

Wilderness Navigation Field Trip – Student Information Packet

Heybrook Ridge, Index WA

Field trip sign-up: Sign up on line at www.mountaineers.org (preferred) or via the clubhouse at 206-521-6001. Sign-up is first-come first-served, and will close at noon on the Tuesday before the field trip. You must sign up to participate. And there is a Pre Trip Plan (homework) to complete.

PARKING IS VERY LIMITED - PLEASE CAR-POOL !!!

You can register to carpool on the Mountaineers website through Your Account, specifying whether you would prefer to ride or drive and your preferred carpool area. This will make your contact information available so that you can connect with other participants to arrange a convenient meeting point such as a Park and Ride.

Field trip info coordinator (email preferred, do not call after 8:30 pm, or before 9:00 am): the Day Lead unless specified differently in the reminder email the week before the field trip.

Don't even think of calling the night before the field trip. It is your responsibility to sort everything out before hand.

Required equipment: This entire information packet (you will need it – READ it before you go)

- The 10 essentials, including a suitable compass and regular pencils (not pens)
- Food for lunch and 2 liters of water or other beverages
- Two or more large **zip-lock bags** to store your papers in (keep this packet dry)
- USGS Index map & USGS Baring map
- Full outdoor gear (except snowshoes & ice-axe) - i.e. polypro, insulating layers, raingear, heavy hiking or mountaineering boots, etc. (No cotton)
- Your Pre-Trip Plan sheet including more equipment detail

When to be there:

Arrive by **6:45 a.m.** ... You must be ready to go by 7:15 including boots on, rain-gear on (if needed), etc. then checked in before 7:30. Getting ready takes 30 minutes (it really does).

Do NOT expect to be done before 5:00 p.m. We strongly recommend that you make no plans for the evening -- you will be tired, hungry and in need of a shower -- by the time you are home and settled you will be well into the evening. People who expect to leave early are always disappointed.

Directions to Heybrook -- and Required preparation:

See the schematic map at the back of this info packet. Heybrook Ridge is on the way to Stevens Pass. **READ this entire packet before you go ... fill out your pre-trip exercise sheet....it will help tremendously!**

LEAVE NO TRACE AT HEYBROOK RIDGE

- 1) Carry out all garbage, and everything else you brought in
- 2) Use the provided blue-bags to carry out solid human waste & toilet paper
- 3) If you see trash, please pick it up. Leave things nicer than they were when you arrived.

Be responsible, have fun and learn a lot !!!

EMERGENCY RESPONSE PLAN - HEYBROOK RIDGE

A copy is provided to all students and instructors

ACCIDENT RESPONSE RESPONSIBILITIES

Field Trip/Site Leader:

- 1) Coordinate evacuation with area leader and first aid leader.
- 2) Provide additional manpower as required.
- 3) Contact ambulance, hospital, and county sheriff as required.
- 4) Contact injured person's family.
- 5) Report accident to club and appropriate committee chair(s).

Area Leader:

- 1) Assume field trip leader's responsibilities as necessary, notify other area leaders of accident plan (practice may or may not continue depending on the severity of the accident).
- 2) Ensure immediate first aid is given to the injured person(s).
- 3) Contact nearest area leader on radio (channel 6 code 17)
- 4) Deliver accident report form to field trip/site leader with evaluation of seriousness of the injury and type of evacuation recommended.
- 5) Carry out evacuation as directed by field trip/site leader. Be aware that there is a gated Forest Service road down the back side (north side) of the site to the highway in Index. The road heads downhill halfway between the stumps and the fire tower, and is one of the obvious forks as you come in to the field trip site. The field trip leader has a key to the gate which is located at the start of the road, near the state highway in Index. In general, this road can be negotiated by pickup truck or car, unless covered with snow. The road also continues east towards Baring to exit onto US HWY 2—same gate key.

First Aid Leader (designated on the spot, based on available skills):

- 1) Ensure proper first aid is provided.
- 2) Have someone else complete thorough physical examination to determine all injuries.
- 3) Ensure stabilization of victim's condition.
- 4) Go to hospital with victim and stay until situation is under control. Report to field trip leader.

LAW ENFORCEMENT

Heybrook Ridge is located in Snohomish County, WA. At Township 27 North, Range 10 East. The majority of the field trip takes place in Sections 20 and 21. The hike up the trail to the lookout goes through the east side of Section 19.

The Snohomish County Sheriff is the law enforcement agency to contact. Dial '911' and ask for the Snohomish County Sheriff.

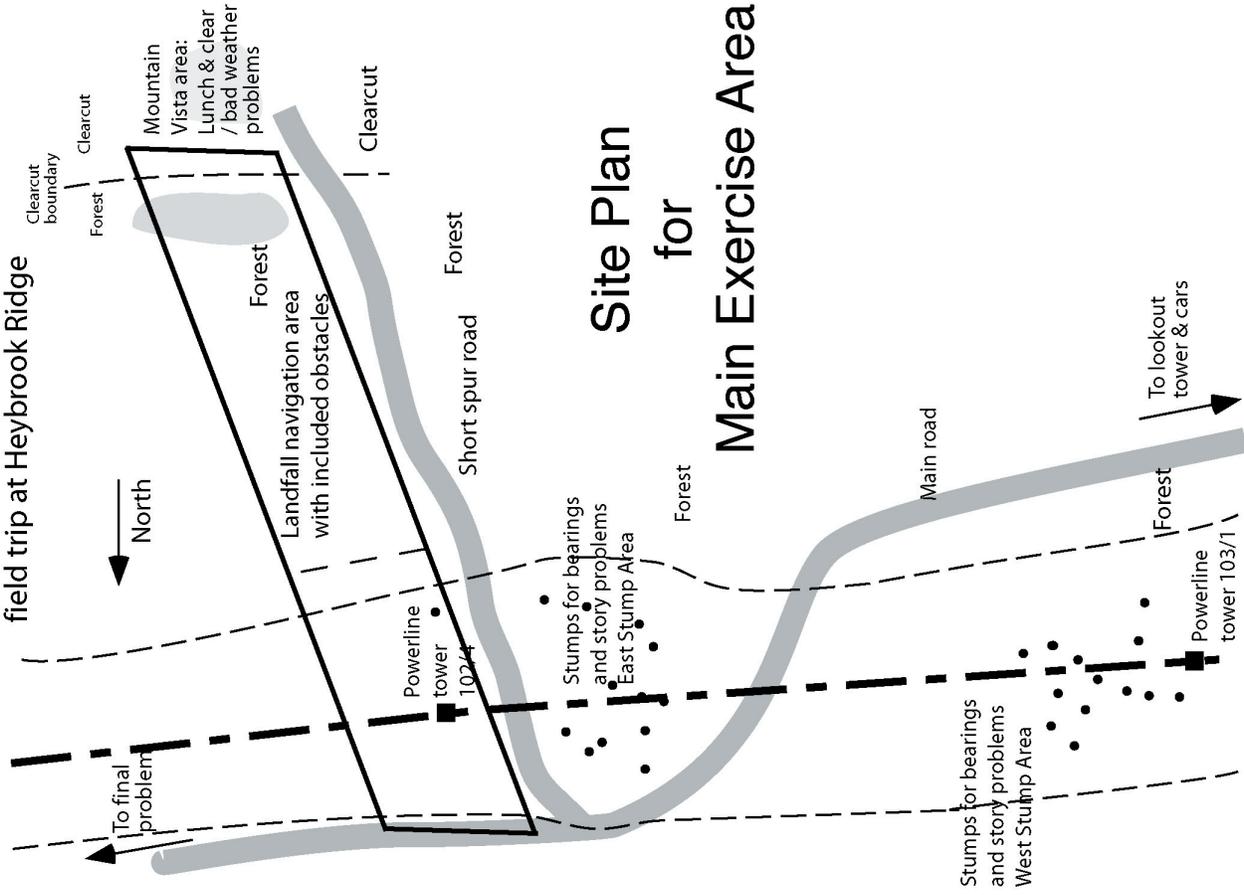
MEDICAL EMERGENCY

Valley General Hospital - 14701 179th Avenue SE - Monroe, WA

(360) 794-7497

From Heybrook Ridge Valley General Hospital can be reached by driving west on SR-2. Proceed through Monroe. Just past the SR-522 intersection/overpass you'll come to the intersection at 179th St. SE (Valley View Road). Turn left onto 179th St. SE, heading south across the railroad tracks. Valley General Hospital is on the immediate left.

Mountaineers Basic Navigation Course:
field trip at Heybrook Ridge



sketch (not to scale)

MER 22-Jan-2002
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Heybrook November Timetable

6:45	Students arrive, (takes 30 min. to get ready)
7:15	Students 100% ready to go
7:15 - 7:30	Student check-in
7:30 - 7:50	Student orientation
7:50 - 9:30	Hike to exercise area, including break for equipment and fitness check (15 min)
9:30--11:20	Take bearings (45 min) done by 10:15 Story problem (35 min) done by 10:50 Landfall navigation (30 min) done by 11:20
11:20 - 12:00	Catch-up, assemble at mountain vista, Eat lunch, pack up again, good or bad weather exercise (only 40 minutes)
12:00 - 12:15	Assemble, instructions for final problem
12:15-2:30	Final problem (navigation in the woods)
2:45	Start hike to cars
4:00	Arrive at cars, check out with leader
just before 5:00	Departure (only after everyone is down and checked in) -- this will be in the dark

Wilderness Navigation Course - Description of Exercises - Heybrook Ridge Navigation Field Trip (Saturday & Sunday)

Teaching objectives for the field trip

At day's end, each student should be able to:

- take compass bearings accurately
- navigate with map and compass
- perform landfall navigation
- determine position with multiple navigation tools
- navigate through the woods
- be accustomed to bushwhacking, possibly while out in the rain all day
- understand personal physical conditioning, limitations and equipment needs.

Before leaving the parking lot
 When directed, form groups with instructors. Make introductions. Instructors will ask you to inform them of any medical conditions or problems privately. Specifically mention asthma, diabetes, allergies, recent injuries, illness, or other conditions which might affect you. At this time, instructors will check for cotton clothing or other unsuitable gear. Every year, we have a few students wearing cotton. Find your location on the map.

1 Equipment check at lookout tower
 Instructors inspect and evaluate each student's equipment and fitness, specifically including:

- physical conditioning & limitations
- ten essentials including navigation extras
- clothing and boots
- packs (and packing job)

Your instructors will help you identify what works and what doesn't work with your equipment. Instructors will offer advice based on their experience and show you examples of good equipment and packing choices, often from their own gear. This is a great opportunity to ask your equipment and fitness questions. Instructors will note any deficiencies in your fitness or equipment on grade cards. Be sure to get a drink and snack here.

2 Taking bearings

Groups are assigned to a stump area (east or west) by an area leader. Instructors will provide direction on how to take bearings, and how to complete the problem.

GOAL: Take nine bearings accurate to $\pm 2^\circ$

METHOD: Students work solo. Each student goes to a numbered stump (assigned by the instructor), and takes bearings on the three lettered stumps indicated. Check the accuracy of your answers with your instructor before proceeding.

If any bearing is in error by more than 2° , the student tries again (you will not be told the correct answer until you are within 2°). The process is repeated until each student has taken nine bearings accurate to within $\pm 2^\circ$

(In case of consistent difficulties, instructors will consult with an area leader - if there are inaccuracies, we need to know so that they can be fixed - please document issues).

GRADING: Instructors will note the accuracy of bearings in the student grade cards i.e. "11 attempts required to get 9 accurate bearings, two bad bearings off by 3° ".

For each stump assigned in the top row, fill in the bearings to the corresponding stumps below it.

Eastern stumps - For stump G, site from the north side.

1	2	3	4	5	6	7	G	K
A	B	B	A	A	E	A	H	4
B	D	C	C	D	F	D	5	D
E	Y	K	G	F	G	G	F	G
-	-	-	-	-	-	-	W	O

Western stumps-if you aren't sure which area, ask!

1	2	3	4	5	6	7	8	8
A	A	B	A	C	B	C	U	2
E	B	D	D	E	C	D	T	3
F	G	G	F	G	E	E	J	-

3 Location exercises occur throughout the day

GOAL: To learn how to use all available information from observation, map, compass, altimeter, GPS, clinometer, watch... to determine and keep track of position on the map, and in the real world.

METHOD: Stay alert, pull out your map when directed, use your compass to stay oriented to North and South. If elevation and/or UTM coordinate information is available, use it to confirm (or not!). Pay attention to what information, tool or technique is most useful at different points.

Instructors are available to help students and check student answers. Distances can be measured on the map, or estimated by eye.

4 Landfall navigation

GOAL: Follow an assigned bearing from one end of a course to the other end (about 700-feet long), arriving at the end no more than 2° off course.

APPROACH: There are three navigation methods taught in this exercise (leap-frog, landfall, obstacle avoidance), and two distinct phases (working in pairs; working singly but with a safety buddy).

LEAP-FROG METHOD: This method is used on snow or other featureless terrain, particularly in white-out conditions. Students work in pairs. Student B goes out a ways along the desired bearing, while student A directs him/her left or right. Student

B then turns around, and takes a back-bearing on student B, moving until on the correct bearing. When the students agree, student B stays in place, and student A walks past, "leap-frogging" student A. The process is repeated. Lacking a fixed object (such as a tree), your partner becomes the fixed object used to keep track of position on the featureless terrain.

To take a back bearing, instead of reading the north pointing end of the compass needle (the pointy end, usually red) to take a bearing, use the south end of the needle (the back end, usually white) to take the bearing. The back bearing to your previous position, should have the same reading in degrees as the normal bearing did using the north end of the needle. Instructors demonstrate this method for students.

LANDFALL METHOD: To follow a given bearing, sight along that bearing to an identified landmark (or object in the landscape) in the distance, then move to that landmark, and repeat the process as needed. This "sight-identify-move" process is called "landfall navigation". Accuracy can be checked by taking a back bearing each time a new landmark is reached.

OBSTACLES: Students must navigate around downed trees and over a ridge with steep rocky areas. It may not be possible to follow a bearing by walking along it. Instructors teach the students how to get around obstacles, while maintaining their ultimate heading.

OBSTACLE AVOIDANCE: To detour around an obstacle, walk a fixed distance out of your way before reaching it (i.e. 8 paces @ 90°), then the same distance in the opposite direction after it.



The steps are as follows:

1. Turn to a heading 90° off course
2. Walk in that direction, counting your paces.
3. Turn 90° back onto the proper heading
4. Walk past the obstacle
5. Turn 90° toward your old line of travel
6. Walk back the same number of counted paces. Turn 90° back onto the proper heading.

Instructors will demonstrate this method to students.

THE EXERCISE: Instructors assign each pair of students a starting location and a bearing. Instructors may assist students as needed throughout the exercise, but the result is the responsibility of each student.

Navigate in pairs across the powerline right-of-way using the leapfrog method. Arrange to do at least 3 "leaps" by the time you enter the trees. After crossing through the trees, individuals remain in pairs for safety, but navigate independently.

Navigate individually via the landfall method, and follow the assigned bearing to the end of the course. Partners must keep each other in sight and sound, and stay with their partners in case of injury.

At the end, the course emerges into an open clear-cut area. Within about 50 feet, you should cross a 200 foot line of stakes 20-feet apart (the catch line). Estimate their position crossing the finish line to the nearest 5 feet, based on the distance labeled on the nearest two stakes on the finish line.

Record your starting letter and finishing distance, i.e. Start: B, Finish at 175'. Instructors will write this into the grade cards: "Landfall B 175".

GRADING: Each error of 2° results in being 20-25 feet off at the finish line. 75% of students finish within 45 feet (4°). Within 20 feet (2°) is an excellent result. More than 50 feet off is poor.

Lunch

After arrival at the finish line for the landfall navigation, take a brief break, eat lunch, talk to others and enjoy the view. If you are behind, you will need to be efficient - you must be doing the next problem at 12:10, not just thinking about getting ready for it. You will have a 10-minute warning.

5 Good & Bad Weather Problems

See the attached sheet for directions. Which problem you will do depends on the weather.

The outcome of these problems will not directly affect your grade, but your general understanding of the material in them will.

6 Final Problem

GOAL: To navigate from the "launch" ridge through to the service road with reasonable accuracy in a reasonable amount of time (Please note that the service road is the 2nd road participants will reach. The first road reached is very overgrown, recognizable only because it is firm and flat for 6 ft.)

METHOD: Students navigate cross-country from the ridge in pairs from an assigned launch point along an assigned bearing. Each student pair receives a launch ticket with an assigned bearing. Print your names on the launch ticket. There are five launch points, lettered "A" through "E" along the ridge. Students travel in pairs for safety, and must keep each other in sight and sound contact. However, each student is to navigate independently using the "landfall method." Do not "Leapfrog" each other or consult on choices of landfalls. This problem tests your INDIVIDUAL skill and efficiency.

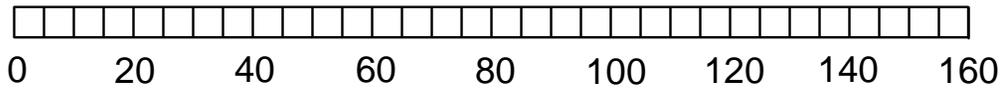
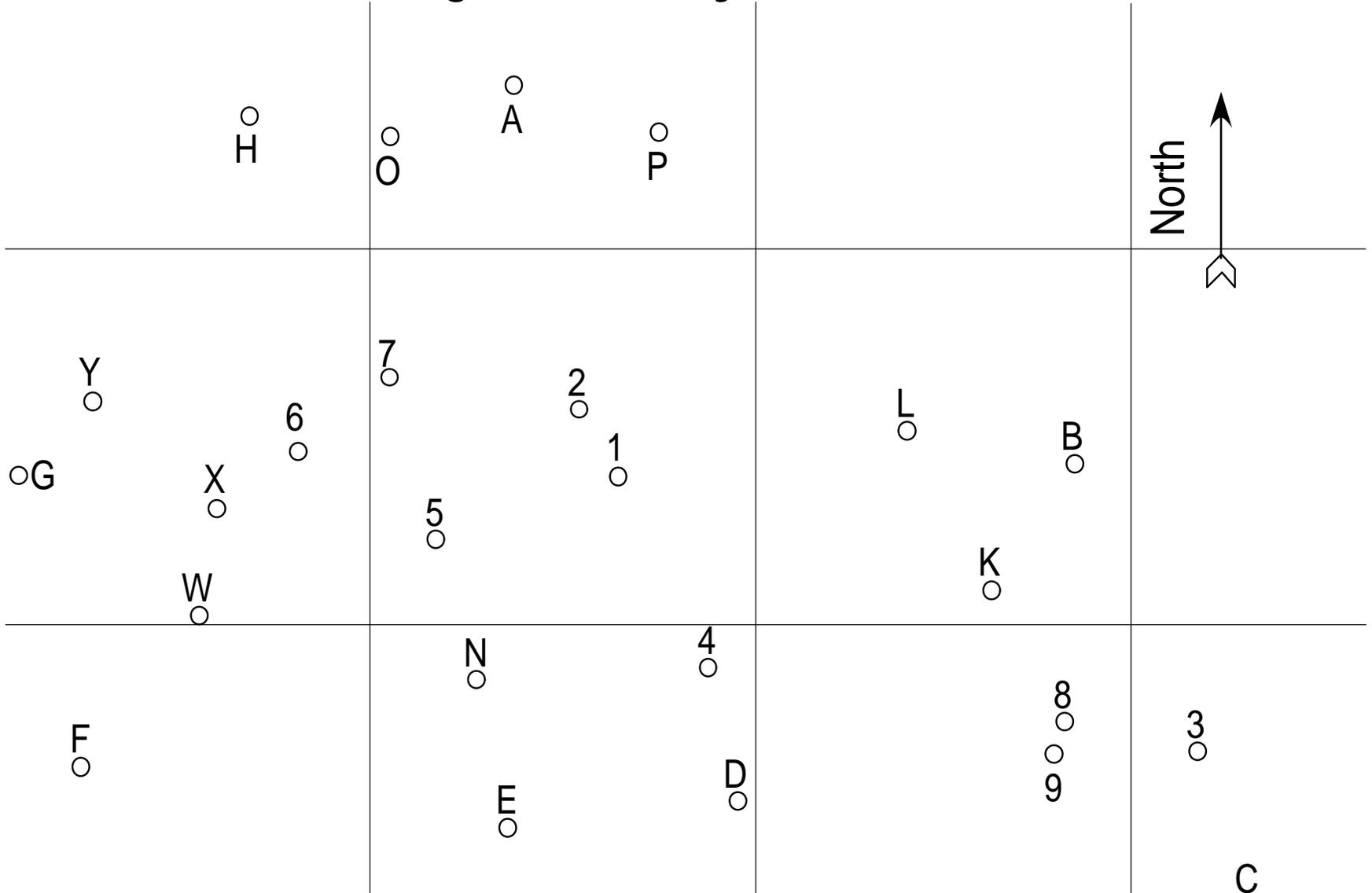
You should reach the second road in no more than 40 minutes. The leader will also assign instructors to launch points. At a set time after the last students have "launched" the instructors begin "sweeping" down after the students. Accuracy is determined in reference to numbered signs along the second road ("1" to "11") spaced at 200' intervals. When you reach the road, find the closest numbered sign, then report to a "catcher" who will let you know your accuracy. **DO NOT CROSS THE SECOND ROAD.**

If you reach the road near a sign without being swept, you will receive an "S" for the problem. The closer you are to the "correct sign" the higher your grade. If you reach the road outside the signed area, are swept by an instructor before you reach the road, become lost, or abandon your partner, you will receive an "NS" grade. This almost never happens. Good Luck.

NO-ONE leaves the goal area until **EVERYONE** is accounted for. **NO EXCEPTIONS.**

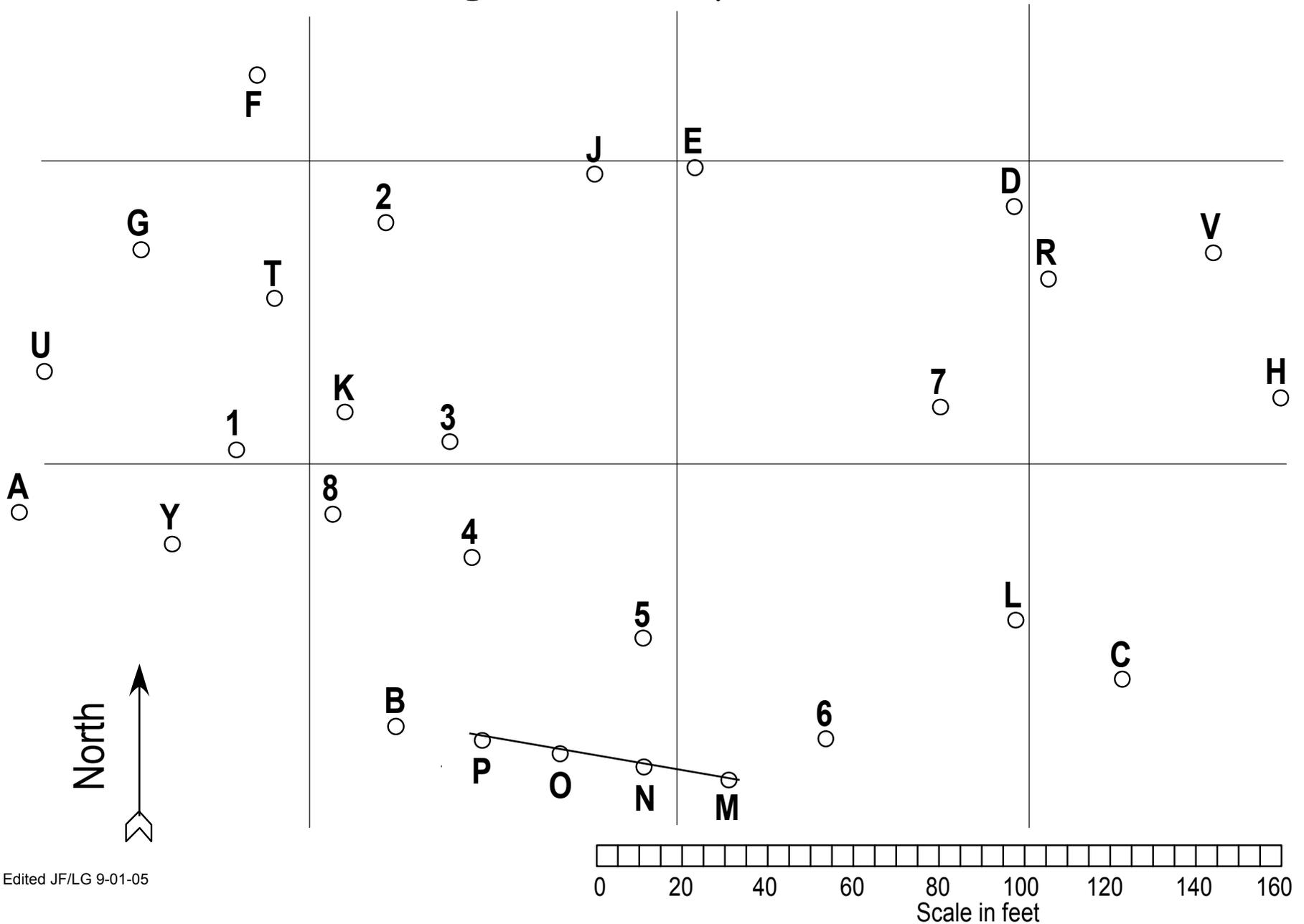
Hike out, check out - Do not leave parking area until told. Sign out by 1) turning in your grade card at the parking lot, and 2) having your name checked off the list. Then **WAIT** for release.

Map of Eastern Stump Area Bearings and Story Problems



Scale in feet

Map of Western Stump Area Bearings and Story Problems



Navigation Field Trip – Lunchtime / Mountain Vista Exercise

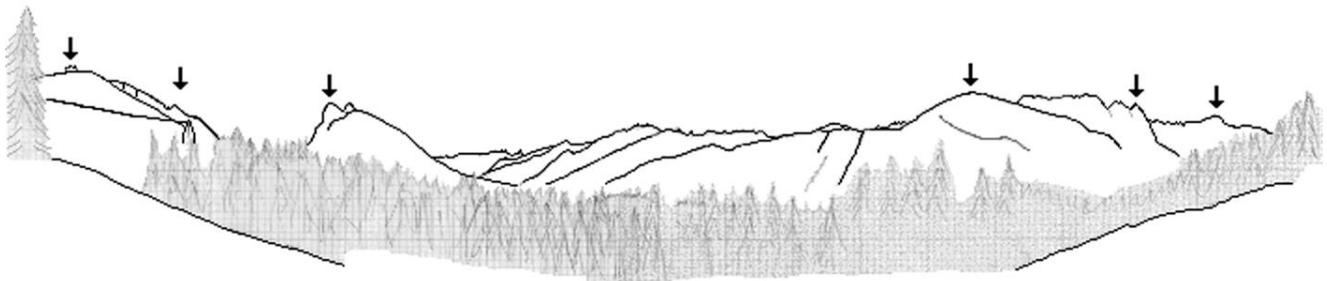
Student Information

Timeframe: Time is limited. You may need to do this problem and eat your lunch at the same time.

Goals: To enable you to correlate the mountains you see with the features shown on the topographic map. After identifying peaks (clear days) or position (bad weather), if time allows, locate yourself using triangulation. Select the exercise appropriate to the visibility (clear weather or bad weather).

Clear weather exercise (if possible) – note steps and available time as students start to eat:

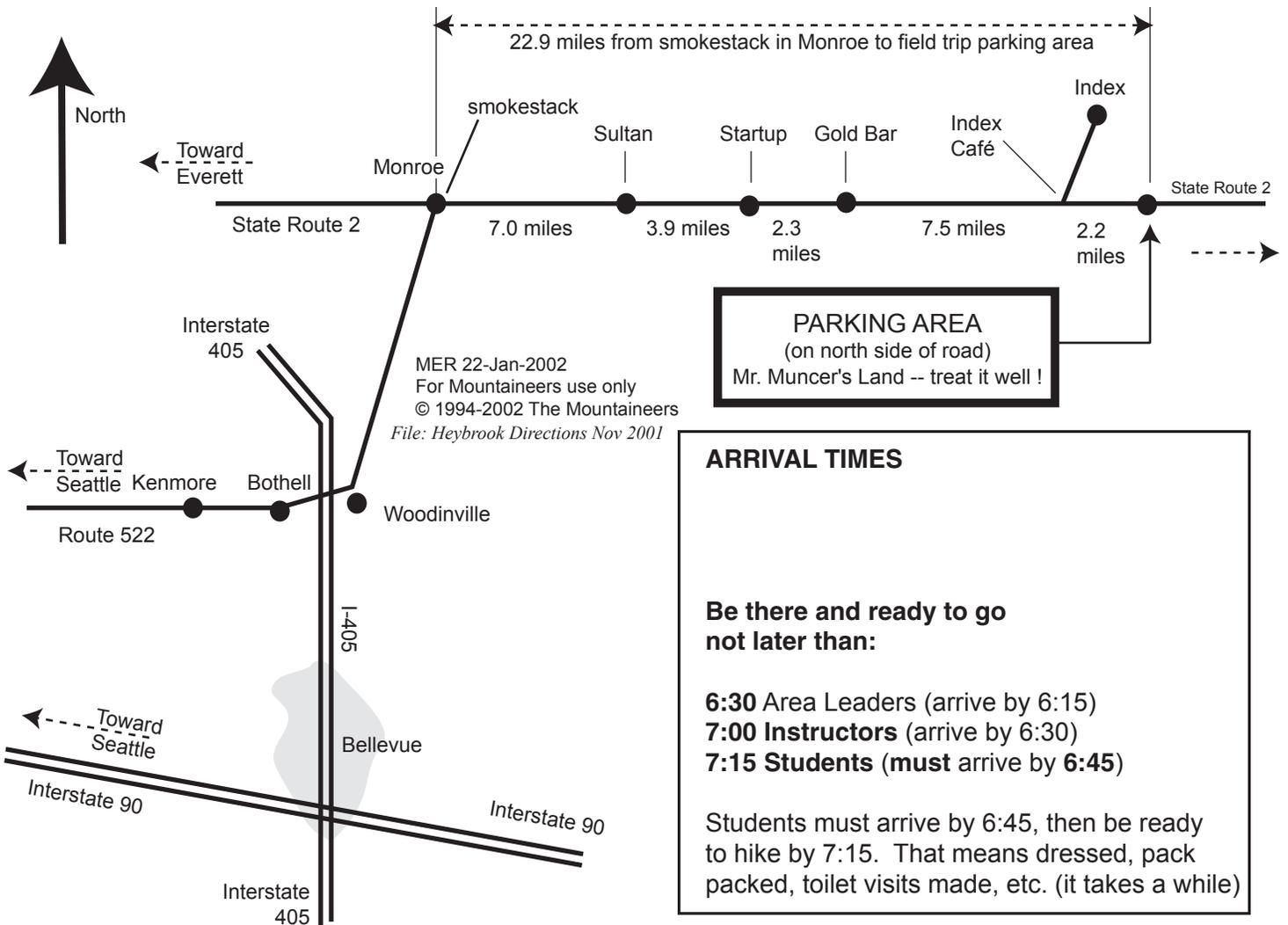
1. Your instructor will show you **approximately where you are** on the map within 1/4 mile. Note how you could determine your approximate location if the weather was bad:
 - a) last known position (road) and direction of travel through forest (dead reckoning)
 - b) the side of the ridge you are on (downhill is generally south)
 - c) the electrical towers within sight.
2. As a group, **orient your maps** so each map aligns with the land (the top of the map should point north)
3. Your instructor will **identify the North Peak of Index** and give the bearing to it. Look for this peak on your maps using the name and bearing. Compare the landscape to the map topography in detail.
4. Working from right to left, **take bearings on each of the peaks below** (see the picture). With these bearings and the topography, identify each peak on the map as well (as you go). Write the bearings and the names above each arrow. Show your instructor the peaks on the maps, and explain your reasoning. Make sure your declination is set properly at 16.0° (2015).
5. Teams that finish these identifications should try using **all available information (bearings, slope angle, altimeter) to confirm your position.**



Bad weather exercise (if peaks not visible). This exercise should take 10 – 15 minutes to complete.

1. **ORIENT YOUR MAP**
Orient map so that the top of the map points north (so that it matches the topography), using a relatively flat surface. Use a stump, rock, ground, or your pack. **Do not hold the map in your hands, because once you move the map, it will no longer be oriented.**
2. **IDENTIFY LANDMARKS**
Identify nearby landmarks, noting their distinct features (features which will allow you to identify them uniquely on the map). Note the location of the nearest power line tower (among other landmarks). You may use a compass bearing or elevation contour to confirm your identifications.
3. **LOCATE YOURSELF**
Using your map, locate the features you found, and justify to your instructor why you think you have correctly identified them. Use this information and the topography and slope direction to locate your position on the map more precisely. Take a bearing on the nearest power line tower to confirm.
4. **ROUTE FINDING**
Now that you have found your approximate location you will need to find a suitable route that will take you to the trail head. Looking at your map determine the easiest way down. Try and use at least two of the landmarks that you picked for reference points.
5. **BEARINGS, GENERAL DIRECTION & GETTING OUT**
Now that you have picked a route measure a bearing on your map to your first landmark. Measure the bearings to subsequent major landmarks (i.e. which direction do you travel on the road?). Be prepared to explain how you came up with your location, route out, and bearings.

Driving directions to Heybrook Ridge. Map is not to scale.

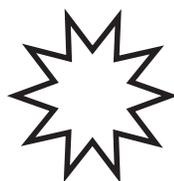


From Seattle, take I-5 N to Exit 175, then head E on 145th to Bothell Way NE/SR522. Turn left and follow it to Bothell, continuing right to stay on 522 heading E and N towards Woodinville and Monroe. From Renton, Bellevue or Lynnwood, take I-405 to Exit 23 (junction with SR 522). From Lake City and Kenmore, reach Bothell via SR 522, then continue east. Take SR 522 east past Woodinville, and then north to Monroe. In Monroe, 522 ends at Route 2. Take the exit ramp that heads east on Route 2 toward Stevens Pass. From the end of the commercial strip in Monroe it is 22.9 miles to the field trip parking area. This is 2.2 miles beyond the Index Café on the left, and 0.2 or 0.3 miles past the USFS Heybrook Lookout trail head (on left).

An alternative for users of Google maps is to type the latitude and longitude (47.805589, -121.529628) into the search box to obtain mapping directions.

Allow *** 5 minutes driving time from Bellevue** (SR-520/I-405 intersection), or , **0 minutes from downtown Seattle** or the 65th Street park & ride. If you plan to stop for breakfast, bathroom or snacks, add more time (15 to 40 minutes).

When you arrive in the parking lot on Mr. Muncer's land, please **follow directions** for parking. He is kind enough to let us use his land -- please care for it and respect his generous offer. Do not park so as to obstruct the road through the parking area - he drives large trucks up & down, and needs room to get by. Portable toilets will be located at the top of the road after the student / instructor check in area. Please -- no trash in the portable toilets. Like all Mountaineers events, you get to carry out whatever you bring in, including your garbage.

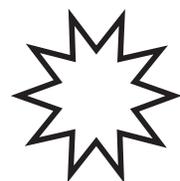


PARKING AREA on LEFT (NORTH)

2.2 miles east of Index Café

0.2 miles east of Heybrook Lookout Trailhead

On private property with owner's permission



Please carpool. There is not enough space to allow for parking of single occupant vehicles.

Sign up online to arrange carpools. Only if you sign up to carpool can you see contact information for all riders and drivers who have opted to share information.

You must then contact each other - make arrangements to meet at a convenient location (such as a park & ride).