

NOTES for the 2023 World Rogaining Championships at Northstar, July 29-30

SAFETY

Please refer to the Safety page for Safety information and requirements.

EMERGENCY PHONE NUMBERS

General emergency phone number is 911. We recommend calling the organizer's emergency phones printed on the maps.

2021 NORTH AMERICAN ROGAINGING CHAMPS

The map for WRC2023 is an extended version of the map used for the 2021 North American Rogaining Champs. [Here are the results](#) of that event and a [link to the map file](#).

RULES

[The IRF Rules of Rogaining can be found here.](#)

COMPULSORY GEAR (IRF RULE D9)

For safety reasons and because of the high mountain environment, (range of weather conditions at the highest checkpoint could be from freezing to 100F in July), the list of mandatory gear is:

- **SIAC (Si-Air) touchless card with non-removable wristband, provided by the organizers. Do NOT use your own e-punch for the WRC!**
- **Competition number bib, provided by the organizers. Bib numbers must be visible during the whole competition.**
- **A GPS tracking device provided by the organizers (one per team).**
- **A whistle.**
- **At least two liters of water.**
- **A minimal First Aid kit, including electrolyte replacement for 4 liters of water.**
- **An emergency blanket (one per team)**
- **A thermal top with long sleeves**

RECOMMENDED GEAR

In addition to compulsory gear, we recommend these items:

- Mobile phones will be allowed in the race for safety equipment, but competitors must carry them sealed in a tamper-proof bag provided by the organizers. The phone may be removed from the bag in case of emergency. Bag seals may be checked at the finish; if unsealed, the team is disqualified.
- A normal watch. Watches with GPS or any navigational aid are not allowed.
- Electrolyte replacement for 8 liters of water, and a Hiker's First Aid kit with blister abatement, wound management, antihistamine, medications, etc.
- Food
- Compass
- A warm jacket for night mountain weather conditions
- A beanie or cap which covers the head
- Sun protection

- Some money

COMPULSORY GEAR CONTROL

Organizers will check selected compulsory gear before the start. In addition, the organizers may check compulsory gear at any time during the race or after the finish, in the finish area. Note that all competitors will be issued SI Air cards. Do not use your own SI card for the WRC!

VENUE

Competitors will experience a beautiful but steep area of the high Sierra overlooking Lake Tahoe at elevations ranging from 1,900 to 2,625 meters (~6,200 to 8,610 feet). The vegetation is largely open pine forest, with many meadows, rock features, and man-made influences. Undergrowth and deadfall will be a factor in some areas so leg protection (gaiters) is suggested. You will not encounter poison oak, which does not grow at these elevations. There is a very extensive road and trail network due to logging activity and many recreational users in the area. The Hash House will be in the middle of the Northstar ski resort containing a complex set of condominium buildings and linear clearings for ski runs.

COURSE

There are a total of 87 checkpoints (controls) and the straight-line optimum route to get all of them is approximately 112 km. The score of each checkpoint is 10 times the first digit of the code. For example, checkpoint 47 is worth 40 points, and checkpoint 103 is worth 100 points. There is a total of 5620 possible points. **The late penalty is 10 points for each started minute after the official finish time, which should be 12:00 noon on Sunday, July 30, but may be adjusted a little if required. Teams finishing 30 minutes after the official finish time will be considered LATE and receive zero points.**

One very important point to note is that Highway 267 is STRICTLY OUT OF BOUNDS! You may NOT travel on the shoulder of highway 267 (but you can be on the grass or a path parallel to it) and you can only cross highway 267 at one spot. Checkpoints east of 267 must be preceded by checkpoint 21 which is at a mandatory crossing point. There is a crosswalk signal at this crossing point, and it is highly recommended to wait for the signal to stop traffic before crossing. Subsequently, checkpoints west of 267 must also be preceded by checkpoint 21. If this is not the case, you WILL BE DISQUALIFIED!

The course and terrain will provide a lot of different route choices and planning scenarios. Organizers are encouraging all the teams to consider seriously the mountain terrain, where the height gain will be more important than distance for good planning. The Hash House will be supplied with water and food through the duration of the event starting at 5pm on Saturday July 29.

CHECKPOINT MARKERS

Checkpoint markers are located 1-1.5 meters from the ground. They have reflectors. There is an electronic punch on or near the marker. It should beep when your e-punch is within 1 meter of it. If there is no punch signal (no light/no sound) when you punch the SI station, it may be because the station is not "awake" yet – especially if you are the first to visit it. In this case, insert your e-punch into the hole in the unit for a few seconds to wake it up. In some (rare) cases, the unit may have a dead battery. If you cannot get it to wake up and beep, you may use the manual punch hanging on the unit to punch in the backup boxes on the map. If a checkpoint marker is missing, you may protest at the finish area. If a checkpoint is confirmed missing, the GPS tracking may be used to score checkpoints in a protest. Missing SI stations is not a reason for unsealing the bag with prohibited devices.

CONTROL (CHECKPOINT) DESCRIPTIONS

Control descriptions in English are printed on the waterproof competition map. Also, separate sheets of plain paper with control descriptions (text and symbolic) will be provided with the competition maps at 9am on Saturday July 29. Some of the control features are not on the map and per Rogaining convention, the description begins with “a”. Most control features are on the map, and the description begins with “the”.

WATER STATIONS

In the competition terrain, there will be six (6) water stations marked on the map with a cup symbol and each will be at a regular checkpoint with a point value. The water stations are located at the control circle, not where the cup symbol is on the map. Do not forget to punch at a water stop. Water will be provided in gallon jugs and cups will be available. Do not drink from streams, ponds or dams without first filtering the water - Giardia is a bad parasite that causes diarrhea, is carried by animals and birds, and therefore may be present in any naturally occurring water. Five of the six water stations are on patrolled roads.

MAP

The map scale is 1:25,000, with a contour interval of 10 meters. Competition maps, one per competitor, will be printed on waterproof and tear resistant synthetic paper (68lb Yupo). The map sheet size is 33 x 22.6 inches (84cm x 57cm). The map is oriented to magnetic north so correction for declination will not be necessary. Magnetic north lines are 1,000 meters apart. A second map will be provided for each participant for planning purposes (or a clean copy souvenir). A reduced size map of the course will be provided as an intention sheet – please submit this when entering the Start corral; it is an important feature of our safety plans.

The features of the map are represented with orienteering ISOM 2017 1:15000-size symbols. In general, few point symbols are used on the map and several new area symbols were added. As a 1:25000 scale map, only the main and big features have been represented, but in some areas some smaller features may be represented (for example, a single cliff or boulder might be represented in an area with no other details).

The base map has been made from different sources of data:

- Contours, vegetation, and cliffs have been drawn from LiDAR data courtesy of the National Center for Airborne Laser Mapping (NCALM) and collected in 2013-2014.
- Trails were drawn from Strava heatmaps and most were confirmed during field checking.
- The whole terrain has been checked with aerial imagery (courtesy of Google maps) to complete and correct the above information.
- Additionally, some fieldwork has been carried out in order to add details that were not visible in the source data. Below are more details of the map features.

Contours: The LiDAR-derived 10-meter contours are very good in this area. Some 5-meter form lines were used in the flatter areas. The brown dot knoll symbol was used in place of small contour hilltops for clarity. These are not the typical 1-meter-tall knolls used on orienteering maps.

Vegetation mapping: The forest thickness is shown in more detail than a typical Rogaining map. The forest areas are shown as they would on an orienteering map with white for open forest and 3 shades of green for decreasing runnability. This representation has to be taken as an estimation only because the vegetation was automatically generated from LiDAR data using a 5m x 5m cell size. In general, the LiDAR data does not represent undergrowth (<1m) very well but rather shows thick vegetation that is taller than one meter. This means that it gives you a good idea of the general density of the forest, but you can't count on it being perfect. You may be able to walk through some green areas while it can be almost impossible to cross others. Similarly, there are some white areas with undergrowth that can be more difficult than the map shows. Almost all yellow areas on the map are rough open land with tall grass. The NW corner of the map has experienced significant fuel thinning. This has caused the area to be churned up with new tracks and has covered up some small trails. The good news is that the thick vegetation was removed so it is a lot easier to get through the area. Gaiters are recommended to protect against thick bushes and areas of tall grass.

Roads and trails: There is a very extensive network of trails and dirt roads. A lot of effort went in to draw them all, but this is an area where every season brings new trails, often created by abundant mountain bikers. Every attempt was made to properly classify roads and trails by size from aerial imagery. Solid black lines are used for standard logging roads 3-6 meters in width while the dashed vehicle track symbol is used for roads that were very rough or very narrow (2.5-4 meters). Trails that are very heavily used by mountain bikes or over 1 meter in width are shown by the footpath symbol while narrower (<1 meter wide) trails are shown by the small footpath symbol. The indistinct path symbol is not used on the map. However, the narrow ride symbol is used extensively. This symbol is used for old logging roads or other linear traces that were visible in aerial imagery. Sometimes they are prominent in the terrain, sometimes they are very overgrown compared to the surrounding forest, and sometimes they are indistinct. It is very important to distinguish the narrow ride symbol from the small footpath symbol! The narrow ride symbol was narrowed slightly to make it easier to distinguish. Be sure to check the legend to see the difference. You cannot count on being able to find all the narrow rides and using them for travel or navigation. Indistinct ones were removed from the map but it wasn't possible to check them all.

Water features: The Sierra mountains just experienced a record snowfall this past winter so it is likely that water features are wetter than is shown on the map. All streams are passable although it is possible that you might have to search a bit for a spot to cross to avoid wet feet. Many streams and wetlands are marked out of bounds for ecological reasons or because they are simply dangerous and uncrossable. Some water tanks are shown with the new blue square symbol even though they are all actually round tanks.

Rock features: There are a fair bit of rock features on the map, and most are shown with area features such as boulder field (rock features larger than 1 meter tall), rocky ground (generally less than one meter tall), and bare rock. Two new symbols were created by combining the bare rock symbol with either boulder field or rocky ground. These symbols were used to show areas that were made up of all rock with no trees or grass exposed. As an example, a talus slope is shown with the bare rock + rocky ground symbol. This was done partially because the LiDAR data picked up the rocky areas as dark green even though there is no vegetation present. A few isolated boulders and boulder clusters are mapped, and they are usually larger than 2 meters tall. Cliffs were mostly derived from the LiDAR data and shown with or without tags depending on the need for legibility.

FORBIDDEN AREAS AND SAFETY

Out-of-bounds areas are marked on the map with 2 symbols. Olive green is used for settlement areas containing buildings. It is OK to travel on roads and trails if they pass through olive green (unless they are also covered with purple cross-hatching). There are also some gaps in the olive green and some buildings not surrounded by olive green where it is OK to pass between the buildings. Try not to disturb the building occupants if you pass these areas at night. Other out-of-bounds areas are shown with purple cross-hatching. For example, there are many wetland areas on the map that are off limits. Areas where roads cannot be used are also shown with purple cross-hatching. For example, there is a large area just west of the Hash House where the roads are not open to the public. Competitors that enter any areas with purple cross-hatching will be disqualified.

There are many downhill bike trails in the area just south of the Hash House. They are represented on the map with purple dashed lines (normal footpath symbol with purple color). It is strictly forbidden to follow these trails from 10:00am to 5:00pm, as high-speed downhill mountain bikes are descending, and competitors could cause and be involved in serious accidents. You may cross these trails at any time but do exercise extreme caution while doing so.

Please be careful when entering areas with cliffs, especially at night. There are other steep areas that may have some hidden cliffs in them that can be dangerous, especially at night. Also be wary of cars on the paved roads.

Patrolled roads are shown on the map with a pink outline. These roads will be driven by race officials periodically to check on the water stations and to assist any teams in need of emergency help.

ON AND OFF THE COURSE

You may rest in or near your car in parking lots F or G overnight. However, if you wish to drive somewhere or walk to your accommodations, you must first check out at the Hash House and check back in when you return, by punching the check-out/check-in e-punch units. This is so we know not to search for you if you don't return, and so that no one is tempted to drive to any checkpoints. It is allowed to visit any publicly available store while on the course, but it is not OK to visit your private accommodations without first checking out of the course at the Hash House.

WEATHER

A weather forecast will be posted at the Hash House on Friday before the WRC starts. Please, take care with the weather conditions.

REGISTRATION

Registration and packet pickup times are 3-6pm July 28 and 8-11am, 1-2pm on July 29 in parking lot F at Northstar (Hash House). Your packet will include a high-capacity rental (no fee) e-punch stick with Tyvek wrist band, a model map, bib number, GPS tracker, and event information pamphlet. You can also pick up event clothing if you ordered any. Any last-minute changes to teams, partners, etc., can be done at registration, but there may be a monetary charge to make a change. Each participant is required to have signed a waiver. Each participant under 18 years shall submit his/her waiver from their legal guardian.

SI CARDS and GPS Trackers:

The SportIdent electronic punching system will be used. Each competitor will be provided with a SPORTIdent (SI) electronic punching “e-Punch”, in the team’s packet. A Tyvek wrist band must be used to attach the punch to the wrist, in a way that it cannot be removed or fall off accidentally.

Competitors on the 24-hour World Rogaining Championships will receive touchless SportIdent (SIAC or Si-Air) ePunches, which punch when within about 2 feet of the checkpoint. Team members must punch within 1 minute of each other for a checkpoint to count; be careful with the Si-Air punch – it might punch before you are all there. Each 24-hour team will also be provided with a GPS tracker. This is a very important safety feature of the event. Please follow the instructions for its use carefully. E-Punches and GPS trackers will be collected at the Finish.

MAP HANDOUT: At 9:00 am at the Hash House. Please, only one representative from each team should pick up the team’s maps.

PLANNING AREA: After receiving the competition maps on waterproof paper, competitors can use the event center area of Parking Lots F and G to plan their route. Tables and chairs under tents will be provided. Competitors shall not leave this area starting from the moment of distribution of the maps, except to walk to the start corral at the ice-skating rink in Northstar Village, 600m away. Competitors may use their cars parked in lots F and G for planning.

ENTERING START AREA: The start will take place in the ice-skating rink “corral” in the middle of Northstar village, about 600m along a signed route from the Hash House. Before entering the start corral, competitors must ensure that they have all the compulsory equipment. No team can enter the start area without their GPS tracker, bib number, and e-punch on their wrist which will be checked by the organizers upon entry to the Corral. The Start corral will open at 11:30, and teams must be in the corral by 11:50. The whole team shall arrive and enter together. During entry, competitors **MUST** punch the Clear and Check stations. If you do not do this, your SIAC card will not work! There will be some instructions and a short briefing before the Start at noon.

FINISH: The finish time is noon on Sunday, July 30. After finishing the course, only the organizers will be allowed to remove the wristband. Participants who carried mobile phones during their course will be requested by the organizers to present their unopened sealed bag right after the finish.

HASH HOUSE CATERING: There will be food and drink available at the Hash House at the event center, from 5 pm on Saturday to 11 am on Sunday. The plan is for hot soup, deli sandwiches, fruit, chips, nuts, bars, and hot & cold drinks. There will be vegan options available.

Lunch will be provided after the 24-hour event, at the Hash House from 11am-1pm. The lunch menu will consist of pulled pork, pulled chicken, bread rolls (vegan), corn bread (vegetarian), Mexican beans (vegan), pasta primavera salad (vegan), and cookies.

WI-FI: There will be an event Wi-Fi network available in the event center area. Just select WRS as the SSID for your Wi-Fi. No password required. Go to <http://10.0.1.201:8000> for results.

SHOPS AND FOOD: Northstar Village has a variety of shops and restaurants close by, including The North Face, Patagonia and True North. There are also some shops in Tahoe City at the south end of the map, but they would require significant extra distance to reach them while on the course. There is also a large grocery store (Raley's) near Tahoe-Truckee airport.

RESULTS: After finishing, each competitor receives a printout of e-Punch results. These printouts shall be considered as preliminary. Final results will be published after 1:00 pm, and possibly later if there are any problems or protests.

PROTEST: Within 45 minutes of the nominated finish time, a team may submit a protest about any team thought to have breached the rules, about the preliminary results, or about any actions of the organizers that they consider make the competition unfair. Protests shall be submitted to organizers in writing, and in English.

JURY: Any protest is considered and determined by a three-person jury. Members of the jury will be David Baldwin, Lauri Leppik, and Bud Laird.

AWARDS: The team with the highest score in each class is granted the title of World Rogaining Champions. The three best teams in each class are awarded prizes. The Awards ceremony is scheduled to take place at 1 pm on Sunday, July 30.

4-HOUR EVENT

The 4-hour event will be from 2 pm to 6 pm on Saturday, July 29. Most of the 24-hour information applies to the 4-hour event, except the Schedule (see section 7), and compulsory gear for the 4-hour is:

- **SI-card with non-removable wristband, provided by the organizers.**
- **Competition number bib. Bib numbers must be visible during all the competition.**
- **A whistle.**
- **Mobile phones will be allowed in race for safety equipment, but competitors must carry them sealed in a tamper-proof bag provided by the organizers. The phone may be removed from the bag in case of emergency. Bag seals may be checked at the finish.**
- **A normal watch. Watches with GPS or any navigational aid are not allowed.**
- **At least one liter of water.**

MODEL COURSE

A Model Course will be available on a map called Martis Peak. See schedule page for the schedule and driving directions. The model map will be available in your race packet and there will be some extras at registration. The table below shows the coordinates of the most convenient parking area, which is a parking area on Highway 267 that serves as a trailhead for the Tahoe Rim Trail, a 170-mile long popular hiking trail that circumnavigates Lake Tahoe. Parking areas are shown on the map with a P followed by a number indicating the approx. number of cars that can park there. If the parking areas are full, you can also park on the shoulder of Highway 267.

Martis Peak is a section of the original map produced for the event and contains terrain that was unneeded for the main event. As such, the mapping style is identical to that of the main event and the map also has a scale of 1:25000 with 10m contours. However, the model map is printed on regular paper using a laser printer, so it is not of the same quality as the competition map. There are seven (7) checkpoints shown on the model map. There will be a checkpoint marker at each location but no e-punch or reflector. You are welcome to travel anywhere else on the map to scope out the terrain but don't travel off this map as you may end up in the embargoed area used for the main event. Martis Peak at the north end of the map is highly recommended. It is 40 meters higher elevation than the highest spot in the competition area and has a nice view of Lake Tahoe and the surrounding areas.

Map	Link to pdf file ; Hardcopy also included in your race packet.
Control Descriptions	On the map
Driving Directions	Drive east from Northstar on highway 267
Parking Coordinates	39.2585, -120.0645

Bill Cusworth
Lead Course Setter and Mapper, WRC and Model Event
billcusworth@gmail.com