

USHPA RISK ASSESSMENT WORKSHEET

Hang Gliding / Paragliding Site

 $\textbf{The United States Hang Gliding \& Paragliding Association • www.ushpa.aero} \bullet info@ushpa.aero$

Flying Site Name:	North Boulder		
Site Location: (Closest City, State)	Boulder, CO	Annual/ Last Assessment Revision Date:	15 Jan 2019
Primary Launch GPS Coords: (DD.DDDD, -DD.DDDD)	40.0562, -105.2998	Primary LZ GPS Coords: (DD.DDDD, -DD.DDDD)	40.0553, -105.2894
Site Requirements: examples: H3, P3, H3 w/ CL	H2/P2/M1		
Site Type: examples: Coastal Cliff, High Alt, Mt Thermal, Eastern Ramp	High Alt, Mt Thermal		
Site Guide Link: https://www.link.com	http://www.rmhpa.org/boulder-site-guide/		
Site Guide Review Login: (if protected)	Site Guide Review Password: (if protected)		
Chapter #:	21		
Chapter/Club Name:	Rocky Mountain Hang Gliding and Paragliding Association		
Name of Safety Coordinator:	Ed Williams, Tavo Gutierrez, Ben DeVoti		
Name of Site Coordinator: (for chapter)	Dustin Miller		

USHPA_Risk_Assessment_Worksheet V 2017-12-12	
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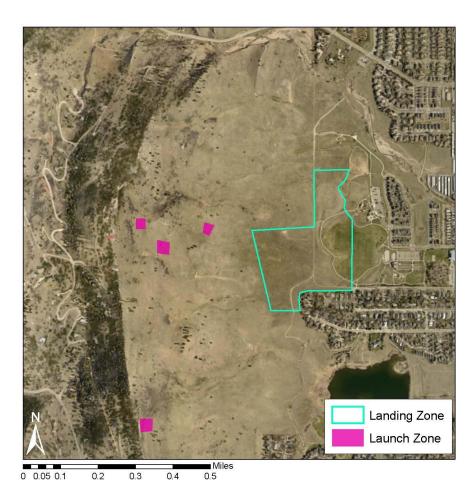
For Risk Management Information & Process Instructions see: START HERE: USHPA RISK MANAGEMENT PROGRAM

Quick Risk Management Plan Steps outline:

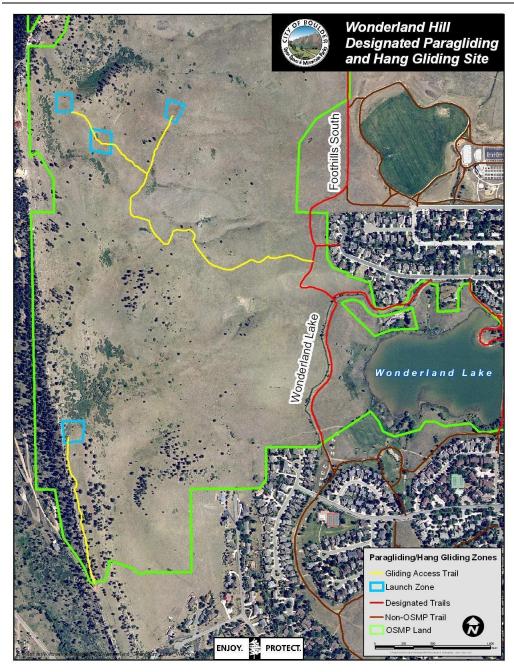
- 1. Review the Chapter Risk Management Training Videos & Training Materials on http://ushpa.vizigy.com
- 2. Create / Update Chapter Managed Sites and Site Locations List Table
 - a. Update Chapter Managed Site Additional Insured Landowner Table and associate to Site Locations
- 3. Create Site Maps to be used in this assessment and Site Guides. Site Maps to include the setup, launch, teardown and landing areas, including use zones & measurements (to compare to guidelines) and include in Risk Assessment & Site Guide document.
- 4. **Risk Assessment and Mitigation** sections of Worksheet: Identify all possible risks. Evaluate from the perspective of spectators, visiting pilots, inexperienced and experienced pilots. Analyze all risks and determine the vulnerabilities.
 - a. Note significant risks under Risk Detail and Risk Assessment.
 - b. For each risk noted, determine steps, actions, signs if necessary to mitigate the risk and document under "Risk Mitigation."
- 5. **Create Risk Mitigation Plans** in section of this worksheet for actions to be implemented if not in place and follow-through on any actions or other mitigation activities identified in your Risk Assessments and Action Plan, such as signage or preventative measures.
- 6. Create / Update Site Guide and update rules/regulations/protocols /site guides to be reflective of risks.
- 7. Communication
 - a. Publish your Site Guide and any rules/regulations/protocol guides, so all users of the flying site are aware of them
 - b. Publish your Risk Management Plan to be available to Chapter Members
- 8. Accident Investigations and feedback findings to your Risk Assessment Worksheet & Site Guide if actions are required
- 9. Submission Upload during Chapter Application/ Renewal (Annually) or send directly to USHPA or RRRG contact for updates after upload

Site Maps and Use Zones:

Wonderland Hill (North Boulder) Launch & Landing Zone



Also see: http://www.rmhpa.org/boulder-site-guide/



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(000 - Flying Site Name) North Boulder	Review/ Revision Date 15 Jan	2019	
Risk Identification (Examples – Feel free to identify your own!)	Risk Detail & Risk Assessment	Risk Mitigation	Sign Off
 Road or Trail Access What type of road access is there (4WD, paved, public, etc.)? What type of trails are used to access site features? Are roads and trails used to access the site secured using gates or locks? Should they be? Does access to roads/trails need to be restricted or monitored? Are there potential conflicts between pedestrians and vehicles (pilots or spectators)? How do emergency vehicles access site areas? Is signage needed? Have there been any incidents or accidents involving vehicles at this site? 	Road access to LZ with trails to all launches. Alternate drive up for shorter hike to south launch. Very specific requirements for drop off for south launch no parking allowed http://www.rmhpa.org/images/northboulder_pineneedle.pdf Please stay on the trails at all times to prevent unintentional spread of noxious weeds per Boulder Open Space.	Specific guidance in site guide.	
 Vehicle Parking Area Is there a designated parking area for vehicles? What is the clearance between vehicles and: Setup? Are gliders in setup area secured? Launch? Landing area? Teardown area? Are gliders in teardown secured? If any clearance is less than 50 feet, mitigation should be described Are tie-downs needed? Is signage needed? Have there been any incidents or accidents involving vehicles in the parking area at this site? 	Parking is not immediately proximate to the LZ or launches. It does not pose a hazard. No parking at the South Launch!		

Spectator Areas

- What is the clearance between spectators and:
 - Setup? Are gliders in setup area secured?
 - o Launch?
 - Landing area?
 - Teardown area? Are gliders in teardown secured?
 - → If any clearance is less than 50 feet, mitigation should be described
- Are tie-downs needed?
- Are spectators allowed in areas with gliders without an escort? Should they be?
- How are spectator limitations communicated and enforced?
- Are barriers needed?
- Is signage needed?
- Have there been any incidents or accidents involving spectators at this site?

For spectators at launch, mainly public trail users, spectators are kept away from use areas. Clearance >50 is easily achievable and pilots are encouraged to allow spectators, but to explain to them where to view from and the importance of staying clear of use areas.

The trail area immediately below the upper launch should be cleared before launches commence.

On days when the park is busy spectators or other users can pose a hazard. The landing area becomes more restricted.

In the future, we may be looking at adding an alternative landing zone to be used when there are spectators in the LZ. This is in discussion with the Boulder Open Space and Parks and Rec.

Respectful and thoughtful communication between pilots and spectators.

Instructors should closely monitor and perhaps restrict student pilots on days when the park athletic fields are very busy.

Boulder has provided additional LZ space to the north and west of the park. If the athletic fields are crowded use these clear areas to land.

Potential Obstacles

- Which potential obstacles are present at the site:
 - wires
 - towers
 - o lake or river
 - o ocean
 - forest or trees
 - o large rocky areas
 - other
- What is the clearance between potential obstacles and:
 - o launch? (50 feet)
 - landing area? (100 feet)
 - o planned flight path? (75 feet)
 - → If any clearance is less than noted distance, collision avoidance mitigation should be described
- Is the clearance sufficient?
- Are potential obstacles marked?
- Is signage needed?
- Have there been any incidents or accidents involving overhead obstacles at this site?

Clearances & Obstacles:

North Launch:

rocks and oak brush: pose little threat

trees: behind and to the side of the main launch should be navigated especially on strong days with a North component

South Launch:

trees: there are large pine trees that necessitate a launch in either the NE or SE direction; easy to avoid

LZ:

No natural obstacles

Avoiding spectators on busy weekend days is important but also easy to do.

Flight Path to the LZ:

Pilots should try to avoid landing short; there is no danger in doing so. It does come with additional but very manageable turbulence but the main objection from Boulder Open Space is the noxious weed issue.

Summary: Clearances are sufficient, obstacles are obvious, and making the LZ is straightforward.

Have site mentor do a walk-through with new pilots

For returning pilots, walk full LZ and launch areas.

Before every flight, conduct a flight-plan review taking into account obstacles

Steer clear of obstacles and be aware of the danger of object fixation.

Understand density altitude and how it affects launch and landing characteristics (HA endorsement required).

Do not fly alone.

Landing short is preferable to not landing in control. Avoiding noxious weeds is secondary to safety. This is part of the site intro.

Launch Areas

- What is the clearance around the take-off area:
 - o in front (for solo pilots)? (50 feet)
- o in front (for tandem pilots)? (75 feet)
- o behind? (30 feet)
- o to the sides? (30 degrees)
- → If any clearance is less than noted, collision avoidance mitigation (for obstacles or spectators) should be described
- Are there ground obstructions (trip/fall hazards)?
- Is the launch area clearly marked? Does it need to be?
- Are there appropriate/adequate tie-downs?
- Are the site regulations and launch requirements clearly communicated to all pilots and spectators? How?
- Are there launch assistant qualifications and equipment guidelines communicated? How?
- Are spectator areas delineated and communicated? How?
- Is signage needed?
- Are there First Aid First Responder resources?
- Have there been any incidents or accidents involving obstacles, obstructions, vehicles or people on launch at this site?

Clearance for take-off obstacles is >100 feet and >30 degrees

Slip/trip/fall hazards are present due to native environment

Winds with a North component make the North Launch more difficult to launch

Site regulations are posted on the RMHPA

Site Guide and communicated to pilots during site walkthroughs and introductions.

Cellular coverage is available.

Launch is clearly marked and obvious.

Emergency medical response is available from Boulder, CO.

Landing Zones

- What is the clearance around the landing area and:
 - o ground personnel
 - o vehicles
 - o structures
 - o active roads/trails
 - o spectators
 - → If any clearance is less than 50 feet, collision avoidance mitigation should be described
- Are there ground obstructions (trip/fall hazards)?
- Is the landing area clearly marked? Does it need to be?
- Are there appropriate/adequate tie-downs?
- Are the site regulations and landing requirements clearly communicated to all pilots and spectators? How?
- Are spectator areas delineated and communicated? How?
- Are there guidelines regarding ground handling (kiting) in the LZ area?
- Are there appropriate wind indicators?
- Is signage needed?
- Are there First Aid First Responder resources?
- Have there been any incidents or accidents involving obstacles, obstructions, vehicles or people in the landing area at this site?

The LZ is very large and covered with irrigated grass.

Landing zone has some mild slope in places. Due to density altitude, approaches can go long. Midday turbulence can be encountered.

Other park users can create hazards.

Site regulations are posted on the RMHPA Site Guide and communicated to pilots during site walkthroughs and introductions.

Cellular coverage is available.

The LZ is not clearly marked, but obvious with a windsock just to the west.

Emergency medical response is available from Boulder, CO.

Understand density altitude and HA endorsement required.

Land well clear of other park users and avoid direct over flight.

Boulder has provided additional LZ space to the north and west of the park. If the athletic fields are crowded use these clear areas to land. The area to the north of the park is normally used by hang gliders.

 Other Activities in Area Is the site open to the general public? Do other activities occur in the same area? Such as: radio controlled (RC) aircraft model rocketry skeet shooting kite flying If any other activity occurs, mid-air mishap mitigation should be described Is signage needed? Have there been any incidents or accidents involving other activities at this site? 	General public can access the launch area, but there is plenty of space for pilots to keep clearance from spectators. The LZ may have other activities in progress (sporting events and other park visitors).	Pilots will communicate with spectators to keep them clear of launch area.
 Are there other flight operations in the area? general aviation commercial aviation agricultural aviation If any other flight operations occur in the area, interference mitigation should be described Has the local FAA office been advised in writing of glider flight activities? Are NOTAMs published for this site? Are there conflicts with Terminal Controlled Flight areas (TCA)? Are there potential conflicts with general aviation airports and landing patterns (noncontrolled)? Are all tandem and towing operations in compliance with FAA rules and regulations? Have there been any incidents or accidents involving FAA non-compliance or other flight operations in the area of this site? 	There is a municipal airport about 5km west of this flying site. There is a commercial soaring plan business that operates out of this airport as well as general small aviation traffic. NOTAMs are posted for home football games at The University of Colorado Boulder. This usually affects this free flying site for a day. There have been no incidents involving flight operations.	The Boulder flying site is marked on pilot air space maps. There is a long history of cooperation between paragliding/hang gliding pilots and the commercial soaring plane businesses. Some of the commercial soaring plane pilots are also paragliders so the communication is more than adequate.

Organized Events

- Does your Chapter have any organized events at this site? Such as:
 - o club meetings, picnics or parties
 - o fly-ins or demo days
 - ACE events or sanctioned competitions
 - public demonstrations
- Is there a Flight Safety Coordinator designated for all flying events?
- Are spectator areas and vehicle parking areas clearly defined, designated and enforced?
- Are recommended clearances between flight operations and spectator areas marked, maintained and enforced?
- Are tie-down systems available and in-use for organized events?
- Are flight simulators or other demonstration equipment under direct supervision at all times until disassembled?
- Are First Aid First Responder resources on site and available?
- Have there been any incidents or accidents during organized Chapter-sponsored events?

We have not had organized events in Boulder.

We do intend to have more social events in the park adjacent to the landing zone to include picnics and barbecue. These events will generally not have a flying component.

We may have informal competitions among interested pilots but these will not be Race to Goal but rather Elapsed Time or Open Distance events open all season long. These picnic areas are far from the landing zone and pose no additional danger to the flying activities.

Without a group start type of race, there is little additional risk to the general flying activities at the site posed by informal competitions. To the contrary, these sorts of competitions are meant to enhance a sense of mentorship at the site.

Safety Officer (Annual Review)

- Do your Bylaws clearly define the responsibilities of the Safety officer (can be a Director, Coordinator, or other titles)? Such as:
 - Risk Assessment and Risk Mitigation Plan
 - o Incident Reporting process and follow-up
 - Oversight of Site-Event Management Plans
 - Access to historical data for informing site guidelines and rules
 - Authority to close a site due to hazardous conditions or situations
 - Authority to restrict flight operations of a single pilot if necessary to avoid potential accidents
- Does your Chapter have a copy of USHPA's Risk Management Plan Program with Appendix A, Recommended Operating Guidelines?
- Does your Chapter have appropriate documentation in place for:
 - o Risk Mitigation Plan
 - o Incident Reporting
 - policy/procedure to close a site due to hazardous conditions or situations
 - policy/procedure to restrict flight operations of a single pilot if necessary to avoid potential accidents

Yes, chapter bylaws included Safety Officer and Flight Director responsibilities, including reviewing and updating risk management plans, incident reporting, open access from pilots, site regulation changes and authority, and imposing flight restrictions.

Yes.

Documentation is maintained.

The Chapter Safety Officer and Secretary are both planning to visit all Chapter managed sites this year to review and update Risk Assessments and Site Guides with the local site experts/coordinators.

Information Communication

- Are flying site rules and guidelines clearly and appropriately communicated? This could be through one or more of the following:
 - o website
 - o video
 - o signage on site
 - paper hand-outs
 - designated members (site administrator, sponsor, guide)
 - o other
- Are flying site parameters and protocol clearly and appropriately communicated (to spectators and pilots) through signage, physical markings, barriers, etc.?
- Is contact information for the chapter site coordinator available at the site?
- How can members and spectators provide input and suggestions to the site management team?
- How is the Emergency Action Plan communicated?
- Have efforts been made to claim ownership of internet information with pointers back to your Chapter as the primary information source that takes precedence if on Google Maps, Paragliding Map, Paragliding Earth, or other online site guides?

Yes, site guidelines and process are communicated to the RMHPA membership via email, social media, and an updated website Site Guide.

In the chance spectators are present, pilots are encouraged to communicate with them on spectator safety hazards, where to view, and where to keep away from.

Site coordinator information will be included on the updated Site Guide.

Members and spectators are encouraged to contact any RMHPA officer with input or questions. Officer information is included in the RMHPA website.

Ownership claim has not been initiated

The Boulder Site Guide is being updated and rewritten to more clearly communicate relevant information.

Experience & Skills required to fly the site safely

- List the pilot skill sets required to fly the site safely.
- Does the site require a specific pilot proficiency rating / special skills? Cliff, ramp launch, thermal, turbulence, ...
- Is USHPA membership & ratings required to fly at this site?
- Each site should have recommended or required USHPA ratings
- Do the site ratings reflect the launch and landing zone requirements?
- Why did Site receive the rating? (Is the site a Green Circle run or a triple Black Diamond and why it was rated that)
- How are pilot rating/special skill requirements verified? Some possible methods:
 - o sticker
 - o text message (719-387-4571)
 - website (ushpa.org/m/#####)
 - PDF USHPA or Chapter Member card
 - o designated members (site admin, sponsor)
- How is site access limited to only those pilots with a verified appropriate rating/special skills?
 - o all members
 - designated members (site administrator, sponsor, guide)
 - other
- How does the chapter encourage and enable appropriate pilot experience for flying at this site?
- Does training take place at the site? If so, are USHPA training guidelines followed?

H1/P1/M1 with instructor supervision.

H2/P2/M2 required w/ High Altitude and Turbulence endorsements preferred.

The Site is insured, therefore USHPA membership and appropriate ratings are required. Moreover, local pilots are strongly encourage to be members of the RMHPA club.

Site ratings do reflect the pilot requirements during morning and evening flights and/or when thermic conditions and environmental hazards are not present. For mid-day conditions, H3/P3/M3 or higher, is recommended.

USHPA membership/rating is verified by email, in-person cards, and/or txt message verification to USHPA.

Training and mentoring do occur at the Site. We have several pilots on the hill who can give ratings to newer pilots and this encourages a sense of mentorship on the hill.

 Emergency Action Plan Is the site Emergency Action Plan documented and communicated? Example methods: website signage on site (launch and LZ) paper hand-outs designated members Is there a documented protocol for filing incident reports? Have local emergency responders been notified of flying site location and methods of access? What first responder resources are available onsite? Some possible options: first aid kit direct phone numbers of emergency services landline telephone (e.g., pay phone) no-fly tarp/flag Does the chapter sponsor First Aid and CPR training for members? How often? Have there been any incidents or accidents at this site using your Emergency Action Plan? 	An EAP will be published on the website and briefed annually at a Chapter Meeting.	An EAP is published on the website and briefed annually at a Chapter Meeting. A generic EAP, developed with reference to USHPA's online training material, is included on the Chapter website and briefed at a Chapter meeting annually. Specifics for individual sites are included in the individual site guides. Our Chapter conducted first responder training in 2018.and will sponsor additional First Responder and CPR classes if pilots are interested.	
 Tandem Flying How is compliance with the USHPA FAA Tandem Exemption monitored and enforced? Are all participants issued a 30-day student membership, or confirmed to possess a current USHPA membership? What is the clearance around the take-off area: in front (for tandem pilots)? (75 feet) behind? (30 feet) to the sides? (30 degrees) If any clearance is less than noted, collision avoidance mitigation (for obstacles or spectators) should be described Have there been any incidents or accidents involving tandems at this site? 	There have been no incidents with tandem flights.	The only commercial tandem operators are done through Peak to Peak Paragliding school.	

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Towing • If towing operations occur at the site, indicate all	N/A	N/A	
types: o aircraft			
o boat			
o scooter			
o static line			
o truck			
o winch			
o other			
 List each towing vehicle used (Year, 			
Manufacturer, Make, Model, Owner)			
 Does every tow operator have the relevant 			
USHPA towing appointments?			
 Is there a written schedule for maintenance of 			
all towing equipment and associated line and			
hardware?			
 Does the Chapter verify that the towing 			
equipment maintenance is up-to-date?			
 Are there towing-specific risks at this site? For 			
example:			
o fuel storage			
 equipment maintenance 			
licensing of operation			
o site access			
 Is the clearance around the towing area 			
sufficient: o in front?			
habia dO			
bening?to the sides?			
overnead?For aero-towing operations:			
How is compliance with the USHPA FAA			
Towing Exemption monitored and enforced at			
the site?			
Have there been any incidents or accidents			
involving towing at this site?			

Glider Tie Down Systems • Are glider tie-down systems needed at this site (in either the setup or teardown areas)? Possible	N/A	N/A	
reasons to require: o dust devils o gusty winds insufficient clearance from vehicles insufficient clearance from spectators If tie-downs are available, how are they			
 communicated to pilots? If tie-downs are available, how are pilots encouraged to make use of them? Have there been any incidents or accidents involving loose gliders at this site? 			

Environment & Other Risk Considerations

- What are the Minimum & Maximum allowed winds and maximum gust factor for the site?
 Explanations should be included if these numbers are high for the industry.
- Are there any other risks or hazards associated with this site or XC from this site? For example:
 - o man-made risks
 - o natural hazards
 - o environmental risks
 - external events/forces
 - weather conditions
 - o known venturi & rotor zones
 - o potential risks of impact
 - vulnerability
 - o Time of year and time of day hazards
 - Other risks typically included in site briefings
- Are there any possible risks due to local response?
- Are there preventative measures that can be implemented immediately?
- Have there been any incidents or accidents in the past at this site? If so, what actions, systems, communications, etc. could have mitigated those outcomes?
- Have there been any incidents or accidents in the past Year that warrant hazard updates to the Site Guide?
- List any facilities owned by the chapter at this site (such as clubhouse, storage shed, wind sock tower, launch ramp, towing equipment)

There are no minimum wind speed nor gust factors for the Site.

Maximum winds are commensurate with ratings required for this site: H2/P2/M2 and H3/P3/M3 for midday conditions.

Mountainous weather is the primary flight-related hazard associated with this Site, and includes:

Wind velocity

Turbulence

Compression and venturi effects

Thermic conditions

Thunderstorm development

Gust fronts

Quickly changing conditions

Weather-related risk mitigation tactics include:

Operating with rating limitations

Site mentorships and site walkthroughs

Understanding, reviewing, or trained/mentored in wind judgement and compression effects, topographic and terrain-induced amplification of weather, thermal knowledge and skills to deal with high altitude thermic conditions and how to recognize ramping, wind shear knowledge and forecast review, knowing where nearby wind talkers are located, understanding thunderstorm life cycle and recognizing hazardous conditions, having the flight skills to manage your aircraft including turbulence techniques and how to descend and land quickly when conditions build, recognizing changing conditions and landing quickly.

Mini / Speed Wing Provisions & Associated risks

- Are Mini/ Speed Wings flown at your site?
- Do you have Mini/ Speed Wing provisions in your site protocols?
- Provisions or Restrictions to consider:
 - Required Glide Ratio from each Launch to each LZ
 - Quantifiable terrain clearance limits to experience level.
 - Acceptable flying conditions in conjunction with terrain clearance protocols including acceptable times of day to the season.
 - Restrictions on Low Acrobatic Flying / Low Barrel Rolls / Swooping
 - Distances from other pilots, observers, vehicles, structures, and other obstacles or areas
- Are there any other Mini/ Speed Wing risks or hazards associated with this site?
- Have there been any Mini / Speed Wing incidents or accidents in the past Year that warrant hazard updates to the Site Guide?

Mini wing pilots sometimes soar other sites (especially coastal sites) in high winds. However, because of the rapidly changing and at times unpredictable nature of the weather/winds combined with the topography at our high mountain sites, high wind soaring is not recommended.

Mini/speed wings are flown at the Site, which requires an M1 rating.

Obstacle clearance is a non-issue for mini/speed wings; the terrain in flight path is native grass with a few outcroppings of oak brush, trees to the left and right of the primary flight paths.

The Site is favourable to mini/speed-wing activities, especially during winter mornings and evenings.

Excellent training area, reliable sledders, also possible to soar these sites, allow adequate separation from terrain.

Annual Incidents & Accidents Review

- # of Incidents this past Year 4
- # of Accidents this past Year 1
- Has your Chapter Reviewed Accidents in this past year and prior years to determine if actions are required?

There were several minor incidents in which pilots made poor landing decisions or flew to far behind the hill. One of these situations resulted in a reserve toss but in all situations pilots were OK.

Unfortunately there was one major accident this year in which a pilot was severely injured. He has since made a full recovery. This pilot was flying on a benign weather day but in his attempt to thermal efficiently was flying too slow. This resulted in a spin and the pilot did crash and was rescued by SAR.

Yes we are constantly reviewing safety protocols and procedures and how best to communicate all of that to our member pilots.

Accidents and incidents are briefed at Chapter Meetings (when possible by the pilots involved). Lessons learned and takeaways for the future are discussed. Summaries of these accident and incident debriefs are included in Meeting Minutes on the Forum.

It is our constant effort to keep the mentorship environment high for new pilots. We have implemented a Mentor program at Boulder.

This program designates 4-5 experienced pilots who have volunteered to act as mentors for any pilot looking for mentoring.

These mentors usually are also Observers and so can give ratings. This encourages pilots to seek guidance and training from their peers.

Risk Mitigation Plan Activities - to be implemented/ work in process

Risk Mitigation Plan Activities	Responsible Coordinators	Project Start	Est. Completion
Update RMHPA site guide	Webmaster	ASAP	Complete
Safety Coordinator and Secretary Site Visits	J. Hildebrand & Scott Drinkard	Feb 2018	Complete
Add EAP brief and plan to the Chapter Website	Jake Hildebrand	Feb 2018	Complete
Update RAW and Site Guide Photos with Google Earth Pro (LZ obstacle survey to add to existing photos)	Scott Drinkard	Jan 2019	Aug 2019

Site Locations:

Attach & upload Chapter Managed Sites and Site Locations Table

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