



United States
Department of
Agriculture

Forest
Service

January 2004



Environmental Assessment

Mt. Whitney Human Waste Management

Inyo National Forest
Inyo County, CA

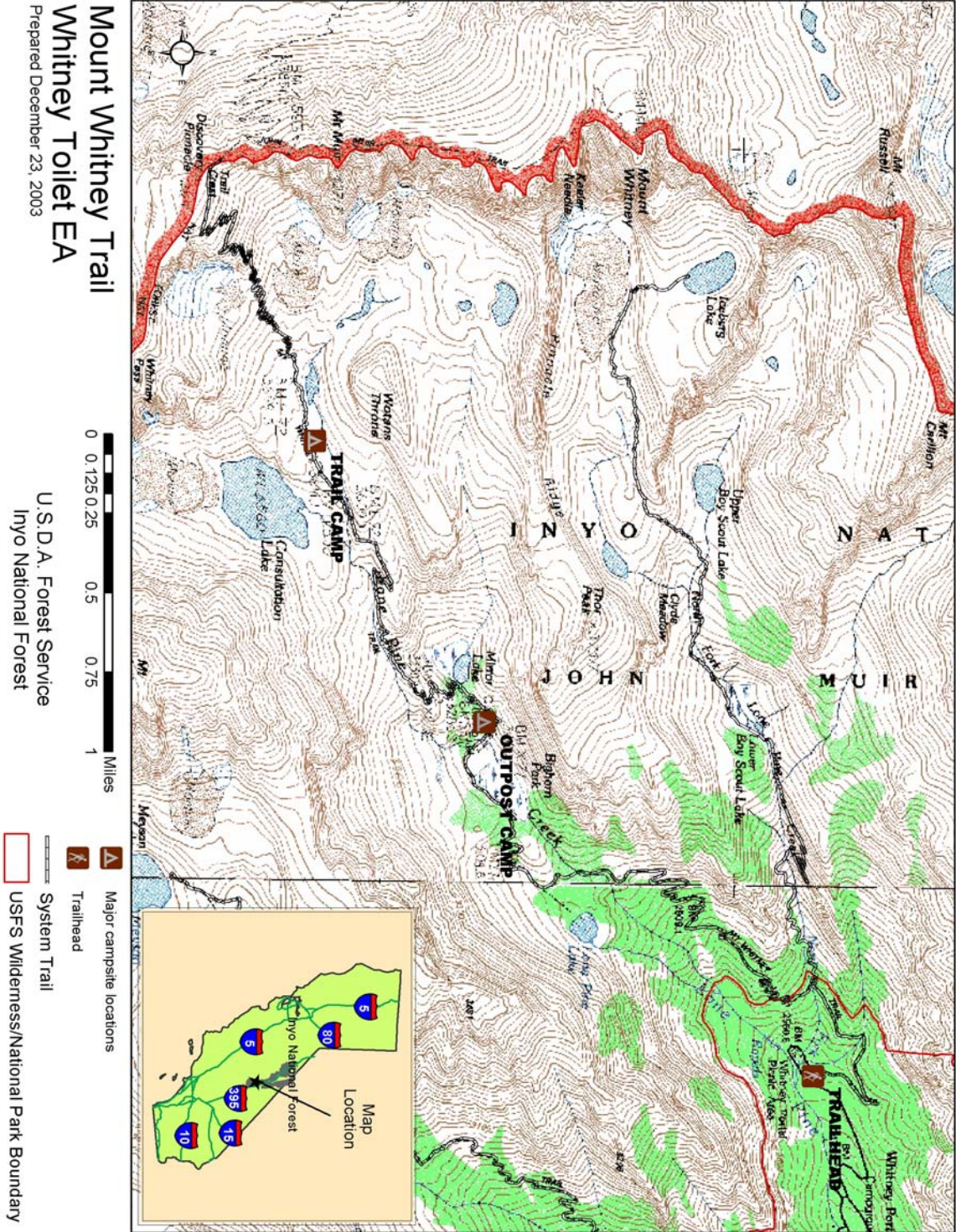
T16S R34E Sections 2,3,4,9,10

For Information Contact:
Mary Beth Hennessy
351 Pacu Lane, Suite 200
Phone: (760) 873-2448
E-mail: mhennessy@fs.fed.us

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Map of Mt. Whitney Trail and Campsite Locations



INTRODUCTION / BACKGROUND

Mt. Whitney is the highest point in the lower 48 states, at 14,497 feet above sea level. Over the years, Mt. Whitney's popularity has continued to grow. A trail to the summit was constructed in 1904. The area surrounding Mt. Whitney was designated the High Sierra Primitive Area in 1931. In 1964, Congress designated the area as the John Muir Wilderness.

Topographically, the Mt. Whitney drainage is steep with limited camping locations. The two primary locations for camping are Outpost and Trail Camps. Trail Camp is a particularly strategic camp location for summiteers. At an elevation of 12,000 feet it provides for acclimatization and is the last good location to camp before ascending to the summit. The Outpost location is at a lower elevation, 10,300 feet, which can be more suitable in inclement weather and for early/late season access. A third location, Mirror Lake, was a popular camp location that was closed to camping in the mid 1970's due to recreation impacts to the riparian area around the lake. Trailside meadow, below Trail Camp, was also closed to camping due to recreation impacts. When these locations were closed to camping, use was further concentrated at Outpost and Trail Camps.

Forest Service management of human waste on Mt. Whitney began 40 years ago. Primitive pit toilets were first placed on the trail in the mid 1960's. With the concentration of camping, impacts at the camp locations also became concentrated, most notable were the impacts of human waste disposal. Early management activities provided for human waste disposal in primitive pit latrines, responding to the need for concentrating the waste to prevent the widespread use of 'cat holes' in the vicinity of these camp locations.

In the early 1970's, a number of Forest Service reports identified concerns with visitation levels on the Mt. Whitney trail. In a 1973 Staff report (INF files, August 27, 1973), the Forest Hydrologist recommended that camping be constrained from the southwest section of Trail Camp to prevent contamination of surface waters. In this report it is evident that there was an attempt to consider the relationship between potential resource concerns with human waste and the establishment of use limits. At that time, the presence of pit toilets had clearly reduced threats of contaminated water and evidence of human waste disposal in the camp areas.

Also in 1973, the Regional Office instructed the Forest to remove a fiberglass toilet from Trail Camp (by helicopter) to maintain the purity concept of the Wilderness Act (Written correspondence of Wayne Maynard, Forest Planner, 1973). Also, a metal toilet was removed from Lone Pine Lake. Maynard writes "Regardless of the interpretation of 'purity' sanitation of Trail Camp remains the problem". "After the toilet facility at Trail Camp was removed, sanitation problems occurred immediately" (Mt. Whitney Trail Interim Management Plan 1974).

As a result of a 'carrying capacity' planning effort in the early 1970's, a permit system and use limits were implemented in 1974. Still, it was identified that human waste was an issue. "Even with the 75 per day entry limit, it will be necessary to have a primitive, wilderness type latrine at Trail Camp and Outpost Camp" (Mt. Whitney Trail Interim Management Plan 1974). All other toilets had been removed in 1972 and 1973. Day use was not controlled by these use limits. Primitive toilets -small A-frame structures that provide screening, with seats atop large 50 gallon drums - were again placed at Trail Camp and Outpost. These drums were flown out by helicopter on a regular basis.

Again, in the early 1980's concerns mounted regarding the human waste situation on Mt. Whitney with disposal issues and health hazards. The A-Frame primitive toilets were replaced by a system designed to dehydrate waste. The Outpost and Trail Camp toilets were replaced with the solar toilet buildings, currently at the sites today. The original solar toilets had a rotating carousel with burlap bags on the carousel. The solids would be contained in the burlap bags and the liquids would drip from the bags and drain into a liquids tank. Hot air from a greenhouse room was then blown over the liquids to facilitate evaporation. The burlap bags would not dry out completely which required employees to wrestle wet waste filled bags off the. Between 1989 and 1993 the burlap bags were packed out with pack stock.

In the mid 1990's several other methods were tried. Composting was tried, but composting needs a relatively constant temperature and consistent moisture content to be successful. With the extreme temperature differences between day and night, and the dry air, very little composting occurred. The sawdust added to the waste however did help reduce the smell. A big tank, which contained both the liquids and solids, was also tried. The solids would change into sludge, which was then pumped by hand into trays in the greenhouse room to dry. This seemed to be working, except for the extra handling of the trays and having enough room to dry all the sludge. But then the tank turned septic (anaerobic) and the smell was unbearable.

The next system tried is the system that is currently in use today. Waste receptacles with wheels - the same type that are provided by the garbage company for trash collection are placed under each toilet riser. The solid waste is collected in the waste receptacles and the liquid is drained out of the bottom of the waste receptacles into a tray. See Alternative 2, No Action for more description of the present system.

FIGURE 2: Helicopter performing maintenance at Trail Camp Toilet Facility



The demand for visitor access to the Mt. Whitney area is extremely high. Being an icon, and the highest point in the lower 48 states, it has and will attract recreationists who are goal oriented and drawn to the challenge. Even with a quota in effect, use continues to grow each year as more and more days are filled each season. In 2001, 5,250 permits were issued (day use and overnight) and 16,194 people traveled up the main Whitney trail. In addition, parties that enter from other trailheads exit the wilderness via the Mt. Whitney Trail. In 2002, limits were placed on the exit over Trail crest in the form of a quota of 25 people a day. This is administered as an exit quota and also fills regularly in July and August.

In 1996 permits and use limits were placed on day hikers. Though day hikers do not contribute as much proportionately to the human waste, they also use the toilets, and management was concerned with, the addition of impacts of 100-150 day hikers a day. In the 2001 Wilderness Plan, the day hiking quota was reduced from 150 to 100 a day, while the overnight quota was raised from 50 to 60 people a day in order to balance the use.

Current direction in the Ansel Adams, John Muir, Dinkey Lakes Wilderness Plan (LRMP Amendment 7) is as follows:

Maintain the Mt. Whitney toilet facilities at a level commensurate with allowable visitor use and resource protection; not solely for the convenience of the visitor. Materials will be in keeping with the surrounding environment. Support activities will be minimized by efficient and suitable backcountry human waste management techniques. Permission for mechanical and motorized transport of hazardous waste, building material etc. will be approved annually. (pg 10)

In summary, human waste issues have been a challenge for many years. The Inyo National Forest has considered visitor use levels, resource protection and wilderness values. This environmental assessment will provide a contemporary analysis of the management alternatives for balancing visitor use, resource protection and wilderness values on Mt. Whitney.



Figure 3: Campers around Trail Camp

PROPOSED ACTION

The proposed action is to replace the two existing toilets, along the Mt. Whitney Trail at Outpost and Trail Camp with the minimum necessary structures to serve the allowable recreation use in the area of 60 overnight, 100 day and 25 over Trail crest per day. The proposed replacement toilet buildings will have a footprint of approximately 16' x 16' or 256 square feet. In addition there will be a deck area outside for unloading bins and several small liquid drying beds for a total footprint of 500 square feet or less. Connected actions include a proposed schedule for helicopter flights for construction and annual reoccurring maintenance.

PURPOSE AND NEED

The purpose and need for this analysis is to improve the quality of human waste disposal for visitors and agency personnel and to insure environmental impacts of human waste are minimized.

The existing toilets at Outpost and Trail Camp were installed twenty years ago. Despite a series of modifications and retrofits, they have not been functioning properly for many years. The maintenance and continued modifications of the buildings expose Forest Service personnel to many health and safety hazards. Maintaining the human waste containment system exposes employees to hanta virus, hepatitis, and unpleasant pungent human waste smells. Low ceilings in the structures create space constraints for moving large bins and conducting the needed maintenance chores in the buildings and increase the risk of injuries to the employees. Inefficiency and ineffectiveness in drying waste matter requires employees to literally be in the waste, mixing sawdust and other materials into the human waste to facilitate drying.

The inability of the current facilities to process liquids causes the containers to fill quickly resulting in periodic closures of the facilities. Toilet closures, due to this and other malfunctions of the units, have affected the environment with human waste and toilet paper proliferation around the popular camps.

This analysis will lead to a decision that may in one way or another require a Forest Plan Amendment. If the toilets go forward as proposed, the visual quality objectives will need to be modified. If visitor use is reduced as a result of this analysis, the allowable visitor use quotas will need to be modified.

DECISION TO BE MADE

The Mt. Whitney District Ranger, Inyo National Forest is the Deciding Officer for this Environmental Assessment. The decision to be made by the District Ranger is:

1. Whether the existing toilet structures along the Mt. Whitney Trail, will be reconstructed as proposed, modified by an alternative, removed or no change at all.
2. What mitigation measures and monitoring requirements will the Forest Service apply to the reconstruction or removal?

PUBLIC INVOLVEMENT

Public scoping on the proposed action was conducted in July 2001. A letter (June 30, 2001) signed by White Mountain District Ranger Luci McKee was sent to the mailing list (over 700 names and organizations) used for the just published Ansel Adams/John Muir Dinkey Lakes Wilderness Management Direction FEIS. In addition a news release was published in the Inyo Register, the Inyo National Forests paper of record on July 10, 2001. Sixteen letters were received as a result of scoping.

ISSUES

The Forest Service separated the issues into two groups: significant and non-significant . The following issues have been identified as significant.

Issue 1 - Use Levels

There is disagreement on whether the allowable visitor use levels are appropriate and acceptable in designated Wilderness. The current levels of use and effects of concentration at two camp locations on the Whitney trail, contribute to the need for more facilities and support activities that in turn lead to a degradation of wilderness and a reliance upon human intrusions. The need for toilets is dependent upon the allowable visitor use. Some contend that if visitor use is reduced then toilets would not be necessary.

Issue 2 - Wilderness character

Structures in wilderness - There is dispute whether building or re-building structures in Wilderness is appropriate. The Wilderness Act (1964) prohibits permanent improvements (Section 2c) and prohibits structures and installations (Section 4c). The sight of buildings and sounds associated with building may degrade aspects of a person's wilderness experience. There are also visual impacts of structures in wilderness that are

incongruous in a wilderness setting and/or need to be designed to fit into the surroundings. Others believe that structures are necessary for resource protection and are in accordance with Forest Plan direction and Forest Service policy on non-conforming facilities (FSM 2323.13).

Minimum necessary - Similarly, differences in opinion exist regarding the structures as the minimum necessary for the administration of the wilderness, or to attain the goals of the Wilderness Act. Others interpret the proposed structures as the minimum necessary for achieving the recreational goals of the Wilderness Act.

The use of Mechanized Transport - The use of helicopters to support the human waste removal program may violate the Wilderness Act minimum requirements for motorized equipment and mechanical transport. Mechanized and motorized uses are only authorized if it is considered to be the minimum necessary for the administration of the area for the purpose of the Wilderness Act.

Wilderness Experience - In summary, a visitor may experience an erosion of wilderness values with the proposed replacement of the two toilets. These values range from the intangible associated with Wilderness, such as opportunities for solitude or an unconfined primitive experience, to those that may never visit Mt. Whitney but consider the level of development and use to be unacceptable in a designated Wilderness.

Issue 3: Public /Employee Health and Safety

The maintenance and modifications of buildings and the backcountry human waste management system exposes employees to many health and safety issues, including hanta virus, hepatitis and coliform bacteria. There are many vectors for human pathogens in the existing buildings that affect the public and employees. By placing the responsibility of human waste removal on the visitors, these pathways to pathogens would be reduced.

ALTERNATIVES

Alternative 1 - Proposed Action – Replace toilet structures

Replace the two existing toilets at Outpost and Trail Camp with the minimum necessary structures to serve the allowable recreation use in the area. Allowable use is 60 overnight campers, 100 day hikers on the main Whitney trail per day as well as 25 overnight users accessing the main Whitney trail corridor from Trail crest per day.

The toilet buildings will have a footprint of approximately 16' x 16' or 256 square feet. In addition there will be a deck area outside for unloading waste bins and several small liquid drying beds for a total footprint of 500 square feet or less. The building will have a sloped roof facing south with solar panels on the roof. The solar panels provide

electricity for fans and heat panels for warming air. The buildings will have an upper floor where the toilets are located with tanks/bins located on the lower floor where the waste is collected. The liquids will be drained off into a separate area in the tanks or routed outside to drying beds where the liquids will be evaporated. The solid waste will have sawdust added to reduce smell and encourage composting. The waste will then be dried prior to being removed and flown out by helicopter.

Helicopters will be needed for the removal of the old toilet buildings and hauling in construction materials and completed walls for new toilet buildings. Estimated helicopter trips required up to 15 trips for each toilet building if a Type 1 heavy lift helicopter is used. If a Type 3 HP medium lift helicopter is used it would take 50 or more trips. Most likely a combination of both helicopter types would be used.

Applicable BMPs will be implemented in the construction activity phase. (See appendix 1). They include:

- 2-2: Erosion Control Plan
- 2-3: Timing of Construction Activities
- 2-28: Surface Erosion Control at Facility Sites

These toilets will require routine maintenance by backcountry rangers at least three times per week. Typical maintenance items include: leveling off the waste mounds in the tanks, adding sawdust, checking fans, checking liquid lines, and cleaning bathrooms.

If toilet failures occur, the Mt. Whitney district staff will immediately institute a pack out your waste program using the existing structure as receptacles. All visitors will be contacted and will be provided a pack out kit for their use along with education materials and an educational contact by ranger staff.

Alternative 2 - No Action -Existing Situation

The allowable visitor use for the main Mt. Whitney Trail is managed through a daily trailhead quota of 60 overnight users and 100 day hikers and a daily Trail Crest quota of 25 hikers (entering from the west through Sequoia-Kings Canyon National Park).

Toilet buildings exist at Outpost (10,300 feet) and Trail Camp (12,000 feet). Each building is bi-level and has two separate rooms with a toilet seat in each one. The toilets are open late May through late October. Toilets may be shut down or closed due to repairs or maintenance.

At Outpost camp human waste is collected underneath each toilet riser in a 90-gallon garbage bin. The liquids are drained out of the bins and collected in a large holding receptacle. Solar heated air is blown over the liquids holding tank and through the bottom of the bins to help evaporation of the liquids and drying of the solid waste. The

waste solids remain in the bins until they are flown out by helicopter. The liquids remain in the holding tank to evaporate, primarily during the winter months.

At Trail Camp human waste is collected underneath each toilet riser in lined 150-gallon bins. The liquids are routed out of the bins by a solar powered pump into an outside holding tray, approximately 4 by 8 feet, 6 inches deep. The liquids from one full bin fills up the liquids tray. Evaporation of the liquids from this tray is dependent upon weather and the time of year, generally evaporating within two weeks. The solid waste remains in the bin liner. The liners are flown out by helicopter.

Helicopter flights are used to fly bins and liners, both empty and full, supplies, repair and maintenance materials and helitack personnel to each toilet facility a minimum of two times per year, with multiple flights on these occasions.

Empty waste bins and supplies are flown into Outpost every June. In 2002, three round-trips were made from the Lone Pine helispot located near Lone Pine campground to Outpost camp; a total of one hour of flying time. One wilderness ranger and four helitack personnel were used for this mission.

At the end of the season bins full of human waste are flown out of Outpost Camp. In 2002, a total of eight bins were flown out, totaling three round-trips trips and one hour of airtime. The helicopter landed at Outpost camp twice to load and unload helitack personnel. One wilderness ranger and one helitack person were on site for this mission.

Empty liners and supplies are flown into Trail Camp every June also. In 2002, five round-trips of supplies were made from the Lone Pine Helispot located near Lone Pine Campground to Trail Camp. The helicopter landed at Trail Camp twice to load and unload one helitack personnel. One wilderness ranger, one helitack person and three engineers were on site at Trail Camp for this mission.

At the end of the season liners full of human waste are flown out of Trail Camp. In 2002, the helicopter landed at Trail Camp twice to load and unload helitack personnel. Four liners were flown out, totaling four round-trips and one and one-half hours of airtime. One wilderness ranger and one engineer were on site.

Maintenance of the toilets requires annual and or more frequent repairs for general upkeep of the facilities. This includes: replacing lumber, painting surfaces, repairing hardware, maintaining bear-resistant electric fences, replacing wiring, replacing ducting and fans, replacing and maintaining bins and maintaining signs.

Wilderness personnel clean and maintain the toilet facilities at least four times a week. Cleaning involves sweeping, mopping, and cleaning toilet seats with disinfectants. Maintenance involves rotating and moving full bins, monitoring liquids levels, pumping liquids from the bins, maintaining liquid drain hoses, checking fans and air ducts. The electric fences are put up and taken down annually.

Alternative 3 – One Toilet Structure - Remove the Trail Camp Toilet and replace and maintain Outpost Camp toilet.

The present toilet structure at Trail Camp would be removed and a new toilet structure would be built at Outpost. The new toilet structure would have a footprint of approximately 16' x 16' or 256 square feet. In addition there will be a deck area outside for unloading bins and several small liquid drying beds for a total footprint of 500 square feet or less. (Same as the design in **Alternative I**)

During the construction phase, helicopter flights would be necessary to fly in personnel, human waste bins and construction materials to Outpost. Helicopters would also be necessary for maintenance of the toilets.

A mandatory pack out your waste program would be instituted at Trail Camp. Extensive education of wilderness users in instruction of proper use of the pack out your waste kits would be implemented. Receptacles would be set up at the Whitney Portal trailhead to collect the pack out your waste kits. During the first two years of implementation, a receptacle would also be located at Outpost Camp. After two years, wilderness users would pack out all waste to the Whitney Portal trailhead. Removal of the Outpost Camp receptacles could be either by horse or helicopter.

Alternative 4 – Toilet Building Removal and Designated Sites Camping

In this alternative, overnight camping will be dispersed and managed by designated campsites to reduce the need for toilet facilities at the currently concentrated locations of Trail Camp and Outpost. The toilet facilities would be removed. The intent would be to reduce the concentration of use at the two locations and achieve dispersal of impacts and human waste. Education will be used to gain compliance and acceptance of a voluntary pack out your waste program. If human waste concerns persist, a mandatory pack it out program will be instituted.

Parties will be managed through an assigned sites system. Sites will be managed to allow for concentrations at existing areas of concentration (Outpost and Trail Camp) but with five other areas identified and managed for overnight use. In total there will be 20 overnight parties allowed each day accessing from the Mt. Whitney main trail; 4 parties per day accessing from Trail Crest and 5 sites reserved for through John Muir Trail hikers coming over Trail Crest. A total of 38 sites would be designated.

Day hiking would be limited to 70 people a day. This is a decrease from the current quota of 100 people a day. This would require a non-significant Forest Plan Amendment.

Overnight visitors will be required to camp at a designated site. Distribution of camps would be achieved by establishing designated sites and managing use by groups or

parties –per- day. The following locations have been identified as potential locations for distribution with a potential number of sites identified.

| Designated Site Location | Potential Number of Sites | Maximum Site capacity (people) |
|---|---------------------------|--------------------------------|
| Outpost | 8 | 38 |
| Trail Corridor between Outpost and Mirror Lake | 1 | 4 |
| Mirror Lake | 3 | 6 |
| Trail corridor between Mirror Lake and Trailside meadow | 3 | 8 |
| Corridor between Trailside meadow and Trail Camp | 2 | 4 |
| Consultation Lake | 3 | 20 |
| Trail Camp | 18 | 40 |
| TOTAL | 38 | 120 |

Small unobtrusive signs would identify sites. The site would be designed and hardened to contain impacted areas and will be engineered to accommodate up to a particular party size. A trail to the site from the main trail and one to water would be designed as a primitive path so that travel could be maintained to a limited area and it is visible to the visitor, very few constructive features would be used to maintain this primitive path. All signing and development would be kept to a minimum. Design would minimize intrusiveness of management presence.

Aggressive education of visitors would be necessary to achieve compliance with the designated site system and to encourage a pack out your waste program. Receptacles would be at the trailhead for the pack it out program.

No structures would exist in the drainage under this alternative.

Alternative 5 – Toilet Building Removal and Mandatory Pack Out of Human Waste

This alternative will remove both toilet structures along the Mt. Whitney Trail and require visitors to pack out their own solid waste. The Forest Service will provide human waste pack out kits to each visitor. Disposal facilities will be provided at the trailhead at Whitney Portal. The existing toilet structures would be disassembled and removed by helicopter.

Several types and brands of human waste pack-out kits are commercially available. The kits allow sanitary, convenient, and reliable containment and transport of human fecal materials by the user. The California Integrated Waste Management Board of the

California Environmental Protection Agency has approved the disposal of these bags in permitted California municipal solid waste landfills. Currently, the Mt. Whitney Ranger Station distributes a kit which consists of a plastic waste bag and a Ziploc bag. The waste bag contains a powdered gelling agent, odor neutralizer and decay catalyst. The bag is spread open on the ground and waste is deposited in it. The waste bag is then tied closed and sealed inside of the Ziploc bag. Each waste bag can be used several times, so each kit should adequately serve one visitor for 1 to 2 days. Most other commercially available kits are all similar in function and a product along these lines will be used for the pack it out program.

Human waste receptacles would be located at the Mt. Whitney trailhead. Visitors would place their waste bags in the receptacles when they return from their trip. During the first year of implementation, 2004, one toilet will be removed and the other will be used as a receptacle. In 2005 the second building will be removed and receptacles will be located at the trailhead.

The mandatory pack out program would require a comprehensive public awareness effort. Information about the program would be disseminated through a variety of venues, including the internet, Forest Service visitor centers and offices, outdoor magazines, sporting goods retailers, environmental and recreation organizations, and mailings to permit applicants. In the field, wilderness Rangers would provide information and instruction for using the bags and encourage and monitor compliance. Signing would be used where necessary to direct visitors to naturally screened locations with durable surfaces where they could gain privacy to use their pack out bags.

Monitoring of water quality and user compliance will be instituted to assure the system is effective. If a mandatory pack it out system fails, the Forest Service will implement further use limits and/or designated sites camping system.

Environmental Consequences Comparison of Alternatives

| Issue ↓ | <u>Alt. 1</u> Replace Toilets | <u>Alt. 2</u> No Action - Existing situation | <u>Alt 3</u> One toilet | <u>Alt. 4</u> Designated Sites | <u>Alt 5</u> Mandatory Pack out human waste |
|------------------------------------|--|---|---|---|---|
| Use Levels | Use levels remain the same - 60 overnight and 100 day hikers per day | Use levels remain the same - 60 overnight and 100 day hikers per day | Use levels remain the same - 60 overnight and 100 day hikers per day | Use levels managed to 25 parties a day for overnight use and 70 day hikers | Use levels remain the same - 60 overnight and 100 day hikers per day |
| Wilderness Character | | | | | |
| Structures / Minimum Necessary | 2 structures remain | 2 structures remain | One structure | No structures | No structures |
| Mechanized equipment and transport | Helicopter flights, fans, motors continue | Helicopter flights, fans, motors continue | Helicopter flights, fans, motors continue at Outpost | No mechanized equipment and transport after structures are removed | No mechanized equipment and transport after structures are removed |
| Wilderness Experience | Experience impaired by structures, sounds and smells. Camping is concentrated into two locations. | Experience impaired by structures, sounds and smells Camping is concentrated into two locations. | Experience impaired by structures, sounds and smells at Outpost Experience improved at Trailcamp | Loss of freedom to select campsites. Improved opportunities for solitude. Reduction in day use quota, reduces opportunities for day hikers. | Freedom to select campsites. Experience impaired by mandatory requirement of pack out human waste |
| Health and Safety | Employee safety will be improved by redesigned structures and human waste management system | Employee health and safety will continue to be at risk. | Employee health and safety will be improved from current situation. | Employee health may be improved if proper human waste disposal is achieved. Visitors may be exposed to their own waste and the sight of others if compliance with proper methods is not achieved. | Employee health may be improved if proper human waste disposal is achieved. Visitors may be exposed to their own waste and the sight of others if compliance with proper methods is not achieved. |

ENVIRONMENTAL CONSEQUENCES

Physical Environment

SOILS

The effects of the Whitney Toilet alternatives on soil erosion and sedimentation are discussed in the Water Resources section of this Environmental Assessment, while this section will mainly discuss how the Alternatives affect long-term soil productivity.

Alternative 1 - Proposed Action – Replace toilet structures

Twenty to thirty thousand hikers enter the Mt. Whitney Trail each year. Most of these visitors remain within 100 ft. of the main trail and within 50 ft. of the current toilets at Outpost and Trail Camp, and in and near the two major campsites. Therefore, most current human impact in the upper Lone Pine Creek watershed is highly concentrated. The concentration of human impacts greatly decreases soil productivity on the main trails, around the two major campsites, and near the current toilets where vegetation and soil trampling decreases productivity by compacting the soil, altering the soil structure, and removing organic matter. The portion of the upper watershed away from the main trail and two main campsites has only light human impacts from occasional hikers or campers. On a watershed scale, soil productivity is insignificantly impacted by current use.

Construction of each toilet would cover up to 200 additional square feet of soil with the new building, eliminating any soil productivity under the buildings as long as the building exists. In addition, soil would be trampled by workings during building construction up to 10 ft. out from the new building, temporarily compacting about 1,250 ft² of soil. The area around the building used by workers should be minimized to prevent as much new soil compaction as possible. Some of the area compacted by workers during construction could be rehabilitated by re-planting willows or other vegetation to discourage future traffic and regain soil productivity. A small path around the toilet, about 4 ft. wide, would need to remain free from tall vegetation for building maintenance.

A small amount of vegetation may have to be removed around the Outpost toilet site during toilet construction to allow room for workers to move around the building. This removal of vegetation would expose the previously protected soil to rainfall, and the top layer of soil could be more easily washed away from the site. This removal of the top, organic rich layer of soil could decrease soil productivity. Proper rehabilitation of the temporarily disturbed area will prevent soil erosion.

The effects of this alternative have been considered in the context of past, present and reasonably foreseeable future actions in the analysis area. The construction of each toilet would cover 400 square feet of ground for growing vegetation, eliminating, in the

foreseeable future, any soil productivity. Activities associated with the construction of the buildings would temporarily impact adjacent areas. The appropriate rehabilitation of temporarily impacted areas would ensure that long-term soil productivity is achieved both locally and within the Lone Pine Creek watershed.

Alternative 2 - No Action -Existing Situation

There will be no impacts to soil productivity beyond those occurring currently in the upper Lone Pine Creek watershed. See Alternative One for current soil conditions.

If the Outpost toilet fails and the toilet is closed, visitors will be required to pack out their waste. There would be more people leaving the main trail and walking further from Outpost camp to find a suitable site, and this could lead to vegetation removal through trampling. When vegetation is removed, soil could be more easily compacted by foot traffic, and would be exposed to rainfall. Therefore, the soil would more easily wash away, removing the organic-rich top layers and reducing soil productivity. However, this would affect only a small amount of soil, as most of the upper watershed is rocky.

Alternative 3 – One Toilet Structure - Remove the Trail Camp Toilet and replace and maintain Outpost Camp toilet.

Under Alternative Three, there would be no change in soil productivity in the area near Outpost Camp. See Alternative one for current soil conditions.

Campers who stay at the Trail Camp Toilet would be required to pack out their waste in bags. Assuming that in the first few years, about 50% of people will comply with the pack-it-out policy and would bury their waste in holes. Digging holes would mix the soil, burying the organic-rich top layer of soil and therefore reducing soil productivity. Because there is a relatively small area of soil near Trail Camp, the existing soil areas would likely be almost completely dug up after a few seasons. Continued digging over many seasons could reduce long-term soil productivity.

After a few years with extensive education, visitors would likely become comfortable with the idea of packing out waste, and compliance would likely improve to 80%. Then, the number of holes dug would decrease to a number that would have small effects on soil productivity relative to the watershed.

With visitors attempting to find visual privacy to use their pack-it-out bags, there would be more people leaving the main trail and walk further from Trail Camp to find a suitable site. This could compact soil and reduce soil productivity on the new use trails, but because most of upper Lone Pine Creek watershed is rocky, this should not measurably impact soil productivity relative to the watershed. Further, compliance would likely increase over a few years, allowing the user trails to revegetate and decompact.

When vegetation is removed, soil could be more easily compacted by foot traffic, and would be more exposed to rainfall. Therefore, the soil would more easily wash away, removing the organic-rich top layers and reducing soil productivity. This would affect only a small amount of soil as most of the upper watershed is rocky, and visitors could be educated to walk on rocky areas rather than vegetated areas.

Cumulative Effects are expected to be the same as under Alternative One both on a local and watershed scale.

Alternative 4 – Toilet Building Removal and Designated Sites Camping

Alternative Four includes designating campsites dispersed throughout the upper Lone Pine Creek watershed. Designated campsites would result in more area of soil disturbance than currently, and disturbance would be spread throughout the watershed. Each site would need a trail from the main trail for access, with the Forest creating trails to water from the campsite. With appropriate site planning to reduce impacts to soil and vegetated areas, and education encouraging walking upon bedrock instead of vegetated areas, impact could be prevented.

Under a voluntary pack it out program between 5,000 and 7,000 people may still bury their waste. Digging holes would mix the soil, burying the organic-rich top layer of soil and therefore reducing soil productivity. Because there is a relatively small area of soil in the upper Lone Pine Creek watershed, the existing soil areas would likely be almost completely dug up after a few seasons, reducing soil productivity throughout the upper watershed.

Both toilets would be removed under Alternative Four, and soil at the previous toilet sites should be decompacted and revegetated to increase soil productivity. Proper rehabilitation will prevent soil loss and return soil productivity.

Creation of new campsites would remove a small amount of vegetation. When vegetation is removed, soil could be more easily compacted by foot traffic, and would be more exposed to rainfall. Therefore, the soil would more easily wash away, removing the organic-rich top layers and reducing soil productivity. However, this would affect only a relatively insignificant amount of soil as most areas chosen for sites would not be vegetated, and visitors could be educated to walk on rocky areas rather than vegetated areas when walking around the camp.

With implementation of BMPs, proper site location, and visitor education, the local and watershed scale of the impacts of rehabilitating the two toilet sites while creating new sites are negligible.

Alternative 5 – Toilet Building Removal and Mandatory Pack Out of Human Waste

In the first few years, some of the visitors might not use bags at all, and would bury their waste in holes. Digging holes would mix the soil, burying the organic-rich top layer of soil and therefore reducing soil productivity. Because there is a relatively small area of soil near the Outpost Camp, the existing soil areas would likely be almost completely dug up after a few seasons.

Continued digging over many seasons could reduce long-term soil productivity. However, after a few years with extensive education, visitors would likely become comfortable with the idea of packing out waste, and compliance would likely improve. Then, the number of holes dug would decrease to a number that would have insignificant effects on soil productivity relative to the watershed.

With visitors attempting to find visual privacy to use their pack-it-out bags, there would be more people leaving the main trail and walking further from Outpost camp to find a suitable site. This could compact soil and reduce soil productivity on the new use trails, but will be partially off-set by rehabilitation of the existing toilet sites. As visitor education improves and visitors use more hardened sites to leave the trail, disturbances would decrease, litter, duff and organic matter would return to the site and provide for long-term soil productivity.

Both toilets would be removed under Alternative Five, and soil at the previous toilet sites should be decompacted and revegetated to increase soil productivity. Rehabilitation should allow soil to regain productivity.

WATER RESOURCES

Alternative 1 - Proposed Action – Replace toilet structures

Cement and other potential pollutants that could possibly spill would be used during construction of both toilets, but proper construction, Best Management Practice (BMP) implementation will prevent water quality degradation.

The Outpost toilet structure would be constructed within 100 ft of an intermittent stream, with heavy vegetation between the structure and stream. During construction of the proposed new Outpost toilet, a relatively small ground area will be disturbed to enlarge the existing building footprint up to 500 ft² (including deck and holding area), and to allow workers to move around the building during construction. In addition, soil would be trampled by workings during building construction up to 10 ft. out from the new building, temporarily compacting about 1,250 ft² of soil. The area around the building used by workers should be minimized to prevent as much new soil compaction as possible.

Willows to the south of the current structure may need to be trimmed for construction, and one shrub at the southeastern corner of the building would need to be removed. Otherwise, no riparian vegetation would be disturbed.

At Trail Camp, there will be fewer construction effects on water quality because there is very little vegetation at the toilet site, and the ground to be disturbed already contains the outdoor liquid storage bin. Proper implementation of construction BMPs will prevent water quality degradation during snowmelt or rainfall events.

The proposed toilet system will be designed to minimize the chance for leakage or spillage of the waste, unless it malfunctions or overflows, which is unlikely without extraordinary situations.

The design will be safer than the current system, where cumbersome containers easily allow spillage and numerous connections between waste-carrying tubes allow leakage.

Bleach and other cleaning chemicals would be used to clean the proposed toilets at both sites, to prevent public safety hazard. These chemicals will be dumped outside after they are diluted, and low concentrations will enter the soil at both sites. However, the volumes would be small (about ½ - 1 gallon of chemical per year) and the rangers will dispose of the cleaning fluids over 200 ft from any surface water. The chemicals should therefore have no measurable effect on water quality.

Currently, visitor use is concentrated around Outpost and Trail Camps and their associated toilets. With new or modified structures in the same place, camping and associated user trails would remain concentrated at the two major campsites, and no new land would be disturbed for camping. Therefore, campers would not create new potential sediment sources.

The effects of this action have been considered in the context of past, present, and reasonably foreseeable future actions in the analysis area. Alternative One will not have any negative cumulative effects on water quality, riparian habitat quality, or geomorphic function of Lone Pine Creek or lakes within the watershed. It is possible that there will be slightly improved water quality in the watershed because under this alternative, the toilets could stay open year round and more people will use the toilets rather than defecating on the ground.

Alternative 2 - No Action -Existing Situation

The Lone Pine Creek watershed is currently impacted by heavy hiker and camper use. Use is highly concentrated around the trail, Outpost Camp and Trail Camp. Most overnight users camp either at Outpost or Trail Camp, where solar toilets are provided, and most visitors use these toilets during the quota season. During the non-quota season, when toilets are closed, visitors usually deposit their human waste in the snow, on the ground, or in the ground. Water quality degradation in this watershed is possible through trail and campsite erosion, trash, food waste, and human solid waste. However,

water quality studies have not been completed and there is currently no evidence of water quality degradation.

The toilets at both Outpost and Trail Camp are in disrepair, and leaks and spills can easily occur. Such leaks and spills, if they occur during a rainy period or during snowmelt, could make their way into the surface water system and contribute pathogens, bacteria, and nutrients to the water. No large spills have been reported to enter water, and the potential for such a spill is low.

The existing toilets use large plastic containers like those used for municipal garbage to capture and store solid human waste, with drains on the bottom of the container to drain liquids. When the containers are full, rangers wheel them outside, bolt down the lids (unsealed) and leave them in an electric-fenced area until a helicopter picks them up. The electric fence prevents bears from getting into the waste containers. As it is, the system could easily allow leaks or spills, especially during transportation of the containers and during outdoor storage.

Although the volume of most leaks and spills is not likely to be sufficient to cause measurable water quality degradation, a spill of an entire 90 gallon container while the waste is still wet could enter a water body and temporarily degrade water quality. Even if the waste was partially dry at the time of spillage, it would be impossible for the rangers to clean up the entire spill, and any rain could wash the remaining spill into lakes or creeks, causing a temporary spike in contaminants.

Bleach and other cleaning chemicals are used to clean toilets at both sites. These chemicals are dumped outside after dilution, and it is possible that they could enter groundwater through the very permeable soils at both sites, during wet times with a high groundwater table. However, the volumes are small (about ½ - 1 gallon of chemical per year) and the rangers dispose of the fluids over 200 ft from surface water. Therefore, the chemicals will likely have no measurable effect on water quality.

The Trail Camp toilet lies in a depression where water accumulates in a small ephemeral wash during the snowmelt season. The toilet structure diverts the stream and groundwater seeps into the cement vault under the structure. Under the No Action alternative, the Trail Camp toilet would continue modifying the wash's path as it does today. The effects are insignificant from a geomorphic, hydrologic, or habitat standpoint because the wash is ephemeral and because there is little vegetation or wildlife dependent on this water.

The current toilet buildings cannot be repaired to prevent safety hazard, and eventually one or both toilets may be closed down without warning. When this happens, it is uncertain what measures will be taken to prevent waste accumulation problems along the trail and near water. If the toilets are not replaced, and people are not required to pack out their waste, feces and associated toilet paper from 20,000 to 30,000 people could accumulate each year. It is uncertain how much of that waste would decompose

before making its way to surface or groundwater, but we will assume that a portion of the waste would not decompose and would be carried into water bodies after each spring's snowmelt or during rainstorms. This could have slight measurable water quality impacts.

If the current toilets fail, it is possible that the INF would begin requiring users to pack out their solid waste, and if users complied with the pack-it-out system, there would then be few water quality impacts from human waste.

Camping along the Mt. Whitney trail is concentrated at the Outpost and Trail Camp sites, where toilet facilities exist. If no action is taken, camping and associated user trails would remain concentrated at these two sites, and no new land would be disturbed for camping. Therefore, campers would not create new potential sediment sources.

The effects of Alternative Two have been considered in the context of past, present, and reasonably foreseeable future actions in the analysis area. There is a slight possibility that the No Action alternative could have a very local and temporary detrimental effect on water quality because there is a potential for sewage spills at both toilets. If the spill volume is large enough and/or during snowmelt or an intense rainstorm, the sewage could make its way to running surface water, contributing excessive nutrients, bacteria and possibly other pathogens.

Alternative 3 – One Toilet Structure - Remove the Trail Camp Toilet and replace and maintain Outpost Camp toilet.

At Trail Camp, there will likely be insignificant construction effects on water quality because the toilet will be modified, not replaced. However, an additional storage area for two bins is necessary at the Trail Camp toilets, which would add up to an additional 140 ft² to the existing structure and disturb at least that much ground. There is very little vegetation at the toilet site, and the ground to be disturbed already contains the outdoor liquid storage bin. With proper BMP implementation during construction, these ground disturbing activities will not affect water quality.

If hikers comply fully or almost fully with the pack-it-out policy at Trail camp, there should be a slight reduction in human waste inputs to water in the Lone Pine Creek watershed relative to current conditions. Currently, hikers do not bring pack-it-out bags during the non-quota season when toilets are closed, and waste is often deposited in snow or on the ground. When waste is deposited in snow near water, it can be carried into the water body. While there is no evidence that such fecal contamination of water is occurring, it is possible that small amounts of fecal contamination is locally reaching water. With a voluntary pack-it-out program in place, visitors will be more likely to carry pack-it-out bags during the off season and pack out their waste.

If hikers do not fully comply with the pack-it-out policy at Trail Camp, there will be an increase in human waste deposition in the area relative to current conditions, and it is

possible that there would be a slight increase in fecal contaminants in Lone Pine Creek downstream from Trail Camp. The Trail Camp toilets receive more use than the Outpost Camp Toilets, (Calder Reid, personal communication, May 17, 2002), and therefore the water quality impact could not be significant if half of the people did not comply with the pack-it-out system. Extensive education and an easy-to-use disposal system would likely result in high compliance rates, near 80%, and reduce water quality effects to negligible levels.

The modified Outpost Camp toilet will be designed to avoid spills and leaks, and therefore the risk of sewage spills will be reduced from the current level.

Bleach and other cleaning chemicals would be used to clean the modified Outpost Camp toilet, to prevent public safety hazard. These chemicals must be dumped outside after dilution, and it is possible that they could enter groundwater through the very permeable soils at both sites. However, the volumes would be small (about ½ - 1 gallon of chemical per year) and the rangers will dispose of the cleaning fluids over 200 ft from any surface water. Therefore, the chemicals will likely have no measurable effect on water quality.

Alternative Three should not have measurable negative cumulative effects on water quality, riparian habitat quality, or geomorphic function of Lone Pine Creek or lakes within the watershed. It is possible that there will be a slight decrease water quality in the watershed because under this alternative, more users might defecate on the ground, disturbing soil and introducing nutrients, bacteria, and other pathogens into surface water. However, extensive education and enforcement should reduce this effect to non-significance.

Alternative 4 – Toilet Building Removal and Designated Sites Camping

Under Alternative 4, use would be dispersed relative to current use, but waste would be concentrated near the trail and campsites. Designated campsites would be farther than 200 feet from water, and visitors would therefore usually deposit waste farther than 200 feet from water. Extensive education would likely result in higher compliance rates, and also result in more sanitary waste disposal practices, such as burying waste and packing out toilet paper.

Although it is uncertain what impacts people defecating on or in the ground per year would have on water quality, it would likely have small but immeasurable impacts. The area is very dry and often cold, and bacteria should die quickly (Climburg et al. 2000). During rains and snowmelt, it is therefore unlikely that large amounts of bacteria will enter water bodies. However, other, more resistant and less understood pathogens could enter the water supply. The greatest impact, if any, would be temporary water quality degradation locally near the campsites, during rain or snowmelt after the waste and toilet paper had accumulated for months.

Camping is currently concentrated at the Outpost and Trail Camp sites, where toilet facilities exist. With more dispersed campsites, more ground would be disturbed through creation of access trails and possible new campsites. Because the INF would designate campsites, the sites would be at least 200 ft from surface water, and therefore the ground disturbance from the sites themselves would not affect water quality. New INF designated trails from campsites to water sources would be constructed to minimize impacts to soil and water quality. The extent of disturbance, while greater than today, would be small compared to the extent of riparian habitat present.

Both toilets would be removed under Alternative Four, and after removal, a large bare spot of compacted soil would remain at the sites. Rehabilitation would prevent soil loss from the sites during rainfall and snowmelt.

The effects of Alternative Four have been considered in the context of past, present, and reasonably foreseeable future actions in the analysis area. Alternative Four would disperse visitor use by dispersing campsites. A small amount of new ground would be disturbed, with some erosion and riparian vegetation trampling causing slight local and temporary increases in turbidity. With user compliance, there should be no increase in human waste deposition on the ground, and no cumulative water quality impact in the watershed from human waste.

Alternative 5 – Toilet Building Removal and Mandatory Pack Out of Human Waste

With half of the hikers complying with the pack-it-out policy, between 10,000 and 15,000 people would still defecate on or in the ground per year, most likely concentrated near the trail and two major campsites and therefore near surface water. Extensive education would likely result in higher compliance rates.

Although the impacts of 10,000 to 15,000-people defecating on the ground per year are uncertain, it would likely have small but immeasurable water quality impacts. Because almost all overnight camping is concentrated in the Outpost and Trail Camp campgrounds, and under Alternative five, camping patterns would not change, those areas would sustain the greatest human waste concentration. The analysis area is very dry and often cold, and bacteria should die quickly (Climburg et al. 2000). It is unlikely that large amounts of bacteria will enter water bodies during rains and snowmelt. However, other, more resistant pathogens that are less completely understood could enter the water supply. The greatest impact would likely be temporary and local water quality degradation near the two major campsites, during rain or snowmelt after the waste had accumulated for months. Ranger removal of human waste at the end of the summer could help reduce waste accumulation and subsequent water pollution.

All receptacles for waste bags will be constructed to prevent spillage, animal disturbance, or leakage, and will not contribute to water quality degradation.

Most current camping and use patterns will remain the same under Alternative Five, although more people will likely leave the trail to find protected areas to go to the bathroom, where currently they simply go into the toilets along the trail. This could create some user trails that will remove vegetation and loosen soils, causing erosion and sedimentation into water bodies. However, much of the watershed is bedrock, and with education, users can be encouraged not to walk on vegetated areas.

Both toilets would be removed under Alternative Five, and after removal, a large bare spot of compacted soil would remain at the sites. Rehabilitation would prevent soil loss from the sites during rainfall and snowmelt. With the removal of both toilets on the Mt. Whitney trail in the Lone Pine Creek Watershed, the potential for spilling large quantities of human waste onto the ground will be reduced, hydrologic alterations caused by the current toilets will also be reduced.

The effects of Alternative Five have been considered in the context of past, present, and reasonably foreseeable future actions in the analysis area. During the first few years of implementation, we assume that there will be an increase in the amount of human waste buried or left on the ground. Although water quality effects are uncertain, it is likely that there will be a large enough concentration of waste within 500 ft of the two major campgrounds to cause an increase in nutrients, bacteria, and other fecal-transmitted pathogens in Lone Pine Creek near the campgrounds. This effect should decrease over time with greater compliance.

In the first few years of implementation, it will be necessary for rangers to pick up accumulated human waste on the ground surface before snowfall to prevent measurable impacts to water quality. An increase in foot traffic off the main trail will likely occur with the pack-it-out program, due to visitors searching for visual privacy to go to the bathroom. This will lead to a proliferation of user trails to well-protected areas, and result in vegetation trampling and removal. Erosion will increase along these trails, and if enough trails are created, it could increase sedimentation into Lone Pine Creek and other water bodies. However, increased education encouraging visitors to walk off the trail only in rocky areas, and increased ranger presence would reduce sedimentation to non-measurable quantities.

RIPARIAN CONSERVATION AREA (RCA) CONSIDERATIONS

See Appendix 2 for description of RCA and Management Direction.

Alternative 1 - Proposed Action – Replace toilet structures

Consequences to Riparian Conservation Objectives-RCO 1

Toilet construction and operation will not detrimentally affect the beneficial uses of Lone Pine Creek, and have little potential for impacting water quality objectives unless there is a sewage or chemical spill, as long as appropriate Best Management Practices (BMPs) are implemented during construction. In the case of a large sewage spill, it is possible that all beneficial uses would be affected and water quality objectives for NO_3^- -N, total N, and PO_4 could be exceeded. (*see appendix for definitions*).

Toxic chemicals used for cleaning would be stored at this site under this alternative, and appropriate spill plans will be created to prevent water quality degradation in the case of a spill. Chemicals will be used and stored within the toilet buildings, and therefore spillage would have little chance of reaching surface or groundwater.

Under alternative one, the current pattern of trail use and camping will continue in the Lone Pine Creek Watershed. The current use concentrates camping at Outpost and Trail Camp. Both of these areas are suitable for camping, as erosion and compaction is minimal at these rocky areas and vegetation is sparse due to poorly developed soils. Continued camping at these sites will not have impacts on beneficial uses of Lone Pine Creek, in terms of erosion, sedimentation and effects on riparian vegetation.

Implementation of construction BMPs to mitigate any erosion or runoff of construction wastes will allow toilet construction to meet RCO #1.

BMPs and monitoring protocols for sanitation facilities are described in Appendix I, and include:

- 4-4: Control of Sanitation Facilities
- 4-5: Control of Solid Waste Disposal

Consequences to RCO 4

Replacement and operation of toilets should meet RCO #4.

Alternative 2 - No Action -Existing Situation Consequences to RCO 2

The toilet at Outpost has no impacts to geomorphic characteristics of any water body.

The toilet at Trail camp is in a low-lying area among rock outcrops, and water flows in the low-lying area during snowmelt only. The water fills the vault below the toilets (no sewage is in the vault, it is just an open space), and is diverted from its natural path around the toilet building. Therefore, the toilet building is currently altering geomorphic processes of a small wash. Under the proposed alternatives, the toilet building will remain in the same place and be modified. There is little vegetation or wildlife dependent on the ephemeral wash, and therefore the geomorphic modification has a small effect on aquatic or riparian habitat.

Consequences to RCO 1

Continuing toilet operation as today has the potential to affect the beneficial uses of Lone Pine Creek, with potential for impacting water quality objectives in the case of a sewage spill. Currently, spills are likely with difficult-to-manage waste receptacles and potential for bears to knock over the receptacles when they are stored outside. The Outpost toilet site is within 200 ft of Lone Pine Creek, so large spills could end up in the creek. In the case of a large sewage spill, it is possible that all beneficial uses would be affected and water quality objectives for $\text{NO}_3\text{-N}$, total N, and PO_4 could be exceeded.

Under alternative Two, the current pattern of trail use and camping will continue in the Lone Pine Creek Watershed. The current use concentrates camping at Outpost and Trail Camp. Both of these areas are suitable for camping, as erosion is minimal from these rocky areas and natural vegetation is minimal due to poorly developed soils. Continued camping at these sites will not have impacts on beneficial uses of Lone Pine Creek, in terms of erosion, sedimentation and effects on riparian vegetation.

Consequences to RCO 2:

The toilet at Outpost has no impacts to geomorphic characteristics of any water body.

The toilet at Trail camp is in a low-lying area among rock outcrops, and water flows in the low-lying area during snowmelt only. The water fills the vault below the toilets (no sewage is in the vault, it is just an open space), and is diverted from its natural path around the toilet building. Therefore, the toilet building is currently altering geomorphic processes of a small wash. However, there is little vegetation or wildlife dependent on the ephemeral wash, and therefore the geomorphic modification has a minimal effect on aquatic or riparian habitat.

Consequences to RCO 4:

Implementation of this alternative should meet RCO #4.

The No Action alternative would have a detrimental effect on water quality only in the unlikely event of a sewage spill at either toilets. If the spill volume is large enough and/or during snowmelt or an intense rainstorm, the sewage could make its way to running surface water, contributing excessive nutrients, bacteria and possibly other pathogens. The effect would be temporary and local.

ALTERNATIVE 3 – Consequences to Riparian Conservation Objectives

Alternative 3 consequences to RCO 1

Impacts the same as under Alternative One

ALTERNATIVE 4 – Consequences to Riparian Conservation Objectives

Alternative 4 consequences to RCO 1:

Under Alternative Four, fewer people would enter the watershed daily, and if hikers use the pack it out system, there will be no threat to beneficial uses. However, if hikers do not use the pack-it-out system, there is a potential for higher nutrient and bacterial levels locally and temporarily if intense rain falls on feces deposited near water. If feces deposition is dispersed and the majority of hikers use the pack-it-out system, beneficial uses will be protected.

Alternative 4 consequences to RCO 2:

The toilet at Trail camp is in a low-lying area among rock outcrops, and water flows in the low-lying area during snowmelt only. The water fills the vault below the toilets (no sewage is in the vault, it is just an open space), and is diverted from its natural path around the toilet building. Removal of this building would allow geomorphic processes to return more toward normal at the site, although the trail would still run through this area and divert part of the water flow. As the water is intermittent and does not support a large amount of aquatic or any riparian habitat, this effect is small.

Alternative 4 consequences to RCO 4:

Alternative Four would disperse visitor use by dispersing campsites. New areas would be disturbed, with an insignificant amount of erosion and riparian vegetation trampling that would not degrade water quality.

With user compliance, there should be no increase in human waste deposition on the ground, and no cumulative water quality impact in the watershed from human waste.

ALTERNATIVE 5 – Consequences to Riparian Conservation Objectives

Alternative 5 consequences to RCO 1:

Under Alternative Five, if only 50% of hikers comply with the pack-it-out system, there is potential for higher localized nutrient and bacterial levels locally and temporarily if intense rain falls on human solid waste deposited near water. If feces deposition is dispersed and 80% hikers use the pack-it-out system, beneficial uses will be protected.

Alternative 5 consequences to RCO 2:

The toilet at Trail camp is in a low-lying area among rock outcrops, and water flows in the low-lying area during snowmelt only. The water fills the vault below the toilets (no sewage is in the vault, as it is just an open space), and is diverted from its natural path around the toilet building. Removal of this building and filling in the vault hole would allow geomorphic processes to return more toward normal at the site, although the trail would still run through this area and divert part of the water flow. As the water is intermittent and does not support a large amount of aquatic or any riparian habitat, this effect is small, but positive.

If users create more trails off the main trail to access protected areas, they might remove some riparian vegetation, increasing erosion and sedimentation into water. If users enter riparian areas where the vegetation can protect them from sight of the trail, they could trample riparian vegetation and possibly cause some bank erosion. Increased education and ranger presence should encourage visitors not to trample delicate alpine and sub-alpine vegetation.

Biological Environment

Wildlife

Due to the high elevations and rugged terrain within the project area, wildlife habitat is fairly limited. The area surrounding Outpost Camp supports a riparian meadow system surrounded by sparse subalpine forest. The Trail Camp area is mostly devoid of overstory vegetation, with occasional forbs and grasses present on the generally rocky substrate. Animal species present include black bears (*Ursus americanus*), yellow-bellied marmots (*Marmota flaviventris*), pikas (*Ochotona princeps*), American martens (*Martes americana*), voles (*Microtus* spp.), and several high-elevation bird species.

Potential impacts on animal species from project implementation include direct, indirect and cumulative effects. Potential direct effects include habitat loss and disturbance of individuals during construction periods. Indirect effects include potential modification of both animal and human behavior in the vicinity of toilets. Some wildlife species habituate to human presence and eventually become dependent on human activities and seek out humans to receive food. Ravens and other scavenging birds, bears, coyotes and some rodents are known to frequent areas of high human concentrations to seek handouts and scavenge garbage. Both bears and marmots are attracted to human food and have been observed consuming human feces at the Trail and Outpost Camp toilets. Cumulative effects would be associated with other past, present and reasonably foreseeable actions in the area or changes in the overall recreation use of the area.

Overall, impacts of the proposed action are expected to be minor or negligible. Little or no habitat loss is anticipated, as toilet replacement would occur on previously disturbed sites. Periods of human activity above ambient levels associated with construction would be of short duration. Animals in the immediate vicinity of the project have likely developed some habituation to the presence of humans, and none of the alternatives would substantially modify overall human use of the area relative to current levels.

Consequences by Alternative:

Alternative 1 – Proposed Action – Replace toilet structures

There would be a slight increase in disturbance of local wildlife species associated with replacement of the two structures. Replacement would require between 15 and 50 extra helicopter trips into the area. Helicopter noise may temporarily displace individual animals from the immediate vicinity, however the perturbation would be of short duration and limited frequency and would not constitute a long-term negative impact. Once the construction period was over, human use of the area would be similar to the existing situation. The new toilets may be less odiferous, thereby reducing the attraction of animals searching for food.

Alternative 2 – No Action – Existing Situation

There would be no impacts to animals or their habitat beyond what is currently occurring in the Outpost and Trail Camp areas. Resident species would not experience the increased, short-term disturbance associated with construction of new toilets or additional helicopter trips.

Alternative 3 – One Toilet Structure – Remove the Trail Camp Toilet and Replace and Maintain Outpost Camp Toilet

Short-term disturbance of animal species would be slightly decreased relative to Alternative 1. An equal number of helicopter trips would be required to replace the Outpost Camp toilet, but fewer trips would be necessary to remove the Trail Camp structure. Elimination of the Trail Camp toilet may result in an increase of improperly disposed human waste in the area. This could attract resident wildlife species and provide them an unhealthy food source. Ultimate compliance with a mandatory “pack out your waste” program would eliminate this attractive nuisance.

Alternative 4 – Toilet Building Removal, Designated Sites Camping, Voluntary Packing of Waste

Short-term disturbance of animal species would be slightly decreased relative to Alternatives 1-3. No helicopter trips would be necessary for replacement of facilities, or routine maintenance and flying out human waste. Elimination of the two toilets would likely result in an increase of improperly disposed human waste in the area. This could attract resident wildlife species and provide them an unhealthy food source. Limiting the day hiking quota to 70 people may slightly reduce the incidence of human/wildlife encounters and resulting disturbance of individual animals.

Alternative 5 – No Designated Sites, Toilet Building Removal and Mandatory Packing out of Human Waste

Initially, impacts to resident wildlife species would be similar to those described for Alternative 4. By making the “pack out your waste” program mandatory, the availability of human waste as an unhealthy food source or attractant would eventually be eliminated or greatly reduced.

Botany

Consequences common to all alternatives:

Cumulative effects are similar under all alternatives. There are no cumulative effects associated with other past, present, or reasonably foreseeable future actions in or adjacent to the project area. The impacts in the area are limited to those associated with the direct and indirect effects of the hiking and backpacking use already considered in this analysis.

Alternative 1 – Proposed action

Under the proposed action, trampling impacts to vegetation would remain confined primarily to the area in the immediate vicinity of the toilets. The construction and maintenance of the new toilets will result in the disturbance of an additional 1400 square feet each over the existing situation in the same area. Vegetation is sparse, particularly in the Trail Camp area. There may be trampling of small numbers of Mt. Whitney draba, a Forest Service sensitive plant species. The risk of weed introductions is relatively low, and will be minimized with the implementation of weed mitigation measures as stated in the weed risk assessment for this project, designed to decrease the risk of introduction associated with construction activities, or with high hiker use.

Alternative 2 – Existing Situation

The effects on vegetation resources are similar to the proposed action under this alternative. There would not be an additional 2800 square feet of disturbance as would occur with the replacement of both toilets. The risk of weed introductions will be low, as in the proposed action.

Alternative 3 – Remove Trail Camp toilet and replace Outpost Camp toilet

The effects of this alternative on vegetation at Outpost Camp are the same as those discussed under the proposed action. Trampling impacts to vegetation would remain confined primarily to the area in the immediate vicinity of the toilets. The construction and maintenance of the new toilet at Outpost Camp will result in the disturbance of an additional 1400 square feet over the existing situation in the same area. There may be trampling of small numbers of Mt. Whitney draba, a Forest Service sensitive plant species.

At Trail Camp, the use will become more dispersed as visitors seek out privacy for waste disposal. Disturbance to soil and vegetation, including sensitive plant species, and the potential for weed invasion will increase, particularly during the first few years, while people are adjusting to the pack it out policy and still digging holes. Over time, impacts should become limited primarily to trampling of vegetation and soil compaction, over a wider area than under the current situation. Surveys will be conducted at Trail Camp if this alternative is selected, with follow-up monitoring as warranted based on the results of the initial survey, to determine if unacceptable levels of impact to any sensitive plant species are occurring. The likelihood of impacts is low.

The risk of weed introductions is relatively low, and will be minimized with the implementation of weed mitigation measures as stated in the weed risk assessment for this project, designed to decrease the risk of introduction associated with construction activities, or with high hiker use.

Alternative 4 – Toilet Building Removal and Designated sites Camping

With the designation of campsites and access trails, and the reduction in overall use levels, the impacts to vegetation, including sensitive species, due to trampling and soil compaction would likely be less than under alternatives 3 and 5. Visitor use, and consequently vegetation trampling impacts, would be dispersed over a larger area than under alternatives 1 and 2; however, trampling may be lower overall due to the lower use levels. Whether this would be better or worse for vegetation, particularly sensitive plant species, is unclear, and depends on the specific locations of sensitive plant populations. Sensitive plant surveys would be completed prior to site and access trail designation, and sites would be placed to minimize impacts to sensitive plants to the maximum extent possible.

Alternative 5 – Toilet Building Removal and Mandatory pack out waste

The effects on vegetation resources of this alternative for the Trail Camp and Outpost Camp areas are the same as those outlined for Trail Camp in alternative 3. Visitor use will become more dispersed in both areas, and along the trail, as visitors seek out privacy for waste disposal. Disturbance to soil and vegetation, including sensitive plant species, and the potential for weed invasion will increase, particularly during the first few years, while people are adjusting to the pack it out policy and still digging holes. Over time, impacts should become limited primarily to trampling of vegetation and soil compaction, over a wider area than under the current situation. If this alternative is selected, surveys will be conducted at Trail Camp and Outpost Camp, as well as at other locations along the trail that begin to receive heavier use. Follow-up monitoring will be conducted as warranted based on the results of the initial survey, to determine if unacceptable levels of impact to any sensitive plant species are occurring. The likelihood of impacts is low.

Human Environment

Heritage Resources

Alternative 1 - Replace Toilets;

Alternative 2 - Existing Situation;

Alternative 3 - Remove Trail Camp toilet and replace Outpost Camp toilet
Consequences to Heritage Resources

In alternative 1 and 2 structures would exist at the current location of Trail Camp and Outpost and in Alternative 3, only one structure would exist at Outpost. In accordance with the National Historic Preservation Act Section 106, a clearance is on file on the Forest, (Heritage Resource Report - R1995050400696). There is no effect to Heritage resources in these alternatives.

Alternative 4 – Toilet Building Removal and Designated Sites Camping

In this alternative, campsites would be designated. In Heritage Resource Report R1995050400696 no heritage resources were found in the trail corridor and at Trail Camp and Outpost. There is no effect to Heritage resources in this alternative. If other sites are designated, a separate heritage clearance would be conducted.

Alternative 5 - Toilet Building Removal and Mandatory Pack out waste

No effect.

Recreation

Consequences Common to all alternatives:

In all alternatives, human waste disposal requires visitors to dispose of their human waste in a manner that is not typical in a wilderness setting.

Consequences by Alternative:

Alternative 1 - Proposed Action – Replace toilet structures

With the replacement of the two toilets, the experience that a visitor has come to expect on Mt. Whitney, with toilet structures provided, will improve. It will enable visitors to experience the Mt. Whitney trail and facilitate visitor's wilderness visit - primarily the less experienced wilderness travelers.

During the construction phase of the project, a visitors' experience may be affected by the noise, the disturbance to the wilderness setting, helicopter flights and general non

conforming wilderness intrusiveness. This would however be minimized by the timing of construction and would be temporary in duration, with much of the building being constructed off site and flown in.

During the construction phase the Forest may reduce the quota or completely block out days for the safety of visitors. Visitor use would be reduced in these time periods, reducing opportunities for visitors to hike on the Mt. Whitney trail. This impact to visitors would be short in duration.

There would be an improvement to the bathroom facility over what now exists with a likely reduction in odors as a result of more efficient and effective management of waste.

Alternative 2 - No Action -Existing Situation

In this alternative the toilets would continue to produce odors that emanate from urination around the toilet site. In addition, as liquids are collected in holding tanks near the toilets at Trailcamp, odors will continue to emanate from areas outside and adjacent to the toilet building.

The health and safety of employees will continue to be a concern with employee exposure to human waste through moving the waste bins, breathing the waste odors and continual exposure to hepatitis, hantavirus and fecal coliform bacteria.

On going modifications of the building may lead to continued temporary closures and visitor expectations of toilet availability may not be met. When the toilet buildings are unavailable (due to periodic malfunctions that can be expected) there will likely be a proliferation of human waste around the structures and in the camping areas creating a visual and aesthetic impact to the visitors' experience.

Alternative 3 – One Toilet Structure - Remove the Trail Camp Toilet and replace and maintain Outpost Camp toilet.

Visitor's expectations will be affected by not having toilet facilities at Trail Camp. This may create more concentration of use at Outpost and an associated reduction in solitude at an already very concentrated use site.

Instituting a pack it out program will require some time to gain compliance. There will likely be a period of time before compliance with the pack it out program is at an acceptable level. During this time visitors may experience human waste deposits and toilet paper that may affect their experience.

The facilities at Outpost will be improved thereby improving the experience for visitors' who are not offended by toilet facilities in wilderness.

Alternative 4 – Toilet Building Removal and Designated Sites Camping

In this alternative the quota will change from 60 overnight visitors a day to 20 parties a day. This may not be a reduction of use over the course of a summer. Data from a 1996 survey found that 49% of the parties were 2-3 people, 25% had 5-6 people. The average length of stay was 2 days (37%) 3 days (32%) and 4 days (20%). It is likely that to implement a designated site program the length of stay would need to be controlled to two and three day periods. With this data, the average daily overnight use would be between 50 and 70 people a day. Currently at 60 people a day, at any one time there is on average 120 overnight visitors in the drainage. By managing by parties and not people, overnight use would not necessarily decrease on any given day, but would likely average out to 90-130 overnight visitors at any one time.

In reducing the day use quota to 70 from 100, there may be a change in use patterns but overall the total number of day users may not change. 2001 visitor use data on the Inyo national Forest finds that the average daily day hike visitation is 50 people per day. Although some days it does reach 100, with high demand use will temporally disperse and may not be an overall reduction in use. Initially however, there may be a reduction in day use.

With a designated site management regime, the visitor may experience a loss of freedom to camp where they like. Many visitors contacting the Wilderness reservation office however, do anticipate and ask which campsite they occupy. It is anticipated that visitors can and will adjust, however the visitor seeking total freedom to choose may be displaced, although this type of visitor is not currently the typical Mt. Whitney visitor. Visitors may not be able to reach their designated site due to physical limitations. This may pose enforcement and compliance issues for the field staff.

Visitors may have in some cases more solitude than current camping patterns allow. Those that are camping at Mirror Lake, and along the trail corridor will experience few and in some case no camps within sight or sound of each other. Those camping at Trail Camp will likely have more solitude than presently, with the majority of camping use concentrated there now. Outpost will likely remain the same with similar sites within site and sound of each other. The camping experience at Consultation lake will change to having less solitude at times, and user trails may be created to access Consultation Lake, that will need to be managed.

There will likely be an increase in (used) toilet paper on the ground and human waste partially buried or dug up by animals. This may have an aesthetic impact for visitors. With education efforts to encourage visitors to pack out their waste and at minimum pack out their toilet paper, the visitor will over time, experience few aesthetically displeasing piles of human waste along the trail and around camps. Initially, there will likely be aesthetic impacts.

Management will have a more intensive permit reservation program and it will be more complicated to manage a designated campsite program. Visitation from the surrounding

Parks and Forests such as the John Muir trail hikers that is not controlled by the Inyo, may become an issue that will need further regulation.

Alternative 5 – Toilet Building Removal and Mandatory Pack Out of Human Waste

In this alternative there will be an increase in exposure to human waste by visitors. This may have a negative impact on a visitors experience, initially. With education the attitudes of visitors will likely change. The current profile of the type of visitor that hikes on the Mt. Whitney trail may change with a pack out your waste management regime. Currently the visitor has less experience and there are more novice hikers visiting this area. This will be challenging for managers and rangers to educate and gain compliance with this sector. But, over time, the trail may receive more use from the more experienced hikers that are returning to this area with a different setting (no structures and facilities).

It is likely that the compliance rate will be 50% initially (first year), and achieving, at best 80% compliance. A mandatory program will require a Forest Supervisors Order. There will be enforcement issues with compliance. Enforcement of the requirement will be difficult. It will be difficult to determine who is complying and there may be a negative response from visitors that will result in non-compliance.

This alternative will require a significant change in behavior for visitors.

Because there will be no buildings, camping will likely disperse out to other areas, with visitors having freedom to choose their site and no need to locate their site at Trail Camp and Outpost. Concentration of use will likely remain at these locations since they are logical sites. But with the possible change in visitor type (discussed above), campsites may develop in new locations.

There may be an increase in urine smell throughout the camp concentrations areas, or at least the urine smell will continue. There may be an increase in (used) toilet paper on the ground and human waste partially buried or dug up by animals. This may have an aesthetic impact for visitors. There will be a moderate risk of exposure to human waste by employees.

VISUAL RESOURCES

On the Inyo National Forest all lands designated Wilderness were assigned a Visual Quality Objective (VQO) of Preservation in the 1988 LRMP. This VQO allows for ecological changes to be visually evident on the landscape (such as an avalanche), but generally precludes management activities that are visually evident (except for very low visual impact recreation facilities like log foot bridges). The sites under discussion here are all within the Wilderness boundary and have been assigned a VQO of Preservation

Existing toilet structures do not meet the Preservation VQO. The 1988 LRMP direction allows deviations from assigned VQO's with Forest Supervisor approval. Any alternatives requiring bathroom structures and associated infrastructure would require Forest Supervisor approval for a continued VQO deviation. Where no reflective infrastructure is employed (such as solar panels) and where mitigations can be implemented to allow for the form, materials and structure to blend with the surrounding landscape, a VQO of Partial Retention could be achieved. Where the use of mitigations to allow for the blending of the structures and associated infrastructure cannot be achieved, a VQO of Modification would result.

Consequences by Alternative:

Alternative 1 - Replace Toilets;

Alternative 2 - Existing Situation;

Alternative 3 - Remove Trail Camp toilet and replace Outpost Camp toilet

The buildings as described, depending upon materials and siting, could meet a Visual Quality Objective of Modification or Partial Retention depending upon the mitigation techniques employed. The Partial Retention VQO requires that management activities remain visually subordinate to the characteristic landscape. Under the Modification VQO management activities may visually dominate the original characteristic landscape, but the activities of vegetative and land form alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type. Structures in a Modification VQO must remain visually subordinate to the proposed composition.

The following is a list of potential mitigation measures to meet varying levels of Partial Retention VQO compliance:

- Siting the new structures between rock outcrops to diminish their scale and mass.*
- The use of native or native appearing rock-like materials to conceal the wood frame structures.*
- The use of camouflage or concealment techniques to render the structures more neutral in their surroundings.*
- Rooftops could be constructed and buildings sited to match the skyline angles from the direction that they are generally approached
- Paint colors could be chosen to match and blend with the naturally prevailing colors of the summer season in the campgrounds
- Reflective or shining materials could be minimized on the outside of the buildings

(* May be cost prohibitive in nature and may cause greater impacts in required construction methods to other resource analysis areas.)

The following is a list of potential mitigation measures to meet varying levels of Modification VQO compliance:

- Rooftops could be constructed and buildings sited to match the skyline angles from the direction that they are generally approached
- Paint colors could be chosen to match and blend with the naturally prevailing colors of the summer season in the campgrounds

Alternative 4 – Designated Sites

Alternative 5 – Mandatory Pack Out of Human Waste

Alternatives 4 and 5 do not involve construction or visible management activities in the Wilderness and would meet the Visual Quality Objective of Preservation. The possible presence of toilet paper would reduce the level of Preservation VQO being achieved, however the associated mitigation measures to educate the public and achieve compliance would lesson and/or remove this impact over time.

Removal of the toilet buildings would be a major step for this area towards the goal of the Visual Quality Objective of Preservation and the LRMP intent for VQO's in Wilderness. The hardening of sites for camping and the small unobtrusive signs to indicate the camping areas would be more in line with the Preservation VQO than what exists today. The temporary rock cairns and the naturally screen locations for privacy would also be within the scope of the Preservation VQO.

WILDERNESS

Consequences by Alternative:

Alternative 1 - Proposed Action – Replace toilet structures

This alternative will continue the provision of structures in wilderness to accommodate a high level of public use on Mt. Whitney. This level of use will continue to concentrate at Outpost and Trail Camp and opportunities of solitude and unconfined types of recreation will be limited. Closures would be maintained at Mirror Lake and Trail meadow which further concentrates the use at the two toilet locations. However, the structures themselves do not require camping at those locations, that is a visitor's choice. To date, visitors choose to camp at these two locations, it isn't required, and solitude and unconfined recreation can be found most anywhere else in the drainage.

With improved toilet structures that are more capable of drying waste, the smells will likely decrease and there would be an improvement in odors around the two toilet sites. However, with the amount of use occurring, it is likely that there will still be some odor that may affect a visitor's experience.

By providing toilet structures, the managing agency creates a dependency that is contrary to wilderness values of self-sufficiency. The fact that visitors expect their human waste to be removed demonstrates that there is a loss of this self-sufficiency.

The presence of structures can be viewed as contrary to wilderness values. The imprint of man should be substantially unnoticeable.

These same structures can also be justifiable to be the minimum necessary to administer Mt. Whitney. The agency has identified the use on Mt. Whitney acceptable through an open public process (Wilderness Plan EIS). It has been and will likely continue to be an extremely very popular recreation activity, where permits are in high demand. Due to the topography of the canyon, camp-able areas are minimal and human waste deposits cannot be adequately buried due to the lack of soils.

This alternative would require the construction and the maintenance of the toilets with mechanized transport (helicopter). The use of a helicopter may debase the wilderness character and be intrusive on a visitor's experience. With timing of the helicopter missions for the construction phase occurring during the lower use season (May, June, October), this intrusion will be reduced however still witnessed by approximately 100-200 visitors. Trail closures would be considered to eliminate any safety and intrusion issues.

On going maintenance would involve helicopter flights at least twice annually to remove the waste. This would be the minimum tool necessary to do that job given the toilets themselves require waste removal. With an improved drying system, combined with storage capacity for the waste containers, the flights could be reduced from current levels. However, there would still be a disturbance and intrusion to a visitor's experience.

Public health and safety would be improved by reducing the potential for the toilet facilities to malfunction and cause a shutdown. Employee exposure to human waste would be minimized with the improved methods of storing, transporting and minimizing spillage inside the chambers. However, in the public area of the building there will be many vectors for transmittal of pathogens; these include doorknobs, toilet seats, floors, walls, etc.

Alternative 2 - No Action -Existing Situation

All of the effects are the same as Alternative 1, with the exception of odors, and the use of mechanized transport needed for construction of the buildings, and public health and safety.

With the existing toilet structures, there is limited drying space and this inhibits the drying of waste, which is the primary cause of odors. So in this alternative the odors would be greater than alternative 1, and would have a negative effect on the visitor's experience. Storage of the waste bins outside also contribute to the odor around the toilets, as does the voluntary request not to urinate in the toilets.

Mechanized transportation using helicopters would only be needed for the annual maintenance needs, since no construction would be taking place. However, the existing buildings are in disrepair as are the toilets themselves and may require ongoing refurbishing and maintenance needs that require helicopter transport. This may not be able to be timed to offset intrusions to a visitor's experience. Also, the disposal of the human waste itself is needed at least twice during the year due to the lack of storage capability and drying capability.

Public health and safety would continue to be a concern. Employees exposure to human waste through the operation of the current system involves movement of the bins, and spillage. The public's exposure to pathogens is minimized except at times when the toilets are closed due to mechanical problems and human waste is deposited in and around the camping vicinity and encountered on a regular basis.

Alternative 3 – One Toilet Structure - Remove the Trail Camp Toilet and replace and maintain Outpost Camp toilet.

With the Trail Camp toilet structure removed, an intrusion on the visitor's experience will also be removed. It is likely however that the same amount of campsites and occupation of campsites would occur here since Trail Camp is a popular site to base from and that will not change.

There may be an increase of human waste disposal throughout the Trail Camp area until compliance with a pack it out program is achieved. This may take 3-5 years with the phase in of a receptacle at Outpost for two years and then a receptacle only at the trailhead. Some non-compliance and the visible deposition of human waste is expected which would result in impacts to visitor's experience. These impacts would be minimal with compliance to pack it out.

With one toilet that requires maintenance by mechanical transport there would be the disturbance and intrusion of helicopter flights. This would be greatly reduced from Alternatives 1 and 2. There would be flights required for the replacement construction and after that, once at most twice a year, which would be timed to coincide with the lower use season.

The health and safety of employees would be improved at Outpost with an improved facility. At other areas employees may encounter human waste deposits and exposure to the waste while cleaning up particularly intrusive deposits. At Outpost, even with a new building there will be many vectors for transmittal of pathogens; these include doorknobs, toilet seats, floors, walls etc. The public will also have some exposure to their own human waste and possibly be exposed to the human waste depositions from non-compliance with the pack it out program.

Alternative 4 – Toilet Building Removal and Designated Sites

By having to camp in designated sites, visitors may sense a loss of visitor freedom. While in the designated campsites there will be fewer encounters with others camped, and a wilderness experience with more opportunities for solitude.

By designating the sites impacts are concentrated and the remainder of the areas in the drainage are protected from increased impacts. The intensive impacts at fewer sites are traded off for a reduction in the overall impacts in the canyon.

Less day use will occur and will reduce the opportunities for this experience. Reducing the use will also reduce encounters with other visitors and possibly improve the overall experience by reducing crowding and congestion along the trail.

It is possible that with the continual public use of campsites there may be a sense of ownership and stewardship of the site that would help eliminate improper human waste deposition. With vigorous education, compliance with pack it out may improve over time.

It is likely that some human waste will be left in an exposed and unsanitary condition. This waste may pose some risk to public health and would be visually intrusive. Agency employees would be exposed to human waste while cleaning campsites and the trail corridor, the extent of which would be determined by visitor compliance to pack it out and proper waste disposal.

Use of mechanical transportation would be necessary for the removal of the buildings at Trail Camp and Outpost, but would be minimal and timed to correspond with the lower use season.

Alternative 5 – Toilet Building Removal and Mandatory Pack Out of Human Waste

With this alternative visitors are required to pack out their own human waste. This will be unpleasant for most visitors, especially with the many novice hikers that Mt. Whitney attracts. With the convenience of toilets for the visitors no longer there, the wilderness value of self sufficiency is given emphasis over the convenience of toilets. This will

require a significant behavior change for visitors that have come to expect the convenience of toilets.

Initially, there may be a decrease in use on Whitney as hiking the Mt. Whitney trail may be not be as attractive with the increased requirement. Most likely there will be a change in the type of visitor, with fewer novice hikers.

Compliance is not likely to be high for the first few years which would cause deposits of human waste in and around the Trail Camp and Outpost camp area. Camping would likely continue to be concentrated in these locations, however the visitor would have the freedom to camp anywhere other than the areas closed (Trailside meadow and Mirror Lake). With an increase need for more privacy, campers may disperse to new locations such as Consultation Lake. There may be a dispersal of impacts associated with camping such as site proliferation and the construction of rock walls that are popular to create at the high elevation camps.

There may be a need for more ranger presence and therefore a visitor's experience may be affected by increase contact with Wilderness Rangers. Used pack it out kits will likely be left behind as a result of poor visitor compliance, also affecting the visitor's experience.

As in alternative 4, it is likely that some human waste will be left in an exposed and unsanitary condition. This waste may pose some risk to public health and would be visually intrusive. Agency employees would be exposed to human waste while cleaning campsites and the trail corridor, the extent of which would be determined by visitor compliance to pack it out and proper waste disposal.

The use of mechanical transportation (helicopter) will be needed for the removal of the two toilet structures. This would take place over a two year period and the intrusion of the helicopter flights would be timed to occur during the low use season to reduce intrusions and disturbance to the visitors.

Social/Economic

Alternative 1 - Proposed Action – Replace toilet structures

Local communities may experience concerns with loss of visitation during the rebuilding of the toilets, but it is not likely, as the return to status quo would maintain levels of tourism as they are today for the long term. There may be a brief period during construction when visitation will be limited but this would likely be less than 10 days total.

Alternative 2 - No Action -Existing Situation

Under this alternative status quo with the toilets may lead to an eventual toilet failure at Outpost and less likely but possible failure and closure at Trail Camp with possible limitations of use on the Mt. Whitney trail for moderate durations until the situation is corrected. This may lead to a decrease in visitation for a short to moderate period or a gradual decline in use due to the loss in popularity given the situation of toilets not being available to the type of visitor that is expecting toilet facilities.

Alternative 3 – One Toilet Structure - Remove the Trail Camp Toilet and replace and maintain Outpost Camp toilet.

Same as Alt. 1 with construction related issues.

With one less toilet we may see a temporary decrease in people climbing Whitney, this will likely change as people adjust and accept the practice.

Alternative 4 – Toilet Building Removal and Designated Sites Camping

There is a possibility that with a designated campsite management regime there could be a possible decrease in visitation. However, many visitors have come to expect on-site management at popular destinations. The popularity of Mt. Whitney will likely not be decreased by this action and visitation will likely remain constant.

Alternative 5 – Toilet Building Removal and Mandatory Pack Out of Human Waste

With a pack out human waste management regime there may be a decrease in use, a change in use patterns, or change in the type of visitor hiking the Mt. Whitney trail. There may be more demand for day use, which may increase service needs in Lone Pine and surrounding communities. There may be an increase of more self-reliant visitors who do not spend as much in the local community and surrounding communities. It is likely there will be a change in clientele.

Whitney Portal store and campground may be affected if use decreases. This use decrease, if it occurs, may be only temporary as the visitors react to change and respond towards a gradual acceptance of the practice.

Cost Comparison of Alternatives

| Alternative | Description | Demolition | Construction | Annual Operation | Annual Staff Cost |
|-------------|--|------------|--------------|------------------|-------------------|
| 1 | Remove & replace 2 toilets | \$41,000 | \$200,000 | \$4,850 | \$60,000 |
| 2 | No Change | \$0 | \$0 | \$5,250 | \$60,000 |
| 3 | Pack-It-Out at Trail Camp Remove 2 Toilets Replace 1 Toilet | \$41,000 | \$118,000 | \$26,350 | \$60,000 |
| 4 | Designated Sites | \$41,000 | \$39,500 | \$37,050 | \$60,000 |
| 5 | Pack-It-Out | \$41,000 | \$29,500 | \$37,050 | \$60,000 |

APPENDIX I

BEST MANAGEMENT PRACTICES APPLICABLE TO THE MT. WHITNEY TOILET PROJECT

2. Erosion Control Plan (PRACTICE: 2-2)

- a. Objective: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of construction activities and through effective contract administration during construction.
- b. Explanation: Land disturbing activities can result in short term erosion. By effectively planning for erosion control, sedimentation can be controlled or prevented. Within a specific period after award of a contract (presently 60 days prior to the first operation season in Timber Sale Contracts, per C6.3) the purchaser will submit a general plan which, among other things, sets forth erosion control measures. Operations cannot begin until the Forest Service has given written approval of the plan. The plan recognizes the mitigation required in the contract. A similar plan is required of miners and special use permittees.
- c. Implementation: Design engineers develop detailed mitigation using an IDT. The detailed mitigations are reflected in the contract specifications and provisions. The intent of mitigation is to prevent construction-generated erosion, as well as that generated from the completed road, from entering watercourses. Contracted projects are implemented by the contractor or operator. Compliance with contract specifications and operating plans is ensured by the COR, ER or FSR through inspection.

This practice is commonly applied to all road construction through contract clauses and specifications and will apply to road construction for timber sales, mining, recreation, special uses and other roadwork on NFS lands.

3. Timing of Construction Activities (PRACTICE: 2-3)

- a. Objective: To minimize erosion by conducting operations during minimal runoff periods.
- b. Explanation: The amount of erosion and sedimentation from road construction are affected by the magnitude of water runoff. An essential element of effective erosion control is to schedule operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations to minimize erosion and sedimentation. Equipment will not be allowed to operate when ground conditions are such that excessive rutting and soil compaction could result. Such conditions will be identified by the COR or ER with the assistance of an earth scientist or other specialists as needed.

Erosion control work will be kept as current as practicable on active road construction projects. Construction of drainage facilities and performance of other contract work to control erosion and sedimentation will be required in conjunction with earthwork projects. The operator should limit the amount of area being graded at a site at any one time, and should minimize the time that an area is laid bare. Erosion control work must be kept current when road construction occurs outside of the normal operating season.

- c. Implementation: Detailed mitigations developed by design engineers and an IDT will be included in the environmental analysis and in subsequent project plans and contracts.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and as specified in the project plan. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and the operating plan will be achieved by the COR or ER through inspection.

28. Surface Erosion Control at Facility Sites (PRACTICE: 2-28)

- a. Objective: Reduce the amount of surface erosion taking place on developed sites and the amount of soil entering streams.
- b. Explanation: On lands developed for administrative sites, ski areas, campgrounds, parking areas, or waste disposal sites, substantial acreage may be cleared of vegetation. Erosion control methods must be implemented to keep the soil in place, and to minimize suspended sediment delivery to streams. Some examples of erosion control methods that could be applied at a site for keeping the soil in place would be applying grass seed, erosion blankets, tackifiers, hydromulch, paving, or rocking of the roads, water bars, cross drains, or retaining walls.

To control the amount of soil entering streams, the natural drainage pattern of the area should not be changed; sediment basins and sediment filters will be established to filter surface runoff; and diversion ditches, and berms will be built to divert surface runoff around bare areas. Construction activities will be scheduled to avoid periods of the year when heavy runoff is likely to occur.

- c. Implementation: This management practice is used as a preventative and remedial measure for any site development project that will remove the existing vegetation and ground cover and leave exposed soil. This practice is applied during the planning phase for NFS projects, or by special use permit requirements for private development on public land.

Mitigation measures will be developed by the IDT and incorporated in the project by the design engineer. Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria.

Contracted projects are implemented by the contractor or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, ER, and FSR.

4. **Control of Sanitation facilities (PRACTICE: 4-4)**

- a. Objective: The objective is to protect surface and subsurface water from bacteria, nutrients, and chemical pollutants resulting from the collection, transmission, treatment and disposal of sewage at Forest Service sites.
- b. Explanation: Toilet facilities are provided at developed recreation sites. The type and number depends on the capacity of a given site. Sanitation facilities (which may vary from a portable toilet to a sophisticated treatment plant) will be planned, located, designed, constructed, operated, inspected and maintained to minimize the possibility of water contamination. Toilet facilities may also be made available at dispersed sites with the same goal of preventing water contamination.
- c. Implementation: The appropriate disciplines will perform field investigations to evaluate soil, geological, vegetative, climatic, and hydrological conditions. The location, design, inspection, operation and maintenance must be performed, or controlled by qualified personnel who are trained and familiar with the sanitation system and operational guidelines. Proximity of toilets to open water and other sensitive areas will follow guidelines.

State and local authorities will be consulted prior to the installation of new sanitation facilities, or modification of existing facilities to ensure compliance with all applicable State and local regulations. All phases of sanitation management (planning, design, inspection, operation, and maintenance) will be coordinated with State and local Health Departments and RWQCB representatives.

APPENDIX 2

RIPARIAN CONSERVATION OBJECTIVES APPLICABLE TO THE WHITNEY TOILET PROJECT

For a completed description of RCO Standards and Guidelines, see the Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2001).

RCO #1: Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses.

Beneficial Uses of Lone Pine Creek, from the Lahontan Basin Plan (LWQCB 1994), include:

| | |
|-------|---|
| MUN | Municipal and domestic supply |
| AGR | Agricultural Supply |
| GWR | Groundwater recharge |
| REC-1 | Water contact recreation |
| REC-2 | Non-contact water recreation |
| COMM | Commercial and Sportfishing |
| COLD | Cold freshwater habitat |
| WILD | Wildlife habitat |
| BIOL | Preservation of Biological Habitats of Special Significance |
| RARE | Supports habitat for rare, threatened or endangered species |
| WQE | Water quality enhancement |
| FLD | Flood peak attenuation / flood water storage |

RCO #2: Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.

RCO#4: Ensure that management activities, including fuels reduction actions, within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.