Health & Safety Plan

Wilder Ranch State Park
IMAP

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1. HEALTH & SAFETY OBJECTIVE

Ecological fieldwork can be dangerous; however, all accidents are preventable, and with proper training and execution ecological field workers can conduct their tasks free from health and safety incidents. Every worker has the responsibility to look out for his or her health and safety and address and/or report potential problems as they arise. All workers should discuss any questions or concerns with their supervisor and co-workers. The goal of IMAP is to conduct all fieldwork free from accidents. This Health & Safety Plan is not intended to cover every conceivable issue that might arise, but is meant to point out known potential risks of fieldwork at Wilder Ranch State Park.

2. TRAINING

Prior to beginning fieldwork workers will be provided a copy of the Health & Safety Plan for their use. The fieldwork supervisor will discuss this Plan with the workers and address any issues.

3. H&S ISSUES

The following are the most likely issues to affect fieldworkers at Wilder Ranch State Park. A standard first aid kit (including Benadryl for allergic reactions) and first aid manual should be included in every vehicle as standard field equipment. Workers should carry the first aid kit when they are working far away from their vehicle.

It is every worker's responsibility to inform all co-workers and their supervisor of any pre-existing conditions that may affect their health and safety in the field and that may require special awareness by other workers (i.e. diabetes, allergies, vision or hearing impairments). Field teams should discuss health and safety issues when beginning a new work task and decide on appropriate responses to potential situations.

3.1 Cliffs & Caves

There are many steep cliffs over 100 feet high in the park. Some of these are located along the coastal bluff and others are inland along canyon walls. Many of the cliffs are not obvious because of dense vegetation until a person is at the brink. Also, fieldwork in caves and at the cliffs at the park poses a risk of falling and of falling rocks.

Each worker should be aware of their surroundings and use care when walking, even on established trails (some trails pass close to cliff edges). When working in proximity to a cliff take time to explore the area to become familiar with dangerous areas and hang ribbon/flagging to temporarily warn of hazardous spots. Always inform co-workers of hazards that occur in an area. Workers should be careful not to dislodge rocks or throw things over the sides of cliffs.

Work on the sides of steep cliffs may require special safety equipment, such as harness and hardhats, and such activities should have an activity-specific health and safety protocol developed prior to the start of the task.

A health and safety protocol for work in caves is attached as Appendix A.

3.2 Sunburn

Sunburn is one of the most likely health hazards. Each worker should wear protective clothing and use adequate amounts of sunscreen to avoid over exposure to the sun.

3.3 Dehydration

Each fieldworker should carry sufficient water or other drinks and drink regularly to ensure they do no become dehydrated.

3.4 Water Safety

A drowning hazard exists at the shoreline, along streams, and at ponds. Some fieldwork may require wading in the water; though other than ocean tides there is generally no swift water at Wilder Ranch State Park during the spring and summer sampling season this project covers. If fieldwork requires work in water greater than four feet deep or from a boat a separate health and safety plan will be prepared for that activity (Note: boats and boat operators should be certified). Every field worker should inform their supervisor of their swimming ability and workers should not be placed in situations they feel is beyond their ability to swim if the need arises.

When working near water each worker should be aware of their surroundings and weather conditions (check local weather reports before beginning water work) and plan adequate escape routes where necessary. Rogue waves occur at the shoreline and workers should always follow the general rule of 'never turning their back on the ocean'. When working near water team members should always have a partner.

3.5 Plants

The most likely poisonous plants that will be encountered at Wilder Ranch State Park are poison oak and stinging nettle. Each field worker should discuss these plants with their supervisor and learn to recognize the plants. Avoid contact with these plants where possible. Wear protective clothing to prevent exposure to skin when working near these plants. In event of stinging nettle or poison oak exposure refer to general treatments in a first aid manual. After exposure to poison oak workers should remove any exposed clothing before entering project vehicles or cover the seats with covers that can be removed and cleaned to wash away toxic poison oak residue.

Blackberry is another potentially dangerous plant because of sharp thorns on long vines. Each worker should learn to identify blackberry. Workers should be

careful not to become entwined in blackberry, and if vines do become wrapped around workers legs the vines should be carefully removed before attempting to walk.

There is a danger from being struck by falling tree limbs when working in the forest. Work should not occur in heavily forested area on days when the wind is causing tree limbs to break and fall.

3.6 Wildlife

Rattlesnakes inhabit Wilder Ranch State Park though they are not common. Fieldworkers should be aware of their surroundings and avoid stepping into areas or putting their hands into places that have not first been inspected.

Mosquitoes occur at the Park and are most likely at night and early in the morning. Insect repellent can be used and protective clothing worn to help avoid mosquito and other insect bites. Wild bees and wasps also occur in the Park, and should be avoided when observed in a work area; use special caution when working off trails in forested areas because bees and wasps generally nest in the ground in areas with heavy leaf litter.

Hantavirus, a respiratory disease potentially fatal to humans, is known from wild deer mice in California, though the presence of this disease in mice at Wilder Ranch State Park is unknown. Rabies may also occur in some animals at the Park. Prior to handling any animals an activity-specific health and safety plan will be prepared to ensure workers receive any necessary inoculations, protective clothing, and instruction in safe handling of animals. In general, handling live deer mice out-of-doors in well ventilated areas is not a risk for hantavirus.

Handling live mammals, such as mice, rats, rabbits, fox, and skunk has a risk of bites or scratches. Only persons with pervious experience and training should attempt to handle live animals, and appropriate protective clothing, such as leather gloves, and restraint devices, such as capture bags, should be used.

Ticks are prevalent at Wilder Ranch State Park during some seasons and very difficult to avoid during fieldwork. Workers should wear light colored clothing where possible and regularly inspect for ticks that could be removed prior to biting. Insect repellants and wrapping pant-leg-bottoms may also help avoid tick bites. Each day after completing fieldwork workers should inspect their bodies for ticks.

3.7 Hiking

Dangers from hiking include twisted ankles and falls. Workers should wear proper footwear for backcountry conditions and pay attention to where they are stepping when hiking. Slippery rocks are likely, especially at the shoreline, so great care should be taken when rocks are wet or covered with vegetation.

3.8 Lifting

Some fieldwork requires lifting and carrying bulky or heavy objects. Each worker should not lift/carry more than they are able. When lifting heavy objects workers should use their legs to spare their backs, use lifting aids/tools where possible, and ask for help from fellow workers.

3.9 Getting Lost

Fieldwork requires entry to backcountry areas, often off of established trails. Workers should always inform their supervisor or a local Ranger where they are going to be and expected times of departure and return. Fieldworkers should take a cellular telephone when possible. Fieldworkers should carry a map, compass, and/or GPS unit and take time to familiarize themselves with any existing flagging schemes before entering a backcountry area. If a worker becomes lost they should call for help or simply find a safe place to sit and wait for searchers to arrive.

3.10 Driving

Each field worker must pass a driving test and is expected to follow all driving laws when operating a project vehicle. Each worker should receive instruction from his or her supervisor for proper techniques of off-highway vehicle use (on dirt roads). Any time a worker is uncomfortable with their ability to drive in a given situation they should inform the supervisor and a solution be developed.

In case of an automobile accident the driver should follow the procedures contained in the glovebox of state owned vehicles. All accidents, no matter how minor, should be reported to and investigated by the California Highway Patrol, a Park Ranger, or local law enforcement. The DPR Pocket Travel Guide should be attached to this Plan for additional reference.

In event a state-owned project vehicle breaks down look in the vehicle glovebox for the list of approved vehicle roadside service, towing and repair facilities. The Voyager Card that accompanies the vehicle can be used to pay for emergency service.

3.11 Exposure to Toxic Chemicals

If any element of fieldwork at Wilder Ranch State Park involves any dangerous or toxic chemicals an activity-specific health and safety plan should be prepared for that activity.

4. REPORTING INCIDENTS

Affected field workers should immediately report any injury or health risk exposure to their supervisor. Immediate first aid should be used whenever necessary. A DPR Form 761 should be completed after an incident as soon as reasonably possible and given to the supervisor (an example of the form is attached).

5. COMMUNICATIONS

If a team is working a considerable distance from a public telephone a cell phone should accompany every team in the field and the phone be shared by the team members according to their needs during the fieldwork. After each day of fieldwork a team member should report the status of the field team to a prearranged contact at Sacramento HQ via telephone; generally the contact person will be Roy Woodward, leave a message on voice mail if necessary. This check-in is intended as a brief report that all hands are safe and accounted for.

6. HOSPITAL AND CONTACT NUMBERS

Call 911 for any emergency.

Hospitals:
The nearest hospital to Wilder Ranch State Park, about 6 miles away, is:

Dominican Hospital
1555 Soquel Drive
Santa Cruz
(831) 462-7700

The nearest medical clinic, about four miles from the Park, is:

Santa Cruz Medical Clinic
1203 Mission Street
Santa Cruz
(831) 458-6300

Directions to the clinic and hospital from Wilder Ranch State Park:

- South on Highway 1 to Santa Cruz
- The highway becomes Mission Street so look for the clinic; **or**,
- Continue on Mission Street and exit for Soquel Drive, stay right over the freeway;
- Proceed through one light and look for the hospital on the left.

DPR Contacts:
Wilder Ranch State Park Ranger:

(831) 423-9703

Santa Cruz District Office:

600 Ocean Street
Santa Cruz, CA 95060
(831) 429-2850

Santa Cruz County Dispatch

(800) 548-1431

Tim Hyland, Santa Cruz District ecologist:

Cell # = (831) 251-2884

See attached list for additional IMAP telephone numbers.

Appendix A

Cave Health and Safety Protocol

Potential Hazards Associated with Caving

- Falling debris or rocks getting to the caves, which generally lack trail access
- Uneven footing on the way to and inside the caves
- Slippery areas (slick limestone and passages covered in mud)
- Falling into drop-offs, pits, or from climbing vertical features, resulting in injury (sprains, muscle cramps, broken bones, concussion, death)
- Bruises from moving through the cave (especially joint areas including knees, elbows and other body parts)
- Narrow and constricting passages (stuck person, trapped party)
- Getting lost or disoriented in a maze of passages
- Falling objects, rock, or mud inside the caves when people are climbing or moving above (one of the main reasons for wearing a hardhat)
- Hypothermia (a very serious hazard for an injured and/or immobilized person)
- Unstable geology (loose ceilings, loose rocks on floor, weak climbing holds)
- Bats, including histoplasmosis (not reported in Northern California), ammonia vapors (in caves with very large colonies), rabies (uncommon)
- Wild animals (e.g. skunks, a major rabies vector, utilize Santa Cruz County caves)
- Bad or Foul Air (reduced oxygen and elevated carbon dioxide levels)
- Flooding (stream caves only)

It should be noted that in over 50 years of organized recreational caving in California, there have been only two fatal cave-related accidents in the state (both due to falls, one while climbing up to the entrance of a cave). This excludes the many drowning deaths of beachgoers attempting to enter sea caves in the surf zone. Most cave-related fatalities nationwide occur while cave diving; most other cave deaths have been due to drowning in flooding caves, falling, and being hit by falling rocks. The National Speleological Society publishes an annual *American Caving Accidents* report.

Safety Precautions

In general, avoid caving if prone to claustrophobia or panic attacks, or if you have had problems with dislocated shoulders or kneecaps, bursitis, arthritis, or any severe joint problems.

Be safety conscious and do not cave alone. Have a backup plan if something goes wrong or someone gets injured. At least three

people comprise a safe caving party (since in the event of accident, one person can stay with the injured and the 2nd person goes for help). Access to cell phone or change for a pay phone is advisable. Let someone at home or the office know your plans, but add several hours to your estimated time of return to avoid a false alarm

Wear proper attire:

- Rugged clothing that won't snag on rocks (i.e., long pants and long-sleeved shirts or coveralls)
- Wool or synthetic thermal underwear (especially if you are prone to being cold or doing stationary work, i.e., inventorying)
- Close-fitting gloves (a knit brand with blue or green rubberized palms and fingers sold widely in hardware stores and garden centers works very well)
- Helmet with chinstrap (preferably with safety release buckle on the strap)
- Rugged footwear with good tread (i.e., hiking boots)
- Balaclava (optional, especially if you are prone to being cold)
- Knee and/or elbow pads (optional, DO NOT use the hard Rollerblade types or kneeling pads used by plumbers)
- Change of clothes (especially if not using coveralls, as your clothes will probably be dirty/muddy after caving)

Bring appropriate equipment (the following are for a typical day trip):

- Headlamp light secured to helmet (duct tape works for this)
- Minimum of two small backup lights (like Mini-Mag lights) per person (one or both can be conveniently attached to sides of helmet with duct tape or permanent fasteners)
- Two or three sets of batteries for primary light source (even better is if all light sources use the same size of battery)
- Small pack to carry vehicle keys, water, food, batteries, equipment, and other loose items
- Very small first aid kit for each person (alcohol swabs, safety pin, band-aids, gauze and butterfly closures, etc.)
- Small quantity of duct tape ("the caver's baling wire")
- Bic Lighter to check CO_2 levels
- Rope (with rope bag) may be needed in caves with vertical component (i.e., IXL cave)

Bring compact food (Power Bars, dried fruit, etc.) and a quart of water.

Cave with an experienced spelunker (best if s/he is familiar with the caves). If the cave has been mapped, bring a copy of the map for reference.

For additional cave safety and conservation information, see the attached Cave Safety and Conservation Information from the San Francisco Bay Chapter of the National Speleological Society (www.caves.org/grotto/sfbc/safety.html). Also see Cave Safety and Conservation, Texas Speleological Survey (www.utexas.edu/depts/tnhc/.www/tss/cavesafe.htm) for information regarding bats, ammonia vapors, histoplasmosis, rabies, and bad air.

Special Information Regarding Specific Caves at Wilder Ranch

Dolloff and IXL caves—Exploring these caves requires passing through tight constrictions that have trapped at least three individuals in the past 40 years. Reconsider entering if you have a barrel chest, wide shoulders, wide hips, "buffed" muscles or pronounced body fat. Beware forcing your way through a downhill or vertical constriction, as you may find it impossible to fight gravity on your return.

Dolloff Cave—This cave is known to contain bad air (carbon dioxide), typically pooling in the lower part of the cave but often rising to the entrance level. Bring a Bic Lighter to check the air quality. Prior to entering the cave, check that the lighter will create a flame. Upon entering the cave, periodically check if the lighter continues to create a flame. Should the flame and the lighter nozzle be separated by a gap (i.e. the flame floats in the air above the lighter), the flame is in the oxygen rich layer and the no flame is CO_2 rich layer. Exit the cave. Should the lighter not create a flame, a concentration of CO_2 greater than 4% is indicated and visitors should exit the cave immediately. CO_2 concentration can increase well above lethal levels (10%) within a few feet. Note that physical disturbance of the CO_2 "pool" (e.g. by feet or air turbulence) may increase CO_2 in the upper level to above safe levels. Hazards of breathing high levels of bad air include not only death by asphyxiation but life-threatening shock upon exiting a bad air cave in which one has been exerting oneself for a sustained period. See "Bad air" section of the Cave Safety and Conservation, Texas Speleological Survey for explanation.

Stump Cave—Part of the ceiling of the Boulder Bypass passage appears to be collapsing. Be sure to check the ceiling and avoid crawling beneath the visibly loose slab on the left side (going toward the Bat Chamber).

IXL Cave—As this cave is much more extensive than the others, bring food, water, and a small first-aid kit sufficient to deal with minor contusions and even broken bones or sprains (e.g. butterfly and other closures, pain reliever and a SAM splint—many other items

can be improvised). Work trips may last in excess of eight hours (recreational trips typically take only three-four), and each visitor should carry several changes of batteries and even an extra bulb for his or her primary light source, in addition to the usual two extra independent sources of light.

It is recommended that a person familiar with the cave accompany new visitors. Though relatively simple in plan view, IXL is vertically complex, with upper and lower levels and many passages where scrambling or chimneying are required. Getting lost is a potential hazard for new visitors. Learn the habit of glancing behind you frequently to see how a passage looks traveling in the opposite direction. Although a good cave map can aid in finding the route, those existing for IXL are either incomplete or lack information to make the vertical relationships of various passages clear.

If the party intends to visit the Sunday Section (Deep Pit area), a 150 foot static climbing rope will prove helpful to inexperienced visitors desiring a hand-line. This is best transported through the cave in a rope bag. It is strongly recommended that at least one member of the party be familiar with the Sunday Section prior to descending the Deep Pit.

While technical climbing gear is not necessary, there are areas in the cave where a 30-40 foot rappel and mechanical rope-climbing skills can be practiced. However, neither IXL nor any cave is the place to try these skills for the first time. Learn on the surface with experienced

(We would like to thank Mr. Daniel Snyder of Santa Cruz for his contributions to the Cave Health & Safety Protocol)