boundary of airport property, immediately north of an antenna array used by a research laboratory as depicted in **Figure 5**. The drop zone in this area includes a standard Class 1 330-foot radius circle (348,120 sq. ft.) plus a 40-foot buffer to avoid physical obstructions. Also shown on Figure 5 and subsequent alternatives are two concentric inner circles representing Class II and III drop zones which can serve as landing targets and encourage the improvement of skydiver proficiencies. The closest edge of the drop zone would be approximately 1,050 feet from the centerline of Runway 11/29 which allows unidirectional approaches.

The drop zone is adjacent co-located with the swoop pond and the walking distance from the farthest edge of the drop zone boundary to the loading zone is about 1,600 feet. The general area of DZ 1 is not currently planned for future development.

Alternate Drop Zone No. 2

Alternate Drop Zone 2 (DZ 2) is located northwest of the existing drop zone as shown in **Figure 6**. Similar to Alternate DZ 1, the drop zone meets the Class I USPA recommendation and also includes the 40-foot buffer. The closest edge of DZ 2 is 430 feet from the Runway 11/29 centerline. While development is not immediately planned in the area, adjacent access to Taxiway B represents prime frontage property on the airfield for future consideration. DZ 2 is also co-located with the swoop pond and the farthest walking distance to the loading zone is 1,500 feet.

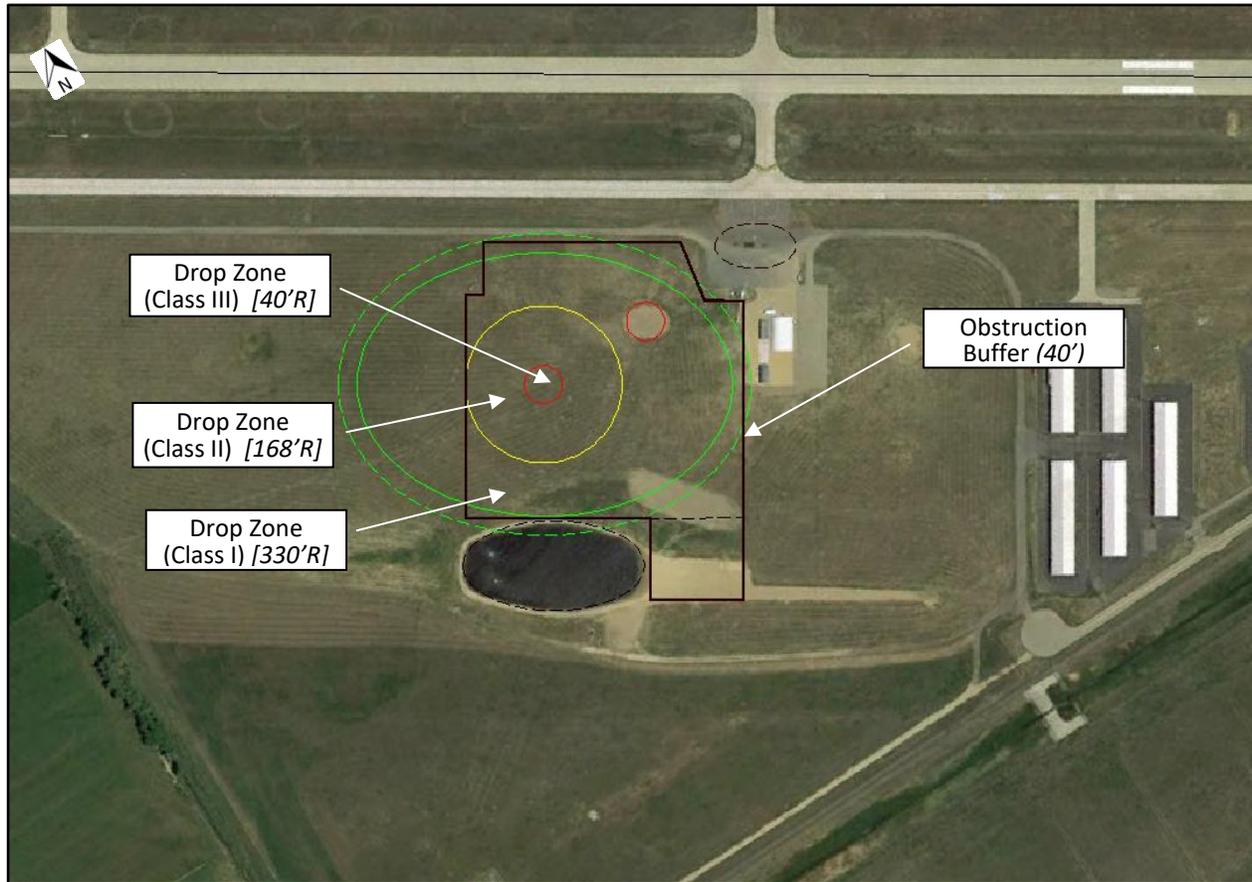
Figure 6
Alternate Drop Zone 2



Alternate Drop Zone No. 3

Alternate DZ 3 is an adaptation of the existing drop zone and is illustrated in **Figure 7**. Designed to provide an adequate landing area (342,120 sq. ft.) for all types of skydiving activity, it is elliptical in shape, approximately 790 long and 550 feet wide aligned parallel to Runway 11/29. DZ 3's closest boundary is 375 feet from the runway centerline. As with the current drop zone, the encumbered property is not currently planned for future aeronautical development. DZ 3 is also co-located with the swoop pond and the farthest walking distance to the loading zone is 900 feet.

Figure 7
Alternate Drop Zone 3



6. Drop Zone Recommendations

It is apparent the current drop zone area is insufficient to support the full range of skydiving activities, especially those regarding skydivers with limited experience. In order to provide an adequate area for skydivers to safely operate at LMO, it is recommended that Alternate Drop Zone 1 be strongly considered as the preferred area set aside as the primary drop zone. DZ 1 provides several advantages, the key being the distance from the Runway 11/29 to allow maximum separation from normal air traffic.

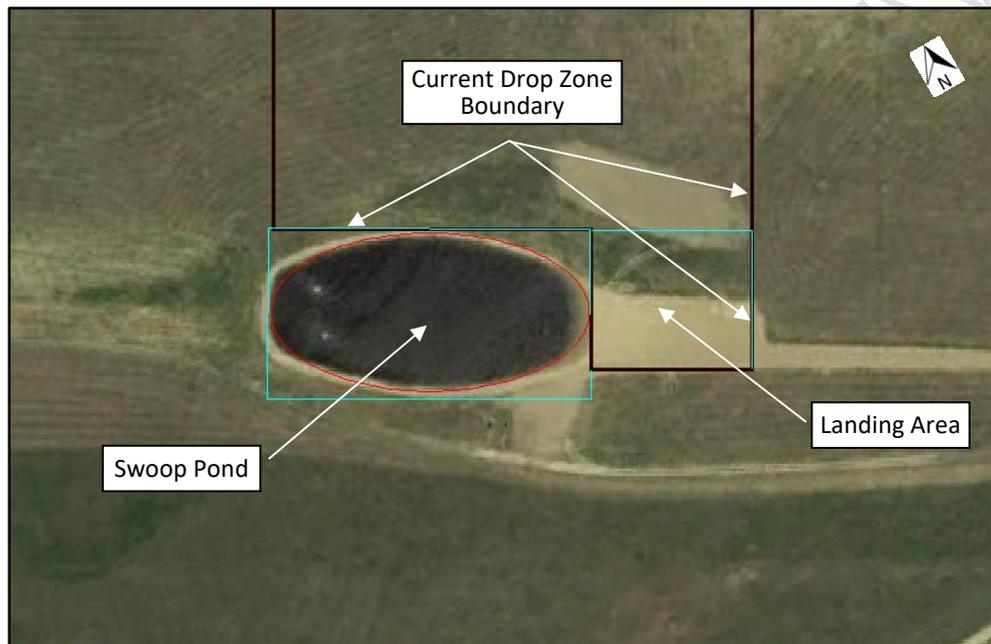
DZ 1 can be sized to support the entire range of skydiving, is not encumbered by obstacles, adjacent to the swoop pond and retains relatively close proximity to the loading area. The site takes advantage of an area that can be approached from all directions without encroaching on activity using Runway 11/29 and the area is not slated for any proposed future aeronautical or non-aeronautical development.

The outline of the concentric drop zones should be prominently marked for easy identification from the air. Wind indicators (direction and speed) should be located adjacent to the DZ so that skydivers can assess the need to adjust their approach (e.g., closer-in for higher winds). Other markings may be helpful to mark geographic reference points so that skydivers can gauge their approach to the DZ.

7. Swoop Pond

The USPA defines a swoop pond as a “water obstacle used as a high-performance landing area”. At LMO, the swoop pond is separate from the drop zone and consists of a 380 feet by 180 feet water feature approximately 4 feet deep with a parachute landing areas at each end of the pond as depicted in **Figure 8**. The August 10, 2010 Letter of Agreement (Attachment B) between the City and the Operator established the responsibilities and conditions for the operation and maintenance of the swoop pond. It also set the financial compensation the Operator must pay for the use of airport property. The annual fee was originally set at \$1,550 per year and adjusted each year based on a regional Consumer Price Index (CPI).

Figure 8
Swoop Pond



The pond is open for 5 months of the year, from May 1st through September 30th. Each year, the pond is filled with raw water to a depth of 3-4 feet under contract with the City’s Water Department. Maintenance of the pond is the responsibility of the Operator. Aside from mowing the area adjacent to the pond, the Operator must aerate the water and treat the pond water every 30 days with chemical agents to inhibit algae and plant growth to prevent the pond becoming a wildlife attractant. The swoop pond is to be completely drained within 15 days of the season end (October 15th).

Skydivers using the pond with generally approach the pond simultaneously with regular skydiving activity using drop zone. Occasionally, the Operator will sponsor a special event involving the swoop pond and is responsible for the security of the airfield and the safety of spectators. Entry to the area is either by using the perimeter road or via Rogers Road.

The use of the swoop pond is unique to special form of skydiving. There does not appear to be any specific guidelines for the layout and design of a swoop pond. Other than providing a definition, the USPA is silent on the topic. General discussion on-line regarding swoop pond development indicates that a linear distance of 300 feet or more and a depth of 3 feet is a common recommendation. As such, it is assumed that the swoop pond at LMO is adequate for its intended use. However, unlike the regular drop zone which does not require significant development, the location of the pond is fixed by its physical features. It’s adjacency to the current drop zone has not conflicted with regular

skydiving activity and it is presumed that the pond would not interfere with the use of a relocated drop zone, physically or operationally.

The provisions contained in the existing Letter of Agreement (LOA) for the swoop pond cover the requirements for the Operator to maintain the pond to avoid creating a habitat that could attract wildlife. It also sets the timelines for when the pond opens (May 1st) and closes (September 30th) as well as a deadline for when the pond must be drained. The LOA covers the Operator's financial responsibilities for costs incurred in filling and draining the pond, maintenance and monthly treatment of the pond water, and an annual use fee.

The LOA is silent on the Operator's requirement for maintaining adequate liability insurance for the operation of the swoop pond with the City as an additional named insured. It may be covered in the Operator's general liability policy however, because of the specific nature of swoop pond activity, the Operator should confirm with their insurance provider if it comes under the terms of their existing policy and should provide the City with a statement attesting to such from the policy underwriter.

D. COMPARATIVE AIRPORTS

1. Overview

A review of other airports that host skydiving activities was conducted to compare and contrast against the relative nature of skydiving activities with LMO. The general characteristics of the comparable airports selected for comparison included:

- Unlimited skydiving (i.e., initial training, sport and tandem skydiving)
- USPA Group Member designated as a Training Center
- Estimated aircraft operations (40,000 or greater)
- Based aircraft (30 or more)
- Non-towered

"USPA Group Member" pledge to comply with USPA's Basic Safety Requirements and to use current USPA sanctioned instructors, provide USPA-required equipment, and use USPA-developed instruction methods. USPA Group Members designated as "Training Centers" provide instruction, equipment, and training to become a licensed skydiver.

A review of the U.S. Parachute Association's (USPA) Drop Zone Locator⁴ identified several skydiving operators that fit the general characteristics for comparison. **Table 4** presents a list of airports that met the selection criteria.

From among these, three airports were selected as representative examples for examining their policies, practices, and procedures for accommodating commercial skydiving operations. In each case, the airport manager was interviewed to discuss skydiving activities at their airport.

2. Yolo County Airport (DWA)

Yolo County Airport (DWA) is owned and operated by Yolo County, California and is classified by the FAA as a general aviation airport of "local" significance.⁵ The Airport is located seven miles northwest

⁴ <https://uspa.org/DZlocator>

⁵ FAA characterizes "local" general aviation airports as supporting local businesses and personal air transportation need. They generally have 15 or more based aircraft with no jets and modest levels of activity..

PRELIMINARY

of the City of Davis, California and 22 miles west of the Sacramento. The Airport has one runway, Runway 16/34 which is 6,000 feet long and 100 feet wide.

Table 4
AIRPORTS WITH SKYDIVING TRAINING CENTERS

<u>LOCID</u>	<u>Airport</u>	<u>ST</u>	<u>Estimated Ops</u>	<u>Based A/C</u>	<u>Based Jets</u>	<u>Remarks</u>
DWA	Yolo County	CA	60,360	79	0	
CVH	Hollister Municipal	CA	57,489	158	9	Gliders (45)
OAR	Marina Municipal	CA	42,000	53	4	
ZPH	Zephyrhills Municipal	FL	49,425	165	2	Gliders (20)
X26	Sebastian Municipal	FL	37,240	37	0	
DED	Deland Municipal	FL	117,460	79	2	
X51	Homestead General Aviation	FL	76,617	30	0	Gliders (8)
LHZ	Triangle North Executive	NC	62,800	133	1	
MWO	Middleton Municipal	OH	40,050	62	2	

Source: USPA Drop Zone locator, FAA Form 5010, & interviews

DWA has one full-time Fixed Base Operator (FBO) and an aircraft/avionics maintenance service. SkyDance Skydiving is the skydiving operator based at the airport, providing a full range of parachuting activities (i.e., novice to advanced training, tandem, high altitude, etc.). SkyDance operates as a USPA recognized Training Center. The skydiving operator uses a Cessna 208 Caravan capable of carrying 12-16 skydivers and operates from a set of buildings located in the northwest area of the Airport. The drop zone consists of a nearly 500,000 square-foot parcel located across the road from the SkyDance offices. An adjacent parcel to the south is open and available for novice skydivers. **Figure 9** illustrates the location and layout of the Airport and the location of the drop zone.

Lease/Operational Agreement

There is a lease between the County and SkyDance for the land and facilities, however there is no agreement in place for the use of the drop zone area.

Rules & Regulations

The County's Airport Rules and Regulations are posted online, however there is no mention of skydiving activity.

Minimum Standards for Commercial Aeronautical Activities

It does not appear that Yolo County has established any minimum standards for commercial aeronautical operators (not that they are required to).

Other Remarks

The Airport has hosted skydiving activity for over 20 years without incident or major complaints by the users or neighbors. The County operates a non-certified Automated Weather Observation Station (AWOS) which, when skydiving activity is prevalent, announces "avoid overflying the east side of the Airport" as the end of the weather information.

Figure 9
Yolo County Airport



3. Middletown Regional Airport (MWO)

General

Middletown Regional Airport/Hook Field (MWO) is owned and operated by the City of Middletown, Ohio and like LMO, is classified by the FAA as a regional general aviation airport. The Airport is located two miles north of the city and 23 miles northeast of Cincinnati. The Airport has two runways, Runway 5/23 which serves as the primary runway and is 6,100 feet long; Runway 8/26 is a turf runway used seasonally as the secondary, crosswind runway and is 3,040 feet long.

MWO has one full-time Fixed Base Operator (FBO), an aircraft maintenance service, and a flight training provider. Start Skydiving, LLC is the skydiving operator based at the airport, providing a full range of parachuting activities and operates as a USPA recognized Training Center. They operate all year long weather permitting but their normal season is between April 1st and October 31st. The skydiving operator normally operates two Cessna 208 Caravans capable of carrying 12-16 skydivers each in addition to a Cessna 206 (6-8 skydivers). Larger aircraft are brought in during the busier summer months to accommodate demand. There are several drop zones located on the airport and are designated for use based on the proficiency level of the specific skydiver. **Figure 10** illustrate the location and layout of the Airport and the location of the drop zone.

Lease/Operational Agreement

There is a lease between the City and Start Aviation (and owner of Start Skydiving) for the property used for offices and other space used for skydiving activity. There is currently no operating agreement for the use of the drop zones.

Rules & Regulations

The City is currently working on preparing a set of Airport Rules and Regulations as part of its Master Plan Update which will include skydiving activity.

Minimum Standards for Commercial Aeronautical Activities

The City is also working on preparing a set of Minimum Standards as part of its Master Plan Update which will include commercial skydiving operators.

Figure 10
Middletown Regional Airport



Other Remarks

Start Skydiving advertises itself as the Number 1 ranked Drop Zone in the world however, the basis for that assertion is unknown.

Until July of 2018, Start Aviation Services, the Airport's FBO (and owner of Start Skydiving) was also contracted by the City to serve as the Airport Manager, which created inherent conflicts of interest.

The City operates an Automated Weather Observation Station (AWOS) which announces skydiving activities in progress as part of the weather information message.

4. Triangle North Executive Airport (LHZ)

General

Triangle North Executive Airport (LHZ) is owned and operated by Franklin County, North Carolina. LHZ is classified by the FAA as a general aviation airport of regional significance. The Airport is located five miles north of the city of Louisburg and 17 miles northeast of Raleigh, North Carolina. The Airport has one runway, Runway 5/23 which is 5,498 feet long and 100 feet wide.

The management activities of the Airport also include providing typical Fixed Base Operator (FBO) services including Jet A and AvGas fuel sales, aircraft parking, hangar leasing, flight training and aircraft rentals. Triangle Skydiving Center, Inc. is the based skydiving operator, providing a full range of parachuting activities and operates as a USPA recognized Training Center. They generally operate all year long weather permitting but busiest during the summer months. The skydiving operator normally operates a turbine-powered Cessna 208 Caravan capable of carrying 12-16 skydivers at a time to altitude.

There are two drop zones located adjacent to TSC's office and hangar. The first drop zone is approximately 72,000 square feet which only D-licensed skydiver are authorized to use. A larger estimated 364,000 square-foot (8.3 acre ±) irregular shaped parcel is located immediately to southeast of the first drop zone which is available to all skydivers. **Figure 10** illustrates the location and layout of the Airport and the location of the drop zones.

Lease/Operational Agreement

There is a 3-year lease between the County and Triangle Skydiving Center for the rental of the office and hangar space and other space used for skydiving activity (e.g., parachute packing, rigging, etc.). There is currently no operating agreement for the use of the drop zones.

Rules & Regulations

The County recently updated its Airport Rules and Regulations and the only references to skydiving activity in the regulations include:

REGULATIONS GOVERNING REQUIREMENTS FOR COMMERCIAL OPERATIONS

F. The minimum liability insurance which a commercial operator shall carry will be determined by the nature of the commercial operation. Airport bodily injury and property damage liability insurance limits:

f. Parachute/Skydiving Operations: \$1,000,000

SPECIAL AIRPORT USES

D. No commercial operations involving non-powered aircraft, including gliders, balloons, parachuting, and other unusual and special classes of aeronautical activities, will be permitted on the airport without the prior written approval of the Airport Manager.

Minimum Standards for Commercial Aeronautical Activities

The County addresses the Airport's Minimum Standards through the aforementioned rules and regulations which other than a minimum level of liability insurance, impose no other requirements.

Other Remarks

The County operates an Automated Weather Observation Station (AWOS) but the broadcast message does not include advisory regarding on-going skydiving activities.

Figure 10
Triangle North Executive Airport



5. Summary

These examples are provided for comparison for existing skydiving operations at LMO. While each of the comparable airports has unique characteristics, there are similarities that can enable the City to consider the how to address its own concerns regarding the review of appropriate rules and regulations, standard operating practices, and the current minimum standards for commercial skydiving services.

Each of the comparable airports have skydive operators that are designated as training centers which offer initial and advanced skydiving lessons. They also share larger than standard drop zones which provides adequate area for skydivers to land within the boundaries. Two of the comparable airports (MWO and LHQ) have a separate drop zone set aside for expert skydivers. Only one airport (MWO) had publically available SOPs for airport operations which specifically included skydiving activity. Additional information on these airports is included in **Attachment D**.

E. SAFETY RISK ANALYSIS

As part of this analysis, a multi-level safety risk analysis was conducted to identify and assess potential risks associated with supporting commercial skydiving activity at the Airport. It included various elements relevant to the existing policies, procedures and practices proposed skydiving operation as well as characteristics of existing activity at LMO.

1. FAA-Based Safety Risk Analysis

The basic risk assessment followed the outline from Figure 8-3-5B, “Risk Assessment for Parachute Operations at an Airport” found in FAA Order 8900.1, *Flight Standards Information Management System (FSIMS) Change 502*. The assessment also used on-site observations and other information for considering the potential hazards that could occur at the Airport.

The initial assessment identified several areas where the unmitigated risk could be considered “low”, “medium” or “high” based on the potential frequency and severity of mishaps aligned with the FAA’s threshold for safety. **Table 5** highlights the FAA’s factors that could directly affect the safety of skydiving and other users at LMO.

Table 5
FAA-Based Safety Risk Assessment

<u>Hazard Factor</u>	<u>Potential Mitigation</u>
1. Drop Zone not sized for the appropriate skydiver experience level	Establish appropriately sized and marked drop zone in an area that minimizes conflicts with other airport users
2. Drop Zone located inside traffic pattern for Runway 29	Relocate drop zone to avoid runway proximity
3. Congested traffic pattern with diverse mix of aircraft and pilots with varying proficiencies.	Publish updated SOPs and post on-line. Proactive awareness campaign.
4. Current skydiving SOPs date from 1995 and are not available or referenced in other airport publications	Update SOPs and post on-line. Proactive awareness campaign. Conduct safety meetings
5. No Procedure in place for notifying airport users of changes to the airport procedures	Publish notices and post on-line, email blasts and bulletins.
6. “No Radio” operations (e.g., light sport, ultralight, glider, or agricultural aircraft) being conducted through the airspace being used by skydiving operations	Recommend use of handheld radio to monitor UNICOM/CTAF communications

These and other issues are generally discussed in a Safety Risk Management charrette where stakeholders including airport management and the skydive operator, along with active skydivers, tenants, and user representatives convene to validate safety concerns and to develop a consensus regarding potential mitigation measures. **Attachment E** contains the full safety risk analysis using the FAA’s methodology and form.

2. Other Safety Risk Factors

The analysis of safety concerns at LMO included other issues and concerns specifically identified by airport management and users. Observations of skydiving activity at the Airport also identified current practices that should be considered. **Table 6** summarizes factors that can potentially compromise safety and strategies recommended for mitigating risks.

Table 6
Other Safety Risk Factors

<u>Hazard Factor</u>	<u>Proposed Mitigation</u>
1. Jump plane pilot does not consistently make routine radio announcements	Enforcement of [Section 13.39.040(j)(2)] and SOP's
2. Jump plane boarding skydivers at loading zone encroaching OFA Taxiway B	Expand / realign skydiver loading zone area
3. Jump Plane refueling on paved taxiway stub encroaching OFA Taxiway A	Relocate fuel tank and aircraft fueling area
4. Tandem skydivers observed performing 'diving spiral' maneuver close to ground	Prohibited [BSR 2-1(c)(8)]
5. Skydivers apparently not adequately briefed on SOPs/Drop Zone	Include SOP/DZ sheet with signed waiver
6. Off-DZ landings not reported	Develop reporting form with detailed information (who/when/where/why/instructor)
7. Skydivers overflying runway approaching from east	Relocate DZ / update SOPs / approach markers

F. CONCLUSIONS & RECOMMENDATIONS

There is no evidence to conclude that current skydiving operations at LMO are critically unsafe and warrant immediate termination. However, on-site observations provided evidence that skydivers using LMO do not appear to be operate in a consistently disciplined manner that provides any level of comfort to other airport users. (See **Attachment C**)

Several areas of concern have been identified and must be addressed to offer opportunities to enhance the safe use of the Airport by both pilots and skydivers. Most of these are addressed in Tables 5 and 6 as mitigation measures.

The location of the drop zone and the development of updated Standard Operating Procedures lead the list of measures that should be considered immediately. Relocating the drop zone to an area that provides an optimum separation distance from the runway can be accomplished with the advice and recommendations of the Operator and FAA. The update of the SOPs requires the cooperation of the Operator and should include input from airport users. Once these elements are in place, educating all users is vitally important to ensure that everyone understands what to expect at LMO and what is expected of them. This can be accomplished through the publication of the SOPs with distribution to all aeronautical tenants, users and posted online on the Airport's website. A safety meeting should be conducted to provide opportunities for user outreach and input.

PRELIMINARY

As previously stated, skydiving is recognized by the FAA as an aeronautical activity. However, it should be recognized that many skydivers, especially novices and students, have very limited aeronautical knowledge regarding the rules, policies, and guidelines that govern operating in the airport environment. All other airport users require some level of formal training and experience to operate safely at an airport. Requiring skydivers to acknowledge reading and understanding the Airport's SOPs is a major step to assuring that they will be able to safely and consistently operate in harmony alongside other users.

As with all aviation activity, there is always little margin for error and a single misstep can have catastrophic results. By confronting the deficiencies that can diminish safety ahead of time, a safer environment can be developed and maintained to allow all users to enjoy the Airport's facilities.

###

Preliminary

Attachment A

Airport Background Information



MARANA RGNL (AVQ) MARANA, AZ

[Airport Details](#) [Users](#)
[Report »](#) [Edit Counts](#)

Final Cleanup after the Aircraft List has been updated: Last Edit: 12/14/2018

Step 1. Eliminate any N-Number Duplicates in your own list. [?'s](#) **0**
[Find these](#)

Step 2. Review N-Numbers Reported by Other Airports. [?'s](#) **14** [Find These](#) [Rpt](#)

Step 3. Deregistered acft [?'s](#) **20** [Find These](#)

Step 4. Review sold out-of-state [?'s](#) **29** [Find These](#)

Step 5. Review all out-of-state registrations [?'s](#) **71** [Find These](#)

Step 6. Review all 'Sold' (Cert's issued After listed) [?'s](#) **73** [Find These](#)

Step 7. Review all with IFR elsewhere, but not here, in last 4 years [?'s](#) **35** [Find These](#)

Step 8. Review '*' Commented N-Numbers. [?'s](#) **1** [Find these](#) [Rpt](#)

Step 9. Review N-Numbers not found in FAA Aircraft Reg. [?'s](#) **1** [Find these](#)

Step 10. Confirm your Counts. [?'s](#) [Show all aircraft](#)

Preferred STEVE SMILLER@MARANAAZ.GOV
MILLER

Contact Airport 520-382-8052
Director

Comments [Edit](#)
Airport Thanks for updating the list.

[Refresh](#)

COUNT DATA

	5010 1/31/2019	Inventory	Currently Validated
Single Engine	246	256	245
Multi Engine	15	23	20
Jet	12	13	12
Helicopter	2	2	2
Total Single, Multi, Jet, and Heli	275	294	279
Glider	1	1	***
Military	0	***	***
Ultra-light	5	10	***
Non 5010 aircraft types		1	
Total Found in FAA Acft. Reg. Data	306		TOTAL 279
Total Not Found in FAA Acft. Reg. Data			
Total Entered in BasedAircraft.com		307	

Confirm aircraft data

Last Confirmed: 12/14/2018 by Steve Miller

N-Number Search: [Go](#)
Show: [All aircraft](#)

[Remove Filter](#)
Include deleted: [No](#)

Based Aircraft at this Airport [Add aircraft](#)

Use multiple pages for faster loading?

= Edit = Delete IFR

N-Number	Make / Model	Type	Owner	Added	Type and City St from FAA Aircraft Registration	Reported by Other Apts	Actions	Comment
N100VX	KIT FOX VIXEN		DAVID GRAF 4000 S SILVER BRIDLE LANE TUCSON, AZ 85735	4/4/2017	Single Engine OAKDALE MN	Not found in Other Apts		



Federal Aviation Administration

(http://www.faa.gov/)

APO Terminal Area Forecast 2017

Aviation Data and Statistics Home (http://w

- Home
- Facility View
- Scenario Activities
- Query Reports

Log out

Go to LOCID:

Current Scenario: National Forecast 2017

Facility: LMO - VANCE BRAND

Facility View LMO

Notes

Graph Data

Print

Enplanements

Airport Operations

Based Aircraft

Tracon Operations

Airport Operations

View Previous Years

Year	F	Itn Air Carrier	Itn Air Taxi	Itn GA	Itn Mil	Local Civil	Local Mil	Total Airport Ops	Total Overflights
2014		0	0	29,980	10	70,000	0	99,990	0
2015		0	0	29,980	10	70,000	0	99,990	0
2016		0	0	21,028	420	50,043	0	71,491	0
2017	*	0	0	21,549	420	50,972	0	72,941	0
2018	*	0	0	22,082	420	51,917	0	74,419	0
2019	*	0	0	22,623	420	52,880	0	75,928	0
2020	*	0	0	23,188	420	53,861	0	77,469	0
2021	*	0	0	23,751	420	54,865	0	79,036	0
2022	*	0	0	24,329	420	55,888	0	80,637	0
2023	*	0	0	24,920	420	56,930	0	82,270	0
2024	*	0	0	25,525	420	57,991	0	83,936	0
2025	*	0	0	26,146	420	59,071	0	85,637	0
2026	*	0	0	26,767	420	60,177	0	87,364	0

Year	F	Itn Air Carrier	Itn Air Taxi	Itn GA	Itn Mil	Local Civil	Local Mil	Total Airport Ops	Total Overflights
2027	*	0	0	27,403	420	61,303	0	89,126	0
2028	*	0	0	28,054	420	62,451	0	90,925	0
2029	*	0	0	28,721	420	63,619	0	92,760	0
2030	*	0	0	29,403	420	64,810	0	94,633	0
2031	*	0	0	30,102	420	66,023	0	96,545	0
2032	*	0	0	30,816	420	67,259	0	98,495	0
2033	*	0	0	31,548	420	68,517	0	100,485	0
2034	*	0	0	32,297	420	69,799	0	102,516	0
2035	*	0	0	33,065	420	71,107	0	104,592	0
2036	*	0	0	33,849	420	72,437	0	106,706	0
2037	*	0	0	34,653	420	73,792	0	108,865	0
2038	*	0	0	35,476	420	75,173	0	111,069	0
2039	*	0	0	36,319	420	76,580	0	113,319	0
2040	*	0	0	37,181	420	78,013	0	115,614	0
2041	*	0	0	38,064	420	79,473	0	117,957	0
2042	*	0	0	38,968	420	80,960	0	120,348	0
2043	*	0	0	39,893	420	82,475	0	122,788	0
2044	*	0	0	40,840	420	84,019	0	125,279	0
2045	*	0	0	41,810	420	85,591	0	127,821	0

Attachment B

Skydive Operations Information

Vance Brand Municipal Airport

Standard Operations Procedure for Skydiving Activity

effective: 09/01/95

revised :10/30/95

The purpose of this document is to establish procedures, regulations, safety standards within the guidelines of the FAR's and FAA AC's, prescribed unicom communication and coordination with the non-emergency sports parachute jumping operations within the class E airspace at the Longmont Vance Brand Municipal Airport.

I. Procedures

A. The Skydiving Operation shall:

1. Comply with FAR Part 105.91, and FAA Advisory Circular 90-66A (current editions) along with the United States Parachute Association (USPA), Basic Safety Regulations.

2. Normally operate from official sunrise to official sunset. However, it is recommended that skydiving activities start at 09:00L, to foster "good neighbor relations". It is also recommended that the first jump of the day should be done by experienced skydivers, to avoid the possibility of an off site landing by a student. Night skydiving operations must comply with FAR 105.33. It is requested, but not mandatory for a night jump operation notice to be posted at the FBO's 24 hours in advance. The purpose of this notice is to advise based pilots and students of this activity.

3. In the event a landing is not possible in the designated drop zone, due to wind, emergencies, spotting, etc., no skydiver will be allowed to cross the Airport's main runway 11-29 at or below 1,000 feet agl.

4. Request all skydivers to deploy parachutes at a reasonable altitude of 2,000 feet agl to facilitate greater visibility for aircraft operations as per USPA regulations.

5. Any skydiver landing off the designated Drop Zone (D.Z.) will be grounded until a landing accuracy class has been taken through the skydiving operator.

6. At their sole expense maintain liability insurance at current City of Longmont standards.

7. For any skydiving special events, as defined by "boogies", shall be reviewed by the Airport Management for their comment. Events

shall be reviewed a minimum of four weeks in advance with Airport Management. Information on the skydiving event shall be posted at the FBO's within a 20 nm radius of the Vance Brand Airport.

8. Not allow jump plane intersection takeoffs any time there are more than 3 aircraft in the traffic pattern or aircraft at the runway hold short lines.

9. Brief all jump plane pilots to fly a normal pattern with appropriate pattern advisory calls and fly a final on the extended center line of the runway. Carrier turns and step descents into the traffic pattern will not be allowed.

10. Brief all jump plane pilots on the volunteer noise abatement plan, as established by the Longmont Airport Users Group.

11. Not allow spectators within fifty (50) feet of the skydiving D.Z.

12. Allow only skydive operations during times of Visual Meteorological Conditions (VMC); no operations shall be allowed during Marginal or Instrument Meteorological Conditions (IMC).

13. Suspend skydiving operations any time the surface winds exceeds 22 mph for experienced skydivers and 14 mph for student operations.

14. Prior to skydiving operations it is recommended that a FAA/FSS weather briefing be received for the Longmont area, this briefing should include but not limited to current and forecasted winds aloft at Flight Level 90, 120, 180.

15. Issue the skydiving advisory NOTAM no less than one hour in advance of scheduled operations. However, to allow better flight planning for transit aircraft it is preferable that the NOTAM be issued a minimum of 12 hours in advance.

16. Notify the Airport Management of any change of operational procedures.

17. In addition to FAR Part 105.35, any skydiver found with alcohol, during skydiving activities, will be asked to leave the airport. After hours parties at the D.Z. will not be allowed without prior notification from the Airport Manager.

18. Have an ongoing clean up program that includes any trash, mud, or debris caused by the skydiving operations and will assure Airport Management that on going clean up will be enforced.

19. Advise parents at the D.Z. that children are not to wander on or near the ramp, aircraft or near the Airport Operations Area. Strict

supervision by the parents is required, or at Airport Managements discretion, they will be asked to leave the Airport.

20. Keep skydivers to the sides the ramp or taxiways and in the designated waiting area to load the jump aircraft. Aircraft have the right-of-way, this should be observed at all times.

II. Unicom and Jump Plane Communications

A. The Skydiving Operator shall:

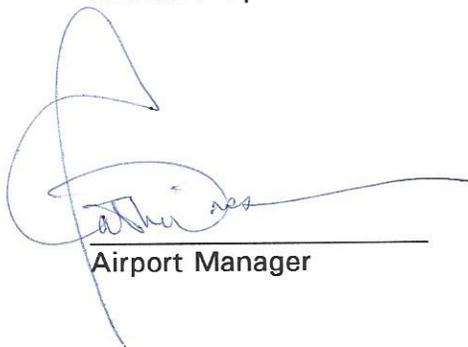
1. Maintain skydiving advisory agreement with the Unicom operator. Unicom operator is requested to advise transit aircraft of skydiving operations in effect and the location of the D.Z.
2. Monitor the unicom and reply to any aircraft call-up with the fullest information about ongoing and planned landing site use. The skydiving operator may at their discretion use a hand held com radio with the call sign "Skydive Ground" to answer any request a transit pilot may have.
3. Periodically review with the Airport Manager, Unicom procedures and comply with any revision.
4. When the jump plane pilot advises via the unicom "jumpers away", the pilot will also advise the number of skydivers in that load.
5. Assure Airport Management that the jump plane pilot has two-way radio communications on the Common Traffic Advisory Frequency (CTAF).

III. Emergencies

A. The Skydiving Operator shall:

1. Any time the Longmont Fire Department, the Longmont Police Department or the Boulder County Sheriffs Department is called to or responds to the Airport for a skydiving incident, the Airport Manager shall be paged at 546-3622. Additionally, report any injuries that require medical response to the Airport Manager in a timely manner.
2. Maintain an Emergency Procedures Manual, which will be periodically reviewed by the Airport Manager.
3. Report any aircraft accidents or incidents immediately to the Airport Manager.

The skydiving operations will be requested to correct any discrepancies within a reasonable time period and show proof of compliancy. Any appeal to the above regulations must be made in writing to the Airport Manager for further review and comment. Additionally, these Standard Operations Procedures may be revised from time to time.



Airport Manager

skydive.ops



President, Mile-Hi Skydiving Center

Preliminary

Public Works & Natural Resources

Vance Brand Municipal Airport

375 Airport Road

Longmont, CO 80503

(303) 651-8431 · <http://www.ci.longmont.co.us>



August 17, 2010

Mile-Hi Skydiving Center
Mr. Frank Casares, President
229 Airport Road – Hangar 34G
Longmont, CO 80503

RE: Letter of Agreement for Swoop Pond

Dear Mr. Casares:

The purpose of this letter is provide Mile-Hi Skydiving Center, Inc and the City of Longmont-Airport a Letter of Agreement for the use and operation of the Skydive Swoop Pond located on the south side of the airport for skydive use.

Per our discussion with the FAA-ADO and the U.S. Department of Agriculture, this letter will outline the parameters for continued use of the Swoop Pond. By signing this letter you agree to the provision below for continued use of the Swoop Pond.

1. The Swoop Pond is approved for use from May 1st through September 30th each calendar year.
2. At the end of the use period each calendar year, the Swoop Pond will be drained no later than October 15th.
3. The immediate area around the Swoop Pond will be mowed and kept weed free 25' (twenty five feet) from the pond edges outward.
4. An appropriate sized spectator area will also be maintained as outlined in #3 when special events are held as agreed upon with the Airport Manager prior to each event.
5. For each public event, Mile-Hi Skydiving will provide portable public restroom facilities at their own cost.
6. The Swoop Pond liner must be maintained in good working order to prevent leakage, tears, cracks, holes, etc.
7. Mile-Hi Skydiving will, in a separate agreement, with the City Water Department, contractually purchase the raw water for filling the Swoop Pond on an annual basis.
8. Mile-Hi Skydiving will treat the pond each 30 (thirty) days with 2.5 gallons of Qutrine to prevent filamous algae growth, bacteria growth and deter the pond as a wildlife attractant.
9. Mile-Hi Skydiving will treat the pond each 30 (thirty) days with 4.0 gallons of Aqua Shade for control of aquatic plant growth and to shade portions of the sunlight spectrum required by underwater plant and algae growth.
10. Mile-Hi Skydiving will keep the pond aerated when not in use by running 2 (two) aerators to stimulate water movement and oxygen flow.

18/08 2010 15:15 FAX

11. Mile-Hi Skydiving agrees to notify the Airport Manager immediately if any of these conditions cannot be met during the operational time period and will provide the Airport Manager with a written course of alternative actions to meet these requirements.
12. Mile-Hi Skydiving and Airport Manager will receive training in wildlife hazard dispersal techniques and supplies will be kept in an accessible location to immediately alleviate hazards if/when wildlife is observed. If wildlife continues to utilize the area, USDA will be notified immediately.
13. Access to the Swoop Pond by Mile-Hi staff, spectators, patrons, guest, etc., will be obtained by the use of the Vehicle Service Road on airport property or Airport Road via Rogers Road for off airport access. At no time is access allowed by vehicles or pedestrians by runway crossings.
14. The City of Longmont allows the use of the Swoop Pond as a Permitted Use on a yearly basis until such time the City requires the use of the property. The City may reclaim the property at any time for aeronautical development consistent with the Airport Master Plan. Mile-Hi Skydiving agrees to pay the City of Longmont-Airport \$1,550 with annual adjustments for the Denver/Boulder Consumer Price Index annually for use of the Swoop Pond.

In order to continue to use the Swoop Pond, please sign the agreement below where indicated. Please retain a copy of this agreement on file should the FAA or State Division of Aeronautics need to view it during their annual inspections.

Thank you for your attention to this matter. If you should have any questions, please feel free to contact me at 303-651-8431.

Sincerely,



Tim Barth
Airport Manager

CC: Marc Miller, FAA Compliance Manager
Kendra Cross, U.S. Department of Agriculture, Wildlife Biologist

I agree to the terms of this Letter of Agreement for the Swoop Pond



Frank Casares, President, Mile-Hi Skydiving Center, Inc.

LETTER OF AGREEMENT

EFFECTIVE: April 2, 2007

SUBJECT: Parachute Jumping at Longmont/Vance Brand Airport (LMO) Colorado.

1. **PURPOSE:** This agreement establishes procedures for conducting parachute jumping operations conducted at LMO.
2. **CANCELLATION:** D01 and Mile Hi Skydiving Center Letter of Agreement, dated October 26, 1998, is canceled.
3. **SCOPE:** This agreement applies to parachute jumping activities conducted within the LMO Parachute Operations Area described in Attachment 1.
4. **AUTHORIZATION:** This agreement authorizes Mile-Hi Skydiving Center, Inc., to schedule parachute jumping in the LMO Parachute Operations Area (Attachment 1). This agreement does not waive any provisions of Federal Aviation Regulations (FAR) Part 91 or 105 and may be revoked at any time for failure of Mile-Hi Skydiving Center, Inc. to comply with the provisions set forth.
5. **EXCLUSION:** The owner/operator of Mile-Hi Skydiving Center Inc. covenants and expressly agrees, with regard to any liability which may arise from the operation within the LMO Parachute Operations Area, that party shall be solely and exclusively liable for the negligence of its agents, servants, and/or employees, in accordance with applicable law; and that neither party looks to the other to save or hold harmless for the consequences of any negligence on the part of one of its own agents, servants, and/or employees.
6. **RESPONSIBILITIES.**
 - a. Each jump aircraft will be equipped with operational transponder in accordance with FAR Part 91.24.
 - b. Each jump aircraft is assigned a call-sign as listed on Attachment 2. The assigned call-signs are only for communications with D01 during parachute jump operations within the LMO Parachute Operations Area (Attachment 1). The call-signs and associated beacon codes are not to be used for filing flight plans or for use outside the LMO Parachute Operations Area. Pilots shall comply with FCC Regulations (87.115) while using the authorized call-sign.
7. **PROCEDURES:**
 - a. Pilots of jump aircraft shall remain within the confines of the LMO Parachute Operations Area (Attachment 1) and clear of Denver Class B airspace during all phases of flight. In the event of adverse climb conditions, pilots may request flight following outside of the operations area and clear of Class B airspace. Aircraft shall return to the depicted operations area when the requested altitude is obtained.

Denver Terminal Radar Approach Control (D01) and Mile-Hi Skydiving Center, Inc.

b. Parachute jumping operations will be confined to a 2 nautical mile radius.

c. D01 will:

(1) To the extent practical, issue advisories to all known aircraft transiting the LMO Parachute Operations Area.

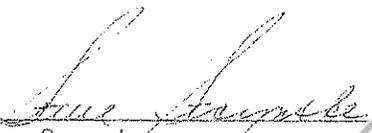
(2) To the extent possible and when requested, assist pilots in avoiding the LMO Parachute Operations Area.

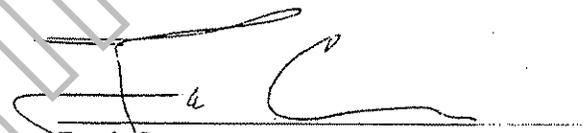
(3) To the extent practical, issue traffic information on known aircraft transiting the LMO Parachute Operations Area.

8. ATTACHMENTS:

a. Attachment 1 - LMO Parachute Operations Area.

b. Attachment 2 - Aircraft call-sign and associated beacon codes.


Steven Steynske
District Manager,
Denver TRACON/Hub


Frank Casares
President,
Mile-Hi Skydiving Center

LMO PARACHUTE OPERATIONS AREA

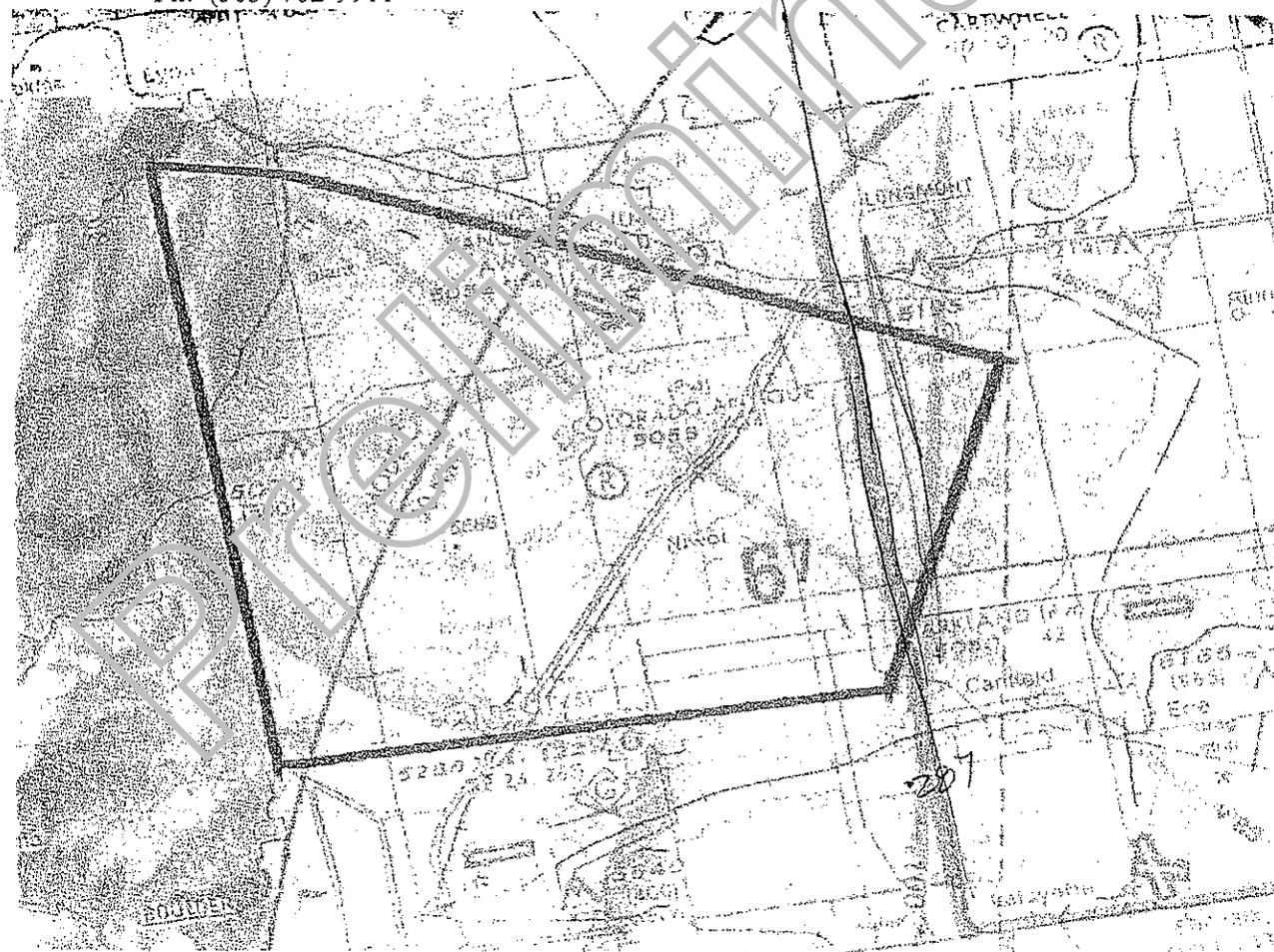
Location: Northwest corner of the LMO Airport

Description: Beginning at a point located at 40 degrees 12'50"N 105 degrees 16'50"W thence direct to 40 degrees 12'30"N 105 degrees 14'50"W thence direct to 40 degrees 08'10"N 105 degrees 03'40"W thence direct to 40 degrees 03'40"N 105 degrees 06'50" thence direct to 40 degrees 04'00"N 105 degrees 16'50"W thence direct to beginning.

Exclusion: That portion of the parachute operations area which lies within Denver Class B airspace is not useable.

Maximum Altitude: 17,900 feet Mean Sea Level (MSL), or higher, when approved by air traffic control.

Operator: Mile-Hi Skydiving Center, Inc.
Frank Casares, President
Ph: (303) 702-9911



Attachment C

On-Site Observations

Preliminary

Date: March 4, 2019
To: David Slayter
Airport Manager, LMO
From: Dave Byers, Quadrex
RE: Skydiving Operations
Vance Brand Airport

Based on my initial on-site visit (Feb 1-2, 2019), I offer the following observations and opinions regarding current skydiving operations at the Airport:

Friday, February 1

I spent the better part of day with the Airport Manager discussing the historical background and current operations at the Airport. We toured the airport grounds including the parachute drop zone. While we were on the field, we observed three (3) flights with Mile-Hi, the skydive operator, using their Beech King Air E-90 (N157MH) aircraft with 10-12 skydivers on each jump. The weather was clear, 55°F, and with light winds. Traffic on Runway 11/29 was light. During one of the jumps, we witnessed two skydivers appear to cross over the centerline of the runway on their approach to the drop zone from the east.

Saturday, February 2

From 11:00 am to 1:00 pm, I conducted continuous on-site observations of skydiving and aircraft flight operations from my vehicle parked near the airport access gate at the cul-de-sac that terminates Rogers Rd. I had a VHF radio to listen to communication on the Airport's Common Traffic Advisory Frequency (CTAF) on 122.975 Mhz. The jump plane in use was their de Havilland DHC-6, Twin Otter (N125PM). Weather at the beginning of my observations was clear, with high scattered cirrus clouds, temperature 50°F and very light winds from 130° at 3 knots. The general sequence of the skydiving operations I witnessed included:

1. Skydivers were transported from Mile-Hi's hangar on the east side of the airport to their Quonset Hut on the west side via a shuttle traversing the north perimeter road.
2. Skydivers were loaded onto the jump plane (with both engines turning) at the paved area adjoining Taxiway B. An escort appeared to be present positioning themselves between the skydivers and the aircraft's left engine.
3. The jump plane taxied to the active runway (mostly Runway 29) and departed immediately to the west for the climb to altitude.

4. High overhead, the pilot of the jump plane would announce something to the effect, "Longmont traffic, 2 minutes to jump, all aircraft avoid midfield operations, Longmont."
5. Most parachutes were observed opening approximately 3-4,000 feet above the airport (some higher but none lower). Skydivers were generally observed approaching the drop zone from the north (downwind) with mostly right turns to final approach before landing.
6. Skydivers appeared to remain at the spot they landed for 2-3 minutes (after gathering their parachute canopies before walking toward the pick-up point near the Quonset hut.
7. The jump plane landed and taxied back to loading ramp. I only heard the pilot a few times announce their entering the traffic pattern and calls for base and final approach turns.
8. During the jump plane's operation, a fresh load of skydivers were transported to the loading area via the shuttle and those who had completed their jump were taken back to the east hangar.

During the period I was observing airport activity, there were at times several aircraft arriving and departing LMO. Many were training flights consisting of "touch and go's (practice landings, then taking off again) by homebuilt and standard aircraft. These were mostly single-engine aircraft however several twin-engine operations were observed as well during the first hour.

Communications on the CTAF was very active with pilots calling out their positions and intent. During the latter part of the second hour, the wind began to pick up speed with occasional gusts and the direction shifted toward the west-southwest. At one point, pilots began using Runway 11. As the wind grew stronger, pilots shifted back to using Runway 29, however aircraft activity diminished significantly.

Observation Notes:

- I recall only one or two times where the pilot of the jump plane announced their departure on the active runway and intended route of flight.
- I do not recall hearing the jump plane pilot announce that jumpers have left the aircraft e.g., "jumpers away" during any jump sequence.
- It was rare to see skydivers approaching the drop zone from the west or executing a left turn for landing.
- Several skydivers were observed executing tight spiraling maneuvers until just before landing. These included a few tandem skydivers.
- Some skydivers who had landed north of the central drop zone area (presumably within the drop zone) had to walk a considerable distance to get back to the pick-up point.
- During the last jump sequence I observed, several skydivers landed significantly outside the boundaries of the drop zone. Three skydivers landed south of the west-side T-hangar area

near the AWOS system. Another skydiver landed behind me in the field west of airport property and had to climb the fence to get back to the pick-up area.

- I left the airport around 1:00 pm to get lunch and returned at 2:00 pm to witness more skydiving operations. The wind appeared to have abated and I saw the jump plane being loaded. I watched the aircraft take off on Runway 29 and climb out toward the northwest. Several minutes later, I heard the jump plane announce they were on final approach. In the interim, the wind had picked up again with strong gusts. The aircraft landed and taxied directly back to the east side. No skydivers were observed landing in the drop zone.

Table 1 is a compilation of my observations and wind data during the period I was at the Airport.

Preliminary

Table 1
AIRPORT ACTIVITY OBSERVATIONS (2/2/19)
Vance Brand Airport

Date: Saturday, February 2, 2019
Time: 11:00 AM
Location: Rogers Rd.

Weather: Clear (High Cirrus)
Temp: 50 F
Winds: 130 @ 3 kts
Source: AWOS - (303) 684-7545

Time	Observation
11:03	A/C departs loading ramp
11:06	A/C departs RW 29
11:19	A/C announces 2 min warning
11:21	Jumpers away (no call)
11:29	A/C arrives RW 29 (no calls) (Counted 21 jumpers)
11:32	A/C departs loading ramp
11:35	A/C departs RW 29 (no call)
11:47	A/C announces 2 min warning
11:49	Jumpers away (no call)
11:55	Last Jumper down
11:56	A/C arrives RW 29 (no calls) (Counted 19 jumpers)
12:01	A/C departs loading ramp
12:03	A/C departs RW 29 (no call)
12:14	A/C announces 2 min warning
12:17	Jumpers away (no call)
12:21	A/C arrives RW 29 (no calls) (Counted 14 jumpers)*
<i>Note: Wind shifted and picked up speed</i>	
12:30	A/C departs loading ramp
12:33	A/C departs RW 11 (no call)
12:44	A/C announces 2 min warning
12:48	Jumpers away (no call)
12:55	A/C arrives RW 29 (no calls) (Counted 20 jumpers)
<i>* 4 jumpers landed south of T-hangars and 1 in field west of DZ</i>	
2:19	A/C departed ramp
2:22	A/C departs RW 29
2:35	A/C arrives RW 29 (RTB)

Aircraft Operations Activity (11 am - 1 pm)							
Time	SEL		MEL		Other		Total
	T/O	LDG	T/O	LDG	T/O	LDG	
11:00 AM							
1st	3	2	1	1			7
2nd	3	4	3	4			14
3rd	4	6	2	1			13
4th	1	1	1	1	1		6
Total	11	13	7	7	1	0	40
12:00 PM							
1st	2	1	1		1		5
2nd	2	2		1			5
3rd	4	1	1				6
4th	3			2			5
Total	11	4	2	3	1	0	21

Note: 1st = 00-15 / 2nd = 16-20 / 3rd = 31-45 / 4th = 46-59 after the hour

Wind Observations				
2/2/2019	Time	Dir	Speed	Gusts
LMO	11:15 AM	170	6	M
LMO	11:35 AM	190	3	M
LMO	11:55 AM	120	5	M
LMO	12:15 PM	130	6	M
LMO	12:35 PM	180	9	17
LMO	12:55 PM	230	15	21
LMO	1:15 PM	250	20	29
LMO	1:35 PM	250	16	26
LMO	1:55 PM	240	13	22
LMO	2:15 PM	230	10	M
LMO	2:35 PM	250	15	26
LMO	2:55 PM	240	20	26

Source: LMO AWOS

Attachment D

Comparative Airport Information

Preliminary



> 1 ASSOC CITY: DAVIS/WOODLAND/WINTE 4 STATE: CA LOC ID: DWA FAA SITE NR: 01488.*A
 > 2 AIRPORT NAME: YOLO COUNTY 5 COUNTY: YOLO CA
 3 CBD TO AIRPORT (NM): 06 NE 6 REGION/ADO: AWP/SFO 7 SECT AERO CHT: SAN FRANCISCO

GENERAL

10 OWNERSHIP: PUBLIC
 > 11 OWNER: YOLO COUNTY
 > 12 ADDRESS: 625 COURT ST RM 202
 WOODLAND, CA 95695
 > 13 PHONE NR: 530-666-8114
 > 14 MANAGER: MINDI NUNES
 > 15 ADDRESS: 625 COURT ST RM 202, RM 202
 WOODLAND, CA 95695-2598
 > 16 PHONE NR: 530-666-8066
 > 17 ATTENDANCE SCHEDULE:
 ALL ALL 0600-1800

SERVICES

> 70 FUEL: 100LL A A+
 > 71 AIRFRAME RPRS: MAJOR
 > 72 PWR PLANT RPRS: MAJOR
 > 73 BOTTLE OXYGEN: HIGH/LOW
 > 74 BULK OXYGEN: HIGH/LOW
 75 TSNT STORAGE: TIE
 76 OTHER SERVICES:
 AGRI, AVNCS, CHTR, INSTR, PAJA, SALES

BASED AIRCRAFT

90 SINGLE ENG:	69
91 MULTI ENG:	6
92 JET:	0
TOTAL:	75
93 HELICOPTERS:	4
94 GLIDERS:	0
95 MILITARY:	0
96 ULTRA-LIGHT:	0

FACILITIES

> 80 ARPT BCN: CG
 > 81 ARPT LGT SKED: SEE RMK
 BCN LGT SKED: SS-SR
 > 82 UNICOM: 123.000
 > 83 WIND INDICATOR: YES-L
 84 SEGMENTED CIRCLE: YES
 85 CONTROL TWR: NO
 86 FSS: RANCHO MURIETA
 87 FSS ON ARPT: NO
 88 FSS PHONE NR:
 89 TOLL FREE NR: 1-800-WX BRIEF

OPERATIONS

100 AIR CARRIER:	0
102 AIR TAXI:	360
103 GA LOC L:	30,000
104 GA INTRNT:	30,000
105 MILITARY:	0
TOTAL:	60,360
OPERATIONS FOR 12 MONTHS ENDING:	12/31/2017

RUNWAY DATA

> 30 RUNWAY INDENT: 16/34
 > 31 LENGTH: 6,000
 > 32 WIDTH: 100
 > 33 SURF TYPE-COND: ASPH-G
 > 34 SURF TREATMENT:
 35 GROSS WT: S 45.0
 36 (IN THSDS) D 60.0
 37 2D
 38 2D/2D2
 > 39 PCN:

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:	MED			
> 42 RWY MARK TYPE-COND:	NPI - G / NPI - G	- / -	- / -	- / -
> 43 VGS:	P2L / P2L	/ /	/ /	/ /
44 THR CROSSING HGT	40 / 40	/ /	/ /	/ /
45 VISUAL GLIDE ANGLE:	3.00 / 3.00	/ /	/ /	/ /
> 46 CNTRLN-TDZ:	N / N / N - N	- / -	- / -	- / -
> 47 RVR-RVV:	- N / - N	- / -	- / -	- / -
> 48 REIL:	N / N	/ /	/ /	/ /
> 49 APCH LIGHTS:	/ /	/ /	/ /	/ /

OBSTRUCTION DATA

50 FAR 77 CATEGORY	C / C	/ /	/ /	/ /
> 51 DISPLACED THR:	/ /	/ /	/ /	/ /
> 52 CTLG OBSTN:	/ TREES	/ /	/ /	/ /
> 53 OBSTN MARKED/LGTD:	/ /	/ /	/ /	/ /
> 54 HGT ABOVE RWY END:	/ 110	/ /	/ /	/ /
> 55 DIST FROM RWY END:	/ 3,500	/ /	/ /	/ /
> 56 CNTRLN OFFSET:	/ 0B	/ /	/ /	/ /
57 OBSTN CLNC SLOPE:	50:1 / 30:1	/ /	/ /	/ /
58 CLOSE-IN OBSTN:	N / N	/ /	/ /	/ /

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):	/ /	/ /	/ /	/ /
> 61 TAKE OFF DIST AVBL (TODA):	/ /	/ /	/ /	/ /
> 62 ACLT STOP DIST AVBL (ASDA):	/ /	/ /	/ /	/ /
> 63 LNDG DIST AVBL (LDA):	/ /	/ /	/ /	/ /

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

A 003 DSTC TO WINTERS.
 A 070 FUEL AVBL 24 HRS.
 A 081 MIRL RY 16/34 PRESET LOW INTST; TO INCR INTST AND ACTVT PAPI RYS 16 & 34 - CTAF.
 A 110-002 NO TGL 2200L TO 0600L.
 A 110-003 RY 34 CALM WIND RY.
 A 110-004 NOISE ABATEMENT: NO TURNS TO CROSSWIND PRIOR TO ARPT BOUNDARY. STRAIGHT OUT DEP NO EAST TURNS ON COURSE PRIOR TO 2 MIS. AVOID OVERFLIGHT OF OFF-ARPT STRUCTURES.
 A 110-006 UNLIT 40 FT POWER LINE & 120 FT TREES 500 FT WEST OF RY CNTRLN.
 A 110-007 BIRDS ON AND INVOF ARPT.
 A 110-008 PARACHUTE ACTIVITY EAST OF RY.
 A 110-009 CROP DUSTER OPNS ON AND INVOF ARPT.
 A 110-010 NON-RADIO AIRCRAFT BASED AT KDWA.
 A 110-011 95 FT AGL UNLIT WIND TURBINE 1000 FT WEST OF RY CNTRLN.
 A 110-012 APT OPS: (530) 759-8766

111 INSPECTOR: (S) 112 LAST INSP: 02/09/2018 113 LAST INFO REQ:

> 1 ASSOC CITY: MIDDLETOWN 4 STATE: OH LOC ID: MWO FAA SITE NR: 18199.*A
 > 2 AIRPORT NAME: MIDDLETOWN REGIONAL/HOOK FIELD 5 COUNTY: BUTLER OH
 3 CBD TO AIRPORT (NM): 02 N 6 REGION/ADO: AGL/DET 7 SECT AERO CHT: CINCINNATI

GENERAL

10 OWNERSHIP: PUBLIC
 > 11 OWNER: CITY OF MIDDLETOWN
 > 12 ADDRESS: 1 DONHAM PLAZA
 MIDDLETOWN, OH 45042
 > 13 PHONE NR: 513-425-7845
 > 14 MANAGER: DAN DICKTEN, AAE
 > 15 ADDRESS: 1707 RUN WAY
 MIDDLETOWN, OH 45042
 > 16 PHONE NR: 513-614-4395
 > 17 ATTENDANCE SCHEDULE:

ALL ALL 0800-1700

SERVICES

> 70 FUEL: 100LL A A+
 > 71 AIRFRAME RPRS: MAJOR
 > 72 PWR PLANT RPRS: MAJOR
 > 73 BOTTLE OXYGEN: NONE
 > 74 BULK OXYGEN:
 75 TSNT STORAGE: HGR, TIE
 76 OTHER SERVICES:
 CARGO, INSTR, PAJA, RNTL

BASED AIRCRAFT

90 SINGLE ENG: 54
 91 MULTI ENG: 4
 92 JET: 2
 TOTAL: 60
 93 HELICOPTERS: 2
 94 GLIDERS: 0
 95 MILITARY: 0
 96 ULTRA-LIGHT: 0

FACILITIES

> 80 ARPT BCN: CG
 > 81 ARPT LGT SKED: SEE RMK
 BCN LGT SKED: SS-SR
 > 82 UNICOM: 123.000
 > 83 WIND INDICATOR: YES-L
 84 SEGMENTED CIRCLE: NONE
 85 CONTROL TWR: NO
 86 FSS: DAYTON
 87 FSS ON ARPT: NO
 88 FSS PHONE NR:
 89 TOLL FREE NR: 1-800-WX BRIEF

OPERATIONS

100 AIR CARRIER: 0
 102 AIR TAXI: 3,600
 103 GA LOC L: 17,800
 104 GA INSTRNT: 18,600
 105 MILITARY: 50
 TOTAL: 40,050
 OPERATIONS FOR
 12 MONTHS
 ENDING: 09/02/2016

18 AIRPORT USE: PUBLIC
 19 ARPT LAT: 39-31-54.5000N ESTIMATED
 20 ARPT LONG: 084-23-47.2000W
 21 ARPT ELEV: 650.4 SURVEYED
 22 ACREAGE: 550
 > 23 RIGHT TRAFFIC: 23, 26
 > 24 NON-COMM LANDING: NO
 25 NPIAS/FED AGREEMENTS: NGY
 > 26 FAR 139 INDEX:

RUNWAY DATA

> 30 RUNWAY INDENT:
 > 31 LENGTH:
 > 32 WIDTH:
 > 33 SURF TYPE-COND:
 > 34 SURF TREATMENT:
 35 GROSS WT: S
 36 (IN THSDS) D
 37 2D
 38 2D/2D2
 > 39 PCN:

	05/23	08/26		
	6,100	3,040		
	100	297		
	ASPH-G	TURF-G		
	66.0			
	78.0			
	140.0			
	MED			
	NPI - F / NPI - F	- F / - F	- / -	- / -
	P4L / 44	/	/	/
	/	/	/	/
	/	/	/	/
	N - N / N - N	N - N / N - N	- / -	- / -
	- N / - N	- N / - N	- / -	- / -
	Y / Y	N / N	/	/
	/	/	/	/
	C / C	A(V) / A(V)	/	/
	/ 29	951 /	/	/
	TREES / TREE	TREES /	/	/
	/	/	/	/
	21 / 41	175 /	/	/
	320 / 864	2,865 /	/	/
	250R / 260L	0B /	/	/
	5:1 / 16:1	16:1 / 20:1	/	/
	N / N	N / N	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/
	/	/	/	/

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
 > 42 RWY MARK TYPE-COND:
 > 43 VGS: 44 THR CROSSING HGT
 45 VISUAL GLIDE ANGLE:
 > 46 CNTRLN-TDZ:
 > 47 RVR-RVV:
 > 48 REIL:
 > 49 APCH LIGHTS:

OBSTRUCTION DATA

50 FAR 77 CATEGORY: C / C
 > 51 DISPLACED THR: / 29
 > 52 CTLG OBSTN: TREES / TREE
 > 53 OBSTN MARKED/LGTD:
 > 54 HGT ABOVE RWY END:
 > 55 DIST FROM RWY END:
 > 56 CNTRLN OFFSET:
 57 OBSTN CLNC SLOPE:
 58 CLOSE-IN OBSTN:

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):
 > 61 TAKE OFF DIST AVBL (TODA):
 > 62 ACLT STOP DIST AVBL (ASDA):
 > 63 LNDG DIST AVBL (LDA):

(-) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS

A 016 MANAGER CELL 513-484-3680
 A 042 RWY 08 08/26 MKD WITH WHITE CONES.
 A 057 RWY 05 APCH RATIO 24:1 AT DSPLCD THLD.
 A 057 RWY 08 APCH RATIO 20:1 AT DSPLCD THR.
 A 057 RWY 23 APCH RATIO 24:1 OVR 84 FT TREES; 2040 FT FM THLD 512 FT R.
 A 081 ACTVT REIL RY 05, MIRL RY 05/23 - CTAF.
 A 096 ULTRALIGHTS ENTER/EXIT PAT AT RY 08 TO NORTH - LOWER THAN REGULAR TFC PAT. ULTRALIGHTS DO NOT FLY SOUTH OF RY 26.
 A 110-001 COLUMBUS CD (614) 338-8537.
 A 110-002 COLUMBUS CD (614) 338-8537.
 A 110-003 EXTENSIVE SKYDIVING ACTVTY.

111 INSPECTOR: (C) 112 LAST INSP: 09/02/2016 113 LAST INFO REQ: 12/01/1979

**Attachment D-1
Drop Zone Rules
Middletown Regional Airport (MWO)**

What are the jumping requirements?

Start Skydiving is a group member of the USPA. As such, please be prepared to show: your current USPA membership and license, your signed logbook to prove your jump currency, and, if you have your own rig, its reserve packing data card and seal will be required to be checked when you first check-in.

How does manifest work?

You can place funds on your account at manifest or online. We do not carry credit at Start Skydiving. Manifest for loads only when you are ready to jump. Missed loads will not be refunded! Please be ready at the loading area by your five-minute call.

What are the requirements for takeoff?

YOUR RIG MUST BE ON - leg straps and chest straps correctly threaded prior to boarding. Helmets and seatbelts must be worn while in the aircraft until 1,000 feet AGL. If you choose not to wear your helmet, you must have it secured to your chest strap or seat belt. The aircraft door must be closed during takeoff and landing while below 1,000 feet.

What about spotting?

Normally, the pilot spots the plane accurately and no corrections are needed. However, you must open the door on the red light and verify that the spot is correct before jumping. You must have the pilot's approval to open our aircraft door without a red light. If the spot is not correct, or if there are clouds or air-traffic on jump-run, then you are responsible for informing the pilot and you must remain inside the aircraft until you are certain that you are clear. When the green light comes on, the pilot has configured the aircraft to be safely exited. It does not mean you are clear below or that you are over the correct spot. Every jumper is responsible for his or her own safety. This includes checking your spot! We are not legally permitted to perform skydives through clouds. Do not exit the aircraft unless you know for certain that you will not fall through a cloud. We will do a go-around and fly another jump run if you cannot exit over the correct spot due to clouds, aircraft, or jumpers. All groups should remain forward in the aircraft until it is their turn to exit. If the green light turns off, everyone must stay in the aircraft and wait for another jump run.

What are the exit orders?

1. Low altitude clear-and-pull passes (If there are multiple jumpers on the same low pass, exit in order of heaviest to lightest wing-loading.)
2. Bellyflyer formation groups, including students on coach jumps (Sort from largest to smallest. Groups of the same size are then sorted from lowest to highest planned deployment altitude. If groups of the same size and deployment altitude, then sort by exit weight and canopy size from least to greatest.)
3. "Traditional" belly trackers (not angle flyers or tracking suit jumpers)
4. Skysurfers will exit second or third out on the first pass to ensure that they are directly over the DZ.
5. Freeflyer groups (Sort from largest to smallest. Groups of the same size are then sorted from lowest to highest planned deployment altitude. If groups of the same size and deployment altitude, then sort by exit weight and canopy size from least to greatest.)

6. Angle flyers (or freeflying trackers)
7. AFFs (in the following order: Cat A, B, C-1, C-2, D, E. If multiple AFFs in the same category, then sort by student exit weight and canopy size from least to greatest.)
8. Tandems (Tandems with videographers first, then tandems without. These are then sorted by exit weight and canopy size from least to greatest.)
9. Tracking suit jumpers
10. Wingsuiters
11. CRW

Only one single group of either trackers, angle flyers, or wingsuiters is permitted per load. This single group must fly a pattern with the first leg perpendicular to jump run. The leader of this group must be an experienced jumper who is familiar with the dropzone and the airspace. This leader must fly with belly facing to earth. If the lead flyer will be back-flying, another experienced jumper must pair with the leader and fly belly to earth over the leader to help maintain directional control.

Exit Separation:

With reported upper winds of 0-10 knots, please allow between 5-7 seconds between exits (take into account the time it takes to climb out of the aircraft). For winds of 20 knots or higher, please use the following formula: Take the upper headwind speed and divide it by half (round up for odd numbers), this will give you the recommended amount of time between exits!

Upper headwind speed:

0-10 knots - 5-7 seconds between group exits
15-20 knots - 8-10 seconds between group exits
21-30 knots - 11-15 seconds between group exits
31-40 knots - 16-20 seconds between group exits
41-50 knots - 21-25 seconds between group exits

Can I bring my own camera on my skydive?

Start Skydiving requires a minimum of a USPA C-license in order to jump with a camera of any type. No exceptions!

What are the landing rules?

Check out the aerial map of the landing areas below or at manifest. There are three primary landing areas and a dozen large outs. Avoid crossing the runway below 1,000 feet and avoid approaching the ends of the runway below 2,000 feet. Also, avoid landing on the grass strip runway.

What is the landing pattern?

The landing pattern for the B, C, and D license landing areas on the southeast side of the runway is based on the current landing direction. If the set landing direction is to the southwest with the hangars on the left-hand side, then a left-handed landing pattern is to be performed. If the set landing direction is to the northeast with the hangars on the right-hand side, then a right-handed landing pattern is to be performed. In the large landing area on the northwest side of the runway, there is no set landing pattern or direction. However, all jumpers must land into the wind and the first jumper down sets the pattern. If there is no wind, then all landing areas default to a southwest landing direction with the hangars on the left-hand side. Only 90-degree turns are permitted to be performed in all landing areas. Any turns greater than 90 degrees must be cleared by the S&TA first before being permitted to be performed.

TANDEM & D LICENSE LANDING AREA - is located directly in front and to the right of our hanger. You must have a D-license to land in this area. First person down sets the pattern so follow the windsock if you are first to land. Only 90-degree turns are permitted in this area. Any turns greater than 90 degrees must be cleared by the S&TA first before being permitted to be performed. Tandems have the right of way, so please continuously watch out for other canopy traffic. If there is no wind, then default to a southwest landing direction with the hangars on the left-hand side while flying a left-handed landing pattern.

B & C LICENSE LANDING AREA - is located in between the runway and the taxiway northeast of the tandem & D-license landing area. Only 90-degree turns are permitted in this area. Any turns greater than 90 degrees must be cleared by the S&TA first before being permitted to be performed. Tandems have the right of way, so please continuously watch out for other canopy traffic. If there is no wind, then default to a southwest landing direction with the hangars on the left-hand side while flying a left-handed landing pattern.

AFF STUDENT, A, B, C, & D-LICENSE LANDING AREA - is located in the massive field on the northwest side of the runway. Use the windsock located in the middle of the landing area to determine landing direction. The first person down sets the pattern. AFF students have the right of way, so please continuously watch out for other canopy traffic. If there is no wind, then default to a southwest landing direction with the hangars on the left-hand side.



TRIANGLE NORTH EXECUTIVE AIRPORT SAFETY GUIDELINES

It is the intention of Triangle North Executive Airport (KLHZ), to provide this **advisory** guideline to ensure Triangle Skydiving Center, Inc. (TSC), Total Flight Solutions, members of the LHZ Pilot's Association and any other existing or future tenants or customers have a mutual understanding of our unique operating environment and to ensure a safe operation for all participating members.

These advisory guidelines are provided in addition to all Federal Aviation Requirements (FAR) documented by the Federal Aviation Administration (FAA) and United States Parachute Association (USPA) as an additional layer of safety at and around KLHZ.

This is a public document and it can be accessed via the airport website at <http://www.franklincountync.us/services/airport>. Anyone can go to any internet terminal to read and/or print this document. To enable access to transient pilots, there is a link to the airport website at <http://www.aopa.org/airports/KLHZ> and at <http://www.airnav.com/airport/KLHZ> (the link on the airnav page is near the very bottom of the page).

Each pilot based at this airport is responsible to understand and abide by these guidelines. A copy of this document will be printed and supplied to all current and future tenants of the airport as well as a printed copy displayed prominently in the terminal lobby including visual reference to all procedures and traffic pattern utilization. Each operator/PIC shall be expected to review KLHZ operation procedures quarterly.

It is the responsibility of Total Flight Solutions, Triangle Skydiving Center, and any other resident organization to ensure that their customers understand and abide by these guidelines.

Independent instructors are responsible for obtaining a copy of this document and ensuring all students understand and abide by these guidelines.

There is a link in the "About" tab at the top of the Triangle North Pilots Association website at <http://lhzpa.org>.

This airport does not have a control tower and only a single runway with a grass landing area alongside. However, we have the following activities, often occurring simultaneously:

- Fixed wing operations, including single- and multi-engine piston and turboprop airplanes, one twin jet, two self launching gliders, and a towed glider with the Civil Air Patrol. A few airplanes do not have radios.
- Helicopter operations: there are several based at this airport.
- Fixed wing and helicopter flight instruction at Total Flight Solutions.
- Skydiving at Triangle Skydiving Center. It can be busy on the weekends and most runs include at least a few students.
- There are two hot air balloons that operate in the neighborhood.

Noise Abatement Procedures

KLHZ has two noise sensitive areas on the western side of the airport.

- The first is approximately 1 mile south and .1 mile west of centerline departing runway 23.
- The second is approximately 1 mile north and .4 west of centerline departing runway 05.

Both areas are over homes with RED roofs. Please fly neighborly.

In order to ensure that both of these noise areas are avoided please expedite climb out and maintain runway heading until 2 miles from KLHZ, then turn on course.

Runway and Taxiway Right-of-Way

Taxiways and runways at KLHZ experience unique usage due to the complex environment here. FAR 91.113 specifies right of way rules. The following clarifies right-of-way procedures to ensure a safe runway and taxiway environment in our environment.

- Rotorcraft generally use the the parallel taxiway instead of the runway for takeoff and landing.
- Rotorcraft shall not directly over-fly any aircraft on the taxiway at an altitude of less than 300AGL/700MSL.
- Taxiing Rotorcraft shall give way to any aircraft on the taxiway. Separation shall be 100 feet between rotorcraft and taxiing aircraft.
- Fixed wing aircraft on final have the right-of-way over any aircraft not yet on the runway.
- Rotorcraft on final to the parallel taxiway will sidestep if a fixed wing aircraft is on the taxiway.
- All pilots should be aware that rotorcraft fly slower and steeper approach angles than airplanes including power off procedures that involve a descent rate of 1500-2000 FPM.

There is a lot going on here. Keep your head on a swivel and your eyes outside.

Periodic review of this document.

We intend to meet approximately twice a year to review this document and update as necessary. The next scheduled review will be in December, 2014.



The photo above shows the airport and labels various areas for various activities. The remainder of this document describes additional details about our operation here.

Powered Fixed-Wing Operations

Fixed-wing traffic will utilize a left-hand pattern to runway 23, right-hand pattern to runway 5. Pattern altitude will remain fixed at 1000AGL/1400MSL on the downwind leg.

Fixed-wing traffic will operate at pattern altitude (1000 AGL/1400 MSL) anytime within 2 miles of KLHZ.

Fixed-wing traffic departing from KLHZ shall maintain runway heading until 2 miles from KLHZ then turn on course. This procedure will ensure appropriate separation and noise abatement.

KLHZ reminds you to remain diligent in your "see and avoid" responsibilities at all times.

Flight training procedures (to include altitudes and locations of operation while operating in the vicinity of KLHZ) will be available upon request at the Total Flight Solutions office.

Pilots executing an instrument approach, practice or actual, should call position reports as a distance from the airport rather than crossing a waypoint or fix. All Air Transport Pilots have instrument ratings and about 90 percent of Commercial Pilots have instrument ratings. But only about 20 percent of Private Pilots have instrument ratings. "2 mile final runway 5" means something to a Private Pilot about to turn base. "Crossing JEBIX ILS runway 5" has no meaning to a pilot that is not instrument rated.

Glider Operations

Self Launching Gliders

When the engine of a self launching glider is running, the pilot observes the same rules of safe conduct as powered airplanes.

There are two self launching gliders that operate routinely at KLHZ. They normally take off under power, and land as a glider. Each of the gliders will announce on arrival that they are landing as a glider. When they are landing as a glider, they assume the right of way of a glider.

Aero Tow Gliders

The Civil Air Patrol (CAP) normally operates aero tow gliders on Wednesday afternoon and on Saturdays.

A CAP Air Boss will maintain continuous radio contact with LHZ traffic advising of operations of the glider on CTAF frequency. The Air Boss will speak freely with other aircraft to advise the status of the glider operation.

A goal of the Air Boss is to occupy the runway in preparation for take off no longer than 3 minutes. It is understood that the goal is to occupy the runway for the shortest period of time possible.

The tow plane will normally fly straight out until 500 AGL, then turn crosswind in accordance with the local traffic pattern, east of the runway. Typically the tow plane will turn 270 degrees and tow the glider over the center of the airport. The goal is to keep the glider upwind of the airport whenever possible. Since the wind is nearly always from the west, this means that the towplane and glider will usually turn and fly over the airport headed west.

The glider will normally release from the towplane at 2000 AGL. The towplane will break left, and the glider will break right. The towplane will enter the traffic pattern and the glider will continue with its operations.

The towplane normally makes its traffic pattern with the rope attached. Here at LHZ, the towplane makes a low pass at about 200 feet, drops the rope in the grass and lands long on the remaining runway.

Glider Approach and Landing

Gliders observe the same traffic pattern as powered aircraft, and may circle to lose altitude in the traffic pattern area. The glider pilot will communicate with powered aircraft to minimize any possible delay and to maximize safety.

In light traffic conditions, the CAP glider will land on the runway, in order to quickly swap cadets for the next flight. In heavy traffic conditions, the glider will land in the grass.

The self launching gliders typically land on the runway as a glider and then start the engine after landing to taxi off the runway.

Nearby glider operations

There are multiple gliders based Crooked Creek, seven miles Southeast of KLHZ, and at Ball, eight miles North-Northeast of KLHZ. These folks use 123.3 for communications. They do not have transponders and are mostly composite so they are not visible to ATC. They generally maneuver up to 6000 feet and sometimes come within a few miles of KLHZ. These aircraft also have a small cross-section and they are difficult to see.

Rotorcraft Operations

Flight training procedures (to include altitudes and locations of operation while operating in the vicinity of KLHZ) will be available upon request at the Total Flight Solutions office.

Rotorcraft will utilize a right-hand pattern to taxiway Alpha parallel runway 23, left-hand pattern to taxiway Alpha parallel runway 5. Pattern altitude will remain fixed at 500 AGL/900 MSL on the downwind leg.

If PIC of rotorcraft feels that any operation to the west is unsafe he/she may choose to operate from the runway making left traffic for runway 23 and right traffic for runway 5 provided that he/she can avoid the flow of fixed wing traffic and makes all appropriate radio calls. (takeoff, crosswind, downwind, final).

Rotorcraft shall operate at pattern altitude (500AGL/900MSL) anytime within 2 miles of KLHZ.

Rotorcraft making a runway departure from KLHZ shall maintain runway heading until 2 miles from KLHZ then turn on course. This procedure will ensure appropriate separation AND noise abatement.

When parachutists are in the air over KLHZ:

Rotorcraft shall not operate north of taxiway Alpha 3 at an altitude higher than 8AGL.

Rotorcraft shall not proceed any further north nor operate any longer than necessary North of taxiway Alpha 3 to ensure either safe shutdown or departure from the ramp.

Rotorcraft departing to the northwest from taxiway Alpha must remain south of extended Alpha 2 centerline until 2 miles from KLHZ then turn on course.

KLHZ reminds you to remain diligent in your "see and avoid" responsibilities at all times.

Skydiver Operations

Daily skydiver jump run information, (to include exit altitude, direction, and position in reference to KLHZ) will be available upon request at the Triangle Skydiving Center office. Note that this is dynamic situation. Winds do change and customers often arrive at random times during the day.

Jump operations will be conducted in accordance with US Parachute Association Basic Safety Requirements as well as 14 CFR FAR's parts 61, 65, 91, and 105.

Parachutists will be notified of all KLHZ policies regarding separation requirements and shall be notified that the ILS antenna is in close proximity to that landing area. Avoidance is critical to avoid injury to jumpers and damage to expensive safety equipment and would jeopardize instrument operations to the airport.

Jump operation communications will be broadcast over the Common Traffic Advisory Frequency (currently 123.00). They will be provided by the pilot of the jump plane from TSC before, during, and after every load and include:

- Normal Takeoff: "Triangle one taking off runway 5/23 with skydivers"
- 5 Minutes before exit: "5 minutes until jumpers in the air over Triangle North"
- 2 Minutes before exit: "2 minutes until jumpers in the air over Triangle North"
- Exit Call: "Jumpers in the air over Triangle North"

Once jumpers have exited the jump plane, a status report will be broadcast on CTAF from the ground every two minutes: "We do have canopies over the field at Triangle North." When all jumpers have landed, a status message will be broadcast: "All Jumpers on the Ground."

The jump plane can carry 16 jumpers and, usually, jumpers are all released at about 13,500 feet MSL. Occasionally, a few will be released at a lower altitude, and the jump plane will then resume climbing. The jump plane maneuvers so that it is flying into the wind when jumpers are released. The first jumper is released directly over the landing area and it takes a few seconds for the remaining jumpers to exit the aircraft. The wind will tend to blow jumpers back over the landing area.

After the jumpers are released, the jump plane descends aggressively to 4000 MSL, and then descends somewhat less aggressively to enter the normal pattern, lands, and parks ready to take another load. On a busy weekend, the jump plane will often keep the engine running and "hot load" the next group of jumpers.

After exiting the aircraft, jumpers freefall until they deploy their parachutes. All parachutes must be deployed by 3000 AGL/3400 MSL, but less experienced jumpers will deploy at a higher altitude. It takes about one minute for a skydiver to freefall from 13,500 MSL to 3400 MSL. It generally takes about two minutes for a wingsuit user to descend the same distance. Once under canopy, the jumpers descend, steer the canopies around, and finally enter a small pattern and land into the wind.

All jumpers are directed to land in the landing area near the TSC hangar as depicted in the photo on page three.

Historically, about four times a year on average, a skydiver's parachute does not deploy properly. In this event, the malfunctioning parachute is jettisoned or "cut away" and the reserve chute is deployed. The "cut away" canopy will drift with the wind and will land somewhere eventually. Whenever this happens, TSC ground will issue a warning over the CTAF: "Cutaway, Triangle North traffic be aware there is a cutaway over the field."

Generally, we have winds from the West, and when the winds are from the East, it is generally stormy. Jumpers are directed by TSC to remain on the Northwest side of the runway. However, due to winds, about once a year a few skydivers end up Southeast of the airport. In this event, additional CTAF radio calls will be made by TSC. In addition, jumpers are directed by TSC to cross to the Northwest side of the runway as high as possible but absolutely above 1000 AGL. If they cannot cross to the Northwest side of the runway above 1000 AGL, jumpers are directed to land Southeast of the runway and TSC will send a vehicle to pick them up.

Hot Air Balloon Operations

There are two balloons, a yellow one and a red one, that operate in the neighborhood. They are, of course, unpowered and subject to the winds on any given day, and they are about 85 feet tall.

When departing from KLHZ, the launch point is a few hundred feet Northwest of the ILS antenna, which is 1000 feet Northeast of the arrival end of runway 23. The balloon will quickly ascend to 1500 AGL and departure direction could be just about anywhere, but prevailing winds are generally from the West. Winds vary with altitude, sometimes more than 90 degrees with a change in altitude of a few thousand feet.

Sometimes the balloon will be launched elsewhere and will land somewhere on the airport property. The balloon pilot does have a radio and will announce his position and intentions. This is a good place to land a balloon because there are very few obstructions.

They fly about 100 times per year on average and about fifteen of those either take off or land at the airport.

Frequently asked questions

Question: In previous versions of this document, there was a statement about parachutists not descending below 3400 MSL. That has been removed. What is the story?

Answer: This was a misinterpretation of one of the FARs. Far 105.23 states (in blue): **No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, over or onto any airport unless—**

(a) **For airports with an operating control tower:** (there are three sub-sections, but this does not apply to KLHZ.)

(b) **For airports without an operating control tower, prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.** (Airport management approves so we are covered.)

(c) **A parachutist may drift over that airport with a fully deployed and properly functioning parachute if the parachutist is at least 2,000 feet above that airport's traffic pattern, and avoids creating a hazard to air traffic or to persons and property on the ground.** (After discussing with FSDO, this was intended for military and other operations where parachutists would deploy the parachute at a high altitude and then steer the parachute for a relatively long horizontal distance. Sometimes this would be over an airport enroute to the intended destination. In this case, the parachutist must remain more than 2000 feet above pattern altitude. Note that this situation does not require approval from local airport management. Also note that if parachutists must remain 2000 feet above the traffic pattern, there is no way to land in the approved area. It does not apply in our case, so the item was removed.)

Question: In previous versions of this document, there was an item stating that airplanes on taxiways should stop when they heard the radio call for "Jumpers away." This has been removed. What is the story here?

Answer: After a lot of discussion, no one could remember where it came from and, besides, it was not useful from several perspectives.

Attachment E

Safety Risk Analysis

Preliminary

**SAFETY CONSIDERATIONS AND RISK ASSESSMENT
COMMERCIAL SKYDIVING OPERATIONS
VANCE BRAND AIRPORT
LONGMONT, COLORADO**

The City of Longmont, Colorado, owner and operator of the Vance Brand (LMO) and is classified by the FAA as having “regional” significance. With over 280 based aircraft including 4 jets, LMO can be characterized as a busy general aviation airport with an estimated 71,500 operations annually by all types of general aviation aircraft. The Airport has one runway, Runway 11/29 which is 4,799 feet long and 100 feet wide. LMO does not have an air traffic control tower.

Since 1995, the airport has accommodated a commercial skydiving operation using a parachute drop zone located on the west side of Runway 11/29. Over the past few years, complaints about skydiving activity has increased including jumpers approaching the drop zone from the east overlying the runway at low altitudes, pedestrians crossing the runway, and off-drop zone landings. As a result, the City has initiated an independent safety risk assessment of various elements relevant to the skydiving operation at LMO. This assessment was designed to determine whether skydiving operations can be continue to be accommodated safely at LMO, and if so what risk mitigation measures should be implemented to maximize safety for all airport users.

The FAA has implemented a Safety Management System (SMS) philosophy that provides a systematic approach for identifying and assessing hazards to safety and potential strategies to mitigate risk. The basic process is to (1) identify the hazard and its inherent causes (operational conditions, etc.); (2) to identify the likelihood and severity of the worst possible outcome and; (3) evaluate potential means and methods to reduce the risks.

In this context, the hazard likelihood is a function of the frequency an event could occur. FAA has defined the following quantitative and qualitative criteria for assessing likelihood of a hazardous occurrence per operation:

**Table 1
Frequency of Occurrence Criteria**

Code	Definition	Criteria
A	Frequent	Less than 1:1,000 (≥ once/week)
B	Probable	Greater than 1:1,000 but less than 1:100,000 (< once/week but ≥ once per three months)
C	Remote	Greater than 1: 00,000 but less than 1:10,000,000 (< once/3 months but ≥ once/3 years)
D	Extremely Remote	Greater than 1:10,000,000 but less than 1:10,000,000,000 (< once/3 years but ≥ once/30 years)
E	Extremely Improbable	Greater than 1 : 1,000,000,000,000 (< once/30 years)

Source: FAA ATO SMS Manual (2017), Table 3-5

There is no established metric for identifying with precision the likelihood of an event but the operational characteristics of the specific airport, including peak activity levels, can support the categorization of this risk factor.

The potential hazard severity is the worst possible outcome that would result from of an event. FAA has established the following criteria for assessing severity:

Table 2
Severity of Occurrence Criteria

<u>Code</u>	<u>Definition</u>	<u>Criteria</u>
1	Minimal	Aborted takeoff/landing
2	Minor	Loss of airborne separation
3	Major	Abrupt evasive action
4	Hazardous	Near mid-air / ground collision
5	Catastrophic	Mid-air / ground collision (with fatalities)

Source: FAA ATO SMS Manual (2017), Table 3-3

In minimal and minor cases, it is expected that at least one party performed the action(s) expected of them however in major/hazardous/catastrophic cases, the risk is based on neither party conducting the appropriate action to avoid the event.

Combining the frequency and severity codes is used as a means to objectively identify hazards by applying the FAA's Risk Assessment Matrix as shown in **Figure 1**.

Figure 1
FAA Risk Matrix

Severity Likelihood	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Frequent A	Low	Medium	High	High	High
Probable B	Low	Medium	High	High	High
Remote C	Low	Medium	Medium	High	High
Extremely Remote D	Low	Low	Medium	Medium	High
Extremely Improbable E	Low	Low	Low	Medium	High* Medium

Source: FAA ATO SMS Manual (2017), Figure 3-7

The color coding is used to help interpret the criteria for identifying the level of each risk. For example, if a specific risk is judged to have the remote chance of occurring (C) but the consequences could be major (3), the risk identification (3C) would be considered "Medium". The treatment for the various identified risks include:

High Risk (Unacceptable) – hazard that should be immediately curtailed unless mitigated so that risk is reduced to medium or low level. Tracking and management are usually required. Catastrophic hazards that are caused by: (1) single-point events or failures, (2) common cause events or failures, or (3) undetectable latent events in combination with single point or common cause events are considered high risk, even if extremely remote. (Note: high risk is unacceptable)

once identified however, for short periods of time, high risk may exist while mitigation plans are put into effect.)

Medium Risk (Acceptable with mitigation) – minimum acceptable safety objective for high risk hazards where there is residual risk after mitigation. Medium risk hazards should be mitigated to fall into the low category.

Low Risk (Target) – acceptable without restriction or limitation. Low risks may be minimal, however they remain a risk to safety at the airport and should be monitored.

The FAA’s SMS approach is not meant to be conducted as an ad hoc exercise but should be a collaborative safety risk management (SRM) review, which can include a panel comprised of subject matter experts (SMEs), representatives of the airport’s management, and stakeholders that are affected by the skydiving activity, including representatives of the FAA, airport management, the commercial aeronautical services providers including the skydiving operator and tenants. This risk assessment is intended to provide the factual data to assist a SRM process in identifying the hazards, quantifying the risks, and recommending appropriate mitigation measures for the continuation of skydiving operations at LMO.

The following risk assessment is an adaptation of Figure 8-3-5B, “Risk Assessment for Parachute Operations at an Airport” found in FAA Order 8900.1, *Flight Standards Information Management System (FSIMS) Change 502*. The assessment also used on-site observations and other supplemental information to identify potential hazards that could occur at the Airport relevant to skydiving activity. The form was significantly reorganized to follow major components of the airport environment and operational characteristics. Elements of this safety risk assessment that extend beyond the FAA’s guidance were also included where appropriate. Additionally, where standard risk mitigation measures refer to revising Standard Operating Procedures (SOPs), the Sponsor has limited authority to deviate from guidance published in the FAA’s Aeronautical Information Manual (AIM) but should consider the establishment and publication of “best practices” for alerting pilots to the presence of skydiving operations in the airport environment.

1. Drop Zone Area

Is there an area suitable on the airport to accommodate skydiving operations? If so, does the center of the drop zone meet the recommended minimum safe distances from hazards and NAVAIDS for the appropriate skydiver experience level or activity?

In 2012, FAA published draft standards for the design of parachute landing areas (PLAs) to be included as Appendix 19 of AC 150-5300-13, *Airport Design*. Subsequently, FAA published AC 150-5300-13A which superseded the earlier document but did not include any guidance regarding PLAs. In the absence of FAA guidance, the City is using the USPA recommended standards for drop zone dimensions based on levels of proficiency. The current USPA recommended unobstructed drop zone dimensions (radii) include:

<u>Class*</u>	<u>Proficiency or Activity</u>	<u>DZ Clearance (Radius)</u>	<u>Area</u>
I	Solo students & A-license holders	330 ft (100m)	7.85 ac
II	B- and C-license holders and all tandem skydivers	165 ft (50m)	1.96 ac
III	D-license holders	40 ft (12m)	0.12 ac

* Classes added to differentiate between various DZ activity & dimensions

As currently laid out, there are several concerns with the existing drop zone. The drop is located adjacent to Taxiway B and the nearest boundary is only 350 feet from the centerline of Runway 11/29. As a result, overflights of the runway sometimes occur by skydivers attempting to approach the drop zone from the east due to wind conditions. The area set aside for the drop

zone does not meet the USPA BSR standard for a Class I drop zone. The extension of the DZ that abuts the south end of the swoop pond is generally unusable for novice skydivers and further constrains the amount of area available for all skydivers. In addition, the squared off corners of the current DZ leaves portions of the drop zone functionally unusable in a practical sense. A preliminary site analysis identified three sites at various locations on the airfield capable of meeting these criteria.

Risk Hazards:

- * Drop Zone operations capable of meeting minimum dimensional standards for safety
- * Drop Zone capable of accommodating activity for most general wind conditions
- * Proximity to active runway and traffic patterns
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Minor	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Relocate the DZ site to area that can accommodate full-size circular Class I drop zone
- ___ Relocate the DZ site to avoid existing or potential hazards
- ___ Relocate the DZ site away from airfield runway safety/object free areas
- ___ Relocate DZ site to avoid conflicts with airport NAVAIDS and visual aids
- ___ Incorporate the DZ into the ALP
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

2. Airport Traffic Patterns

Will the Drop Zone be located on the opposite the runway(s) established traffic pattern?

The primary goal of the DZ location relative to the traffic pattern is the ability to avoid conflicts with aircraft operating in the pattern. This does not take into account skydivers approaching the DZ downwind prior to turning upwind to land. The DZ's proximity to the runway may require skydivers to cross the traffic pattern depending on wind conditions.

LMO has one runway and uses a standard left-hand traffic patterns. Runway 29 is the preferred runway direction (weather permitting) for departures and Runway 11 is the preferred arrival runway. The drop zone is located inside the traffic pattern for Runway 29.

Risk Hazards:

- * Skydiving operations crossing active traffic pattern(s)
- * Skydiving operations crossing over runway at low altitudes
- * Skydiving operations occurring too close to active runway
- * _____

Pre-Mitigation	Frequency	Severity	Risk Hazard

Risk Hazard Assessment	Remote	Major	MEDIUM
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Risk mitigation measures that could be implemented:

- Non-standard traffic pattern (RW 29 – right hand turns)
- Relocate DZ to avoid active runway traffic patterns
- _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

3. Airport Ground Operations

Would skydiving operation ground vehicles and pedestrians (skydivers and visitors) routinely cross a runway, taxiway, or Runway Safety Area (RSA)? Note: Routine runway/taxiway crossings are defined as crossings that would be part of the skydiving operator’s standard operating procedures for their skydiving activities.

The drop zone is located on the opposite of the runway from the skydive operator’s base of operations and requires a shuttle to transport departing and returning skydivers. The shuttle uses an internal perimeter road to traverse between the locations. No vehicles or pedestrians are authorized to cross or loiter near the runways or taxiways at any time.

Risk Hazards:

- * Pedestrian activity (landed skydivers) in vicinity of aircraft movement area (potential runway incursion)
- * Ground vehicles operating on aircraft movement area (potential runway incursion)
- * _____
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Extremely Remote	Minor	LOW

Risk mitigation measures that could be implemented:

- Provide alternate route to avoid crossing runways/taxiways
- Post signs at crossing points with instructions for skydivers and pilots
- Provide training to skydivers regarding runway/taxiway crossing procedures
- Provide vehicle driver training for those assigned to recover skydivers
- _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

4. Aircraft Activity

While not actively counted, the estimated number of aircraft operations is significant. FAA provides the estimates for operations at most all public-owned airports. In late 2017, FAA estimated that LMO in experiencing 71,500 operations (take-offs and landings) with nearly 70% percent from local flights that do not depart the general area of the airport. These are generated by the local aircraft owners based at LMO and from flight schools where students and instructors use the airport for training.

Risk Hazards:

- * Congested traffic pattern
- * Diverse fleet mix of aircraft
- * Student pilots with varying degrees of proficiency and communication/language skills
- * Transient aircraft unaware of skydiving operations
- * Peak hour operations (w/skydiving)
- * Aircraft mix diversity (w/skydiving)
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Establish and disseminate best practices for operations in the vicinity of skydiving
- ___ Skydive operator assist update and disseminate standard operating procedures (SOPs)
- ___ Outreach to tenants, known users, nearby airports, and regional pilot organizations
- ___ Safety briefings with based tenants and known users
- ___ _____
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

5. Large Aircraft Operations

Are larger aircraft taxiing or running adjacent to the drop zone, where the engine exhaust, propeller wash or wake turbulence could create a hazard for landing skydivers?

While there are 4 jets and other turbo-prop aircraft (including that of the skydive operator), they make up only a very small portion of total operations. However, it is conceivable that the thrust and wake turbulence generated by these aircraft using the runway and taxiway system may impact the DZ sites during certain wind conditions.

Risk Hazards:

- * Large aircraft operations in vicinity of skydiving activity
- * Transient operations unaware of skydiving operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Extremely Remote	Minor	LOW

Risk mitigation measures that could be implemented:

- ___ Locate the DZ site to avoid existing or potential hazards
- ___ Post signs advising pilots and skydivers of possible hazard by prop wash or jet blast to personnel near the DZ
- ___ Establish and disseminate rules and regulations for ground operations
- ___ Skydiving operator to establish and disseminate ground operating procedures
- ___ Coordinate safety briefings with large aircraft operators known to use LMO
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

6. Military Aircraft Operations

Are there military aircraft using the same airspace as skydiving operations?

The FAA estimated that LMO had 420 military operations in 2017. These were for the most part flights just passing through since there are no based military activity at LMO.

Risk Hazards:

- * Military helo operations in vicinity of skydiving activity
- * Transient operations unaware of skydiving operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Extremely Remote	Major	LOW

Risk mitigation measures that could be implemented

- ___ Facilitate formal communications between known military unit(s) and skydive operator
- ___ Develop and publish Standard Operating Procedures (SOPs)
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

7. Helicopter Operations

Are there any routine helicopter operations (emergency medical services, law enforcement, flight school, etc.) conducted at the airport?

LMO is home for four (4) helicopters used for business and personal use. There is no established heliport or other designated area specified exclusively for helicopter operations however, there is a paved pad located in the southeast part of the Airport commonly used by tenants for helicopter operations.

Risk Hazards:

- * Helo operations in vicinity of skydiving activity
- * Helo traffic patterns established to avoid fixed wing operations
- * Transient helicopter operations unaware of skydiving operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Major	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Establish standard traffic patterns for helo operations
- ___ Safety briefings with based tenants and known users
- ___ Facilitate formal communications between known helo operators and skydive operator
- ___ Develop and publish Standard Operating Procedures (SOPs)
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

8. Light Sport and Other Aircraft Operations

Are there light sport, ultralight, glider, or agricultural (Ag) airplane operations being conducted at the airport or through the drop zone airspace?

There are 16 assorted ultralight aircraft based at LMO. These and other aircraft (including, powered parachutes, etc.) frequently use the airfield.

Risk Hazards:

- * Ultralight and powered parachutes operations in vicinity of skydiving activity
- * No radio communications while operating in the traffic pattern or in the vicinity of skydiving activity
- * Non-standard traffic patterns established to avoid regular fixed wing operations
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Safety briefings with based tenants and known users
- ___ Outreach to regional airports, FBO's, flying clubs and pilot organizations
- ___ Encourage radio communications (hand-held) while operating in the vicinity of the airport.
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

9. Flight Training Operations

Do student pilots routinely use Airport. If so, how many student take-offs and landings occur per day (daylight hours)?

LMO has one based flight school as a tenant. In addition, several regional flight schools use LMO as an approved airport for flight training. Other regional flight schools use LMO as a preferred destination for student cross-country flights.

Risk Hazards:

- * Flight training operations in vicinity of skydiving activity
- * Novice pilots
- * English language communication issues
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Facilitate formal communications between known flight schools and skydive operator
- ___ Safety briefings with based flight instructors and flight schools
- ___ Outreach to regional flight schools
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

10. Airport Procedures

Does the airport have written airport procedures for skydiving operations? Is there a procedure for notifying airport users of changes to the airport procedures?

The City has traditionally relied on standard FAA publications such as the Aeronautical Information Manual (AIM) to promulgate safe flying practices. LMO has supported skydiving operations for over 20 years and the City's current rules and regulations (Chapter 13.39.040(J) of the Longmont Municipal Code) and other documents include provisions regarding skydiving operations. The regulations do not address recommended best practices and other considerations and the publication venue is limited.

In 1995, the skydive operator had prepared a set of Standard Operating Procedures (SOPs) but they have not been updated since the original publication and have not been publically posted to disseminate the information among airport users.

Risk Hazards:

- * Limited FAA regulations and guidance for users regarding the safe conduct of skydiving activities in a congested and dynamic operating environment
- * Outdated skydive operator SOPs
- * Pilots unaware of skydiving SOPs
- *

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Major	MEDIUM

Risk mitigation measures that could be implemented:

- ___ Update airport SOPs to include skydiving operations
- ___ Publish skydiving information on airport website
- ___ Outreach to tenants, known users, nearby airports and regional pilot organizations
- ___ Safety briefings with based tenants and known users
- ___
- ___

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

11. Air Traffic Procedures

Does the airport have an operating airport traffic control tower (ATCT)? If not, can skydiving operations be announced over the airport's UNICOM or CTAF (Common Traffic Advisory Frequency)?

LMO is a busy general aviation airport but does not have an air traffic control tower. The Airport's CTAF (122.975) is used for aviators to make position announcements and state intentions. During peak periods, there may be times where pilots have a difficult time making position announcements and are sometimes blocked by simultaneous transmissions.

It should also be noted that aircraft are NOT required to have nor use aviation radios while operating at LMO. Skydiving operations require use of the CTAF to announce activity in progress and will add to the existing frequency congestion.

Risk Hazards:

- * Congested transmissions
- * Blocked transmissions
- * Unannounced traffic
- * Skydive plan missing calls-outs
- *

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	MEDIUM

Risk mitigation measures that could be implemented:

- Encourage CTAF use among all users
- Skydiving operator use CTAF to inform local traffic of skydiving operations in progress
- _____
- _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

12. Air Traffic Control

Would FAA ATC (Air Traffic Control) need to vector aircraft through the airspace being used by skydiving operations?

LMO is located in the northwest quadrant of the Denver airspace, just outside the Class B airspace of Denver International Airport. A special information box on the aeronautical chart alerts pilots regarding intensive aircraft operations including skydiving along the foothills of the Rocky Mountains between the Northern Colorado Regional Airport (FNL) 19 miles to the northeast of LMO and the Rocky Mountain Metropolitan Airport (BJC) 15 miles to the south. Immediately southwest of LMO is the airway intersection "HYGEN" where V85 and V220 intersect. The parachute icon just below the airport symbol indicates that skydiving operations are present at the Airport.

A Letter of Agreement (LOA) was established in April 2007 between Mile-Hi and the FAA's Denver TRACON (Approach Control) regarding airspace procedures for using LMO for skydiving. The Agreement outlined the geographic boundaries of the "climb box" located southwest of the Airport. The climb box was established to ensure the jump plane remains clear of Denver's Class B airspace and other potential conflicts during the climb to altitude. The actual skydiving drop operation generally will occur at altitudes up to 17,900 feet above sea level (approximately 13,000 feet above ground level) with the aircraft to remain within a radius of 2 nautical miles of the Airport.

Risk Hazards:

- * Skydivers transitioning through congested airspace and airway routes
- * Blocked transmissions
- * Unannounced traffic
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Hazardous	LOW

Risk mitigation measures that could be implemented:

- FAA ATC /Operator: Abide by Letter of Agreement
- FAA ATC: Establish distinct transponder code for skydiving aircraft.
- _____
- _____

Note: These mitigation measures will be the responsibility of the skydive operator and FAA.

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

13. Skydiving Operations Notifications & Publications

Will NOTAMs, AWOS (Automated Weather Observing System) broadcasts, and the parachute symbol on the appropriate Sectional Chart be used to advise aeronautical users of the skydiving operations at the airport?

All appropriate notifications should be published to notify aeronautical users of skydiving activities at the airport.

Risk Hazards:

- * Transient pilots unaware of skydiving activity at airport
- * Non-radio aircraft using airport
- * Unannounced traffic
- * _____

Pre-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard
	Remote	Major	LOW

Risk mitigation measures that could be implemented.

- ___ Publish skydiving information in the Airport Master Record
- ___ Issue NOTAM for skydiving operations
- ___ Append message regarding skydiving on AWOS
- ___ Encourage communication over UNICOM/CTAF
- ___ Publish skydiving information on airport website
- ___ Use visual indicators (flags, banners, etc.) on the airport to alert pilots of skydiving operations in progress
- ___ Establish and disseminate best practices in the vicinity of skydiving
- ___ Skydive operator to establish and disseminate SOPs to all skydivers
- ___ Outreach to tenants, known users, nearby airports and regional pilot organizations
- ___ Regular safety meetings to discuss SOPs, observations, and issues
- ___ _____

Post-Mitigation Risk Hazard Assessment	Frequency	Severity	Risk Hazard

14. Other Considerations

Additional safety observations not covered by questions 1 – 13 that could create a hazard between the skydiver and an operating aircraft needs to be brought to the attention of the review panel for assessment. List any additional concerns/observations below for assessment:

In the course of the safety risk assessment for LMO, there were other issues involving skydiving activity and the skydive operator that were observed and should be reviewed.

a. Skydive Aircraft Fueling

The skydive operator has placed a fuel tanker near a paved run-up pad adjoining Taxiway A and uses it to park and refuel the skydive aircraft as shown in **Figure 2**.

Figure 2



The issue is that while the aircraft is parked on the pad, it imposes an obstruction for other aircraft using the taxiway. The red line illustrates FAA's design standards for Taxiway A's Object Free Area (TOFA) which is situated 65.5 feet from the taxiway centerline. The FAA's states:

The taxiway and taxilane OFA clearing standards prohibit service vehicle roads, parked aircraft, and other objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. Vehicles may operate within the OFA provided they give right of way to oncoming aircraft by either maintaining a safe distance ahead or behind the aircraft or by exiting the OFA to let the aircraft pass.

Source: FAA Advisory Circular 150/5300-13A, Airport Design, Para 404.b(1)

The only recourse for mitigating this issue is to relocate the fuel tank to a place on the airport that will allow aircraft to be refueled without encroaching on any airfield object free area or otherwise create an obstruction to the airspace.

b. Skydive Plane Loading Area

A similar situation occurs when the skydive aircraft is loading skydivers near the drop zone as illustrated on **Figure 3**.

Figure 3



In this case, expanding and realigning the loading area, to allow the aircraft to park outside the taxiway OFA may be a potential solution to the issue.

Summary

A review of NASA’s Aviation Safety Reporting System (ASRS) indicated over 400 reports between 1998 and 2015 throughout the nation that were directly related to skydiving. The following is a tabulation of the reports classified by the general nature of each specific report.

**Table 3
ASRS Skydiving Reports
(1998-2015)**

Description	Reports	Percent
Conflict with <u>skydiver</u> with or without parachute deployed in the vicinity of the airport, including in the traffic pattern, on approach or departure	238	56.3
Conflict with <u>skydiving aircraft</u> in the vicinity of the airport, including in the traffic pattern, on approach or departure	116	27.4
Skydiving aircraft or parachute maintenance issue, incident or accident, including fuel exhaustion	24	5.7
Conflict with skydiver with or without parachute deployed not in the vicinity of the airport between 1,000’ - 14,000’ AGL	23	5.4
Conflict with skydiving aircraft not in the vicinity of the airport between 1,000’ - 14,000’ AGL	14	3.3
<u>Other</u>	<u>8</u>	<u>1.9</u>
Total	423	100.0

Source: <http://asrs.arc.nasa.gov/>

As the table indicates, over 56 percent of the safety reports indicated that the conflicts between skydivers and aircraft occurred in the vicinity of the airport. Reported conflicts with the skydiving aircraft approaching and departing the airport were also significant. These data reinforce the need for instituting appropriate safety measures to mitigate the risk of skydiving activity at the airport.

###

Preliminary

Attachment F
Consultation

Preliminary

Attachment E Consultation

Over the course of the Skydiving Activities Analysis study, a number of airport users were interviewed regarding their observations, perceptions, and opinions regarding skydiving operations at the Airport. The following represents a paraphrased compilation of their comments.

- skydivers (some as friends) come across as classic anti-authoritarian thrill-seekers
- LMO generally safe but observed occasional incidents with skydive aircraft (non-standard entry into the traffic pattern in use, radio calls not made)
- pedestrians crossing the taxiway/runway to get to drop zone
- parachutes over the runway “disaster waiting to happen”
- jets using LMO exacerbate situation (or they may avoid LMO altogether)
- suggest making expectations clear for both skydivers and aircraft operators
- suggest explaining not just the “what” to do but the “why” behind it
- suggest getting word out to other airports
- Skydive operator unwilling to cooperate
- skydiving at LMO as is detracts from attractiveness of Airport
- safety issues with locations of drop zone and parked fuel tanker
- concerns for Airport/City leadership to negotiate and follow through with agreements
- clear violations of USPA BSRs
- inadequate training/orientation regarding LMO drop zone
- no internal safety meetings
- questionable experience of swoop pond users
- significant contrast between LMO skydive operator and other airports/drop zones (which have a robust safety culture but much more comfortable)
- no dedicated ground observer present during jumps
- recommend separate drop zone for more experienced skydivers
- skydive operator absentee owner
- skydive operation disorganized and lacks professionalism
- culture of skydive operation can be characterized as “edgy”, lots of tension, cliquish
- skydivers banned from skydive operation for expressing safety concerns to USPA
- skydivers have quit using skydive operation because of safety concerns
- recommend checking out “Out of the Blue Skydiving Center” (Colorado Springs East Airport) and Orange Skies Free Fall Center (Fort Morgan Municipal Airport) for how a drop zone should be operated
- LMO busiest airport in CO without air traffic control tower
- skydiving operators (previous and current) at LMO have never been good
- current skydive operator does not “play well with others”
- poor communications (one-way – no responsiveness)
- not a matter of “if” but “when” something bad will happen
- poor control of skydivers
- perceptive attitude that the skydive operator “owns the airport”
- good skydive aircraft pilots but will occasionally cut you off in the pattern
- need rules for everyone to play by

Attachment E

Consultation

In addition to the one-on-one interviews, a “town hall” style meeting is being scheduled to receive input from and discuss skydiving and other safety issues with airport users.

The outcome of this meeting will provide guidance for inviting a panel of stakeholders and subject matter experts to conduct a safety risk management (SRM) analysis with the objective of identifying and mitigating safety issues. One expected outcome of the SRM panel is an update of the current Standard Operating Procedures for skydiving operations.

Preliminary