



Ritt Kellogg Memorial Fund Registration

Registration No. 82T7-V9327

Submitted Jan 4, 2016 5:16pm by Elizabeth Forster

Registration

Sep 1, 2015-
Aug 31

Ritt Kellogg Memorial Fund

RKMF Expedition Grant 2015/2016/Group Application

This is the group application for a RKMF Expedition Grant. In this application you will be asked to provide important details concerning your expedition.

**Waiting for
Approval**

Sep 1, 2015-
Aug 31

Ritt Kellogg Memorial Fund

RKMF Expedition Grant 2015/2016/INDIVIDUAL

This is the individual application for a RKMF Expedition Grant. If your group has received approval, you may fill out this application individually. In this application you will be asked to provide important details concerning your experience and eligibility for your proposed expedition.

**Waiting
for
Approval**

Participant

I. Expedition Summary

Expedition Name

Hikin' for Lichen: Backpacking Through Glacier National Park on the Continental Divide Trail

Objectives

The common axis of sightseeing in Glacier National Park is east-west along the iconic Going to the Sun Road. Floods of tourists from all over the world drive the Going to the Sun Road, oftentimes only stopping at lookout points or going on short day hikes. The Continental Divide Trail, however, cuts north-south through the wilderness of Glacier National Park, traversing through stunning and remote scenery largely inaccessible to visitors traveling in Glacier National Park.

Our primary objective of this expedition is to explore the most remote and least visited areas of Glacier National Park, safely push ourselves beyond our comfort levels as backpackers, and hike through what is considered the most beautiful part of the Continental Divide Trail.

Additional objectives are to utilize the Leave No Trace principles we have learned from Outdoor Education, to implement our knowledge of wildlife and bear safety, further solidify our backpacking and backcountry skills, to strengthen our trip planning capabilities, and most importantly, to safely embark on a trip of a lifetime!

Location

Beginning in Alberta, Canada at the Waterton Lakes National Park, we will hike a total of 164.58 miles through the Canada and Montana sections of Glacier National Park to East Glacier Village. We will travel primarily in the Lewis, Clark, and Livingston Mountain Ranges through a variety of valleys and passes. We also plan to hike off the Continental Divide Trail twice in order to explore even more the most central and inaccessible parts of Glacier National Parks. These occur on Nights 5-7 and Nights 11-14. The latter also allows us to ensure that we avoid the more popular areas of the Continental Divide Trail within the Two Medicine and East Glacier areas. Once arriving in East Glacier, we will take the shuttle from the Glacier Park Lodge back to our car in Waterton Park.

Departure Date

Sep 26, 2016

Return Date

Oct 14, 2016

Days in the Field

15

Wilderness Character

The United States holds claim to two of the most famous long thru-hikes in the world: The Appalachian Trail and the Pacific Crest Trail. Both have their obvious merits and travel through incredible landscapes indicative of the geographical and ecological diversity of the United States. More and more, these trails are losing their respective senses of wilderness. Since Bill Bryson released his book, *A Walk in the Woods*, chronicling his experience hiking the AT in 1998, the trail has seen over a 50 percent increase in thru-hikers. In fact, on Dec. 21, 2015, the Appalachian Trail Conservancy reported that 1,385 of northbound thru-hikers, 192 southbound thru-hikers, and 291 section hikers passed through the Harper's Ferry Visitors Center in West Virginia Appalachian Trail in 2015. These numbers represent a 9, 14, and 139 percent increases from the 2014 data, respectively. The Pacific Crest Trail has also seen similar increases in hikers, particularly since the release of the book and movie version of Cheryl Strayed's *Wild*.

The Continental Divide Trail, however, is only approximately 60% completed, and as a result, there were only 17 thru-hikers who completed the trail in 2014. Glacier National Park lies at the northern extreme of the trail and contains some of the most remote wilderness remaining in the United States. Its wilderness is characterized by steep terrain carved by glaciers (25 of which remain), 756 lakes, and proliferous wildlife that consists of nearly 70 species of mammals. It is incredibly inaccessible due to snowpack lasting into the summer, the intensity of the terrain, and its remote location in Northern Montana. The Going to the Sun Road- which traverses east to west across the middle of the park- typically only opens in the beginning of July, and few visitors venture far off the road. The only other roads in

Glacier National Park are on the perimeter of the park, requiring anyone wishing to access the deep interior of the park to backpack. By hiking the Continental Divide Trail through Glacier National Park, particularly the sections north of Many Glacier, we will access this largely untrodden, remote wilderness with little human contact.

On day 5, we will cross the east-west axis of Glacier National Park, which will bring us somewhat back into civilization. This will be an aid in the case of an evacuation and won't draw us out of the wilderness for more than an hour. The trail also passes through the town of Many Glacier on day 4. Many Glacier is our only frontcountry campsite and our only campsite within a day hike's distance of a trailhead. Other than these two instances, these fifteen days in the backcountry will be without much of any human contact, particularly because we are hiking during shoulder season.

II. Participant Qualifications

Participants' Graduation Date

Elizabeth Forster, 2017

Colin Griffith, 2017

Patrick Journey, 2017

Medical Certifications

Elizabeth Forster, 2017

Certification Course: July 29-Aug 7 University of Boulder, Boulder, CO. Wilderness Medical Institute, NOLS.

Patrick Journey, 2017

WFR Certification Expiration Date: January 16, 2016

Recertification Course: June 13-15, Denver, CO. Regis University. Wilderness Medical Institute, NOLS.

Colin Griffith, 2017

WFR Certification Expiration Date: January 16, 2016

Recertification Course: June 13-15, Denver, CO. Regis University. Wilderness Medical Institute, NOLS.

Does your group have adequate experience?

Yes

Training Plan

Practice Trip(s) Before the Ritt Kellogg Trip:

Before the commencement of our trip, the three of us will go on at least one weekend trip together to prepare for the trip. The three of us have already backpacked together many times in the backcountry in the American Southwest, so we are familiar with each other's leadership skills, strengths, weaknesses, and preferences in the backcountry. That being said, the focus of this weekend practice trip will largely be technical. We will practice bear safety techniques, including the techniques for spraying, handling a close-by bear sighting as a group, and practicing the body position in case of an attack. We will also pack our bags with all of the gear we are planning to bring to determine what is truly necessary and become accommodated to the weight. On this trip we will also practice our map reading, compass orientation, and macro/micro navigation skills.

Practicing Backpacking/Map Reading Skills:

Patrick and Elizabeth are going to work on map reading, compass skills, and gain additional backcountry experience while backpacking in Iceland for 2 weeks in May. We will practice the variable of true versus magnetic north, navigating with a topographic map without a trail, and the technique of triangulation to determine our specific location. This backpacking will consist of navigating through unmarked areas that require competent map reading skills with minimal/no contact with society. This trip will both enhance navigation skills in preparation for Glacier and also give us additional long term backpacking skills as we backpack for two weeks in Iceland.

Colin plans to backpack the Skyline Trail- the longest wilderness trail in New Mexico- in the Pecos Wilderness during Spring Break. Here, he will also practice navigation, compass orientation, physical preparation, safe and effective decision-making skills, and leadership.

As aforementioned, we will focus specifically on these skills as well during our weekend trip.

Bear Safety Skills:

Before our trip, Elizabeth- who was educated on bear safety through NOLS during a 30-day for in the Alaskan wilderness- will educate Colin and Patrick on bear safety procedures, both on the practice trip and on campus. The three will all also discuss bear safety with a meeting with the staff at Outdoor Education to ensure our in depth understanding of bear safety.

Prime Hiking Shape:

In the upcoming months before the trip, each of the three will work on improving their cardiovascular and physical strength through training at the gym and outdoor activity. Patrick, Colin, and Elizabeth will be in Colorado in the summer and will be able to hike on the weekends, challenging themselves on tough summits and hikes. Additionally, we will utilize CC's gym, specifically the stair machines and weight room, when we cannot hike.

Gear Inspection:

To ensure that all that is needed is brought, the three will have a gear inspection prior to the trip, where everything on the Equipment List will be cross referenced with the gear. We will check each piece of gear (specifically the tent and the stoves) to ensure that they are properly working. We will also either take a stove repair class with the ORC or consult with a ORC member who usually teaches stove maintenance/repair to refresh our skills.

Contact with Rangers:

In the coming weeks before the trip, we will also make sure to regularly contact the park rangers of Glacier National Park to check the conditions of the trail. This will ensure we are well aware of all variables such as trail and weather conditions.

III. Expedition Logistics, Gear and Food

Travel Plan

We will depart from campus on the morning of September 26th, driving eight hours to The Hardin KOA (2205 MT-47, Hardin, MT 59034), where we will camp for the night (Costs \$25.00/night). The following day, we will commence the final eight hours to the trailhead at Waterton Park, where we will camp for the night at the Waterton Campground.

There is a shuttle that goes from the town of East Glacier back to Waterton Lake, which we will take on the 13th of October after camping in East Glacier at Sears Campground. The shuttle leaves at 11:00 a.m. and takes approximately 2 hours. On our way back to campus, we will camp again at the Hardin KOA on October 13th, and finish our drive back to campus on the 14th of October. Splitting up the driving between two days each way and the three of us will make it very safe.

Expedition Itinerary

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Appendix A

Re-Ration Plans

We do not have plans to re-ration. We want to push our physical abilities as backpackers and pack for an extended trip, so we will be packing for the full fifteen-day hike. This means using many freeze dried foods and deliberately planning for each day (See Food List).

Food Storage

Since there will be considerable bear activity, we will always place all of our food and other scented items (toothpaste, trash, etc.) in bear canisters when we are not eating or preparing for bed. The bear canisters prevent the smell of its contents from escaping and, in turn, decreases the probability of attracting a bear. Normally, hanging a bear bag would be acceptable, but because bears are of a particular concern in the Glacier National Park area, all campsites have either an National Park Service hanging device or NPS designated storage locker. We will place our tent is no closer than 100 meters from the hanging device/storage longer. This will ensure that, if for some reason a bear or other critter stumbles upon our food, we are less likely to make contact with the bear.

Food List

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Appendix B

Equipment List

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Appendix C

Are all expedition members familiar with LNT principles?

Yes

Plan for Minimizing Impacts

We plan on doing our absolute best to abide by the LNT guidelines. After years of leading with the Outdoor Education, prior NOLS trips, and many personal trips, we are all very familiar with the guidelines and how to properly follow them: The completion of this grant will help us properly plan our trip. We will make sure when camping to select only durable surfaces and to hike on the trail. We will pack out all of our garbage and not take anything from the wilderness, minimizing our footprint to the best of our abilities. We will use a shovel to dig holes six inches deep for defecating, and will not bring any toilet paper. We will be respectful of any hikers we run into on our trail, and with the canisters sealing our food, will do our best to not bother the wildlife of the region. Finally, we will not make any campfires unless there is a designated spot that has already had a fire.

Cultural Concerns

Our trip will bring us to such levels of remoteness we do not expect many interactions with others. Because we chose to spend Nights 11-14 on trails off the CDT so as to avoid crowded areas of the CDT, we are also avoiding the Blackfeet Indian Reservation, which would have brought upon us more cultural concerns. Our only concern is other section and thru-hikers. If we encounter section or thru-hikers, we will be friendly and respectful. When we cross the east-west axis of Going to the Sun Road, we will also do our best to be respectful of other visitors of the park.

Land Management

We will need a permit to hike on the Continental Divide Trail in Glacier National Park. We will meet the specific permit

stipulations by adhering to the LNT Principles as previously discussed, camping in designated backcountry campsites only, not bringing any dogs or stock, having a group size of less than 12 people, and having a contiguous itinerary.

Glacier National Park
(406) 888-7800
P.O. Box 395
West Glacier, MT 59936

IV. Risk Management

Objective Hazards

1. Wildlife Safety (bears, moose, mountain lions, etc.)
2. Hiking Injuries (blisters, ankle injuries, etc.)
3. Weather (cold, snow, thunderstorms, etc.)
4. Remoteness (SPOT GPS, Sheriff numbers to call through our trip)
5. Contaminated Water
6. Bugs
7. Getting Lost

Subjective Hazards

Medical Histories:

Elizabeth Forster has had four concussions. She does not feel lasting effects from the concussions during physical activity or when at rest.

Patrick Journey has had 3 dislocations of his right shoulder, and as a result, surgery. Since surgery, Patrick backpacked through Latin America for a total of ten weeks, on a FOOT trip, and three other block breaks. The surgery was successful, and, since backpacking is an activity of extremely low risk for a fixed shoulder, there is no cause for concern for this trip.

Colin Griffith has suffered one concussion. He does not feel any effects from this concussion at rest or during physical activity. He does not have a medical history to cause concern for this expedition.

Group dynamics:

The three have spent considerable time together in the backcountry and live together in an apartment. Group dynamics is no cause for concern. They have set up an effective means of communication and work very well as a team.

Technical Experience:

Patrick and Colin will need to be trained on bear safety techniques. Otherwise, each of the three have spent considerable time in the backcountry backpacking and are comfortable with the logistics of an extensive trip in a remote region.

Hazard Mitigation

1. Wildlife Safety

"Glacier's diverse habitats are home to nearly 70 species of mammals, including grizzly bears, black bears, mountain goats, bighorn sheep, moose, wolverines, gray wolves and mountain lions." These wildlife are a huge attraction for visitors of Glacier National Park and those who enjoy the wilderness, but contact with wild animals can be a serious hazard as well.

On our trip, we are prepared to safely deal with such hazards. The primary wildlife hazard is grizzly and black bears, both of which are in abundance in Glacier National Park. The website for the park outlines a series of guidelines for bear safety:

-“If you encounter a bear inside the minimum recommended safe distance (100 yards), you can decrease your risk by following these guidelines:

-If a bear or other animal is moving in your direction on a trail, get out of its way and let it pass.

-If you can move away, do so. If moving away appears to agitate the bear, stop and talk quietly to the bear. Help the bear recognize you as a friendly human. Then continue to move away as the situation allows.

If a bear appears intent on approaching you, your group, or your campsite in a non-defensive manner (not showing signs of agitation), gather your group together, make noise, and try to discourage the bear from further approaching. Prepare to deploy your bear spray. If you are preparing or consuming food, secure it. **DO NOT LET THE BEAR GET YOUR FOOD!**

-If a bear approaches in a defensive manner (appears agitated and/or charges), stop. Do not run. Talk quietly to the bear. Prepare to deploy your bear spray. If contact appears imminent and you do not have bear spray, fall to the ground on your stomach, clasp your hands around the back of your neck, and leave your pack on for protection. If the bear attempts to roll you over, try to stay on your stomach. If the attack is defensive, the bear will leave once it recognizes you are not a threat. If the attack is prolonged, **FIGHT BACK!**”

Further bear safety protocol we will follow will be to always keep any food or scented items in our bear canisters or the designated bear-hangs/bear lockers at all times outside of food preparation and packing our bags. We will camp more than 100 meters away from our food storage to ensure our safety at night. We will ensure that we are always within a couple feet distance of each other, including when going to the bathroom, so that we can quickly assemble in a line to appear large in case of an approaching bear. We will also carry bear bells on us while hiking and continually make bear calls to help alert bears in the area of our presence, which will help avoid an encounter that is a surprise to the animal.

Bears are not the only wildlife hazard for our expedition. We also must be prepared for possible contact with moose, mountain lions, wolves, wolverines, bighorn sheep, and other species.

For all wildlife, it is important to be respectful. We are visitors to their home. Keeping our food in canisters and wearing bear bells will help mitigate other hazards with wildlife. We will always use caution when in proximity to other wildlife and do our best to not agitate any animals.

2. Hiking Injuries

One of the most common reasons for evacuations are often small hiking injuries such as blisters or ankle injuries. To minimize the likelihood of an evacuation due to hiking injuries, we will treat each injury seriously and be proactive in preventing them from occurring. With our WFR certifications and a well-stocked first aid kit, we are properly trained to properly treat these injuries. Also included in this hazard is sun exposure. We will prevent ourselves from being over exposed from the sun, which causes skin damage and dehydration, by wearing proper layers, hats and sunglasses, and using sunscreen.

3. Weather

September // October

Average High Temperature: 67 // 53

Average Low Temperature: 39 // 32

Average Precipitation: 2.05 // 2.09

Our dates for the expedition are in many ways optimal for weather. Snowpack doesn't melt until early July, and weather in August/Early September is dominated by thunderstorms. Glacier typically enjoys an “Indian Summer,” or warm summer weather that extends into the fall. All trails in Glacier are open until November 1st. On our expedition, there are the possibilities of an early snowstorm, cold weather, and thunderstorms. All members have had experience

winter camping, and an early snowstorm is not likely to lead to any avalanche danger. If somehow there was the possibility for avalanche danger, Elizabeth Forster is certified Level 1 through the American Institute for Avalanche Research and Education. This training as well as a multitude of backcountry day and multi-day ski trips have prepared her to safely navigate through avalanche terrain by listening and looking for signs of previous or potential avalanches and digging snow pits. Colin's certification is pending. Again, we do not foresee any avalanche danger due to the timing of our trip, but we are prepared just in case we are presented with such elements.

An early snowstorm could also cover the trail, but with proper navigation skills such as triangulation, we don't expect snow to be a huge cause for concern. Each of us will be carrying sub-zero sleeping bags and do not expect the level of cold to reach dangerous levels. In the case of a thunderstorm, we have all been trained through Outdoor Education on protocol during thunderstorms, such as where we should be during a thunderstorm, the position we should be in, and the distance from each other.

5. Remoteness

Another hazard for our expedition is its remoteness. We can properly mitigate this hazard by carrying a satellite phone and the proper emergency contacts that will allow us to seek aid if a cause for evacuation arises. We have each spent much time in remote locations and are comfortable with this hazard.

6. Contaminated Water

Freshwater in the Rocky Mountains can carry many serious diseases such as Giardia. To prevent us from getting sick from contaminated water, we will carefully purify all of the water we consume with Aquamira drops. We have all used Aquamira drops many times before and are comfortable with the procedure to properly purify our drinking water. We will make sure we bring enough drops to ensure we do not consume any contaminated water that could cause one of us to fall ill.

7. Bugs

Bugs are another hazard for our proposed expedition. We will make sure to bring proper bug repellent and layers to mitigate this hazard, and will check ourselves for ticks regularly.

8. Getting Lost

The trail is well-marked and we will have detailed maps with us, but there is always the possibility of getting lost. To minimize this hazard, we will always stay together at all times. We will minimize hiking without natural light, and if there is snow covering the trail use our navigation skills intently to ensure we remain on trail. In case we do get lost, we will use our satellite phone to call the proper emergency services. In the chance a single expedition member gets lost, they will practice Wilderness First Responder protocols. They won't yell for an extended period of time to prevent dehydration and will stay put so the search is of a smaller distance. They will wear the brightest layers on top and remain at a high elevation so as to be found quicker.

We don't see elevation as a hazard. The highest elevation of Glacier National Park is 10,479 ft, and since we will be accustomed to the elevation of Colorado Springs and each have considerable experience above 10,000 ft, we see elevation as no cause for concern.

Special Preparedness

None of our medical histories warrant special preparedness that was not covered in the WFR course.

Emergency Preparedness

In the case of an emergency that requires immediate evacuation, we will use our satellite phone to contact the proper emergency services and continue medical care while waiting for evacuation. We will locate the nearest safe helicopter landing site and, if possible, bring the patient to the site. If the patient cannot be brought to the site, we will direct medical services to our location from the helicopter landing site.

In the case of an emergency that allows us to evacuate without outside help, we will evacuate to the nearest exit. Below list the exits we will use depending on our location during the expedition.

Days 1 - 3:

Our evacuation route would be to the Waterton trailhead. Our car will be situated at this trailhead, so in case of an evacuation we will drive to the nearest hospital (Waterton Hospital). There is also a ranger station at the southernmost point of Waterton Lake that we pass on Day 1, which we could utilize in case of an emergency.

Days 4 - 9:

Going to the Sun Road. Along the east-west axis of the Going to the Sun Road there is a large amount of traffic. At Many Glacier, the only frontcountry campground we will stay at for the duration of the trip, there are plenty of resources- rangers stations, phones, etc.- that can aid in the evacuation. From the road itself, we would go to Whitefish North Valley Hospital or Kalispell Regional Hospital, which lie to the West of Glacier National Park. Many Campground is accessed from the East, so we would head to Blackfeet Community Hospital.

Days 10 - 15:

Walton (Park, Ole, Nyack, and Coal Creek) Area and East Glacier The trail runs through the town of East Glacier, which is the end point of our trip. From here we could make it to the Blackfeet Community Hospital in case of a needed evacuation.

Emergency Resources**Hospitals:**

Waterton Emergency Services (to the North)
(403) 859-2636
3rd A Ave East Cardston,
Alberta, T0K 0K0

Whitefish North Valley Hospital (to the West)
(406) 862-2501
1600 Hospital Way,
Whitefish, MT 59937

Kalispell Regional Hospital (to the West)
(406) 752-5111
310 Sunnyview Lane,
Kalispell, MT 59901

Blackfeet Community Hospital (to the East)
(406) 338-6140
760 New Hospital Cir,
Browning, MT 59417

Search and Rescue/Fire:

Glacier National Park's fire department
(403) 859-2113

Glacier National Park Search and Rescue
(406) 888-7800

Flathead County Search and Rescue
406-752-8605

525 Three Mile Drive,
Kalispell, MT 59901

Sheriff:

Glacier County Sheriff's Office
406-873-2711
512 East Main Street,
Cut Bank, Montana, 59427

Flathead County Sheriff's Office
406-758-5585
920 South Main Street, Suite 100,
Kalispell, MT 59901

Land Managers:

Glacier National Park
(406) 888-7800
P.O. Box 395

V. Budget

Budget

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Appendix D

Transportation

\$459.00

Food and Fuel

\$576.16

Maps and Books

\$0.00

Communication Device Rental

\$260.21

Permits/Fees

\$425.00

Gear Rentals

\$540.85

Total Funding Request

\$2,261.21

Cost Minimization Measures

1. We are driving to our destination instead of flying

2. We are buying all of our food in bulk and/or from low costs stores like Costco or Walmart
3. We are renting the "Montana & Idaho's Continental Divide Trail: The Official Guide" from the 4. Colorado College Tutt Library to save the cost of purchasing it
4. We are printing and laminating our own maps to help conserve costs.
5. We are renting the bear canisters and satellite phone as well to help cut down on expedition costs.

VI. Expedition Agreement

Expedition Agreement

[groupagreement.pdf](#) (80KB)

Uploaded Jan 4 5:11pm by Elizabeth Forster

Appendix E

Appendix A

Total Number of Days: 19 (4 driving, 15 hiking)

Driving Itinerary

Sept. 26

Drive 8 hours from CC to The Hardin KOA in Hardin, MT.

Sept. 27

Drive remaining 8 hours from Hardin to Waterton Park. Camp at the Upper Waterton Falls Campground.

Oct. 13

Take the shuttle from East Glacier to back to Waterton Park (2 hours). Drive 8 hours from Waterton Park back to the Hardin KOA.

Oct. 14

Drive remaining 8 hours from Hardin back to CC.

Backpacking Itinerary- <http://caltopo.com/m/19RP>

Day 1- Sept. 28



Trailhead: Waterton Park, Alberta, Canada

Mileage: 9.97 mi

Elevation Change: +1403'/-1,404'

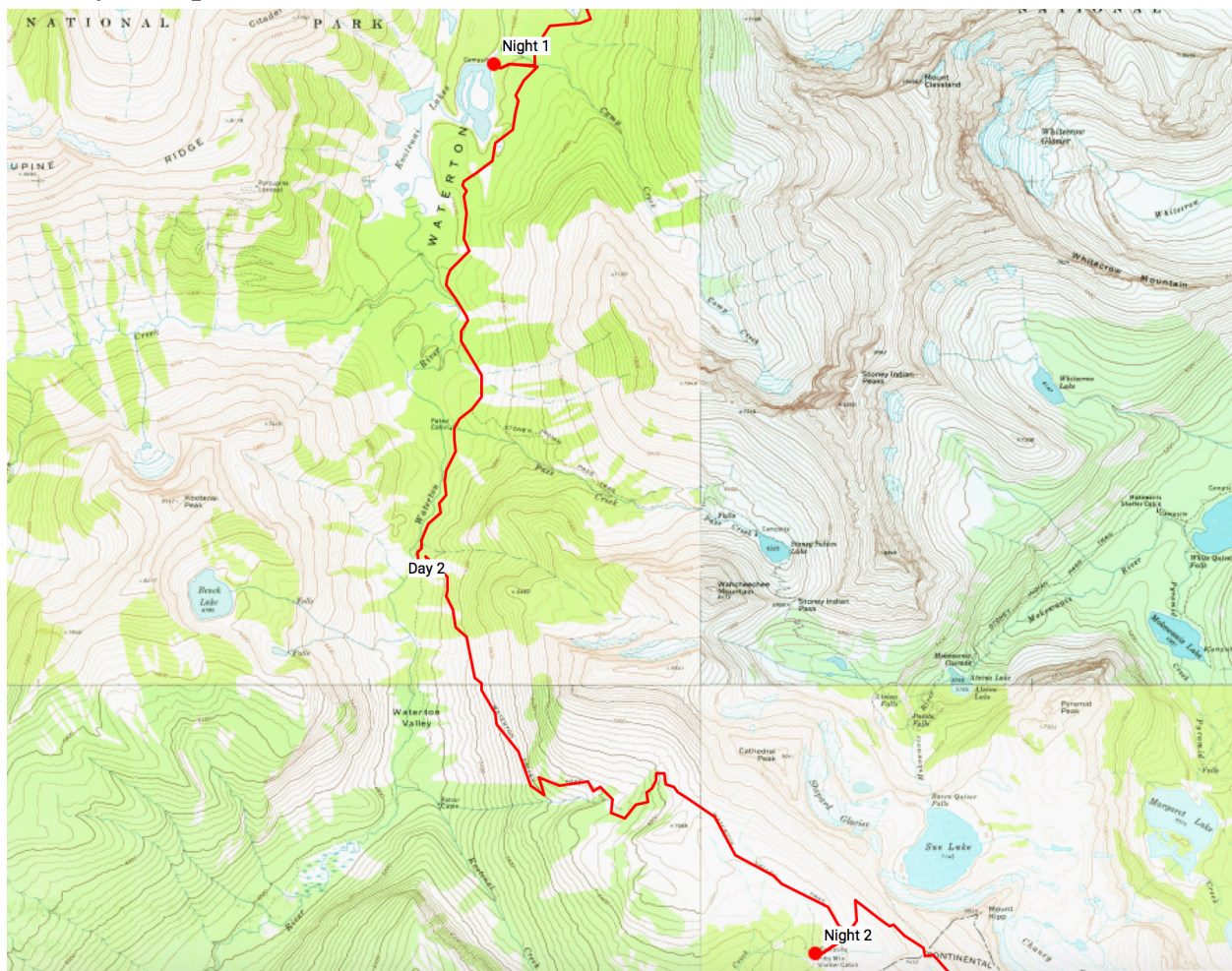
Hike south along Waterton Lake, splitting from the lake at its southern-most point, to the Kootenai Lakes Campground (KOO).

Campground: GPS: 48.9263, -113.9020, UTM's: 287441E, 5423318N

Hazard: Going past a snow/water hazard 2.9 miles before campground at the southern tip of Waterton Lake. There is a Ranger's station at the southern tip of Waterton Lake in case of an emergency.

Water: KOO Campground at Kootenai Lakes

Day 2- Sept. 29



Mileage: 8.22 mi

Elevation Change: +3274'/-978'

Continue south on trail, hiking along the Waterton River at the base of the Waterton Valley for about 3.5 miles. Shortly after passing a Patrol Cabin and the split between the Waterton Valley and Stoney Indian Pass Creek, we will travel SSE and SE along SW facing

side of Cathedral Peak for the remainder of the hike to Fifty Mountain Campground (FIF).

Campground: GPS: 48.85250, -113.86149, UTM's: 290098E, 5415008N

Hazards: Rock hazards and increased exposure while hiking below/along/up base of Cathedral Peak for about 2,000 feet

Water: Sue Lake, 1 mile from FIF campground

Day 3- Sept. 30



Mileage: 11.81 mi

Elevation Change: +2884'/-3075'

Hike SE on the Highline Trail, staying mostly on the edge of treeline, for 8 miles. At the intersection of the trail with the second drainage of Ahern Creek, we will begin hiking south with Iceberg Peak and Iceberg Lake directly to our east. Finish the remainder of the hike to Granite Park Campsite (GRN) right before the base of Swiftcurrent Pass and next to the Patrol Cabin.

Campground: GPS: 48.7728, -113.7764, UTM's: 296018E, 5405921N

Hazards: None

Water: Plenty of drainages. Queen Creek, 4.8 miles from FIF campground

Day 4- Oct. 1



Mileage: 7.72 mi

Elevation Change: +824'/-2450'

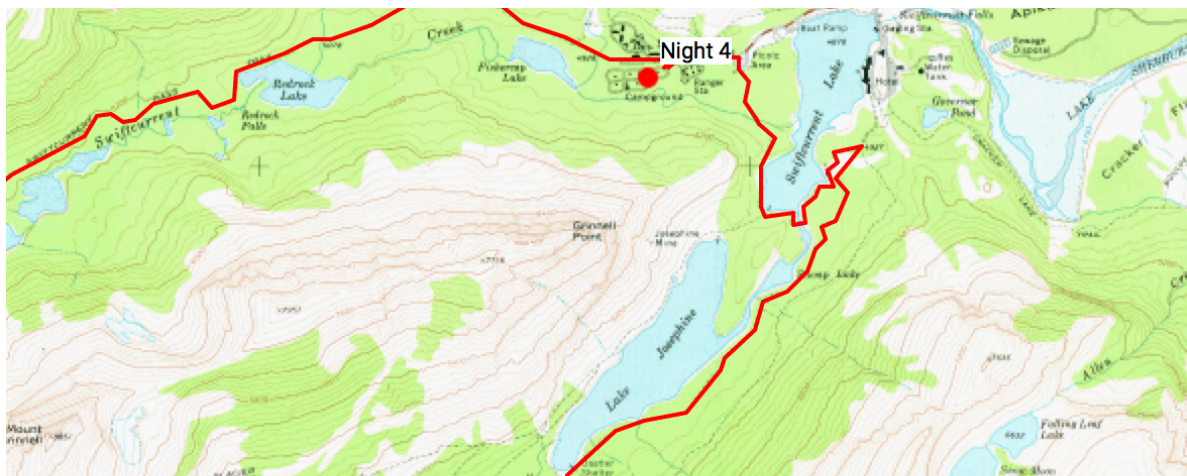
Hike over Swiftcurrent Pass, east along Bullhead Lake, Redrock Lake, and Fisher Lake to Many Glacier Campground (MAN).

Campground: GPS: 48.7966, -113.6762, UTM's: 303466E, 5408298N

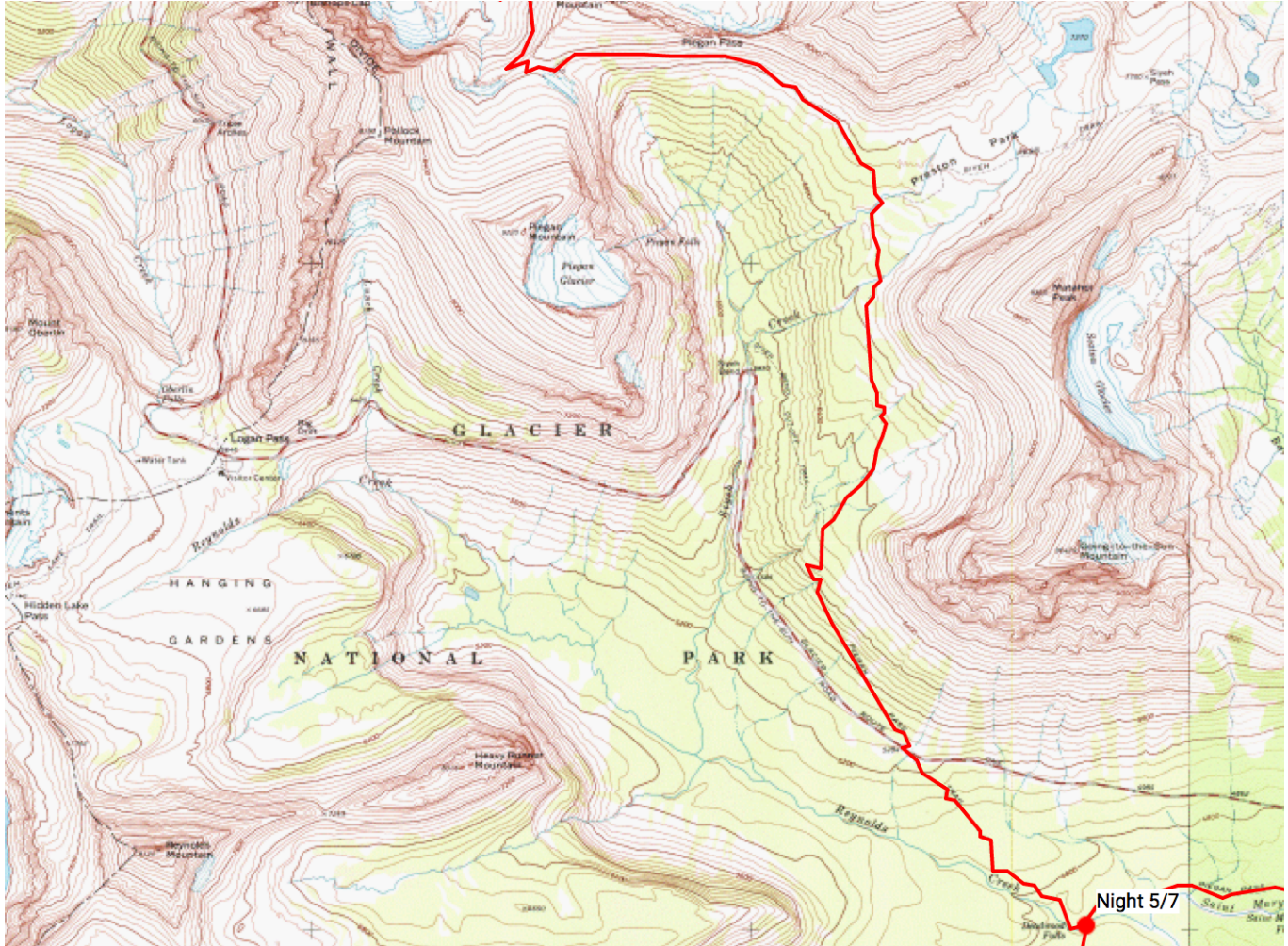
Hazards: Weather/exposure over Swiftcurrent Pass

Water: Plenty of lakes after Swiftcurrent Pass, MAN campground is in the town of Many Glacier

Day 5- Oct. 2



Day 5- Oct. 2 (con.)



Mileage: 15.66 mi

Elevation Change: +3058'/-2260'

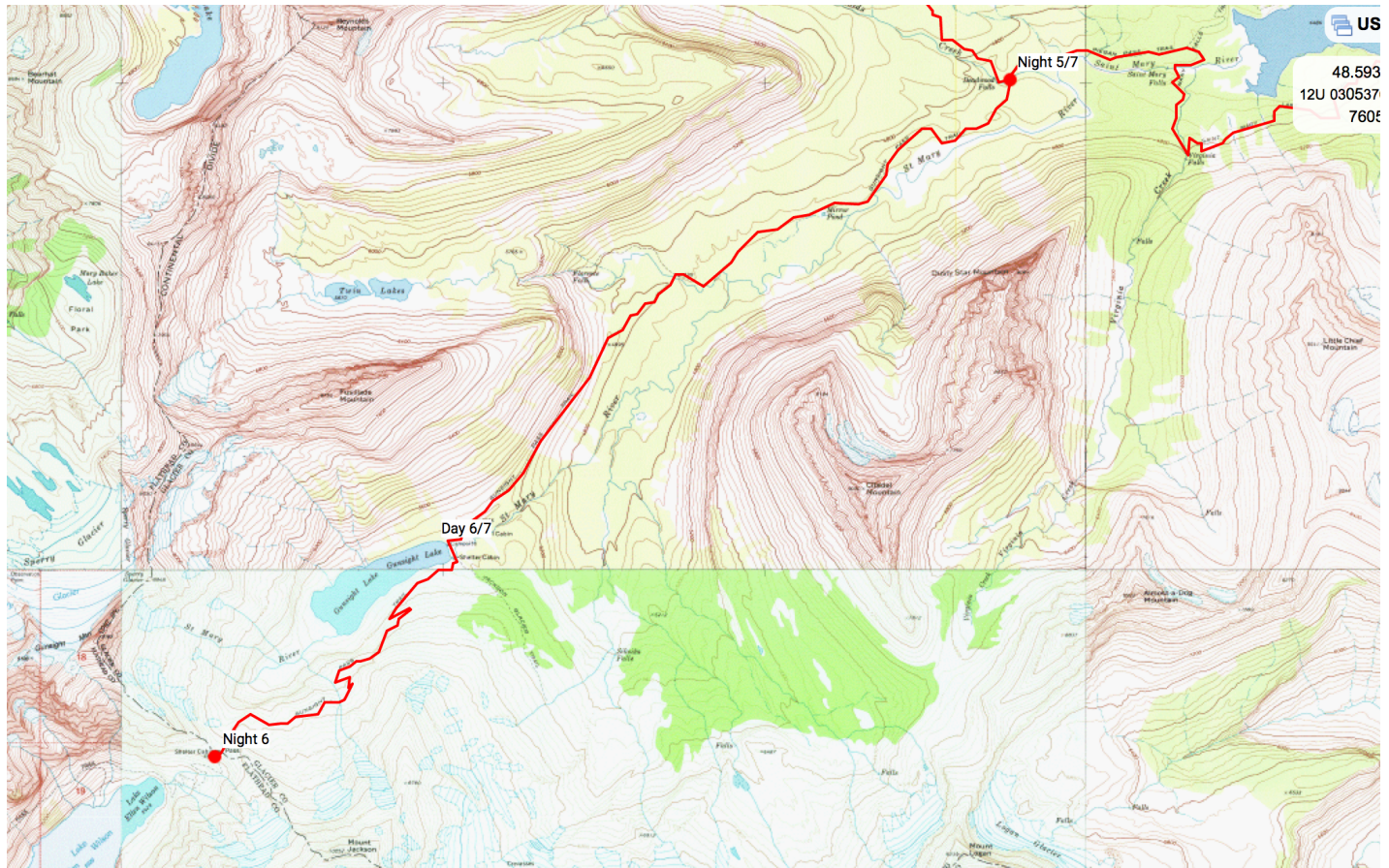
Hike south through Many Glacier, past Lake Josephine and Grinnell Lake. We have the option to hike to Hidden Falls (trail is off the CDT just after Lake Josephine), but only will if we are making good time. The trail will transition from thick to thinner forest as we ascend quickly from 5300 feet to 7570 feet over the pass southwest of Cataract Mountain on the Pigeon Pass Trail. From there, we will continue east and south through alpine terrain, passing numerous major named peaks. We will cross Going to the Sun Road about a mile before reaching the Reynolds Creek Campground (REY).

Campground: GPS: 48.66685, \square 113.63521, UTM: 305981E, 5393773N

Hazards: Distance and elevation change. Will need to leave very early

Water: Grinnell Lake, Cataract Creek, camping on Reynolds Creek
TOTAL MILEAGE: 53.38 mi

Day 6- Oct. 3



Mileage: 9.9 mi

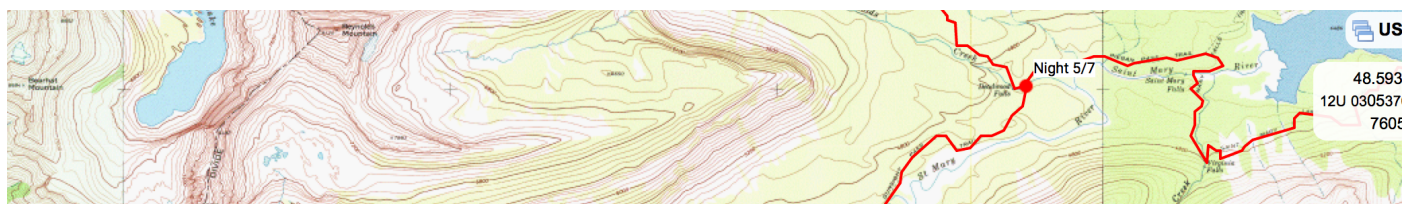
Elevation: +3117'/-863'

Hike east/southeast along the St. Mary River on the Jackson Glacier Overlook Trail for 9.9 miles and summit Gunsight Pass. Camp at Lake Ellen Wilson (ELL), which is right after the summit of the pass.

Campground: GPS: ☐ 113.75369, 48.60516 UTM's: 297010E, 5387225N

Water: Most of the day we are hiking along the St Mary River. We will make sure to re-fill water before summitting the pass at Gunsight Lake. If need be, we can hike less than a mile further down from our campsite to Lake Ellen Wilson.

Day 7- Oct. 4



Mileage: 9.9 mi

Elevation: + 863'/-3117'

Hike back over Gunsight Pass on the Jackson Glacier Overlook Trail for 9.9 miles. Camp again at the Reynolds Creek Campground.

Campground: GPS: 48.66685, -113.63521, UTM: 30S981, 5393773

Hazards: Exposure over the pass.

Water: Most of the day we are hiking along the St Mary River, and we are camping on Reynolds Creek. We can refill water at Gunsight Lake just after crossing over Gunsight Pass in the morning.

Day 8- Oct. 5



Mileage: 12.69 mi

Elevation change: +2625'/-2536'

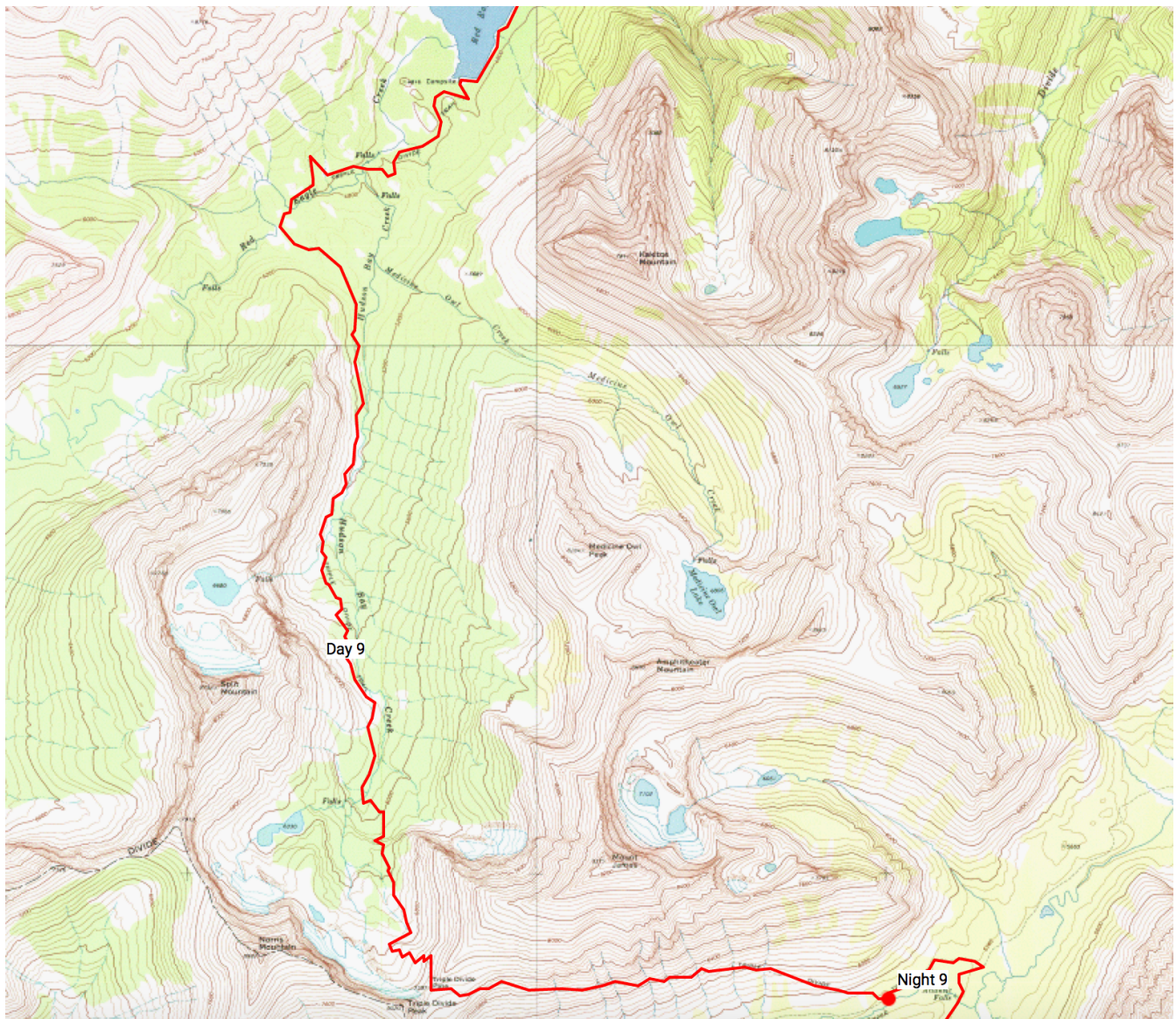
Hike east along Saint Mary Lake on the Saint Mary Lake Trail. After 10 miles, the trail will intersect with the Red Lake Trail. Take the Red Eagle Lake Trail south until the Red Eagle Lake FT Campground (REF) on the north side of Red Eagle Lake.

Campground: GPS: 48.6559, -113.5020, UTM: 31S745E, 5392222N

Hazards: None

Water: Hiking mostly along Saint Mary's Lake, camping at Red Eagle Lake

Day 9- Oct. 6



Mileage: 10.7 mi

Elevation Change: +3376'/2684'

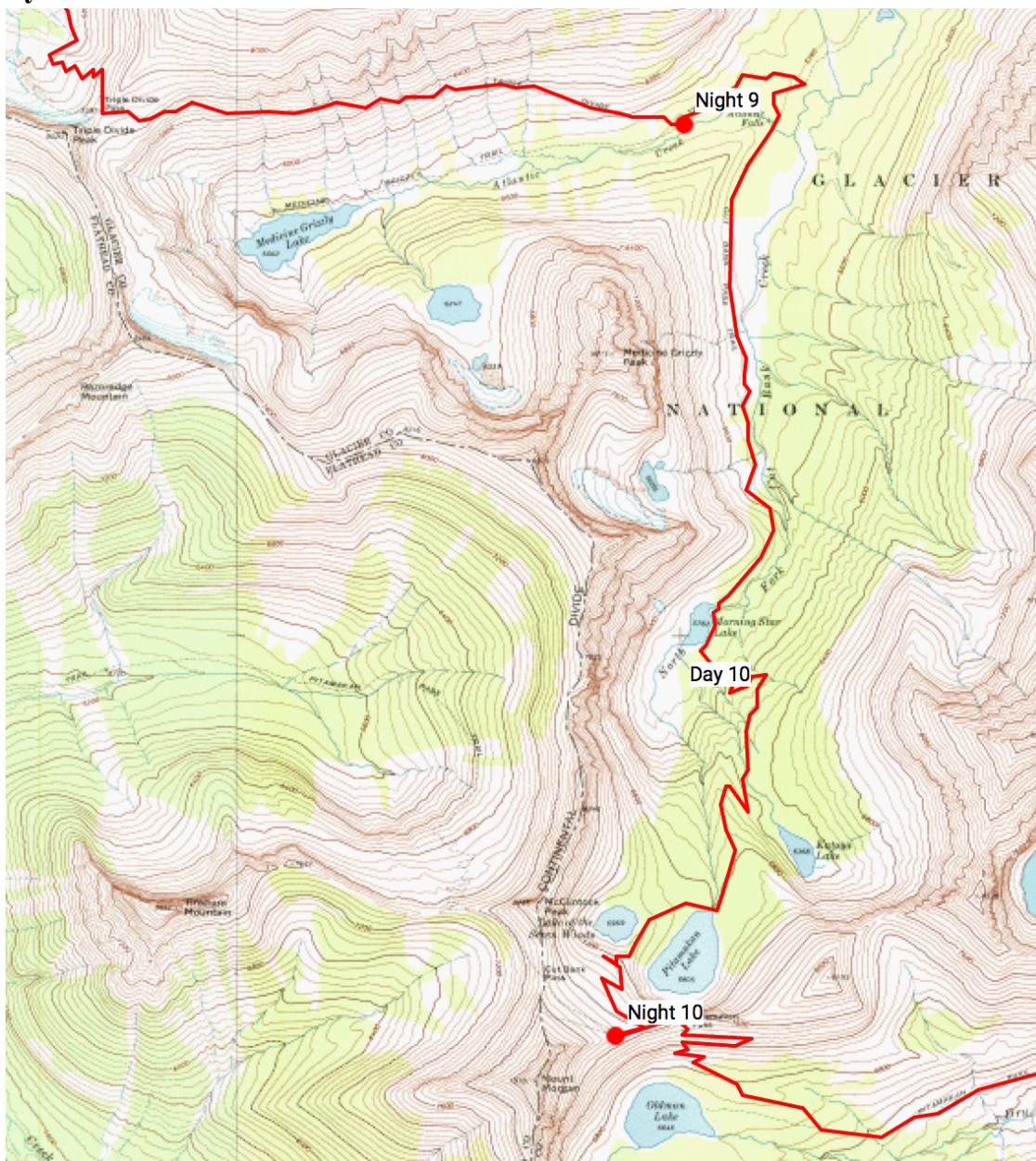
Hike south on the Triple Divide Trail along the Hudson Bay Creek at the base of the valley. At the southern-most point in the valley, summit Triple Divide Pass between Triple Divide Peak and Mount James. Hike down from the pass east across the south-facing side of Mount James. Camp at Atlantic Creek Campground (ATL) at the bottom of the valley just after the intersection of Medicine Grizzly Trail and the Triple Divide Trail.

Campground: GPS: 48.57545, \square 113.45363, UTM's: 319022E, 5383169N

Hazards: Snow/exposure over Triple Divide Pass Trail

Water: Hiking along Bay Creek. Camping on Atlantic Creek.

Day 10- Oct. 7



Mileage: 6.6 mi

Elevation Change: +2740'/-472'

At the intersection between Medicine Grizzly Trail and Cut Bank Pass Trail 0.75 miles from ATL, go south on the Cut Bank Pass Trail for 6.59 miles along the Fork Cut Bank Creek at the base of the valley until you reach Oldman Lake Campground (OLD).

Campground: GPS: 48.51282, □113.45552, UTM's: 318659E, 5376213N

Hazards: None

Water: Pitamakan Lake 1 mi from campsite

TOTAL MILEAGE: 103.17

Day 11- Oct. 8



Mileage: 12.29 mi

Elevation Change: +1558'/-3317'

Hike over Pitamakan Pass and then east on the Pitamakan Pass Trail for 5 miles. At the fork in the valley, continue SSW/SE along the north side of Two Medicine Lake on the Dawson Pass Trail. Continue past the end of the lake on the north side of Pumpelly Pillar until reaching No Name Lake Campground (NON).

Campground: GPS: 48.479, □113.44920, UTM's: 319008E, 5372534N

Hazards: Snow/exposure over Pitamakan Pass

Water: We walk through Two Medicine Campground, camping at a lake

Avoiding Two Medicine Campground due to popularity and access, views of Pumpelly Pillar from campsite.

Day 12- Oct. 9



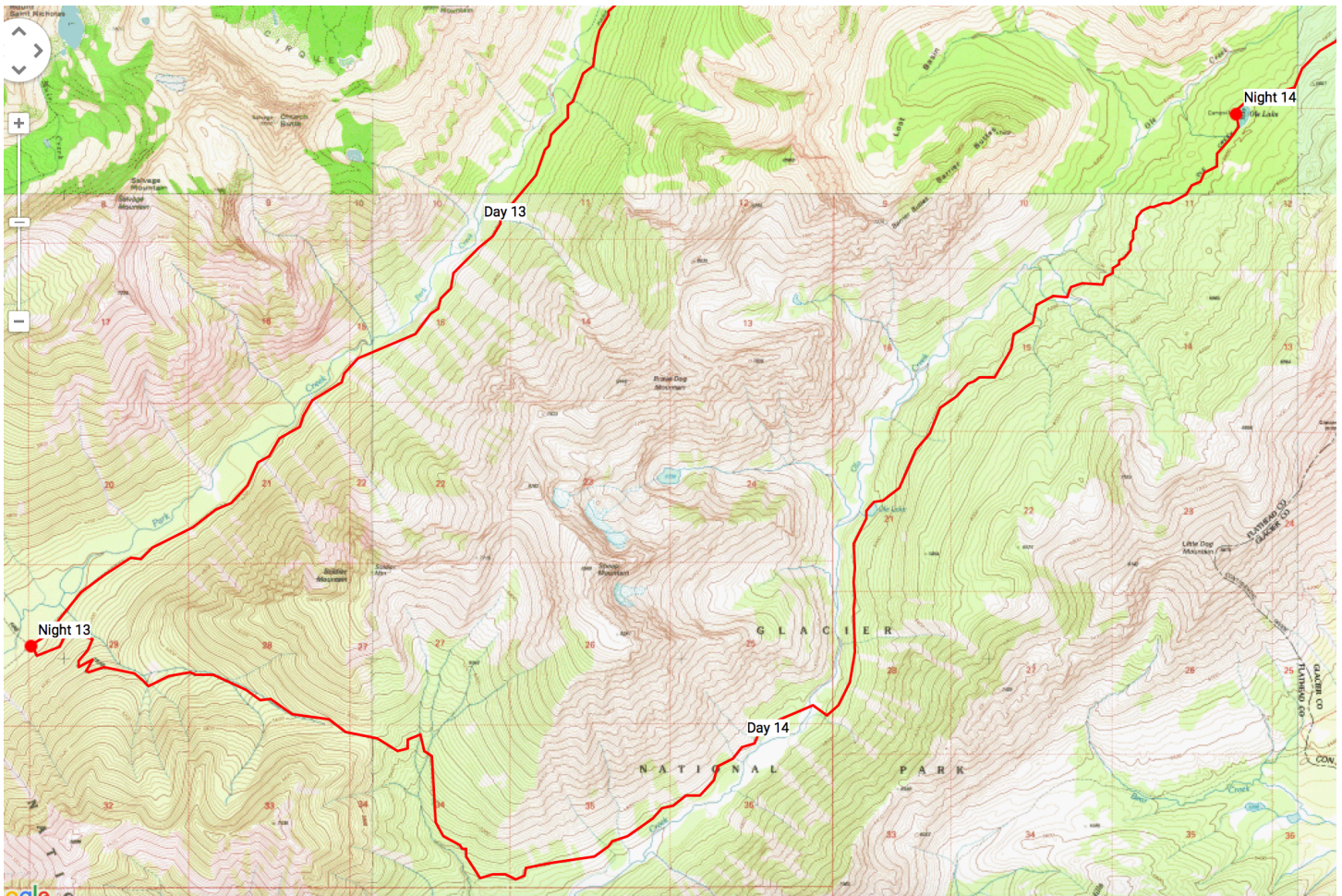
Mileage: 13.05 mi

Elevation: +3107'/-4272'

Hike back along the Dawson Pass Trail until the junction with the Upper Two Medicine Trail about a mile from the campsite. Turn southwest on Upper Two Medicine Trail, stopping at Twin Falls (a 1/4 mi offshoot). At the intersection of the Upper Two Medicine Trail and the Two Medicine Pass Trail, head east southeast on the Two Medicine Pass Trail. Continue on the trail past Cobalt Lake, Chief Lodgepole Peak, over Two Medicine Pass, and to the Upper Park Creek Campground.

Water: Hiking all day along Park Creek

Day 14- Oct. 11



Mileage: 12 mi

Elevation: +3963'/-2402'

Hike southeast on the Coal Creek Fire over an unnamed pass 2 miles into the day. Hike down the pass and south along the trail upon reaching the first drainage on the south facing adjacent mountain. Once entering the base of the larger valley, hike east and the northeast along Ole Creek for the remainder of the 12 miles until reaching Ole Creek Campground.

Campground: 48.3821, -113.3843 UTM's: 323467E 5361518N

Hazards: Navigation over the nameless pass.

Water: Hiking along Ole Creek most all day.

Day 15- Oct. 12



Mileage: 12.17 mi

Elevation: +2287'/-3025'

Hike east on the Ole Creek trail over Firebrand Pass and continue on the Firebrand Trail until it intersects with the Continental Divide National Scenic Trail for another 8 miles until reaching the town of East Glacier. Camp at the St. Mary/East Glacier KOA.

TOTAL MILEAGE: 164.58 miles

Appendix B

Elizabeth and Colin both have gone on NOLS trips, and, through their education, have learned that backpacking burns an average of 2,500-5,000 calories per person per day, depending on the intensity of the hiking and the varying metabolic rates and caloric needs of backpackers. This equates to a range of 1.5 to 2.5 pounds per day per person. With our consistent high mileage of approximately 11 miles a day covering significant elevation change, we should be eating a considerable amount of calories a day to sustain ourselves. Two weeks is pushing the amount backpackers can carry at one time, however, so we are going to use an average of 2 pounds per day per person (2 PPDPP).

To help mitigate the actual weight in our packs, we will largely use freeze dried meals. Freeze dried foods considerably cut down on weight in the pack. The PPDPP below is of the freeze dried meals once water has been added to them. We will use freeze dried foods for breakfast and dinner when we will be able to boil water. On the trail for lunches and snacks we will buy our food from Costco or Walmart to minimize cost. We used Mountain House (MH) from past experience with the brand as well as the fact that they appeared to have the best prices with the widest range of high quality food compared to Wise Company, Emergency Essentials, and Food Insurance. We calculated the pounds of food for the freeze dried meals based on the weight of the food dried and the recommended serving size. This two combined brought us to the total pounds of food needed for each meal each day and the respective costs.

Our Total:

2 pounds * 15 days * 3 people = 90 pounds total (with water weight added to freeze dried meals)

Per Person:

30 pounds per person (with water weight added to freeze dried meals)

Broken Down:

Breakfast: .4 PPDPP // 18 pounds total

Lunch/Snacks: .7 PPDPP // 32 pounds total

Dinner: .9 PPDPP // 40 pounds total

Food Items	Pounds	Servings	Price
Breakfast	18 lbs		
Walmart Quaker Oats	2.6 (Dried)	20 (7 meals)	\$3.99
Walmart Mixed Dried Fruit	1.6 (Dried)	^	\$4.98
MH Granola with Milk and Blueberries	2.5 (Dried)	20 (7 meals)	\$41.99
MH Breakfast Skillet	1.5 (Dried)	10 (3 meals)	\$38.99
Total	8.2 (Dried)	50 (17 meals)	\$89.95

Lunch	32 lbs		
Walmart Tortillas (2 per day = 90 total)	10	9 packs	\$22.00
Peanut Butter	2.5	1 jar	\$5.50
Jelly	2	2 jars	\$4.40
Cheddar Cheese	2	2 blocks	\$11.50
Lunch Meats (first couple of meals)	1.6	3 sets	\$11.97
Summer Sausage	1.2	1 stick	\$9.99
Trail Mix	4.5		\$19.00
Dried Fruit	3.0	8 packs	\$24.00
Cliff Bars	3.4	24 bars	\$23.00
Snickers	1.4	12 bars	\$9.00
Total	31.6	15 meals	\$140.37
Dinner	40 lbs		
MH Beef Stroganoff	1.26 (Dried)	10* (2 meals)	\$31.99
MH Chicken Teryaki w Rice and Veggies	1.25 (Dried)	10* (2 meals)	\$30.99
MH Mexican Style Rice and Chicken	1.17 (Dried)	10* (2 meals)	\$31.99
MH Noodles and Chicken	1.48 (Dried)	10* (2 meals)	\$32.99
MH Vegetable Stew w Beef	1.00 (Dried)	10* (2 meals)	\$30.99
MH Lasagna with Beef	1.20 (Dried)	10* (2 meals)	\$38.99
MH Spaghetti with Meat Sauce	1.19 (Dried)	10* (2 meals)	\$27.99
MH Turkey Tetrazzini	1.07 (Dried)	10* (2 meals)	\$39.99
Dried Beans	2.50	side	\$12.00
Potato Pearls	3.2	side	\$20.00
Beef Jerky	1.00	side	\$20.00
Snickers	1.4	side	\$12.00

Sriracha (ESSENTIAL)	1.75	side	\$3.50
Total	19.47	50 (16 meals)	\$333.50
TOTAL	59.27	48 meals	\$563.82

*The serving sizes of Mountain House products were very conservative, averaging 300 calories, so we equated 2 serving sizes to one actual serving for each person.

Breakfast: With dried foods, we were able to save approx 10 lbs in water weight: 8.2 pounds

Lunch: Total pounds came to 31.6 pounds

Dinner: With dried foods, we were able to save approx 20 lbs in water weight: 19.47 pounds

Total Lbs: 59.27 pounds

With the use of freeze dried foods, we are able to cut down our carrying weight from the approximation of 90 lbs to 60 lbs, significantly cutting down in weight while retaining the necessary caloric amount for our expedition.

Appendix C

Group Gear:

- 2 Pocket Rocket stoves (primary and backup)
- 2 full canisters of gas
- Stove repair kit
- Cooking utensils
- Pot and pan
- Knife (for chopping)
- Dish rag
- Tarp (for cooking)
- 3 containers of Aquamira
- 1 tent (3 person, 3 season, with rainfly and metal stakes)
- Topographic maps
- 6 bear canisters
- 30 SPF Sunscreen
- Chapstick
- Insect repellent
- Bug spray
- 3 compasses
- Trowel
- Lighters
- Waterproof matches
- Satellite phone
- 4 canisters of bear spray
- Biodegradable soap
- Hand sanitizer
- Camera
- Camera batteries
- Patch kit
- 2 small rolls of duct tape
- Satellite phone

Personal Gear:

- Sleeping bag (0 degree or lower)
- Sleeping pad
- Sleeping bag liner
- 75+L pack
- Waterproof pack cover
- Eating utensils/bowl
- Pocket knife/multi-tool
- Sunglasses
- Quick dry towel
- Headlamp
- Extra batteries
- Bear bells
- Toothbrush and toothpaste
- Water carrying capacity of 4 liters (Nalgenes and Camelbaks)

- 1 pair of gaiters

Personal Clothing:

- Rain jacket
- Down jacket/outer layer
- Fleece/secondary layer
- Hiking long sleeve
- 2 hiking shirts (synthetic or wool)
- Thermal long underwear (top and bottom)
- 2 pairs of hiking underwear
- 2 sports bras (if applicable)
- Rain pants
- Durable, synthetic hiking pants
- Synthetic hiking shorts
- Gloves/mittens
- Warm hat
- Sun hat
- 3 synthetic or wool hiking socks
- Liner socks (optional)
- Waterproof hiking boots
- Camp shoes for river crossings (ex: Chacos or Tevas)

First Aid Kit Contents:

- Neosporin (1)
- Tweezers (1)
- Irrigation syringe (1)
- Medical scissors (1)
- Hand sanitizer (1)
- WFR information book (1)
- Medical history of members (3)
- SOAP Notes (6)
- Paper and pencil (1)
- Alcohol wipes (5)
- Tincture of benzoin (5)
- Closure strips (6)
- Assorted band-aids of varying size (30)
- Gauze roll (1)
- Adhesive tape roll (2)
- Sterile Dressing Pads 4x4 (10)
- Sterile Gauze Pads 4x4 (10)
- Safety pins (10)
- Aspirin (25)
- Acetaminophen (25)
- Ibuprofen (50)
- Benadryl (25)

- Pepto Bismal (25)
- Non-latex gloves (2)
- Thermometer (1)
- Instant cold compress (1)
- Duct tape (1)
- New Skin (1)
- Moleskin (3)

Appendix D

Item	Breakdown	Total (\$)
Travel		
Gas	Jeep Wrangler has 18 MPG Total Mileage: 2,092 miles 117 Gallons*\$2.00 (Current average of gas prices in Montana 12/29/15)	\$234.00
Shuttle	\$75/person for the shuttle from the Prince of Wales Hotel to Waterton Park	\$225.00
Permits/Fees		
Glacier National Park	Reservation Fee: \$40.00 Daily Fee: \$7.00 per day per person 7*15*3= \$315.00	\$355.00
Camping	Hardin KOA costs \$25.00 per night per site. We will stay there a total of two times- Driving day 1 and 3	\$50.00
	Sears Campground at East Glacier Village costs \$20.00 per night- Night 15 before shuttle the next morning	\$20.00
Gear		
Satellite Phone	We will rent the Iridium 9555. The bundle includes a 60 minute Weekly rate: \$34.95	Three Weeks: \$104.97 Bundle: \$95.40 Shipping: \$39.95 Surcharges: \$19.89 Total: \$260.21

Bear Spray	Four total (one each + extra) “Counter Assault Bear Deterrent Spray - 8.1 oz.” \$45.95 each	\$183.80
Bear Canisters	6 total, rented for three weeks Cost for each: \$31.00 Shipping: \$47.37	\$310.74
Topo Maps	We will print out and laminate our own maps	\$0.00
	Grand Total	\$2,261.21