

WESTERN STATES ENDURANCE RUN PARTICIPANT'S GUIDE



Squaw Valley to Auburn
California
June 23, 2012

Note: The online WS Participant Guide at <http://ws100.com/pguide.htm> supercedes this, and all other versions of this Guide. Check the online Guide for the most current updates.



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2012

WESTERN STATES ENDURANCE RUN PARTICIPANT'S GUIDE

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(916) 387-8796 ~ E-mail: rd@ws100.com ~ Website: ws100.com

Participant's Guide to the Western States Endurance Run
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TRAIL OF THE WS ENDURANCE RUN

CREW MAP TO ACCESS POINTS

WESTERN STATES ENDURANCE RUN
~100 MILES~
PARTICIPANT'S GUIDE
JUNE 23, 2012

I. PARTICIPATION

Entrants for the Western States Endurance Run are normally selected by a lottery conducted the first Saturday in December of the year preceding the event.

All 2012 runners must have met the following minimum times, which were certified by official race results or a results listing in Ultrarunning Magazine: a) 50 miles in under 11 hours, b) 100 kilometers in under 14 hours, c) completion of an OFFICIAL 100-mile trail race, and during the qualifying period of October 7, 2010, to November 12, 2011. For entry into the 2013 event, the qualifying run must be completed between November 13, 2011, and November 10, 2012.

For 2013 qualifying details go to: <http://ws100.com/qualifying.htm>. Click on the "2013 WS Qualifying Runs List."

As you are aware, operating costs have continued to increase from year to year and supplies must be ordered many months in advance. We have adopted a policy of no refunds if you are forced to withdraw from the Run prior to Race Day. We sincerely hope that you can understand the situation we are faced with and that this will not create a hardship for you.

II. THE RUN

The Western States Endurance Run will be conducted along the Western States Trail starting at Squaw Valley, California, and ending in Auburn, California. The Run will begin at 5:00 a.m. on Saturday, June 23, 2012, at the west end of Squaw Valley. Runners must reach the finish line no later than 10:59:59 a.m. on Sunday, June 24, 2012, in order to be eligible for an award. All entrants must strictly adhere to the Performance Rules, Rules for Pacers, Rules for Crews and to the expressed guidelines of Run Management to avoid disqualification and to remain eligible for an award.

III. COURSE AND TRAIL DESCRIPTION

The Western States Endurance Run follows the middle portion of the famous Western States Trail, a nationally dedicated recreational trail that stretches from Salt Lake City, Utah, to Sacramento, California. One of the most arduous organized running events in the U.S., the Western States 100 is truly the "Ultimate Challenge" for the long distance runner. Entry in this event should not be taken lightly.

Beginning in Squaw Valley, site of the 1960 Winter Olympic Games, the trail ascends from the valley floor (elevation 6,200 feet) to Emigrant Pass (elevation 8,750 feet), a climb of 2,550 vertical feet in the first 4 miles. From the pass, following the original trails used by the gold and silver miners of the 1850's, runners travel west, climbing another 15,540 feet and descending 22,970 feet before reaching Auburn, a small town in the heart of California's historic gold country. Most of the trail passes through remote and rugged territory. People who are unfamiliar with the area should use caution when planning training runs, especially in the high country. Before leaving, let someone know where you will be running and when you will return. REMEMBER THAT MUCH OF THIS TERRITORY IS ACCESSIBLE ONLY BY FOOT, HORSE OR HELICOPTER.

Due to the remoteness and inaccessibility of the trail, the Western States Endurance Run differs substantially from other organized runs. Adequate mental and physical preparation are of utmost importance to each runner, for the high mountains and deep canyons, although beautiful, are relentless in their challenge and unforgiving to the ill-prepared.

1. **Course Route:** The Run will follow the same basic course used since 1986 unless snow conditions force a route change.
2. **Familiarity:** Knowledge of the trail offers both physical and mental advantages during the Run. Participants should make a reasonable effort to run as much of the trail as possible before Race Day. Particular attention should be given to those sections that you expect to run in the dark, when your mental and physical energy may be lagging.
3. **After Dark:** AS ALMOST HALF OF THE TRAIL MAY BE TRAVELED AT NIGHT, EACH RUNNER SHOULD CARRY TWO LED FLASHLIGHTS. If your lights fail, wait for another runner with a light. Do not try to find your way in the dark. If you are the last runner, wait for the Search and Rescue sweep teams. Plan to pick up a flashlight in Foresthill, regardless of what time you reach that point. If you are a 28 to 30-hour runner, plan to pick up a flashlight in Michigan Bluff.
4. **Weather:** Since temperatures during the Run can range from 20 degrees to above 110 degrees Fahrenheit, participants should be fully prepared for both extremes. Weather conditions are unpredictable and can change rapidly.
5. **River Crossing:** At 78 miles, runners must ford the American River near the Rucky Chucky crossing. The ford is dangerous and SHOULD NOT BE ATTEMPTED ON TRAINING RUNS. On Race Day, a guide rope will be stretched across the river, with personnel available for assistance. River rafts are used in high-water years.

6. **Wilderness:** The remoteness of the trail can lead to disaster for anyone not experienced in the "backwoods." For your own well-being and survival, we recommend that you do not attempt a training run alone without letting someone know exactly where you are going and what time you will return. Trail markings will not be completed until a few days prior to the Run. We strongly advise people who are unfamiliar with the area to buddy up with a "native guide." Carry ample fluids, a water filtration pump and food supplies. There are dry stretches of over 8 miles during the Run and of 16 or more miles during training runs.
7. **Trail Markings:** Trail markings will consist of yellow surveyor's tape tied to branches, "W.S. TRAIL" signs nailed to trees, and arrows and signs. ("Pioneer Express Trail" markers are located along portions of the trail. Do not refer to these as Run markers.) In addition, every effort will be made to place approximately 400 Glo-Sticks along the last 38 miles of the trail to brighten the trail at night. Run Management does its best to provide an adequately marked trail, but it is necessary for runners to continually remain alert as they travel. On occasion, persons not associated with the event have altered or removed course markings, or run management cannot place signage at a critical turn on race day due to unusual circumstances. A working knowledge of the trail, particularly of those miles that will be covered in the dark, will be of infinite benefit to the runner who attempts the Western States Endurance Run. YOU are ultimately responsible to follow the correct course.
8. **Drops:** If you have to drop out of the Run at a point where your crew is unavailable, we will make every reasonable effort to get you to the finish or to the nearest major checkpoint that is still in operation, particularly if you are in need of medical attention. In non-emergency situations, you may have to wait several hours before being evacuated. Runners having to drop from the Run BEFORE the Foresthill aid station will be taken to Foresthill. Runners having to drop AFTER Foresthill will be taken to the finish line. Our principle responsibility is to put on a race, not to run a shuttle service for non-finishers; so please be patient. Aid stations will close when the footed sweeps or drag riders arrive.
9. **Trail Etiquette:** Please be courteous to hikers, other runners and horsemen. Collisions on these narrow trails may be disastrous. If you wish to pass another runner, ask for "trail right" or "trail left" before attempting to pass. Slower runners must yield the trail to runners wishing to pass. Horses may be spooked by the sudden appearance of a runner, with serious consequences to the rider. Stop and step off the trail to let oncoming horses pass. Runners should never pass a horse from behind without first notifying the rider.
10. **Volunteers:** Approximately 1,500 dedicated volunteers help out at each Western States Endurance Run. They are truly the life-blood of the Run and will do everything possible to make your day a success. Many spend more hours out on the trail than do the runners themselves. Please be polite and make a point to thank them. Without the volunteers, there would be no Western States 100.

IV. PERFORMANCE RULES

The purpose of these rules is to ensure the Run's integrity as a test of individual performance, providing equal conditions for all. The guiding principles of the Performance Rules are as simple as: play fair, be safe, and respect the land.

Violations of any rules or directives of the Western States Run may be grounds for disqualification for one or more years, or other sanctions such as time penalties, fines, and/or disqualification from age group awards.

1. There will be no unofficial runners.
2. Each runner's official run number must be worn prominently on the front of the body and must be easily visible at all times.
3. Runners must follow the marked trail at all times. Any runner departing from the official trail must return to the point of departure **on foot** before continuing.
4. Each runner must complete the entire course under his own power. No physical or mechanical aids are allowed, including but not limited to ski poles, hiking sticks or crampons. No additions can be made to shoes as manufactured.
5. Except in case of medical emergency, runners may not accept aid or assistance in any form from anyone between checkpoints.
6. Runners may not store supplies of any kind along the trail.
7. Runners are responsible for the actions of their crews and pacers. Everyone associated with the race must comply with all Race rules (Performance Rules, Rules for Pacers, Rules for Crews), regulations issued by the Run Director in pre-race memos and at the pre-race briefing on Friday afternoon, and all parking and access instructions, or risk disqualification of the runner.
8. Each runner must be checked IN and checked OUT of all checkpoints.
9. All cut-off times will be strictly enforced. Runners must be checked OUT of the checkpoint BEFORE the cut-off time. **Runners returning to the checkpoint after the cut-off time will be pulled from the Run.**
10. All runners must undergo brief medical examinations at designated checkpoints. Additional monitoring of individual runners may be required at the discretion of medical personnel. Refusal by the runner to cooperate fully may result in immediate disqualification. Medical personnel have complete authority to evaluate the condition of any runner at any time and to determine whether the runner may continue.
11. In addition to information provided by the runner in the race application's medical questionnaire, each runner must fully disclose to medical personnel at the pre-race check-in any changes to existing medical conditions and prescription medications being taken.
12. Injection of fluids or drugs (intravenous, intramuscular, subcutaneous) during the event may result in immediate disqualification.

13. Littering of any kind is prohibited. Please respect the natural beauty of our trails and the right of everyone to enjoy them. Littering will threaten our continued use of the Western States Trail.
14. Runners must refrain from any act of bad sportsmanship.
15. Smoking is not permitted at any of the checkpoints or along the trail.
16. Any runner who is unable to finish the Run must **personally** inform the aid station captain of the nearest checkpoint of his decision to withdraw. HE MUST GIVE HIS MEDICAL WRISTBAND (issued at the pre-race medical check-in at Squaw Valley), timing chip AND PERFORATED BIB NUMBER TEAR SHEET TO THE CAPTAIN AT THAT TIME. The wristband serves as official notice of a runner's withdrawal from the Run. Runners who leave the course without turning in their wristband and tear sheet will be classified as "lost," thereby activating the Placer County Search and Rescue. Time spent searching for any such runner will be billed to the runner at a minimum rate of \$1500 per hour.
17. Runners crossing the finish line after the 30-hour cutoff will not be listed as official finishers.

RULE VIOLATION PROCEDURE

Violation of any of the rules or regulations of the Western States Endurance Run is an extremely serious matter. Accordingly, alleging violation of a rule by another runner is very serious. Protests must be submitted by a registered entrant and must be lodged using the following procedure:

1. Report the alleged violation to the runner, his crew or his pacer as the incident occurs. Enlist a fellow witness to the alleged violation if possible.
2. Report the alleged violation with the runner's name and number to the next available aid station captain.
3. Report the alleged violation in writing at the finish line to the Race Director. All protests must be submitted by 11:30 a.m. on Sunday following the Run. Written protest must include the name of the person who lodged the complaint.
4. Both parties will be invited to discuss the complaint with the Western States Protest Committee at noon on Sunday, when a decision about whether to withhold the alleged violator's award will be rendered.
5. A final resolution of the issue may be made by the full Western States Board of Trustees approximately two weeks after the Run.

V. PACE RUNNERS

A pace runner is defined as a "trail companion" who may accompany a runner along designated sections of the trail. Pacers are allowed solely as a safety consideration for fatigued runners in the remote and rugged territory of the Western States Trail. Absolutely no physical or mechanical aid may be given by the pacer to assist the runner over difficult sections of the trail (except in medical emergencies), and no food, fluids or supplies of any kind may be carried for the runner.

Pacers should be experienced trail runners in excellent physical shape and conditioned adequately to run 40 miles over rough terrain. Most pacing will be done during night time hours and early morning; so pacers should be warmly dressed, used to running with flashlights, and familiar with the trail. Pacers should be adequately supplied with flashlights, food and water. They may accept aid at the checkpoints.

RULES FOR PACE RUNNERS

1. A pace runner is any individual who accompanies an entrant for any distance greater than 100 yards at one time.
2. One pacer at a time may accompany each runner from the Foresthill aid station to the finish.
Exceptions:
 - a) Runners leaving Michigan Bluff after 8:00 p.m. may be paced from that point.
 - b) All crew members, pacers and fans may accompany a runner from the Bath Road aid station to the intersection of California Street and Auburn-Foresthill Road, from the Rucky Chucky - far side - aid station to the Green Gate aid station, and from Robie Point to the Finish Line.
3. Each pacer must sign a release form at Pacer Central, either at Squaw Valley on Friday morning or at the Foresthill Elementary School after noon on Saturday.
4. Pacers must be at least 18 years of age. (Specific exceptions may be made in advance of the Run by the Race Director.)
5. Each pacer must wear the official identifying number that corresponds to the Race number of the entrant he is pacing. One pacer number is provided per entrant. The official pacer number must be transferred between pacers if duties for one runner are to be shared. If a pacer becomes unable to continue the Run, the official pacer number must be given to the runner, so that subsequent pacers will be properly identified. Pacer numbers may be picked up at either Pacer Central location.
6. All pacers must clearly identify themselves when passing through control points. It is extremely important that Run personnel know exactly who is on the trail and where.
7. Pacers must stay with their runners at all times, except in the case of an emergency. If the runner withdraws from the Run, and the pacer wishes to continue, he/she must remain at the aid station until another runner enters the aid station and requests the services of a pacer. The pacer may not continue on without an official Race participant.
8. Changes of pacers may be made only at the following designated locations: Foresthill School, both sides of the Rucky Chucky river crossing aid stations, the Green Gate, Highway 49, No Hands Bridge and Robie Point. Those runners who are paced for the entire 100 miles (only with prior approval from the RD) may change pacers at any aid station designated for crews, up to Michigan Bluff.
9. Pacers must enter and leave each aid station WITH their runners. They may assist with the re-filling of water bottles or replenishment of supplies while in the station but may not come into the checkpoint ahead of their runners, or depart after their runners, in order to speed up the re-fueling process.
10. Pacers may not carry water, food, flashlights, shoes, clothing or other supplies for anyone other than themselves. "Muling" is expressly forbidden.
11. No mechanical or physical assistance may be given by the pacer to the runner at any time.
12. Please respect the trails; littering of any kind is strictly prohibited.

PACERS MUST COMPLY WITH ALL RACE RULES AND REGULATIONS, INCLUDING THE PERFORMANCE RULES, RULES FOR PACERS AND ALL INSTRUCTIONS FROM RACE PERSONNEL.

VI. SUPPORT CREWS

We strongly recommend that you bring someone to crew for you. Not only will a crew provide a psychological lift, but having one will ensure that you have the food and drink you prefer and changes of clothing along the way.

Crews must follow all of the rules and regulations of the Run, including the Performance Rules, Rules for Pacers, Rules for Crews and any supplementary instructions issued in pre-race memos or at the Friday afternoon briefing. All crew members must willingly comply with all instructions from Run personnel at all points along the trail and its access routes, including parking regulations, or risk disqualification of their runner.

RULES FOR CREWS

1. A crew member is defined as any individual who provides material support to a runner in the event.
2. Crews may meet runners or assist them only at those aid stations specifically designated for crews. Crews must wait to assist their runners until after the official check-in and medical evaluation (where applicable).
3. Crews must adhere to instructions of all aid station personnel, including requests to vacate a certain area of the checkpoint.
4. Crews must stay within a 200-yard radius of the aid station while attending to their runners. **Exceptions:** Crews may assist runners: 1) from the foot of Bath Road to the intersection of Foresthill Road and California Street; 2) from the Rucky Chucky -- far side -- Aid Station to Green Gate; 3) from Robie Point to the finish line. Crews may assist runners in designated areas at the aid stations located on both sides of the Rucky Chucky river crossing, providing they have arrived there on foot.
5. **No crews** are allowed at the following checkpoints: The Escarpment, Lyon Ridge, Red Star Ridge, Miller's Defeat, Last Chance, Devil's Thumb, El Dorado Creek, Dardanelles, Peachstone, Ford's Bar, Auburn Lake Trails, and Brown's Ravine.
6. Crews will be limited to one vehicle per runner at all checkpoints except Foresthill. Due to narrow access roads, motor homes will not be permitted into any checkpoints. The only exception is Foresthill.
7. No crew vehicles will be allowed into Deadwood Ridge, down Bath Road, to the Rucky Chucky river crossing (both sides of the river), to the Green Gate, 49 Crossing and Robie Point. Approximate distance from parking areas to "foot access only" checkpoints: Bath Road: 1 mile; Rucky Chucky -- north (near side): 3 miles; Rucky Chucky -- south (far side): 3¼ miles; Green Gate: 1¼ miles; 49 Crossing: Shuttle bus.
8. Crews must always drive at safe speeds! No matter how fast a runner may be, it is possible for crews to arrive at all the major checkpoints without exceeding the posted speed limits. Speed limits are rigidly enforced by the U.S. Forest Service, California Highway Patrol and the Placer County Sheriff's Dept. The speed limit between Foresthill and Robinson Flat varies from 25 to 45 mph. **SPEEDERS WILL BE CITED!**
9. Crews must never park in such a way as to block traffic, access to the trail or checkpoint, or other parked cars. Vehicles will be towed at the owner's expense, and their runner may be immediately disqualified.
10. No mountain bikes or mechanical devices (unless handicapped) will be permitted along crew access roads or in the shuttle service area.

11. NO PETS OR DOGS WILL BE ALLOWED AT ANY OF THE CHECKPOINTS, THE FINISH LINE OR ALONG THE TRAIL. PETS CANNOT BE LEFT UNATTENDED IN CREW VEHICLES.
12. NO SMOKING WILL BE ALLOWED AT ANY OF THE CHECKPOINTS OR ALONG THE TRAIL.
13. Littering of any kind at any checkpoint, along the trail, or at the finish line is strictly prohibited.

NOTES FOR CREWS

1. Crew access to some of the mountain checkpoint locations may be restricted or prohibited due to snowfall and the necessity of emergency vehicle access. Any last minute changes will be discussed at the trail briefing at Squaw Valley.
2. As crews may have to park a considerable distance from the aid stations, it is advisable to bring a small cooler that can be carried easily into the checkpoint in addition to a larger one that is kept in the car. A small cart or daypack can also be helpful in transporting supplies. Crews should wear running or hiking shoes.
3. Crews should be equipped with flashlights.
4. As the day and night progress, crews should take care of themselves as well as they take care of their runners. Adequate hydration, regular meals and appropriate clothing will keep crew members happier, stronger and focused on the needs of their runner.
5. A comprehensive clinic for support crews will be offered on Thursday afternoon at Squaw Valley. A short session to answer specific questions will be held following the pre-race briefing on Friday.

RUNNERS WILL BE HELD RESPONSIBLE FOR THE ACTIONS OF THEIR CREWS AND PACERS.

VII. MEDICAL AND OTHER RISK FACTORS

The Western States Endurance Run is one of the most physically challenging events in the world and participation in it presents numerous medical risks, many of which can be extremely serious or fatal.

Participation in this event is at the runner's own risk. Although Run Management has medical personnel at various points along the course, the inaccessibility of much of the trail will make it difficult or impossible for medical assistance to reach the runner immediately.

A brief medical examination is required of each entrant at pre-race registration. Weight, blood pressure and pulse will be recorded and used as a baseline throughout the event. This will not be a complete physical and participants are encouraged to see their own physician prior to the Run. Runners should be knowledgeable about the stress effects attendant to participation in ultra events.

Runners' weights will be monitored throughout the race. Recent research suggests that modest (1-4 pounds) weight loss during prolonged exercise is physiologically normal. Excessive weight loss suggests dehydration. Weight gain suggests fluid retention and in some cases may be associated with a serious medical condition (hyponatremia). How the runner feels and looks and his or her mental status is more important to the medical staff than a number on a scale.

It is important for each entrant to recognize the potential physical and mental stresses which may evolve from participation in this Run. Runners may be subject to extremes of heat and cold, hypothermia, hyperthermia, dehydration, hypoglycemia, hyponatremia, disorientation and mental and physical exhaustion. Run Management and the medical staff strive to work with runners. They will do all they reasonably can to ensure "safe passage" to Auburn, but ultimately runners must understand their own limitations. This is one event where, as Dr. George Sheehan has said, it is better to follow the dictates of your body -- not your ambitions! Adequate physical and mental conditioning prior to the Run is mandatory. If you have not been able to prepare properly, do not attempt to run!

Runners should appreciate the risks associated with participation in this event. Actions may have to be taken on your behalf under extreme time constraints and adverse circumstances. We will make reasonable efforts to give assistance whenever possible. Ultimately and primarily you are in charge, and you are likely to be solely responsible for creating your own crisis that we must then respond to. Be careful, be responsible, and do not exceed your own abilities and limitations. IN THE EVENT THAT A RUNNER REQUIRES EMERGENCY EVACUATION BY GROUND or HELICOPTER-AMBULANCE, THE RUNNER ASSUMES ALL FINANCIAL OBLIGATIONS CONNECTED WITH THIS SERVICE. RUN MANAGEMENT IS NOT RESPONSIBLE FOR ANY DEBTS INCURRED.

Some of the main risks of the Run, but certainly not all of them, are listed here. These should be understood and remembered by all runners, before and during the event. Please note that death can result from several of the risk conditions discussed below or from other aspects of participation in the Western States Endurance Run.

1. Renal Shutdown: Cases of renal shutdown (acute renal failure) have been reported in other ultramarathons and have occurred in varying degrees in the Western States Endurance Run. Renal shutdown occurs from muscle tissue injury which causes the release of myoglobin, a protein material, into the blood plasma. Myoglobin is cleared from the blood stream by the kidneys and will look brownish-colored in the urine. Adequate hydration will help flush myoglobin through the kidneys. Overwhelming amounts of myoglobin may clog the filtering system of the kidneys.

Three Western States runners have required a series of dialysis treatments, and others have been hospitalized several days with IV fluids to correct partial renal shutdown. **If not treated, renal shutdown can cause permanent impairment of kidney function.** IT IS CRUCIAL TO CONTINUE HYDRATING USING ELECTROLYTE FLUIDS DURING THE FINAL HOURS OF THE RUN AND FOR **SEVERAL DAYS FOLLOWING THE RUN** OR UNTIL THE URINE IS LIGHT YELLOW AND OF NORMAL FREQUENCY.

The Terrible Three: WS research has demonstrated that starting the Run with a pre-existing injury, low training miles due to the injury, and masking the injury during the Run using anti-inflammatories such as ibuprofen, could very well

earn the runner a trip to the hospital with acute renal failure. The lesson is simple; if you are determined to start the Run with an injury and low training miles, do not attempt to mask the pain with a pill. Let common sense be your guide and stop when your body tells you to stop.

2. Heat Stroke/Hyperthermia: Heat exhaustion and heat stroke are serious risks. These conditions can cause death, kidney failure and brain damage. It is important that runners be aware of the symptoms of impending heat injury. These include but are not limited to: nausea, vomiting, headache, dizziness, faintness, irritability, lassitude, confusion, weakness, and rapid heart rate. Impending heat stroke may be preceded by a decrease in sweating and the appearance of goose bumps on the skin, especially over the chest. Heat stroke may progress from minimal symptoms to complete collapse in a very short period of time. Remember that your muscles produce tremendous amounts of heat when running up and down hill. The faster the pace, the more heat is produced. A light-colored shirt and cap, particularly if kept wet during the Race, can help. Acclimatization to heat requires approximately two weeks. We recommend training 90 minutes in 90 degree F. heat or greater for at least two weeks prior to the Run if at all possible. If signs of heat exhaustion occur, we recommend rapid cooling by applying ice to the groin, neck and armpits.

Runners may drink approximately one-third or more of their body weight in fluids during this event. This means that an average 150-pound runner will probably drink 50 pounds (50 pints) or more of fluid, depending on the heat factor and individual differences. In 1989, radiated heat off the rocks measured at 114 degrees F. In addition to drinking at checkpoints, runners will need to carry fluids between checkpoints. To accurately measure fluid intake and output balance, weigh yourself before and after your training runs. This will help you establish your personal fluid requirements (especially during the heat of the day). Remember to replace lost electrolytes lost from sweat along with lost fluids. Every runner has different needs that should be determined during training.

3. Risks Associated with Low Sodium and Chloride Counts: Low sodium levels (hyponatremia) in ultramarathon runners have been associated with severe illness requiring hospitalization. It is important for long-distance athletes to use fluids containing electrolytes to replace the water and salts lost during exercise. WATER INTAKE ALONE IS NOT ADVISED, as water intoxication and possibly death may result. This problem may in fact worsen after the Race, as the non-electrolyte-containing fluid which has been accumulating in the stomach is absorbed. Potassium and calcium replacement may also be important, although these levels change less than sodium does with fluid loss and replenishment.

Signs and symptoms of hyponatremia include; weight gain, bloating, nausea, vomiting, headache, confusion, incoordination, dizziness, muscle twitching/cramping and fatigue. If left untreated, it may progress to seizures, pulmonary and cerebral edema, coma and death.

There are two ways to put oneself at risk of hyponatremia; 1) over-hydration (with water or even electrolyte-containing sports drinks) and 2) replacing sweat with hypotonic fluids. Weight gain of greater than 3% should alert a runner to stop drinking, slow down and allow the body to readjust its fluid status through urination of excess fluids, after which electrolyte fluids or high sodium containing foods such as bouillon cubes can be consumed.

Risks of hyponatremia include weight gain (though this is not necessary for the condition to develop), female runners, smaller body size, slower runners, and low sweat rate.

Risks of hyponatremia can be minimized by acclimatizing to the heat, salting foods a few days prior to the Run, matching fluid and electrolyte intake to sweat losses and monitoring weight.

The best way to achieve proper electrolyte and fluid balance is to hydrate with fluids containing proper amounts of electrolytes and to replace with sodium-containing foods or supplements, if required, as determined during your training. Potassium, while present in many electrolyte-replacement solutions, may also be replaced with fruit, such as bananas or oranges. Beer or other alcoholic beverages should not be taken at any time during the Race.

Electrolyte fluids should be continued after the Run until the gut is fully functional, which may take several hours. Once the gut is working and adequate hydration has occurred, the normal balance of thirst, hunger, digestion and kidney filtration will maintain the proper balance of fluids and electrolytes. If your weight is up at the finish line, bouillon and salty soups can be consumed. Water or dilute sports drinks should be consumed only after the onset of urination.

4. Snow Hazards: Snow levels in the high country vary greatly from year to year. Wear shoes with good gripping characteristics, but falling will still be likely. Snow conditions may vary from soft and slushy to rock-hard and icy. Run slowly and with particular care and concentration in the snow.

5. **Effects of Cold/Hypothermia:** Temperatures may be near zero in the high country and drop into the 40-degree to 50-degree range during the night portion of the Run. Hypothermia is a potentially serious risk, especially at night since one's energy reserves will have been depleted from 20 or more hours of running. Hypothermia can strike very quickly, particularly when pace slows from exhaustion or injury. The initial warning signs of hypothermia often include lethargy, disorientation and confusion. The runner will feel very cold with uncontrolled shivering and may become confused, unaware of the surroundings, and may possibly be an immediate danger to himself. Staying well-nourished, adequately hydrated and appropriately clothed will help avoid hypothermia. It is important that runners have access to warm clothing through their support crews, drop bags, or both. If there is any question, carry a light jacket when you leave Foresthill.
6. **Wildlife Hazards:** Rattlesnakes, bears, mountain lions and other potentially hazardous forms of wildlife live on the course and have surprised runners in the past. Keep alert and be careful where you place your feet and hands, especially at night.
7. **Vehicle Hazards:** More than 95% of the Western States Endurance Run is run on mountain trails and fire roads which are closed to vehicles. Nevertheless, there are several areas on the course where runners and pacers must be watchful for automobiles. Some of these areas are:
- **Bath Road to Foresthill:** This portion of the trail parallels Auburn-Foresthill Road. There is a wide shoulder with trail; run on it.
 - **Mosquito Ridge Road:** 0.6 miles after leaving the Foresthill Aid Station, the trail crosses Mosquito Ridge Road, which sees heavy traffic. The crossing has good visibility; stop and look both ways!
 - **Highway 49:** The most dangerous road crossing in the Race is at Highway 49 (93.5 miles into the course). This is also a checkpoint; so there are volunteers and crews available should you require assistance. Traffic is generally heavy. The crossing has good visibility in both directions; once again, stop and look both ways. You will make this crossing at night and in a fatigued condition.
 - **Robie Point to the Finish Line:** The last 1.3 miles of the course are run on the city streets of Auburn. The streets are residential and traffic is light, but run with caution.
8. **Use of Drugs:** No drugs of any kind should be taken before, during or immediately after the Run! Many drugs can increase the risk of heat stroke. A partial list of problem drugs include amphetamines, tranquilizers, and diuretics. It was necessary to remove one entrant from the Run in 1984 because the runner received an injection to help alleviate nausea and vomiting. This runner was at severe risk without realizing it. There is little known about drug reactions with the stress of running 100 miles.
9. **Injuries from Falling:** Falling is an ever-present danger on the Western States Trail, with potentially serious consequences. Much of the trail is narrow, uneven and rutted.
10. **Altitude Sickness:** High altitude plus exertion can produce various degrees of high altitude sickness. This has the potential to progress to severe lung and brain swelling, resulting in death. The treatment is rest and rapid transportation to a lower altitude. The latter is most difficult to achieve on parts of the Western States Trail due to limited vehicular access.
11. **Muscle Necrosis:** It has been found that some degree of muscle cell death in the legs occurs from participation in the Run. The recovery can take several months. This seems to be a bigger problem in runners who become dehydrated or have overexerted themselves. Medical analysis of blood samples taken from Western States runners shows that this occurs to some degree in all runners.

12. **Overuse Injuries:** Obviously, innumerable overuse injuries can occur, especially in the knee and the ankle. Sprains and fractures can easily occur on these rough trails. Blisters have prevented many participants from finishing.
13. **Common Fatigue:** One of the dangers you will encounter is fatigue. Fatigue, combined with the effects of dehydration, hypothermia, hyperthermia, hyponatremia, hypoglycemia and other debilitating conditions can produce disorientation and irrationality.
14. **Poison Oak:** Poison oak can be found in abundance along several sections of the trail, particularly the last 30 miles.
15. **Difficulty in Gaining Access to or Locating Injured Participants:** Much of the Western States trail is remote and inaccessible by motor vehicle. Accordingly, in spite of the many layers of safety precautions instituted by Run Management (including radio communications, rescue helicopters on standby, foot patrols, mounted search and rescue personnel and other emergency services and medical personnel at many checkpoints), there is absolutely no assurance that aid or rescue assistance will arrive in time to give you effective assistance should you become sick, incapacitated or injured. In previous years, ambulances and other emergency vehicles have experienced difficulties in gaining access over remote roads jammed with crew vehicles, and other delays have resulted.
16. **Getting Lost:** Although Run Management endeavors to mark the Western States course, it is definitely possible to lose the trail. If you believe at any time that you may not be on the correct trail, do not attempt to find your way cross country. If you are sure of your route, backtrack to where you last saw a trail marker and try to find other markers showing the direction of the trail. If you are unable to find your way, stay where you are! Wandering randomly will take you farther from the trail and reduce your chances of being found. If you do become injured, exhausted or ill, **STAY ON THE TRAIL.** You will be found there either by another runner, the Safety Patrol, or by the Sweep Riders of the Sierras Mounted Patrol, who monitor the progress of runners during the event. If you feel dizzy, disoriented or confused, do not risk falling. Sit or lie down on the trail until you recover or are found. An unconscious runner even a few feet off the trail could be impossible to find until it is too late. If you are assisted by individuals who are not associated with Run Management and you elect to leave the trail, you MUST notify the official at the nearest checkpoint of your decision to withdraw and surrender your official wristband and pull-tag.

Although medical and other personnel will assist you when possible, remember that you are ultimately responsible for your own well-being on the trail. Only you will know how your body and mind feel at any given time. Monitor yourself during the entire Run, and prepare yourself to drop out at the nearest check-point if you find it just isn't your day. As you continue past each medical checkpoint, be aware of the number of miles to the next one, realizing that getting rescue vehicles into these areas can be difficult, if not impossible. Remember that several of the winners of the Western States have dropped out in some years but have come back to win in others.

VIII. AID STATIONS

Perhaps the one thing that stands out most in the memories of every runner who participates in the Run is the incredible volunteers who work the aid stations. With a staff of over 1,500 volunteers, the support given to the runners is unparalleled. The river crossing alone has a team of 125 personnel. There are 25 aid stations, including 10 major medical checkpoints along the course.

The aid station captains have many years of service at Western States and are professionals. The aid stations are well stocked with fluids and a variety of foods. The fluids that are generally available are: water, GU Brew, Sprite or 7Up and Coke. The night aid stations will also have soup, hot coffee and hot chocolate. The foods that are generally available are: salt replacement foods (saltines, pretzels, chips), GU energy gels, fruits (oranges, bananas, melons), potatoes, cookies, candies, sandwiches, etc. Hot soup will be available at several of the aid stations including the River Crossing, Auburn Lake Trails and Highway 49 Crossing.

The use of Ibuprofen (Advil, Motrin) or Naprosyn can lead to kidney problems when used in abundance and/or under stressful conditions such as running a 100-mile race. We will not provide these medications at our aid stations. If you feel the need to bring and use your own pain medications or anti-inflammatories, then you are willing to assume the responsibility for their use.

Our medical staff also has many years of service at Western States. With a staff of approximately 50 physicians, 75 nurses, podiatrists, emergency medical technicians, paramedics and massage therapists, we feel that we provide the safest and best medical backup in the world. Several of these people have been participants in the Run, making them all the more aware of the needs of the runners.

Without the assistance of these 1,500 invaluable volunteers, there would be no Western States Endurance Run. Many of these volunteers have spent days preparing for the Run and will be at their stations for over 30 hours. They have given up their weekend to insure you the best possible chance of success. Giving each volunteer the courtesy, respect and sincere thanks that they each richly deserve is all that we ask.

IX. CHECKPOINTS, MILEAGE AND CUTOFF CHART

Checkpoint	Dist	Med-check	Drop Bag	Crew Access	Pacer Change	Estimated Pace			Absolute Cutoff
						Leader	24hr runner	30hr runner	
Squaw Valley	0.0	Yes		Yes (multiple)		5:00am	5:00am	5:00am	
Escarpment	3.5			No		5:40am	5:55am	6:25am	
Lyons Ridge	10.5			No		6:35am	7:10am	7:40am	10:00am*
Red Star Ridge	16.0		Yes	No		7:25am	8:20am	9:10am	10:00am
Duncan Canyon	23.8			Yes (1 vehicle)		8:30am	9:50am	11:05am	12:00pm
Robinson Flat	29.7	Yes	Yes	Yes (shuttle)		9:30am	11:20am	12:55pm	1:50pm
Miller's Defeat	35.3			No		10:15am	12:25pm	2:30pm	3:10pm
Dusty Corners	38.0			Yes (1 vehicle)		10:40am	12:55pm	3:15pm	4:10pm
Last Chance	43.3	Yes	Yes	No		11:20am	1:55pm	4:25pm	5:30pm
Devil's Thumb	47.8	Yes	Yes	No		12:20pm	3:15pm	6:05pm	7:00pm
El Dorado Creek	52.9			No		1:00pm	4:20pm	7:30pm	9:45pm*
Michigan Bluff	55.7	Yes	Yes	Yes (shuttle)	After 8pm	1:45pm	5:20pm	8:50pm	9:45pm
Bath Road	60.6			On Foot		2:30pm	6:25pm	10:20pm	11:45pm*
Foresthill	62.0	Yes	Yes	Yes (multiple)	OK	2:45pm	6:45pm	10:45pm	11:45pm
Dardanelles	65.7			No		3:15pm	7:30pm	12:00am	2:30am*
Peachstone	70.7	Yes		No		4:05pm	8:45pm	1:40am	2:30am
Ford's Bar	73.0			No		4:30pm	9:25pm	2:30am	5:00am*
Rucky Chucky Near	78.0	Yes		On Foot	OK	5:15pm	10:40pm	4:00am	5:00am
Rucky Chucky Far	78.1		Yes	On Foot	OK	5:20pm	10:45pm	4:10am	5:40am*
Green Gate	79.8			On Foot (shuttle)	OK	5:45pm	11:20pm	4:55am	5:40am
Auburn Lake Trails	85.2	Yes	Yes	No		6:35pm	12:50am	6:30am	7:00am
Brown's Bar	89.9			No		7:15pm	2:05am	7:50am	9:20am*
Highway 49	93.5	Yes	Yes	Yes (shuttle)	OK	7:55pm	3:10am	9:00am	9:20am
No Hands Bridge	96.8			On Foot	OK	8:25pm	4:10am	9:55am	11:00am*
Robie Point	98.9			On Foot	OK	8:55pm	4:40am	10:35am	11:00am
Placer High School	100.2	Yes	Yes	Yes (multiple)		9:12pm	5:00am	11:00am	11:00am

X. CUT-OFF TIMES

Cut-off and "pace" times are listed on the Checkpoint Chart. Cut-off times reflect the deadlines for LEAVING the aid station. If you return to an aid station after the cut-off, you will be pulled from the Run. The cut-off times will be strictly enforced by the Cut-off Coordinators or Aid Station Captains. Anyone leaving an aid station after the cut-off time will be disqualified. This rule is for the safety of all participants. **IF YOU MISS THE CUT-OFF, YOU MUST STOP.** Significant sanctions will apply to anyone breaking this rule. *Cutoffs denoted with an asterisk are default cutoffs. The cutoff is identical to the cutoff at the next aid station. These cutoffs are intended for emergency use at hard to access aid stations and must be respected.*

XI. DROP BAGS

RUN MANAGEMENT IS NOT RESPONSIBLE FOR LOST OR DAMAGED DROP BAGS AND THEIR CONTENTS

Run Management will provide transportation for drop bags to the locations specified on the Checkpoint Chart. This service is provided to aid crewless runners. **Those with adequate support are asked not to overload our volunteers with unnecessary drop bags.**

Drop bags must be securely tied, labeled clearly with the runner's name and entry number, and deposited at the appropriate collection station established for each checkpoint on the Friday preceding the Run. Drop bags must fit through a 6" X 8" opening and can be no longer than 16". You are limited to one drop bag per aid station. Pacers are not allowed drop bags. The collection station is located near the corner of Squaw Peak and Squaw Valley Road (near tram building), for Race Day distribution. Drop bags must be left between 9:00 a.m. and 1:00 p.m. Please do not use paper bags, shoe boxes, or anything made of paper-like products. These can get wet and tear easily.

It is imperative that runners do not leave perishable items in their drop bags. It is strongly recommended that warm clothing and an extra flashlight be placed in the drop bags that will be delivered to each of the night aid stations. **Do NOT place glass bottles in your drop bags.**

Due to the need for organization and "traffic" control at the aid stations, drop bags must be retrieved only by the runners themselves or by an aid station volunteer. Crews will not be allowed into the drop bag areas.

We cannot facilitate pacer drop bags. Pacer supplies must fit in the runner drop bags.

IMPORTANT

The drop bags will be returned to Placer High School stadium as soon as possible. It is the responsibility of each runner to claim his or her drop bags. If you cannot retrieve your drop bags, have someone else do it for you. **Drop bags must be claimed by 3:00 PM, Sunday.** Drop bags are located on the infield of the Placer H.S. track (finish line). **Any drop bags remaining at the track following the event will be disposed of. There are no exceptions to this rule. DO NOT leave valuables in your drop bags.**

XII. AWARDS

All Western States entrants who finish the Run in full accordance with the rules qualify for one or more awards given in recognition of their achievement.

- 1) The first official male and female runner to cross the finish line within 24 hours will be the winner of the Wendell Robie Cup, a perpetual trophy on which the victor's name will be engraved.
- 2) The first male and female finishers will each be awarded the bronze Western States Cougar Trophy.
- 3) Additional age-group awards will be given to the top three men and women in the following categories: 39 and under; 40-49; 50-59; 60-69, and 70 and over.
- 4) All finishers in under 24:00:00 hours will receive the hand-made silver Western States Endurance Run belt buckle.
- 5) All finishers who finish in a time of 24:00:00 but under 30 hours will receive the hand-made bronze Western States Endurance Run belt buckle to commemorate their achievement.
- 6) All official finishers will receive an attractive finisher's medallion.
- 7) The oldest male and female finishers will receive special awards presented by Dr. Walter and Ruth Ann Bortz.
- 8) Runners crossing the finish line after the 30-hour cutoff will not be listed as official finishers.

IMPORTANT

If you are unable to attend the awards ceremony, please have someone else attend in your place so they can pick up your buckle for you. If you would like your buckle mailed to you, a \$25 mailing fee must be received in the WS office by September 1st. All requests and fees must be received by the September 1st deadline. No exceptions. If you miss the deadline, you will not receive a finisher's buckle.

XIII. FOOD/TRANSPORTATION

The Olympic Plaza staff will provide runners with fruit, juice, coffee, Danish, etc., at 3:30 a.m. on Race morning at the Olympic Plaza next to the start line. Breakfast will be served at the finish line from 8 a.m. to noon on Sunday, and is free to all entrants. Each runner will also receive two breakfast tickets for crew members or pacers.

Supermarkets: There are supermarkets several miles from Squaw Valley in Tahoe City and Truckee as well as in Auburn at the Foresthill exit and I-80. (Hamburgers and soft drinks will be for sale at Michigan Bluff, starting at about noon.) During the day, supplies can also be purchased at Whorton's grocery in Foresthill.

Fluids and food will be provided for all finishers and pacers at the Finish Line Aid Station from 9 p.m. on Saturday to 11 a.m. on Sunday.

Please do not ask Run Management to arrange to have your vehicle driven from Squaw Valley to Auburn. Bus service will be provided on Sunday for transportation from the finish line in Auburn to Squaw Valley. The bus will depart promptly at 3:00 p.m. Seating is limited and MUST BE RESERVED. The bus will be located in front of the cafeteria at Placer High School. Cost is \$45/passenger and must be received at the Western States office by June 15th.

XIV. LODGING

It is highly recommended that reservations for motel rooms be made as soon as you receive notification of your acceptance into the Run. Most motels are generally filled by January.

Auburn:

Super 8 Motel, 140 E. Hillcrest Dr.	(530) 888-8808	www.super8.com
Comfort Inn, 1875 Auburn Ravine Rd.	(530) 885-1800	www.comfortinn.com
Foothills Motel, 13431 Bowman Rd.	(800) 292-5694	www.foothillsmotel.ws
Best Western, 13450 Lincoln Way	(530) 885-8611	www.bestwestern.com
Holiday Inn, I-80 and Highway 49	(530) 887-8787	www.holiday-inn.com

Roseville/Rocklin area is 15 to 20 minutes from Auburn.

Roseville/Rocklin:

Larkspur Landing, 1931 Taylor Road	(916) 773-1717	www.larkspurhotels.com
Best Western, 220 Harding Blvd.	(916) 782-4434	www.bestwestern.com

Squaw Valley:

Squaw Valley Lodge (Race Central)	(800) 549-6742	www.squawvalleylodge.com
Alpine Rental Group(condos): Linda or John	(530) 583-3550	www.tahoerentals.net
Olympic Village Inn	(800) 845-5243	www.olympicvillageinn.com
Resort at Squaw Creek	(800) 327-3353	www.squawcreek.com
Village at Squaw Valley USA	(866) 818-6963	www.thevillageatsquaw.com

Truckee:

(20 minutes from Squaw Valley)		
Larkspur Hotel, Truckee - Tahoe	(530) 587-4525	www.larkspurhotels.com
Inn at Truckee	(888) 773-6888	www.innattruckee.com

Tahoe City:

(15 minutes from Squaw Valley)		
Alpine Rental Group(condos)	(530) 583-3550	www.tahoerentals.net
Lake of the Sky Inn	(530) 583-3305	www.lakeoftheskyinn.com/
Pepper Tree Inn	(530) 583-3711	www.peppertreetahoe.com
Tahoe City Inn	(800) 800-8246	www.tahoeinn.com
Tahoe Marina Lodge	(800) 748-5650	http://tahoeml.com
Tamarac Lodge Motel	(530) 583-3350	www.tamarackattahoe.com

For condos and homes in Squaw Valley and Alpine Meadows area, contact: John or Linda at: (530) 583-3550.

Further lodging information can be obtained from:

Tahoe Visitors and Convention Bureau, 950 North Lake Blvd., Tahoe City, CA 95730, (800) 824-6348

Auburn Chamber of Commerce at 601 Lincoln Way, Auburn, CA 95603, (530) 885-5616.

XV. RACE WEEK AGENDA

WEDNESDAY, JUNE 20

3:00 p.m. Clinic - Fulfilling the Dream: Finishing the WS100 Run.

Informal discussion for first-time runners. Meet in Olympic Plaza near fountain. Bring a chair.

THURSDAY, JUNE 21

10:00 a.m. Trek to Flag Raising at Emigrant Pass

Run, walk or ride the tram to the summit for inspirational remarks, a great view and group camaraderie. Meet in front of the tram building. Short program will begin on the summit at high noon. Wear layered clothing and allow enough time to **reach the summit by noon.**

1:00 p.m. Blisters - Prevention and Care - Meet in Olympic Plaza near fountain. Bring a chair.

2:30 p.m. Clinic - Crewing the Western States Run

Meet in Olympic Plaza near fountain. Bring a chair.

4:00 p.m. Western States Trail Clinic

Detailed course description and advice from trail veterans. Meet in Olympic Plaza near fountain. Bring a chair.

5:00 p.m. Medical Clinic

Discussion of some of the physiologic stresses of the Run by the Medical Director and staff. Meet in the conference room at the Squaw Valley Lodge.

FRIDAY, JUNE 22

9:00 a.m. - 1:00 p.m. Race Registration and Medical Examination

Located near the start line at the Olympic Plaza. Attendance by all runners is mandatory.

9:00 a.m. - 1:00 p.m. Drop Bag Delivery

Runners must leave drop bags at collection area near the corner of Squaw Peak and Squaw Valley Road (near tram building), for Race Day distribution to checkpoints.

1:30 p.m. Pre-Race meeting

Trail briefing on lawn behind tram building. Attendance by all runners is mandatory. Bring a chair.

To follow: Brief question and answer session for crews will be held.

SATURDAY, JUNE 23

3:30 a.m. Complimentary Breakfast. Served inside Olympic Plaza near the start.

4:00 a.m. - 4:50 a.m. Pre-Race check-in and bib number hand-out.

Located inside the Olympic Plaza. Mandatory. Any runner not checked in will be disqualified.

5:00 a.m. The Start!

SUNDAY, JUNE 24

5:00 a.m. Silver Buckle winners have finished.

11:00 a.m. Bronze Buckle winners have finished. End of Run.

8 a.m. - noon. Breakfast served at the finish line. Free to all entrants. Each runner will receive two breakfast tickets for crew members or pacers.

12:30 p.m. Presentation of Awards near the finish line at the Placer H.S. track.

IMPORTANT

If you are unable to attend the awards ceremony, please have someone else attend in your place so they can pick up your buckle for you. Finisher buckles may also be picked up by a designated crew member between 8 a.m. and noon at the finish line tent. If you would like your buckle mailed to you, a \$25 mailing fee must be received in the WS office by September 1st. All requests and fees must be received by the September 1st deadline. No exceptions. If you miss the deadline, you will not receive a finisher's buckle.

Drop bags must be claimed by 3:00 PM, Sunday Drop bags are located on the infield of the Placer H.S. track (finish line). Any drop bags remaining at the track following the event will be disposed of. There are no exceptions to this rule. DO NOT leave valuables in your drop bags.

XVI. CREW INSTRUCTIONS

Familiarity with access routes to the major checkpoints will be of considerable benefit to those crewing the Western States Run. Because access roads are extremely narrow and parking is limited, please obey the "No Parking" signs. Failure by crews to observe parking and access instructions can lead to the disqualification of their runners. Crews must always observe safe speeds; there is adequate time to travel between major checkpoints and greet runners as they come in.

CREW "A" INSTRUCTIONS

If you have one crew, we strongly suggest that they follow the instructions listed for Crew "A."

1. Squaw Valley to Robinson Flat -- Allow 2½ hours. Take I-80 West. Exit at the Foresthill exit. Turn left. Follow the Foresthill Highway approximately 17 miles into Foresthill. Continue on this same road approximately 34 more miles to Robinson Flat. A shuttle bus service is provided from the Sailor Flat parking area, approximately four miles south of Robinson Flat. It is a 20-minute uphill walk from Robinson Flat to the Little Bald Mt. Aid Station.
2. Robinson Flat to Michigan Bluff -- Allow 1¼ hours. Go back on the Foresthill Highway, approximately 30 miles. Turn left on the road to Michigan Bluff and go approximately three miles. This is a very steep, winding road; so proceed with caution.
3. Michigan Bluff to Foresthill -- Allow 20 minutes. Return to the Foresthill Highway. Turn left. Go approximately 4 miles to Foresthill.
4. Foresthill to Highway 49 Crossing -- Allow 1 hour. Go back on the Foresthill Highway towards I-80 (approximately 17 miles). Turn left at the signal light (Lincoln Way). Continue along Lincoln Way to the intersection of Highway 49. Turn east (left) onto Highway 49 and proceed 2 miles down the steep, winding road. Turn right at the first bridge (You will notice No Hands Bridge 200 yards down river on the right), cross the American River, and proceed uphill for 3.3 miles to Cool. Park in the lot on your right just past the Cool Firehouse. Shuttle service is provided and will transport crews and pacers to the 49 Crossing aid station beginning at 6:30 p.m. Absolutely no parking or stopping at the aid station is allowed. The highway and its shoulders are narrow and vehicles are moving very fast. The CHP will be monitoring the aid station; anyone parking or stopping on the shoulder of Hwy. 49 will be ticketed.
5. Highway 49 Crossing to Green Gate -- From the town of Cool continue south on Highway 49 for .2 miles to Highway 193. Turn left and travel 6.3 miles. You will see the Calvary Chapel Church on your left. Park in the church parking lot (please don't block any cars so they can't get out) and board the shuttle bus that will take you to the end of Sliger Mine Road. From there it is a 1¼ mile hike to the Green Gate aid station and an additional 2 miles to the river. The route is a steep and uneven dirt road. Wear hiking shoes.
6. Highway 49 to Finish Line -- Allow 30 minutes. Return towards Auburn on Highway 49. Cross the bridge over the American River and make an immediate left. Follow the highway uphill for 2 miles. Continue straight on Highway 49. It will become High Street, heading west. Continue on High Street and turn left onto Finley Street, follow three blocks to the stadium.

If you have two crews, second crew should use Crew "B" Instructions.

CREW "B" INSTRUCTIONS

1. Squaw Valley to Dusty Corners -- Allow 3 hours. Take I-80 West. Exit at the Foresthill exit. Turn left. Follow the Foresthill Highway approximately 16 miles. Turn right onto Mosquito Ridge Road. Go approximately 23.5 miles, and look for "Road N-44" sign. This is a VERY steep, winding road; so proceed with caution. Turn left onto Road N-44. This is a chip-seal road for 2 miles that becomes a dirt road. Total distance along N-44 is about 5 miles. Follow this road to the aid station. Do not take the road to Robinson Flat (closed to crews). **You must park in designated off-road parking areas only!**
2. Dusty Corners to Michigan Bluff -- Allow 2 hours. Drive back out to Mosquito Ridge Road. Turn right and return to Foresthill. Turn right at the Foresthill Highway. Go approximately 4.5 miles. Turn right on the road to Michigan Bluff, and go approximately 3 miles.
3. Michigan Bluff to Finish Line -- See Crew "A" instructions.

XVII. TRAINING FOR THE WESTERN STATES 100

By John Medinger

"Those who cannot remember the past are condemned to repeat it."
- George Santayana

In developing a training program for Western States, it is instructive to look first at the reasons why runners do not make it to the finish line. The most common reasons are:

- heat and dehydration
- "my quads are shot"
- nausea and vomiting
- "I'm completely out of gas"
- Bucklemania and other brain cramps
- injuries
- altitude problems and/or snow

Let's examine these one-at-a-time and get acquainted with what to do and what not to do.

Heat and Dehydration: This, by far, is the most common reason for "dnf's" at Western States. It typically is very hot during the Run. The average high temperature in Auburn at the end of June is 92°F (34°C) and it is not uncommon for Run day temperatures to exceed 100°F. And remember, official temperatures are measured in the shade. You will be in the sun much of the afternoon, and the June sun adds about 30°F to the "feel" of the temperature - so, when it's 90°F in the shade and you are in the sun, it will feel like 120°F.

The relative humidity at Western States is typically very low, often less than 20%. This is good news, since it means that your sweat will evaporate very quickly. It is this evaporation that cools your body. However, for those who are used to more humid climates, it may not seem like you are sweating all that much, since you won't be as wet as you are used to. This does not mean that you don't need to drink as much.

How much do you need to drink? Everybody is different and some years are hotter than others. Having said that, most runners will need 20-30 ounces of water (0.5-0.75 liters) per hour during the hottest parts of the race, and less during the cooler times.

There are two clear indications of how you are doing on hydration during the run. One is your weight. You will be weighed on Friday before the Run and should expect to lose about 2% to 3% of your pre-Run weight during the entire run to maintain normal hydration. If your weight is lower than that, then you are becoming dehydrated.

Frequency of urination. This is a tough one, since infrequent urination doesn't necessarily mean you're dehydrated. Dark urine will usually mean you are dehydrated. If your weight is down and urine is dark or non-existent, be mindful that you need to continue to hydrate with electrolyte fluids until your weight is back up to within a couple of pounds of your starting weight.

Some runners will maintain pre-Run weight or even gain weight during the Run. This is an indication that your system is not processing fluids as fast as you are taking them in. Gaining significant weight can lead to hyponatremia, a potentially dangerous condition where your body does not have enough sodium. It is just as important not to gain too much weight as it is not to lose too much. We recommend weighing yourself before and after your training runs to get a sense of your individual hydration needs.

Maintaining the proper electrolyte balance is a very important factor in maintaining proper weight and getting to the finish

line. Too few salts, and you run the risk of cramping or worse. Too many salts, and you may store fluids and gain weight, or worse, stop being able to process fluids entirely. It is important that you experiment in training with both salt and fluid intake and find out what the right amount is for you. Every runner has different needs and even for an individual runner it will depend on how well heat trained you are. After about 10 days of training in hot temperatures (above about 80°F), your body will automatically start holding onto salts more efficiently. It is simply one of the ways that your body adapts. For many runners in the Run, finding a place to train in hot temperatures in late May and early June is easy. It certainly is the most desirable way to prepare for the heat during the Run. For others who live in cooler climates, this may not be possible. For everyone, we recommend experimenting with electrolyte replacement strategies during training to find out what works for you. The medical research team has estimated that runners lose between 200 - 1100 mg of sodium per hour. Your body can use some of the sodium it naturally has stored, so you won't need to take in quite as much as you lose. But most runners find they need to use some sort of salt supplement during the run to maintain proper electrolyte levels

Another way to help alleviate the heat is to douse yourself with water at every opportunity. The Western States course has many small stream crossings; at each one, take your hat or a handkerchief and scoop some water, wetting down your head and neck. This will cool you in the same manner as sweating.

“My quads are shot.” Western States is a downhill course. There are several very long downhill stretches, where you may be running downhill for an hour or more. This is very abusive to your quadricep muscles, which will absorb much of the pounding. The only way to get your legs used to this is to train on long downhills prior to the Run. Many of the local runners spend hours and hours in the canyons prior to race day. For those who live outside of northern California, it is recommended that you find a steep hill that is at least 3 miles long and practice running down it. For those who do not live in an area that doesn't offer that kind of terrain, you may find that you can achieve some of that training effect with weight training specifically oriented toward your quadriceps.

On the long downhill stretches of your training runs, try to develop a fluid running pattern that allows you to run downhill in a very relaxed fashion. Concentrate on letting the energy of the pounding flow all the way through your body. Avoid at all costs the practice of using your legs as brakes to slow you down on the really steep pitches. Nothing will use up your quads faster than this.

By the time you reach Foresthill (mile 62) during the Run, you will be done with most of the tough climbs. The stretch from Foresthill to the finish line is actually fairly gentle terrain. But you have to have enough left in your legs to be able to do something with it. Those who do well are the runners who are rugged enough to persevere to Foresthill and then are able to run the more moderate downhill and flat terrain from Foresthill to the finish line.

Nausea and vomiting: This is a particularly vexing problem; nothing will shut you down faster than a bout of nausea. The causes of nausea are many. They include dehydration, running too fast (relative to your ability and training), electrolyte depletion, overheating, and sometimes, simple exhaustion. In many cases it is simply your body's way of protecting itself. When the body gets into extreme situations, it automatically starts shutting down non-essential systems to protect the vital organs (heart, liver, kidneys, etc.). One of the first systems that it typically shuts down is the gastrointestinal tract. As you keep running, your muscles are calling for more energy and more fluids. So you continue to eat and drink. But as your gastrointestinal system is shutting down, it no longer is processing the food and drink (or is doing so at a significantly reduced rate). You will often experience a sensation that is described as a “sloshy” stomach. Eventually, all that non-processed food and drink has to go somewhere and so it comes back up.

How do you prevent bouts of nausea? There are no sure-fire cures. Directionally, it seems to help many runners to eat solid foods periodically from the start of the Run. Upon the first symptoms (“sloshy” stomach, or queasiness), slow down. Better to give up a few minutes the next few miles than to spend a couple of hours later on in a chair somewhere. Many runners have reported that taking additional salt at this point helps empty their stomach. Sometimes sucking on ice chips can help. Some report that eating something really bland, like a couple of slices of bread, will help. Carbonated sodas like 7-Up sometimes help. Burping or belching is generally considered a good sign - an indication that your stomach is processing stuff again. DO NOT eat or drink anything new on race day. This is not the time to experiment.

What do you do after you have started throwing up? Again there is no absolute consensus. Some runners recommend trying to get it all out of your system. Stop and sit for a while if you have to, but try to keep moving at whatever pace you can muster. Vomiting will empty your stomach of both food and fluids. At some point - the sooner the better - you will need to replace them. Energy gels, such as GU, PowerGel, or ClifShot, are designed to be eaten on an empty stomach. And your stomach will probably never be emptier than this! GU comes in an unflavored version, which may be the most palatable on a nauseous stomach. It is important to try to start eating and drinking again as soon as you can. Once you have vomited enough to have emptied your stomach, you probably only will have 2-3 hours of energy left in your system; if you don't start generating new energy sources you will probably not be able to continue much beyond that. Some runners report that once they get everything out of their system, they start to feel much better in about an hour. Others take many hours to recover. Let's hope that if this happens to you, you are among the former!

"I'm completely out of gas." This, generally, is one problem that can be fixed. Most runners will experience "flat stretches" where they just don't have much energy. This is usually reflective of low blood sugar and can be remedied by eating and drinking. But beware of the quick fix. Simple sugars will make you feel better quickly, but are so quickly consumed by your body that you will often experience a crash about a half hour later. What is usually best here is a combination of quick energy and some longer-lasting food sources. Again, energy gels (such as GU) are designed to be eaten on an empty stomach and are effective at getting some energy quickly. Combine a couple of packets of gel with a sandwich, soup, or some other food of substance. This combination will be the most effective means of giving you the combination of short and long-term energy sources you will need to make it to the finish. Many runners report that, once you get behind in your energy intake like this, it is difficult to catch back up completely. So, you might expect to suffer from the "low blood sugar blues" at periodic intervals for the rest of the Run. Each time, the remedy is the same: eat and drink!

Bucklemania and other brain cramps: Many runners' focus is on that beautiful silver buckle. Breaking 24 hours is a worthy goal. At the same time, it should be recognized that the main goal is to make it to the finish line. Finishing Western States - no matter how long it takes - is a tremendous accomplishment! Recognize that typically fewer than 20% of the folks toeing the starting line at Squaw Valley will finish the Run in less than 24 hours. If you do not typically finish in the top 20% of runners in other ultras, chances are you won't here, either. Setting an unachievable goal for yourself is a recipe for disaster in something as difficult as running 100 miles. Your number one goal should be to simply finish.

The first half of the Run is mostly physical. The second half of the Run is mostly mental. If you spend the first half of the Run worrying about splits, who you are ahead of and who's ahead of you, chances are you won't have the mental energy it takes to get through the second half of the Run. Take the day as it comes and run your own race. Don't let yourself get too caught up in competing for position in the first half of the Run. Instead, spend the first half of the Run running well within your abilities, and concentrate on eating and drinking. You will be surprised how many runners you will pass later on. Experienced runners often say that the race really starts in Foresthill. Heed their advice.

Injuries: Every year there are several runners who are unable to finish due to injury. Injuries can be separated into two categories, chronic and acute. Chronic injuries are the most common form for distance runners. They are usually the result of overuse. Many runners will stubbornly stick to their training programs and try to "run through" the injury. Sometimes this works, often it does not. Among veteran runners, it is an axiom that it is better to show up at the starting line a little under-trained than it is to show up a little injured. Common runner injuries such as plantar fasciitis, patellar tendinitis, and iliotibial band syndrome are usually easier to deal with if aggressively treated in their infancy. Once they get well-established, they can be very persistent. It is better to take a few days off in April than to be hobbled at the starting line.

Acute injuries - ones that occur during the Run itself - are usually things such as sprained ankles and abrasions from falls. Check with the medical personnel at the next aid station; they will help you make the determination as to whether you are doing any permanent damage or not by continuing. If you are risking permanent damage by continuing, by all means stop! There's always another day.

Altitude problems and snow: Even though the first 30 miles of Western States average about 7500 feet of elevation, few

runners have significant problems with the altitude at Western States. Some runners may experience headaches, dizziness, or nausea in the early stages of the Run, but there have been relatively few reports of serious difficulty with the altitude. If you have a history of problems at elevations in the 7000 foot range, it would be a good idea to acclimatize at altitude for two weeks prior to the Run, if at all possible. For most participants, the worst thing that will happen is that the altitude will slow you down a little.

Snow in significant amounts is a relatively infrequent visitor to the Run. Since 1974, there have been seven years where snow has been a significant factor. Run management will keep you posted during the spring as to expected snow conditions for the Run. If it looks like it will be a significant snow year, it is a good idea to practice running in snow if you can. Even the alternative "snow courses" used in 2010 and 2011 had several miles of snow running. Running in snow is often treacherous; most runners will fall several times. Shoes with a very aggressive outer tread seem to work best. Also, runners will probably want to change shoes at Duncan Canyon; one of the effects of several hours of running in snow is that the mid-soles of your shoes will freeze and become rock hard, depriving you of the cushioning you will need once you get out of the snow.

Training. OK, now that we've talked about all the things that can go wrong, let's talk about training. First, you should start thinking in terms of hours instead of miles. Second, your training should be as specific as possible. Western States is a trail run, with many very demanding climbs and descents, and usually run in very hot weather. The more that you can mimic these conditions in your training, the better off you will be. A training run from Michigan Bluff to Last Chance and back might take you seven hours, but it is only about 25 miles. This will do you much more good than a 30 mile run on flat roads that might only take you 5 hours.

One hundred miles is a very long way to run. There is a temptation to think that you must do mega-mileage in order to be able to attempt running this far. You will hear stories of elite runners who train at 120 or 150 miles per week. But, unless you are truly an elite runner, mega-mileage training is not recommended. Elite runners are elite because they are blessed with biomechanics that few of us can even dream of. These talents and abilities allow them to run faster and more miles without becoming injured. When the average runner attempts a similar schedule, the results can be disastrous, usually resulting in serious injury.

It is not necessary to run 100 miles a week to finish Western States. Many runners are able to finish on about half this amount. Everyone has their own formula for what they consider an optimum training program. The key to most training programs is a weekly long run. It is important to stress your body (but not to the breaking point) and then allow it to recover before stressing it again. Reduced to its simplest form, training is all about stress and recovery. Everyone has a different breaking point, but it seems that many ultra runners can handle up to about six hours of running without significantly breaking down their muscles. If you run longer than that, such as in a 50-mile trail race, you will find yourself stiff and sore for a few days. While this is occasionally acceptable or even desirable, it is not something that most runners can handle on a frequent basis.

Start your buildup in January, slowly increasing your total time and distance during the first three months of the year. In order to be able to do the heavy work that is required during April and May, you will need to develop a significant base during January through March.

A typical training program for the months of April and May might look something like:

Monday	rest, or 45 minutes easy
Tuesday	60 to 90 minutes
Wednesday	2 to 3 hours
Thursday	rest, or 45 minutes easy
Friday	60 to 90 minutes
Saturday	5 to 6 hours
Sunday	1 to 3 hours, slowly - even walking

Depending on the terrain and your speed, this will give you somewhere between about 50 and 90 miles in a week. Once a month or so, it is good to do a longer training run of 8 to 10 hours, or a 50-mile race. Use these longer efforts to simulate what you will want to do during Western States. Practice eating, drinking, changing shoes and clothes, etc. If you are running in a race, do not be too concerned about your competitive position. You may well be a little slower than normal since you are in the middle of your heavy training period. Keep your eye on the big prize!

Other tips. Many runners incorporate a weight lifting routine into their training. It is important to have strong abs, and also strong arms and shoulders. Carrying a water bottle for 100 miles will definitely make your arms tired! Weight lifting should emphasize light weights with many repetitions. A rule of thumb is: if you cannot do three sets of 20 reps, you are using too much weight. Curls, bench press, upright rowing, lunges, and crunches are typical exercises that will be beneficial.

Train on trails whenever possible -- the more hilly and rougher, the better. Train in hot weather whenever possible. This should be obvious, but again, think specificity.

Practice walking. Most runners will walk most of the uphill and many runners will incorporate large amounts of walking toward the end of the Run. Being able to hike aggressively will get you there a lot faster than walking slowly.

If you do not have any experience in running on trails at night with a flashlight, you should practice this also once or twice. This is also a good opportunity to test your nighttime lights. Some runners prefer headlamps, others prefer hand-held flashlights. A few even use waist-mounted fluorescent lights. Each causes their own special problem in adjusting to the dark. Whatever you use, we recommend strongly that you carry a spare light of some sort in your fanny pack, and place an additional spare light in each of your nighttime aid station drop bags. Virtually every experienced runner has "flashlight stories." Don't make the mistake of trying to save a few dollars by not having extra lights and risk ruining your race.

Blisters. While blisters don't account for many "dnf's" they do cause a lot of runners problems. They can slow you down significantly and create a painful aftermath. You should expect that the trail grit and dust will permeate your shoes and socks - even if you wear trail gaiters. This, combined with wet feet from stream crossings and from your own sweat, is a perfect breeding ground for blisters. In your training, you should experiment with blister prevention techniques, such as putting Compeed® or duct tape on friction points, ointments such as vaseline or bag balm, frequent sock changes, etc. Many runners change shoes and socks at Robinson Flat (3 miles after Duncan Creek crossing) and at the far side of the Rucky Chucky River Crossing. You probably should plan to do the same, especially if you are blister-prone.

Beware of the chair! To the best of our knowledge, no one has ever finished Western States while sitting in a chair! If you must take a break at an aid station, allot yourself a modest amount of time (5 minutes) and then force yourself to get up and leave. The longer you sit there, the better it will feel, and the more likely you won't leave the aid station. Some runners will even practice sitting for 5 minutes and then getting up and going on in their training runs. Focus on relentless forward motion. When you can, run. When you can't run, walk. When you can't walk, walk anyway.

Tapering. It is recommended that you include a tapering period prior to race day, to assure that you are well rested and not over-trained on race day. Most runners will start to taper their training two to three weeks prior to the Run. Typically, the penultimate week should have a total mileage not more than half of what you have been doing in the previous couple of months (i.e., if you have been running 60 miles per week, this week should not be more than 30.) In addition, your longest run should not be more than about two hours. The week of the Run itself, most runners like to do very little. Perhaps a 20 or 30 minute run or walk each day, just to burn off a little of the nervous energy that almost always precedes the Run.

Pre-hydration. It is not a good idea to consume large quantities of fluids in the days before the Run. Extra fluids simply get urinated away and over-drinking puts you at higher risk of hyponatremia. The concept of "cameling up" before a run has been completely debunked. All medical research now suggests that you simply drink when you are thirsty. It doesn't get much simpler than this!

Mental preparation. Every runner has his or her own approach to getting mentally ready for a race. We wouldn't begin to tell you what might work for you or suggest that you change whatever your normal mental preparation might be. We only caution you to follow it. It is very easy to get caught up in all the excitement that surrounds Western States in the days immediately prior to the Run and get away from your normal mental preparation. Try not to get too caught up in this and risk losing your normal focus.

Mental approach during the Run. Most runners find it much easier to assimilate the concept of running 100 miles by breaking the race into small segments. First, break the race into maybe four large segments: the high country (start to Robinson Flat), the canyons (Robinson Flat to Michigan Bluff), the tough third quarter (Michigan Bluff to the River Crossing) and the victory stretch (River Crossing to the finish line). Develop a basic strategy for each section, such as:

- High Country: Stay relaxed, take it easy, focus on eating a lot
- The Canyons: Float on the downhill, hike hard on the ups, don't overheat, focus on staying hydrated in the afternoon heat
- The Third Quarter: Don't stop eating! Concentrate on working hard, focus on pushing through the pain. Get your game on: the race starts here.
- The Victory Stretch: Keep moving forward, beware of the chair, smell the barn!

Within each section, your mental focus should be on eating and drinking and making it from aid station to aid station. If you are at mile 60, running 40 more miles might well seem impossible. But surely you can make it another 3 or 4 miles to the next aid station. So focus on that instead. Constantly monitor your body and take the time to take care of any little problems before they become big problems. And don't forget to have some fun, enjoy the scenery and the camaraderie of your fellow runners. After all, this is recreation!

**XVIII. FLUID & ELECTROLYTES 101:
RECOMMENDATIONS FROM THE TRAIL AND MEDICAL TENT**
Lisa S. Bliss, MD

Maintaining fluid and electrolyte balance during the Western States Run seems to come naturally to many runners. They just eat and drink and run and are merry. For others, it's not so easy. They eat and drink and slosh and puke and lose and gain weight and become sick and confused about what they are doing "wrong" and, even more, what they should do to better their situation so that they can make it to the finish line in one piece.

I will attempt to answer some common questions that come up in training for and participating in the Run. I must first toss in the important disclaimers that 1) fluid and electrolyte balance is far more an individual art than a science, 2) what works for one person might not work for another, and 3) knowing what works best for you in *practice* is the most important way to answer these common questions. There is *no substitute* for trial and error, practice and experience!

That said, here are some answers to the questions I frequently hear.

My weight is down and I feel fine. Should I do anything special?

Weight is the simplest indicator of hydration status available to runners in training and on the course. Some weight loss during WS is expected and acceptable. In general, 2% weight loss is considered "acceptable." All things being equal, if you are down 2% of your weight, you can drink a little (1 pint fluids = 1 pound weight OR 1 liter fluids = 1 kg weight) and get your weight back up. No big deal. The concern in longer arduous runs like Western States is that, well, you have to run 100 miles, so an early trend towards dehydration, if not turned around, could mean that you will continue to lose weight during the run, putting yourself eventually at risk of dehydration further down the trail. At WS, we like to have runners stay close to their starting weight, not more, not too much less, simply because you have a long, long way to go. Even as little as 3% weight loss can affect performance by putting strain on the body's cardiovascular system. Additionally, staying hydrated will keep muscle breakdown materials (myoglobin) flushing through the kidneys. So, if your weight is down and you feel good, just slightly increase your fluids and continue on your way down the trail.

My weight is down and I'm puking? How can I stop puking?

This is a little trickier. For some, puking is a common part of their ultra experience. Certainly, the stomach can simply rebel, and getting rid of all the stuff that's been sloshing around in there can be liberating. Many runners say they feel much better after puking and can "start anew" with fluid and calorie replacement without any problems. Puking, in that sense, seems to be part of the solution to a problem. But what if puking is the problem itself? What if it can't be stopped, and despite an ultra effort, calories and fluids refuse to be absorbed from the gut and you become more and more dehydrated and fatigued? In this case, the runner should stop or walk and let the body rest because the body needs that fuel to propel it down the trail. You must let your gut recover.

As you know, running an ultra is stressful on the body....way more stressful than many even think they know it to be. When you place demands on your muscles to keep moving you forward, the blood in your body gets "shunted" to those muscles to fuel them with the oxygen they need to work. And if the muscles are hogging the blood, then some other parts of the body must be sacrificed at the expense of the muscles. Unfortunately, the gut is often sacrificed. And if you keep shoving precious fluids and calories into a gut that cannot absorb them, then they have to go somewhere, and they may come back up and out. So, if your weight is down and you cannot keep fluid and calories down, then you must slow down or stop – decrease the work of the muscles and let the blood get back to the gut so that it can work and absorb like it's supposed to. Unless you can run without fluids or calories (not recommended at WS!), this is your best bet for remedying the problem. Remember too that heat can exacerbate this problem. That's because much of the body's blood is also "shunted" to the skin to facilitate sweating and thus cooling, leaving even less for the muscles and gut. So, if the body is hot and you are sweating profusely and your weight is down and you cannot stop puking, you must cool down your body first. When running in the heat (and you are likely to encounter some in the Canyons), Ice is Nice! Dousing your head and trunk with water also

aids in cooling. Cool the body first, then try to resume fluids and calories. Some tricks worth trying (which may not overwhelm the gut while you are slowing down and letting the blood redistribute back to the gut) are sucking on ice or hard candy, and sampling other simple calories like gels that don't require significant processing by the gut. Some runners find that ginger in various forms can be helpful as well.

My weight is up and I feel fine. Is that OK?

Weight gain is fluid gain. You can acquire too much fluid by too much input (drinking) or not enough output (e.g. low sweat rate in slow runners or in cooler temps, or not peeing out the extra because of ADH) or both.

I repeat: weight gain is fluid gain. The weight of salt is obviously negligible. There is also some contribution from foods, but the dry weight of food is not the primary reason for weight gain. If your weight is up, think fluid, not salt. Sure, it is true that salt can cause you to retain fluid if you take too much, but weight gain reflects the amount of fluid on board and therefore it is the fluid that must go if you are gaining weight. Cutting salt while continuing to drink will not solve the weight gain problem (even if you have "overdone it" on the salt). Similarly, adding salt to an already fluid overload problem will not solve the weight gain problem. This will only cause an overload of both, which is difficult to remedy. The ONLY way to solve the weight gain problem is to get rid of the extra fluid. So, if your weight is up, the most important question to ask yourself is, What should I do with my fluids? Try to keep it simple.

That said, what holds true for weight loss also holds true for weight gain: a little weight gain is usually not harmful – IF you feel fine. Still, in that case, you *definitely* should decrease your fluid intake so that your weight is down by the next medical check. Do NOT continue the same rate of fluid intake because, well, it's too much! Always remember that if your weight is up, you are in NO WAY in danger of dehydration; you are, in fact, overhydrated. So, decrease the fluids and get your weight back down. If you are feeling fine and urinating fine, then simply decrease your fluid intake and reassess at the next medical check. If you are feeling fine but you are NOT urinating, then the situation is a bit more precarious. That's because if you keep drinking and sweating at the same rate, and you are not eliminating those excess fluids, your weight will go up quicker and you are putting yourself at risk of the dangerous, much talked about, fluid overload hyponatremia, where your sodium literally drops too low from getting diluted in the blood. So, remember, just because you are feeling fine at one point doesn't mean you will be feeling fine down the trail. Take care of the little things as they come up, make small adjustments early, and prevent problems down the trail.

So how much is "a little weight gain?" Dang! I wish you didn't ask me that! That's a tough one to answer. Let me just say that it depends on how you feel. If you run into Michigan Bluff and your weight is up 3% and you're feeling great – with NO problems – then you should follow the advice of "continue on but decrease your rate of fluid intake so that your weight is back down at the next medical check." If, however, you stumble into MB and your weight is up only 2% but you are NOT feeling fine, and you have symptoms of hyponatremia (including headache, nausea, vomiting, dizziness, lack of coordination...think "intoxication"), then that "little" amount of weight gain for you IS harmful and you should stop drinking and follow the directions of the aid station personnel. This doesn't necessarily mean your race is over, but if you don't take care of the problem, it certainly may be! The bottom line is, if you are overweight and feeling fine, decrease your intake and get your weight back down. Take care of it early to prevent trouble later, and beware of repeating the same thing later in the Race!

Remember that one way to lose fluids from the body at WS is through sweating. Sweat rate also increases with a faster pace, and decreases with a slower pace. That may seem obvious but there are a lot of runners who believe if they are slower and "out there longer" that they are more likely to get dehydrated. Reality is, these runners not only sweat less, they also have more time to drink. They are actually at a greater risk of becoming fluid-overloaded. Also, smaller body types have less room for error when it comes to maintaining a proper sodium concentration in the body. So, smaller folks are also more at risk of getting fluid overloaded, just because it is easier - based on total body water - to do so.

Note that a runner does not have to gain weight to develop hyponatremia. One can be dehydrated and still get it. This usually occurs in faster runners who sweat out a lot of fluid and electrolytes and inadequately replace both. Symptoms are similar in either setting.

My weight is up and I feel horrible! What should I do?

Simple. First, stop drinking. Second, pee. Putting more fluids (including electrolyte drink) into an already fluid overloaded body that feels shitty is asking for trouble. So, no water, Gatorade, GU2O or even IV fluids! The only acceptable thing to imbibe is a concentrated sodium mixture, like 4 bouillon cubes mixed in 4 oz of water or soup broth with an extra bouillon cube or two mixed in. The goal is to get a little sodium while NOT adding extra fluids. Salty foods are ok too. BUT, that's just the initial step. You are not cured just by doing this! You should not continue down the trail doing the same thing and expect different results, i.e. to feel better. Depending on how you feel (or how you present to the medical personnel), more needs to be done....and peeing is key. You must rid your body of the extra fluids. And sometimes this is the toughest part of running an ultra....making yourself pee off extra fluids when your weight is up and you feel shitty. Continue on....

My weight is up and I can't pee. So now what should I do?

Under "normal" conditions, if you drink too much, you simply pee it out. However, there is not much "normalcy" in running a 100 mile race through elevation, temperature, and diurnal changes! Running WS puts your body under a great deal of stress. One of the body's common reactions to stress is the secretion of a hormone called ADH (Anti-Diuretic Hormone). Remember that a diuretic (like coffee) causes you to urinate more. So, an anti-diuretic causes you to urinate less or not at all, depending on the level of the hormone in your body. Under "normal" conditions, if you drink a lot of fluids, ADH is suppressed, and this cues the kidney to "diurese," i.e. pee out the extra fluid. However, under stressful conditions, sometimes ADH is *inappropriately* released and it causes the kidney to hold on to the urine. It is an inappropriate release because if you are fluid overloaded, ADH should not be hanging around inhibiting your kidney from dumping that extra fluid. This ADH is often the nemesis of the ultrarunner that can't pee. (Note that moderate dehydration will also cause the kidney to hold onto urine too....Arg! It gets complicated, I know!). The key here though, is that if your weight is up and yet you can't pee off those extra fluids, ADH is the likely culprit.

So, what should you do in this situation? Well, these are the things you run across at ultras that can cause ADH to be released even when you don't want it around (like when your weight is up and you need to pee off the extra fluids): nausea, stress, and hypoxia (elevation). There is LOTS of anecdotal evidence that decreasing the stress load on your body can help the body to "relax" and get rid of that inappropriate ADH hormone and thus allow the kidneys to urinate. Decreasing stress at WS may seem impossible, but there are definitely things you can do. Slowing down or walking is a good place to start. Cooling down if hot is also helpful. By decreasing the stress on the body and allowing the body to get rid of the ADH, you will eventually see (or hear or feel) the flood gates open and your kidneys will dump that extra fluid. Slowing down and cooling down are likely some of the reasons why runners tend to diurese during the night portion of the run.

How much salt should I take and how can I monitor it?

If you chose to supplement with salt, you must practice this in training. Every runner is different with regards to salt intake during ultras. Some runners take no supplements and get some sodium with the foods and drinks. Others prefer to drink water or sports drink and take salt supplements so that they can better regulate their intake. There is no right or wrong way.

In an ultra, sodium is primarily lost in sweat. It can also be lost with vomiting or diarrhea. It is also excreted in the urine. Some researchers say that all sodium lost in sweat should be replaced; others say it does not need to be replaced at all (at least in shorter, "easier" runs). Many ultrarunners swear that supplementing with salt during the Run is helpful or even necessary. For now, I will side with the experience of the ultra masses that encourages some sodium intake whether by supplementation or salty foods.

For the average runner: Sweat rate *averages* between 1.0 and 2.5 liters/hour. Some runners sweat more, some less. When heat trained, sweat rate increases (you sweat sooner and more), and the sodium in your sweat decreases (the body conserves sodium). Sweat rate also increases with a faster pace, and decreases with a slower pace.

Average sweat sodium loss per liter of sweat is between 900 mg and 1400 mg. Some lose less, some much more. For a mental picture of how much sodium that is, 1 teaspoon of table salt (NaCl) has about 2300 mg of sodium (Na) in it. The amount of liters of sweat per hour can be determined by weighing nekkid before and after running...though I warn you that sweat rate for the same runner may vary tremendously over the course of 100-mile race. So, while it may seem like it

comes down to just math, numbers are really just general guidelines and if, followed too strictly, can get you into trouble. There are just too many variables, not only from ultra to ultra, but within one race too (affected by training, changes in pace, altitude, food, temperature, etc.).

Still, the best *general* recommendation I have found is to supplement with about 300 mg to 1000 mg per hour. It doesn't matter how you get it, whether it's through sodium supplements or from the diet. This amount may not replace all the sodium lost in sweat, but we don't know if a runner NEEDS to replace ALL the lost sodium for optimal results. So, nothing replaces your own experience. And remember, do not make drastic changes on Race Day!

Also know that not all supplements are created equal! Succeed! Caps contain 341 mg sodium each, Thermo Tabs contain 160 mg sodium, and Hammer e-caps contain 40 mg sodium (the label says 100 mg of sodium chloride NaCl, but NaCl is only 40% sodium by weight).

All that said, I know there are many runners that do very well with lower sodium amounts than what I state here. That is fabulous. There is no right answer. You should do whatever works for you.

I'm getting muscle cramps. What should I do?

There are 2 main theories on muscle cramping. The first is that they are due to neuromuscular fatigue and the second is that they are due to electrolyte depletion and dehydration.

The best thing to do for muscle cramping is to try to prevent them in the first place. Nothing substitutes for training. Specifically trained muscles will be adapted to the tough conditions at WS. Sometimes, however, cramps are unavoidable. So, if cramping occurs in one muscle like the calf, for instance, then you should do a prolonged stretch of that muscle until the cramping subsides, repeating as necessary. If you have multiple muscles cramping or cramping more proximally, like in the quads, you should assess your fluid and electrolyte status. Is your weight too low or too high? Both may contribute to more diffuse cramping due to dehydration or sodium depletion respectively. Some experienced runners take extra sodium or potassium to help with cramping. It is worth a try! Still, the best advice to try to avoid cramping may be to train specifically for the Race.

Will I know if I am getting heat stroke?

Heat stroke is a medical emergency. It can come on quickly but there are usually warning signs. It does not have to be 90 or 100 degrees Fahrenheit for heat stroke to occur; it has been known to occur even in the 60s. You must prevent heat illness and know how to treat it quickly if you suspect it.

Know that the body's muscles create an enormous amount of heat. Harder working muscles create more heat, so faster runners generate more heat than slower runners. That heat must be expelled from the body. Heat accumulates in the body when heat production exceeds heat loss. Slowing the pace is one way to decrease heat production. The evaporation of sweat from the body is one way to increase heat loss. Sweat does not evaporate as well in humid environments, so humidity increases the risk of heat illness if other factors (like speed) are not modified.

Things to look for: feeling overheated, profuse sweating, and flushed skin as the body shunts blood to the skin in effort to promote sweating, headache, nausea, vomiting as the gut shuts down at the expense of blood being shunted to the skin. If any of these are present, start cooling your body by dousing with cold water and start generating less heat by slowing down or stopping. Ice wrapped around the neck is a very efficient way to help cool the blood as it makes its way to the brain. Consider buying a WS Ice Cap or Ice Bandana! These are priceless in the heat! Scarier symptoms of heat illness include dizziness, confusion, and irritability. Any of these symptoms should prompt a medical evaluation. Sure, some runners get irritable without having heat stroke or another serious medical condition, but an evaluation is necessary. Listen to the concerns of other runners, family, or medical personnel. Because some conditions cause confusion, others may be more aware of the danger signs than you!

Ice application is the easiest first line treatment. Place ice packs in areas of major arteries – around the neck, in the arm

pits and over the femoral arteries in the groin region. Never assume that an oral temperature accurately measures the core temperature! The only accurate core temperature measurement available at WS is a rectal temperature. So, please, take heed, and when heat illness is suspected or even in question, just start cooling the body!

What if I get dizzy when I stop running? What should I do?

This is very common and is likely due to postural hypotension. That is, your legs have been working to pump the blood back up and through the body for hours. When you stop, you suddenly take away that pump and the blood can, in a sense, pool in the legs, causing you to feel faint. The best solution....keep running! Or at least, keep moving. However, if you need to stop and cannot keep moving, pump your feet and march a bit in place, and that will help keep the blood circulating up towards your head. If that is not successful and you feel too dizzy and fear you may fall or pass out, then lay down before that happens....or else your body will do it for you! A few minutes of elevating your feet (and even hips) will utilize gravity to get the blood to your head. The dizziness should subside fairly quickly in this position. If it doesn't or you are concerned, seek medical attention.

Dizziness (and even passing out) can happen after finishing the Run, even up to an hour after finishing! It happens for the same reason – you've turned off the pumps in your legs. Again, the best thing to do is to keep moving. BUT if you are taking a well-deserved break by sitting or lying down, it is prudent to “pump” your feet and legs to get the blood moving before standing up. It can take some time for your body to adjust to your legs not moving, so it's good to be aware that this can happen, and that it is in fact, fairly common. Also know that dehydration has nothing to do with this kind of postural hypotension. Symptoms should resolve with lying down with your legs up. It may take several minutes or even an hour before the dizziness resolves upon standing. If you or someone you love has any concerns whatsoever, seek out medical personnel.

What if I get dizzy and lightheaded when I'm running or walking? What should I do?

This is more serious than the above scenario. If you are dizzy or lightheaded on the course, the first thing to consider is your blood sugar level. If that drops too low, you can be overwhelmed with fatigue and can become light-headed and even your mood can change drastically. A secret handed down from one of the best ultrarunners around is to always carry some simple sugar with you, like some hard candy or similar. This is the time to indulge in that sugar! If low blood sugar is indeed the cause of your symptoms, then you will notice a dramatic recovery. If that is the case, get yourself to the aid station and fill up your tank enough so that it doesn't happen again. Cokes and 7-ups have plenty of sugars too and will perk you up. If, after trying sugar, the dizziness and lightheadedness continues, you should seek medical attention. It could be due to a number of things, including heat illness, hyponatremia, even a problem with your heart. It could also be due to simple fatigue, but in any case, you should err on the side of caution and get checked out. Even dizziness from fatigue alone is hazardous on the trail. The opportunities for falling are many, and that alone, can be very dangerous.

Some final musings.

Peer pressure: Some runners will literally drown in the amount of fluids that other runners require. In general -- but not always -- women tend to require less fluid than men. They tend to have lower body weight and perhaps we really do not sweat as much in general. It seems that they also tend to get in a little more trouble with ADH. Perhaps there's a hormonal reason for that. Probably. But it hasn't been proved yet. So, no matter your gender or what the issue, don't do something based on what works for someone else. Do what works for you!

Swelling: It could mean too much fluid or too much salt or too much of both, or it could just happen from arm swinging or just because it does. Finger swelling is not a very reliable indicator of fluid or sodium status. Generalized swelling, however, including the wrists and forearms, is more likely to indicate fluid overload.

Spitting: The convenient and inexpensive Spit Test is a good test of hydration status. If you can easily work up a spit, chances are, you are well-hydrated!

Finally, I must conclude with some **Psych** content. We are, after all, biopsychosocial organisms! More often than not,

problems that arise during your Run at WS can be addressed and remedied. Awareness is the first step in addressing a potential problem. After spending months of physical and mental preparation for the Run, it can be difficult to accept that sometimes things occur during the Run that require acceptance and adjustment. Listen to your body. The goal of the Staff at WS is to get you SAFELY to the finish line. They want that as much as you and will do their best to help you achieve your goal. However, safety is foremost. So, be prepared, know your body, train smart, arrive uninjured, run wisely, adjust as necessary, and arrive safely at the Finish to celebrate your monumental achievement!

Dr. Marty Hoffman (WS Medical Research Advisor) adds:

As is often the case in life, the more we understand about something, the more complicated we realize it is and the more we recognized there's still a lot to be learned. Certainly, that's the situation with fluid and electrolyte balance during endurance exercise.

One thing that's evident is that we've got to get beyond the concept that achieving proper fluid and electrolyte balance is simply a matter of replacing the water and electrolytes that are lost in sweat. Furthermore, just following your weight during an event doesn't give an adequate picture of what might be happening. Weight gain doesn't equate to the development of hyponatremia nor does weight loss eliminate the chance of hyponatremia. In our recent studies at 100 mile races, we've seen runners with weight gains over 4% who had normal sodium levels. We've also seen runners with 5-6% weight loss who were hyponatremic.

What we can say about weight is that maintaining a stable weight during exercise will result in over-hydration. That's largely because water is stored with glycogen (about 3 grams of water for each gram of glycogen), so when you utilize glycogen stores during exercise, you are releasing a considerable amount of water into the body. Most of that water moves into the blood stream. So assuming you start an event with good glycogen stores and appropriate hydration levels, you should actually lose around 2-3% of your body weight to maintain a stable hydration level. If your weight remains constant or increases during exercise, then you are likely over-hydrating.

We also now know that, contrary to conventional wisdom, there is no evidence that weight loss of a few percent impairs performance in ultramarathons considering the baseline weight is in the hydrated and carbohydrate-loaded condition. In fact, we've seen a direct relationship between running speed and percent body-weight loss in our recent studies at 100 mile races. In other words, there is a tendency for the faster runners to lose more weight than slower runners. Some of the fastest runners have lost 5-7% of their starting body weight by the time they reach the finish line.

With regard to sodium requirements, we now know that the body has sodium stores within soft tissue and bone that can be released and activated to maintain blood sodium levels during exercise. Until recently, we had good evidence that for periods of exercise up to around 12 hours, sodium intake during the event is not necessary because these internal sodium stores can be activated. Furthermore, the research has also indicated that if you lose at least 3% of your initial body weight, you would be very unlikely to develop hyponatremia in events of that duration. However, as indicated above, we now have evidence from recent studies at 100 mile running races that hyponatremia can develop with greater than 5% weight loss. Some of the data from these studies suggest that such cases may be due to a sodium deficit, either from inadequate intake or a lack of activation of sodium stores. So, it may be that for events over 12 hours in duration, and particularly under hot environmental conditions, some sodium supplementation may be necessary to prevent hyponatremia, even with proper attention to avoiding over-hydration.

Obviously, one thing we want to prevent during ultramarathons is the development of acute renal failure. Acute renal failure can result from the combination of dehydration and high myoglobin levels due to muscle damage (also known as rhabdomyolysis). So it makes sense to avoid excessive weight loss and to do everything possible to assure that your muscles are well adapted to the demands of the race. Interestingly, we have now recognized a link between hyponatremia and rhabdomyolysis. It may be that muscle cell swelling caused by the hyponatremia makes the cell membranes less stable and more likely to disrupt and release muscle breakdown products into the blood. In fact, we had 3 runners at the 2009 Western States Endurance Run present to the medical tent and/or area hospitals with the combination of

hyponatremia and rhabdomyolysis leading to acute renal failure requiring hospitalization. One of these runners was over-hydrated, so don't think that over-consumption of fluids will protect you from renal failure.

A word about the role of non-steroidal anti-inflammatory drugs (NSAIDs) in the development of exercise-associated hyponatremia is warranted. NSAIDs cause constriction of the blood vessels leading to the kidneys. These drugs also potentiate the action of antidiuretic hormone (also known as AVP) on the kidney. This hormone acts on the kidneys to prevent water loss into the urine. As such, NSAIDs increase the risk for the development of hyponatremia which makes the chances of developing rhabdomyolysis greater, and they further increase the risk for acute renal failure by constricting the blood vessels supplying the kidneys. It should be apparent that the use of NSAIDs during endurance events is risky business.

Final comments:

1. Use caution in interpreting the measured weights at aid stations. Scales are not always calibrated or may read inaccurately if not on a level surface. Pay more attention to the trend you are observing.
2. Drink responsibly during long periods of exercise, avoiding dehydration and over-hydration. Shoot for a 2-3% weight loss during long endurance events. This much weight loss will generally keep you at normal hydration levels (assuming you had good glycogen stores at the onset of exercise), and will not impair your performance.
3. Avoid the use of NSAIDs during exercise. These drugs increase the risk for hyponatremia, rhabdomyolysis and acute renal failure. If you add to this mix, inadequate training, perhaps due to an injury, which would make it more likely to develop rhabdomyolysis, you are a real set-up for developing acute renal failure.
4. Some intake of salt during extended periods of exercise may be reasonable. If your weight is down at least 2-3%, some sodium intake is probably not a concern and may be valuable for some people under some conditions. However, if your weight has increased or is stable, then our current knowledge would suggest that you should not be taking in sodium and that you need to reduce your fluid intake as well.

XIX. WESTERN STATES Training Runs

Western States offers four training runs to acquaint runners with the last 70 miles of the trail. It is recommended that each entrant, especially newcomers to Western States, take advantage of these runs as they will acquaint you with both the trail itself and the conditions you can expect to encounter on Race Day. There will be many runners participating in these runs who have considerable experience on the trail. They will be more than happy to share their knowledge and experiences.

Plan on carrying your own water and whatever supplies you may need. At least two water bottles and a fanny pack is recommended. Aid stations and bus service will be provided.

If you plan on deviating from the scheduled run (running a different section of the trail, running farther than the described run, etc.), you will not be permitted to officially participate in the scheduled training run. The aid stations are for the use of official runners only. We cannot be responsible for you, and our insurance coverage does not permit it.

FEBRUARY TRAINING RUN

This run will acquaint you with the final 20 miles of the trail.

Date: Saturday, February 18, 2012
Time: Bus leaves at 8:00 a.m. sharp
Site: Placer High School, Auburn, California
Route: Green Gate to Auburn, 20 Miles
Cost: \$30, register at ultrasignup.com (Cost to register at Check-In: \$35.)
Aid Stations: Intersection of Quarry Road and beginning of single-track climb to Hwy. 49, No Hands Bridge, Placer H.S.

We will meet at the stadium at Placer High School and leave by bus for the Green Gate at Sliger Mine Road. This is close to the river crossing at Rucky Chucky. From there we will run to the finish line in Auburn, approximately 20 miles. This will familiarize you with a section of trail that you will be running at night.

MEMORIAL WEEKEND TRAINING RUNS

Three training runs are scheduled for the Memorial Day weekend of May 26-28, 2012. This has been a tremendous success each year with over 750 runners participating during the three-day weekend. Conditions permitting, the training runs will cover the last 70 miles of the course.

"Camp WS" at the Foresthill Middle School has been discontinued. There are no commercial lodging facilities in Foresthill. Hotels, motels and restaurants are available in Auburn, located approximately 25 minutes from Foresthill. Camping facilities within easy driving distance of the start of each training run are primitive. Camping information can be found at:
US Forest Service, American River District: <http://www.fs.fed.us/r5/tahoe/recreation/arrd/summer.shtml>.
Auburn State Recreation Area: http://www.parks.ca.gov/?page_id=1348.
Folsom Lake State Recreation Area: http://www.parks.ca.gov/?page_id=1352.

If you are flying to the training runs, we suggest that you fly into Sacramento. If you are planning to rent a car and camp, consider renting a van that could be used to sleep in at the campsites.

Day 1

Date: Saturday, May 26, 2012
Time: Buses leave at 7:00 a.m. sharp.
Site: Foresthill Elementary School, Foresthill Road
Route: Robinson Flat to Foresthill (snow permitting), 32 Miles
Cost: \$30, register at ultrasignup.com (Cost to register at Check-In: \$35.)
Aid Stations: Dusty Corners, Deadwood Cemetery, Michigan Bluff and Foresthill.

The first day we will meet in front of the Foresthill Elementary School. We will provide bus transportation to Robinson Flat, a drive taking approximately 1 hour. You will run from Robinson Flat (depending on snow conditions) back to the elementary school, a distance of approximately 32 miles. This section will acquaint you with the canyons and the two most difficult climbs of the entire Run (Devil's Thumb and Michigan Bluff). Depending on the weather, the run may also help acquaint you with the heat you are likely to experience in the canyons on Race Day. If we are unable to get to Robinson Flat, a substitute route over as much of the scheduled trail as possible will be run. The exact route of this training run will depend upon snow and weather conditions in the high country.

Day 2

Date: Sunday, May 27, 2012
Time: Run starts at 8:30 a.m.
Route: Foresthill to Rucky Chucky (and back to White Oak Flat), 20 Miles
Cost: \$30, register at ultrasignup.com (Cost to register at Check-In: \$35.)
Aid Stations: Peachstone, Rucky Chucky and White Oak Flat.

The second day, we will meet at the Foresthill Elementary School. From this location you will run the California Street section of trail. Departure time will be 8:30 a.m. A shuttle bus will return runners to the elementary school from White Oak Flat beginning at noon.

Day 3

Date: Monday, May 28, 2012
Time: Buses leave at 8:30 a.m.
Route: Green Gate to Auburn, 20 Miles
Cost: \$30, register at ultrasignup.com (Cost to register at Check-In: \$35.)
Aid Stations: Intersection of Quarry Road and beginning of single-track climb to Hwy. 49, No Hands Bridge, Placer H.S.

The third day, we will meet at the stadium at Placer High School and leave by bus for the Green Gate at Sliger Mine Road. This is close to the river crossing at Rucky Chucky. From there we will run to the finish line in Auburn, approximately 20 miles. This will familiarize you with a section of trail that you will be running at night.

Driving Instructions to the Foresthill Elementary School site:

Foresthill Elementary School - - Bus departure site for Saturday training run and the start line for the Sunday training run: Take Interstate 80 (towards Reno) past the three Auburn exits (if you are coming from Sacramento) or prior to reaching the Auburn exits (if you are coming from Reno). Take the Foresthill exit and turn right on Foresthill Road. Head east (proceed down the long hill and cross the Foresthill Bridge). At the exit, set your odometer to "0" and proceed 17 miles to Foresthill. The Foresthill Elementary School is located on the right side of Foresthill Road at the east end of town.

Parking: You can park in the town of Foresthill. A large number of vehicles parking in Foresthill will have some impact on the town. We would like to minimize that impact as much as possible. Please be careful not to block any driveways and do not park in any no-parking zones or directly in front of any businesses. There is a frontage road that runs the length of the town of Foresthill. Between the frontage road and the Foresthill Road is a median. You can park diagonally in the median or parallel park on the frontage road.

Additional Information:

- Memorial Day Weekend, Day 1, will depend on snow conditions in the high country. Alternate route typically starts at the intersection of Mosquito Ridge Road and N-44. You will run five miles down N-44 to Dusty Corners where you will pick up the WS Trail. Every effort will be made to start the run in Robinson Flat.
- You can register for the training runs by going to <http://ultrasignup.com> (see links above.) **We cannot guarantee** you a seat on the bus if you choose to register the morning of the run. **We strongly encourage** all runners to pre-register for the training runs at ultrasignup.com. We make an effort to anticipate our transportation needs, but without reservations it's an educated guess how many buses we will need. The cost of each training run covers the expenses of transportation, aid stations and insurance.
- Aid stations will be provided for all training runs, but they will be few in numbers. Come fully prepared for a run in the mountains, however, as we can't promise anything.
- For the safety of all concerned, cut-off times for all of the training runs will be established for each aid station. If you do not arrive at an aid station before the cut-off time, you will not be permitted to proceed any farther. Failure to comply with this regulation will result in your disqualification from participation on Race Day. We cannot be responsible for runners being out on the trail after dark. Cut-offs will be based on a 30-hour pace, or 18-minute miles.
- Sufficiently trained pacers, family, friends, etc., are welcome to participate in the training runs. We are looking forward to meeting you and training with you.

XX. ENTRY FOR 2013

Due to the large number of runners interested in participation in the Western States Endurance Run, a lottery procedure has been established as the most equitable method of selection. We wish that we could accommodate every applicant, but concern for the safety of each participant, together with specific environmental limitations, dictate that the entry field be restricted. Entry procedures for the 2013 event will be as follows:

1. Each lottery applicant must complete a qualifying run. For details go to: <http://ws100.com/qualifying.htm>
2. Lottery applications will open on the UltraSignup.com website on Saturday, November 10, 2012, and close on Saturday, November 24, 2012. All lottery applications must be submitted online. The results of all qualifying runs will be available on the UltraSignup.com site and selection of a valid qualifier will be part of the registration process.
3. Entrants for the 2013 Western States Endurance Run will be selected via lottery on the second Saturday in December 2012 (December 8, 2012).
4. You will receive an acceptance or denial e-mail immediately following the lottery. The lottery results will be posted to the WS website in real-time.
5. If you are selected in the lottery, the entry fee will immediately be charged to your credit card.
6. Runners who are not accepted in the lottery (and otherwise not admitted as an entrant) will remain in the "hat" for the next year's Lottery and for each consecutive year that they apply but fail to be selected. Unaccepted lottery applicants must re-qualify and re-register for the lottery each year.

"Far Off the Track"

"If you're heading out there
I'll give you a tip
It's wild and it's far
And you're in for a trip.
For just when you think
It couldn't get rougher
The path goes crooked
And the going gets tougher.
But once you've traveled
This far off the track
You won't settle for less
And there's no going back."
Patrick O'Leary

Appendix

(a) TRAIL OF THE WS ENDURANCE RUN

(available online at <http://ws100.com/images/wstrailgraphic.jpg>)

(b) CREW MAP TO ACCESS POINTS

(available online at <http://ws100.com/images/CrewMap.jpg>)