

The Leave No Trace Center for Outdoor Ethics Laboratory Project

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The Leave No Trace Laboratory Project: An Evaluation Report

Summary

The recently completed Leave No Trace Laboratory Project was an innovative attempt to target a community with Leave No Trace education and research. In cooperation with local partners, the Leave No Trace Center for Outdoor Ethics (formerly Leave No Trace, Inc.) implemented numerous educational efforts and research initiatives aimed at assessing the effectiveness of the Leave No Trace education program. Educational efforts targeted Durango, Colorado area community members of all ages. Research findings showed that the education program appeals to visitors and successfully raises visitor knowledge levels of minimum impact recreation practices. Visitor receptivity to the Leave No Trace program tends to increase when the information is packaged in practical and colorful ways that address visitor behavior. Research efforts also revealed program weaknesses. Conclusions from the report suggest areas of improvement and potential future research initiatives.

Introduction

The mission of the Leave No Trace program is to “promote and inspire responsible outdoor recreation through education, research and partnerships”. In 1999, the Leave No Trace Laboratory Project (Lab Project) was established in an ambitious attempt to integrate the three primary elements of education, research and partnerships in a concerted effort targeting a single community. Durango was chosen as the Lab Project’s test site based on its diverse outdoor recreational opportunities, high visitation volume (approximately 1 million visitors each year) and the presence of active Leave No Trace partners.

The primary goals of the Lab Project were threefold:

- 1) To augment ongoing Leave No Trace education efforts and experiment with new initiatives in the Durango area.
- 2) To research the efficacy of the Leave No Trace message in reaching visitors and influencing behavior.
- 3) To collaborate with a wide range of partners to educate visitors and research the Leave No Trace message.

Project success was to be measured by the research findings, educational initiatives and the success of partnerships with area supporters.

Education

General Outreach: A variety of educational efforts were undertaken for the Lab Project. Leave No Trace materials such as Skills and Ethics booklets, plastic reference cards, descriptive posters and banners were liberally distributed to area education organizations and retailers. The San Juan Public Lands Visitor Center, a joint US Forest Service and Bureau of Land Management facility, served as an important distribution source for Leave No Trace materials, as did the Silverton and Durango Visitor Centers. Local and national news coverage increased awareness of the project (see Appendix A: Sports

Afield, B: Durango Herald). With support from the San Juan Watershed Coalition, the Leave No Trace message was promoted throughout the Durango region with a color brochure (Appendix C) and a map and recreation guide (Appendix D), the San Juan Mountains Association newsletter and the Center for Outdoor Ethics (Center) website (www.LNT.org) also promoted the Lab Project to members and visitors.

Events: The Leave No Trace Traveling Trainers visited the Durango area four times during the duration of the Lab Project. The Traveling Trainers hosted two-day Leave No Trace Trainer courses, offered informational sessions and promoted awareness of Leave No Trace and the Lab Project in the Durango area. In addition, Share-the-Trails Team Triathlon events were run each year the Lab Project was underway. These events, created and organized by the San Juan Mountains Association, promoted mutual understanding between equestrians, mountain bikers and hikers through cooperative competition. A Winter Share-the-Trails Team Triathlon, involving snowmobilers, snowshoers and skiers, was also coordinated in cooperation with Tread Lightly! Visitor conflict resolution and Leave No Trace principles were central to these events.

Training: Six two-day Leave No Trace Trainer courses were offered during the Lab Project. One five-day equestrian Master Educator course was also organized. The course was supported by four scholarships to bolster local participation. In total, these training efforts increased the number of trained individuals in the Durango area by seventy.

Youth Initiatives: Two innovative school-based education programs were developed for the Lab Project. With the support of area teachers, Master Educators presented the fundamentals of the Leave No Trace program to elementary school students, who were then asked to create paintings depicting Leave No Trace scenes. The children's artwork was displayed in the Durango Mall for one week while community-based judges evaluated the pictures based on several criteria. Contest winners received recognition for their work and Leave No Trace paraphernalia. The winning artwork was then used to create an eighteen-month calendar that was distributed nationally. The production of the calendar was funded by Backpacker Magazine. The second youth initiative targeted Durango High School students. A backpacking course featuring Leave No Trace principles was offered, culminating in a three-day desert backpacking trip. At the conclusion of the course, students were asked to reflect on what they had learned and write about how they could apply their Leave No Trace knowledge and serve as an example for other students.

Best-Practices Sites: In addition to the community-wide educational efforts, several trailheads and recreation areas were chosen to serve as "best practices sites" for targeted educational and research efforts. In cooperation with area land managers from the US Forest Service, Bureau of Land Management, National Park Service and state and local agencies, selection of the sites was based on the type of recreational use, the degree of recreational impacts and the perceived need for educational intervention. Descriptions of the site-by-site educational efforts follow:

Missionary Ridge: Area-specific Leave No Trace hunter information booth was developed for popular deer hunting area. Volunteers and San Juan Mountains Association staff hosting the booth attracted visitors with hunter-orange bandanas containing the Leave No Trace principles, Colorado Division of Wildlife information and area maps. A total of 600 individuals were contacted during three hunting seasons. Large trash receptacles affixed with Leave No Trace banners were donated by area businesses during the hunting season and were well used by the Missionary Ridge hunters.

About the site: Missionary Ridge is managed by USFS and is heavily used by hunters in the fall. Other users include off road vehicles, equestrians and mountain bikers. Management concerns include hunting impacts, litter, camping practices, user conflicts and water pollution.

Animas River Trail: General Leave No Trace information was disseminated via a Durango Visitor's Center booth hosted by the San Juan Mountains Association. Booth staff members included Leave No Trace messages with all general camping and recreational information. Approximately 20,000 Lab brochures were distributed through this and other outreach efforts. Leave No Trace Frontcountry information was also posted along the adjacent river trail and distributed as part of an empirical study on visitor receptivity to the Leave No Trace message (See research section below).

About the site: Within the city limits of Durango, Animas River Trail is approximately five miles in length and managed by the City of Durango Parks and Recreation Department. Approximately 35,000 visitors use this corridor for rafting, canoeing or kayaking, biking, running, hikers, walking dogs and fishing. Management concerns include litter, dog waste, damage to riparian and wildlife habitat and creation of social trails.

Mesa Verde National Park: A 5x5 foot color interpretive sign was created for the park's lone camping area, Morefield Campground. The display combined park photos with the Leave No Trace principles to create a Mesa Verde-specific message. In addition to the permanent display, the Leave No Trace message was integrated into seasonal park staff training.

About the site: Located 40 miles west of Durango and managed by the National Park Service, this park has over 52,000 acres with over 411,000 visitors hiking and camping annually. Designated as a World Heritage Site, management concerns include removal/damage of archeological resources, entering cultural sites without a park ranger and feeding and harassing of wildlife and unleashed pets.

Chicago Basin: Trailhead education efforts were employed for three years, culminating in an empirical study of visitor behavior and receptivity to a human waste disposal message (See research section below). Educational efforts included Leave No Trace brochures and posters as well as trained volunteers stationed at the railroad access/trailhead and along the Chicago Basin trail.

About the site: Located 15 miles south of Silverton, the US Forest Service manages the Weminuche Wilderness (approximately 500,000 acres in total) in which the Chicago Basin lies. Primarily used by hikers and backpackers, primary access to this area is through the Durango Silverton Narrow Gauge Railroad, which is used by approximately 200,000 people each year. Management concerns include ill-prepared travelers, campsites in riparian areas, improper human waste disposal and litter.

Canyons of the Ancients National Monument (formerly known as Sand Canyon): In cooperation with the Bureau of Land Management, a site-specific brochure encouraging Leave No Trace practices was developed (See Appendix F). 5,000 brochures were distributed at the two primary trailheads. The information targeted area-specific issues such as the protection of archeological resources, the fragility of cryptobiotic soils and the proper disposal of dog and human waste.

About the site: Managed by the Bureau of Land Management, and designated a National Monument in June 2000, this high desert area on 164,000 acres has an annual visitation of approximately 15,000. Visitor use includes biking, hiking, horseback riding and dog walking. Management concerns include development of social trails, trampling of cryptobiotic soil and damage to archeological sites.

Research

The Leave No Trace curriculum is based on scientific research and common sense. Previous empirical studies that benefit the program have been undertaken by Federal agency partners, universities or the National Outdoor Leadership School. Findings from recreation ecology studies and visitor education research enhance the program's message and improve its efficacy. (Many of these studies can be accessed through the Leave No Trace website.) The Lab Project marks the first time that the Center directed empirical research to assess its message. As such, it yielded some good information and some hard lessons.

Animas River Trail: The research conducted on the Animas River Trail assessed visitor's receptivity to a Leave No Trace Frontcountry message. The Frontcountry program, which has been implemented in several locations throughout the U.S., was developed to help inform urban wildland visitors about open space issues such as dog waste, unruly pets, off-trail hiking and visitor conflict. In cooperation with researchers from North Carolina State University and the City of Durango Parks and Recreation Department, a Leave No Trace message was crafted to address issues pertinent to the Animas River Trail. The identical message was then presented via one of two posters: a "traditional" text-based poster and a "modern" poster containing text with graphics and brighter colors. Visitor preferences for each poster were then assessed via observation and a participant survey (N = 169). Analysis from the poster research indicates that most visitors prefer the more modern presentation, but consider the traditional version more authoritative. These findings suggest that the Frontcountry program may appeal to

wider audiences with attractive, colorful informational displays. (See Appendix G for a report summary.)

A second aspect of the ART research compared visitor knowledge levels with demographics and reported exposure to the Leave No Trace program (N = 232). Three main conclusions were reached from this study: 1) When compared to visitors not exposed to the Leave No Trace message, visitors exposed to the Leave No Trace program have a better understanding of Leave No Trace concepts and principles; 2) Visitors affiliated with outdoor/conservation groups have greater knowledge of Leave No Trace than visitors who are not affiliated with outdoor/conservation groups; 3) Visitors with higher education levels have greater knowledge of Leave No Trace than those who have a lower education level.

These findings suggest that the Leave No Trace program successfully disseminates its message to highly educated visitors with outdoor and conservation interests. This information should help Leave No Trace educators recognize the program's strengths and target its weaknesses.

Chicago Basin: Research efforts at Chicago Basin attempted to influence human waste disposal practices in this popular drainage area. Access to Chicago Basin is predominantly via a historic train that drops off over 100 visitors a day during peak season. Education efforts came in one of the following forms: 1) No education (control); 2) A "proper disposal of human waste" brochure accompanying mail-issued train tickets; 3) A more detailed "dispose of waste properly" message and two-plastic-bag system with instructions on how to pack out toilet paper. (The packets were distributed to backpackers as they boarded the train.); 4) Sources unrelated to the Lab project that regularly distribute Leave No Trace information.

Leave No Trace trained volunteers and paid staff conducted exit surveys for visitors awaiting the return train. The survey addressed human sanitation and hygiene and gauged visitors' knowledge of Leave No Trace waste disposal practices. Findings indicated that visitors who received and read a Leave No Trace message on "proper disposal of human waste and carrying out TP" responded positively to the message and were over three times more likely to carry out their toilet paper, increasing the probability from 21% to 70%. Providing backpackers with a clear, focused and practicable message regarding the proper disposal of human waste and giving them a double-bag system to test the idea provided the highest rate of compliance for carrying out toilet paper. Visitors indicated that having a visual image and tangible means of practicing appropriate human waste disposal increased their willingness to comply with the recommendations. The researchers suggested that future efforts should target visitors prior to their arrival at the train or the trailhead. (See Appendix H for the executive summary.)

Missionary Ridge: The research on Missionary Ridge was intended to assess visitor perceptions and norms as they relate to durable travel surfaces. As a popular elk and deer hunting area, Missionary Ridge receives heavy fall visitation by hunters on foot, on horse, on ATV's and in vehicles. After two seasons of refining the research questionnaire, a catastrophic Missionary Ridge wildfire in June 2002 scorched over 70,000 acres of the area and dashed hopes for a productive hunting and data collection season. Regrettably, the research was cancelled.

The research efforts undertaken by the Lab Project reached the following conclusions:

- 1) Clear Leave No Trace messages appeal to visitors and can alter behavior (or reported behavior).
- 2) Leave No Trace messages containing colorful graphics and text are appealing to visitors, but may reduce the message's authority.
- 3) The Leave No Trace program should continue to target individuals with outdoor/conservation organization affiliations, but would also benefit by reaching out to broader audiences.
- 4) The Leave No Trace program could more effectively reach visitors before they arrive at their destination.
- 5) Research efforts are expensive, time consuming and can be affected by unforeseen events.

Partnerships

The Lab Project highlighted the essential role of partnerships in the national Leave No Trace program. Without the funding, time and energy contributions of its partners, the Leave No Trace program would not be as successful at broadcasting its message. The Lab Project confirmed the understanding that the true foundation of the Leave No Trace program is its partnerships. The principal partnerships for the Lab Project are outlined:

San Juan Mountains Association: Through its contribution of countless hours, organizational efforts and local insight, members and staff of the San Juan Mountains Association (SJMA) provided extraordinary support for the Lab Project. SJMA's dedicated staff and active volunteers were the foot soldiers for the education and research efforts. Without the support of the SJMA, the Lab Project would have never gotten off the ground.

US Forest Service and Bureau of Land Management: The San Juan Public Lands Center, based in Durango, is an attempt by the federal government to unite the strengths of the US Forest Service (USFS) and the Bureau of Land Management (BLM). On paper and in practice, this innovative approach to land management has succeeded. Cooperation between the two agencies in support of the Lab Project was seamless. The employees of the USFS and the BLM offered their timely support and knowledgeable experience to the Lab Project, to the ultimate benefit of the public lands in southwest Colorado.

National Park Service: The National Park Service (NPS) lent its valuable support to the Lab Project by incorporating the Leave No Trace message into its campground and staff

training. Efforts by the NPS staff allowed the Lab Project to reach visitors to the well-known Mesa Verde National Park.

Leave No Trace Lab Project Task Force: Comprised of representatives from the SJMA, USFS, BLM, NPS, Colorado Division of Wildlife, Southwest Outdoor Volunteers, Colorado Mountain Holiday (an outfitter) and Backcountry Experience (a local outdoor retailer), the Lab Project Task Force helped keep the Center staff focussed with realistic Project goals. This group of committed individuals served as advisors to the Lab Project and proved integral to its completion.

Although the above section describes the formal partnerships that helped guide the Lab Project, many other individuals and organizations assisted with the project. The Center owes a debt of gratitude to those who participated in the Lab Project. Without them, the Leave No Trace program itself would not be sustained.

Lessons Learned

Although the Lab Project's research and education efforts provided valuable insights regarding the success of the Leave No Trace program, of equal importance were the failures and lessons learned during the Lab Project. Some of these are addressed below:

- 1) The Leave No Trace Lab Project was perhaps overly ambitious. Implementing a host of educational and research efforts requires a significant investment in money and staff time. A full-time on-site staff member would have been of great value for the coordination of the education, research and partnership efforts. In addition, increased funding would have allowed for more complete research efforts.
- 2) Ideally, the Lab Project would have had more experimental control of research efforts. For example, a pre and post comparison of visitor knowledge levels along the Animas River Trail would have helped correlate the application of Leave No Trace message with an overall increase (or decrease) of visitor knowledge of Leave No Trace. An ongoing challenge for the Leave No Trace program is to correlate the application of its message with an improvement in site or resource conditions. Although this type of study would be confounded with many variables, it would provide a valuable test of the Leave No Trace program's effectiveness.
- 3) Partnerships are truly the Leave No Trace program's greatest strength, but are also a potential vulnerability. Too much dependence on any partner leaves the Leave No Trace program susceptible to the same budget cuts, reprioritization and whims that affect the partner organization. Combining positive working relationships with more formal partnership agreements might help ensure complete follow through on projects.
- 4) Although creating site-specific Leave No Trace information requires significant effort, it also provides locally pertinent and valuable information to visitors. Similar future efforts should prove valuable to the Leave No Trace program.

5) The catastrophic fire on Missionary Ridge and the inability of Lab organizers to complete efforts at three selected sites (West Fork Hot Springs, Ice Lakes Basin, La Plata Canyon) suggests how vulnerable such a project is to random events. The Leave No Trace program would serve itself well by remaining flexible and responsive to opportunities and setbacks that arise.

Conclusions

A review of the Lab Project suggests that the ambitious project succeeded in promoting the Leave No Trace message and raising local awareness through educational and training. The research aspect of the Lab Project revealed some of the program's strengths as well as areas for future improvement. The partnerships that serve as the program's foundation continue to be strong and mutually beneficial. Although research from the Lab Project showed that the visitors are receptive to the message and may even alter their behavior because of it, an empirical study that correlates the application of the Leave No Trace message with a change in site conditions has yet to be fulfilled. This provides the chief area for future research possibilities. In general, however, the Lab Project succeeded in furthering the Leave No Trace mission to promote and inspire responsible outdoor recreation through education, research and partnerships.

Acknowledgements:

The Leave No Trace Laboratory Project could not have taken place without the extraordinary support of many dedicated individuals and organizations. The Center owes a debt of gratitude to the following: **REI, Nike and Sports Afield Magazine**, who believed enough in the Leave No Trace mission to support the Lab effort. **The San Juan Mountains Association**, including Kathe Hayes, BJ Boucher, Sue Bryson, Karen Thurman, Jenny Kane and Brad Finch who dedicated tireless hours to the effort. To the **US Forest Service**, including Nancy Berry, Tracey McInerney, Jim Upchurch and Alan Peterson, who were generous with their time and expertise. **The Bureau of Land Management**, including Rick Ryan, Kristie Arrington, Richard Speegle and Stew Jacobson. Kathy McKay of the **National Park Service**, who persistently pushed for greater program support. Yu-Fai Leung, Aram Attarian, Amy Wirshing, Tommy Holden, John Heywood, Ingrid Schneider and Will and Janet Rietveld, whose research knowledge and expertise helped lead the way. Kirk Singer, whose retail shop, Backcountry Experience, spreads Leave No Trace message regardless of formal initiatives. Cathy Metz, who supported the Leave No Trace message on the City of Durango lands. John Fielder, for the donation of his spectacular photographs. Pete Turner of Colorado Mountain Holiday, who volunteered his time to keep the project moving. And, to all the others who lent assistance in bringing the Lab Project to realization and thereby, strengthening the Leave No Trace program.

MINIMIZING *our* IMPACT

Southwest Colorado to be focus of public land study

By Amy Maestas
Herald Staff Writer

A national nonprofit organization that promotes minimum-impact recreation on public land will be scrutinizing the recreation habits of outdoor enthusiasts in Southwest Colorado over the next two years.

Leave No Trace, a Boulder-based group, whose mission is to teach responsible outdoor recreation ethics through education, has announced that it will launch a pilot program in Southwest Colorado to study the best ways to spread its message to public-land users.

The goal of the "Leave No Trace Laboratory" is to track how citizens receive the group's message and how they change their behavior as a result.

The study will focus on providing literature in public places, distributing information and posting signs at trailheads and other popular recreation spots.

It will also focus on educating local commercial guides and outfitters about minimum-impact ethics and training teachers and students about the Leave No Trace message.

The information Leave No Trace organizers glean from the study will be used as a model in other areas across the country, said Scott Reid, the organization's education coordinator.

Reid said Leave No Trace received funding from corporations such as Nike, REI and *Sports Afield* magazine.

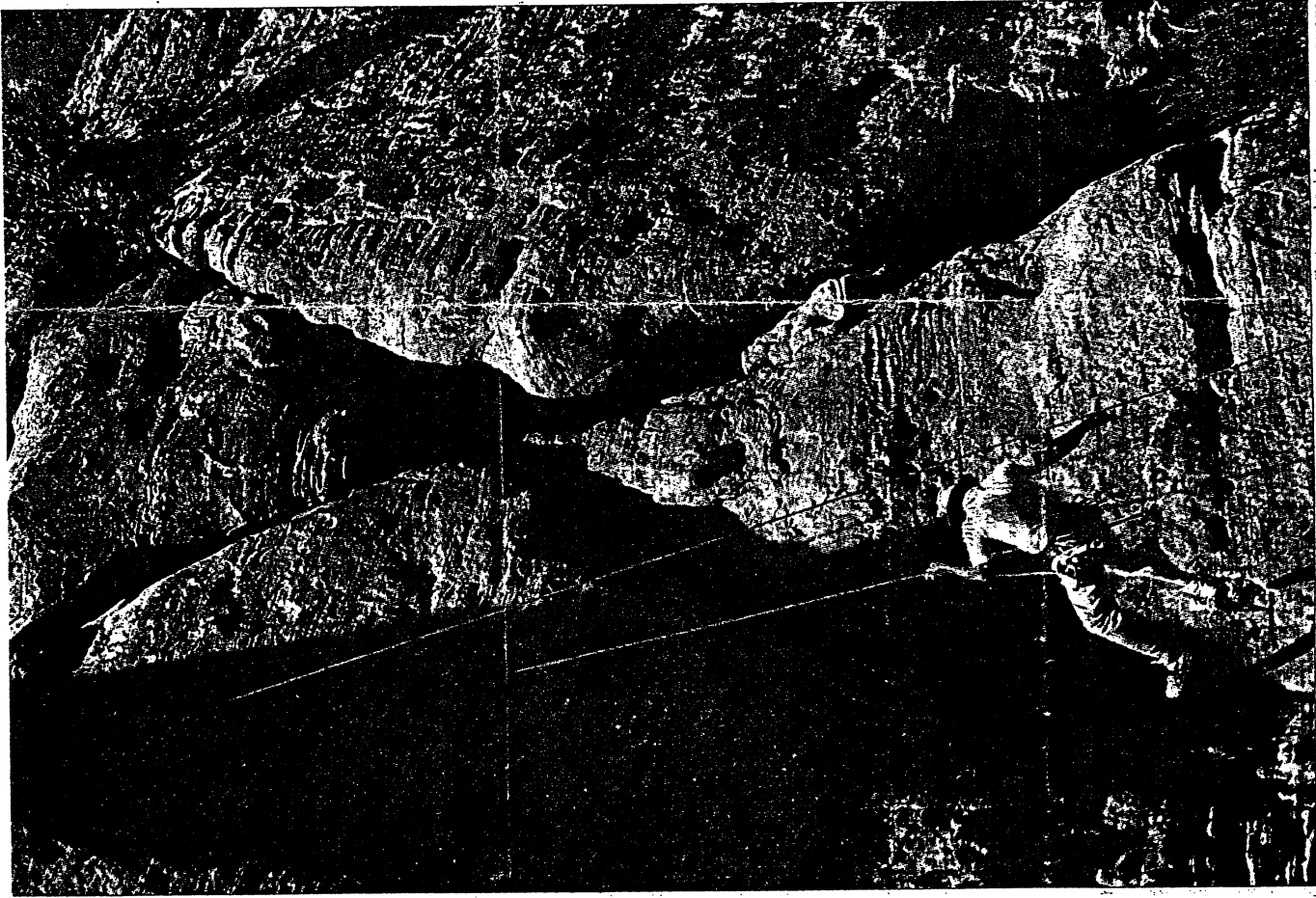
The organization will work with local businesses and agencies, including the Durango Area Chamber Resort Association, Fort Lewis College, outdoor retail stores, the Durango & Silverton Narrow Gauge Railroad, the Bureau of Land Management and the U.S. Forest Service.

The Leave No Trace principles are based on preparation, leaving places and objects in their natural states and minimizing human impact on the wilderness.

Reid said the organization chose Southwest Colorado because of its natural beauty and because the area attracts a diverse range of visitors participating in a variety of recreation activities.

"It's a spectacular location," Reid said. "It's a place where there is an involved community, too."

Reid said some identified target areas for the study include Mesa Verde National Park, Ice Lake Basin, Sand Canyon, Needleton, Elk Park, Emerald Lake, Navajo State Park, Red Mountain and Molas passes and X-Rock.



HERALD FILE PHOTO
A CLIMBER descends last June on X-rock, a popular beginning climbing spot off Highway 550, just north of Durango. Leave No Trace, a Boulder-based group, whose mission is to teach responsible outdoor recreation ethics through education, has announced that it will launch a pilot program in Southwest Colorado to study the best ways to spread its message to public-land users.

Evaluating Effectiveness of the Leave No Trace Frontcountry Program in the City of Durango, Colorado

A cooperative effort between the City of Durango, Leave No Trace Center for Outdoor Ethics (formerly Leave No Trace, Inc.), and North Carolina State University Department of Parks, Recreation and Tourism Management.
Dr. Yu-Fai Leung & Dr. Aram Attarian

Non-Technical Final Report Summary

As part of the overall San Juan Laboratory Project, a study was conducted of visitors to the Animas River Trail (ART) in Durango, Co. (population 14,000 (2000 Census)). Users of this river trail participate in many recreational activities both on land and on the river itself. Some of these activities include running, walking, fishing, canoeing, biking, rafting, etc. The primary purpose of the study, conducted in the summer of 2000 over a twelve day sampling period, was to evaluate the effectiveness of Leave No Trace messages in a frontcountry setting and associated delivery methods. This effectiveness was measured by knowledge and attitudes with different data collection methods. A secondary goal of the study was to evaluate visitor preference for two poster designs carrying Leave No Trace messages specific to the ART. Methods to address both goals include a poster comparison survey, assessment of knowledge and attitudes and on-site behavior observations. In all of the different methods, messages addressed five high priority management concerns specific to the Animas River Trail: Share the Trail, Respect Private Property, Manage Your Dog, Stick to the Trail and Trash your Trash.

To address the primary goal of the study, a portion of the study assessed visitor knowledge and attitudes by comparing levels of Leave No Trace knowledge at two different points in time. 232 individuals agreed to participate in a brief survey given on-site (pre-test) and another survey eight weeks later (post-test). Statistical analysis suggests that respondents had a good level of understanding of visitor impacts on the resource and over half of the visitors were familiar with the Leave No Trace program (average test scores ranged from 58.62 to 72.19%). Half the visitors in this portion of the study were 45 years of age or older and highly educated. The most common ways that these visitors heard of Leave No Trace practices were by word of mouth, signs and trailhead contacts. The majority of visitors who own dogs indicated that they usually or always keep their dogs on leash and pick up after their dog. However, small numbers of visitors indicated that they never actually keep their dog on a leash (10%) or pick up dog waste (17%). The post-test survey also evaluated the retention of Leave No Trace knowledge and

the effects of the poster intervention. Analysis indicated a general increase of knowledge however, post-test analysis shows that the change cannot be attributed to either poster.

In the poster comparison survey, preferences for two different poster designs were examined. Both poster designs contained the exact same wording of messages addressing the five management concerns. One poster followed typical Forest Service or National Park Service design and was text only (traditional); the other poster contained the exact same text but was laid out with more graphics (modern). Results indicate that the majority of visitors preferred the modern poster in all aspects except for authority. In other words, when asked which poster had a more “authoritative” message, the traditional poster was indicated. Of the 169 visitors surveyed, walkers were the most common user group (56.8%) followed by cyclists (24.3%), river users (14.2%) and joggers/runners (4.7%).

Using the posters as an intervention mechanism, visitors were also observed to determine effects the posters had on visitor behavior, if any. Four poster types were used to measure effectiveness: traditional, modern, modern with brochure and no poster (control). Visitors were observed to measure three specific acts: 1) stopping to read poster, 2) had dog(s) off-leash, and/or 3) used social trails. Overall, 4.2% of visitors stopped to read the posters, and 7.5% stopped and read the modern poster when brochures were attached. On days when no posters were displayed (the control group), the percentage of dogs being off-leash was higher (3.3%) than if the traditional poster was displayed (1.0%). Walkers stopped and read either poster most frequently (6.1%); this group was also observed to use social trails most often (2.6%) followed by river users (1.2%).

Results of this study of the Animas River Trail provide insights for both site management and the Leave No Trace Center for Outdoor Ethics.

- First, Leave No Trace messages are successful in reaching recreationists in frontcountry areas such as the Animas River Trail and in increasing visitor knowledge. Communication efforts should be continued and can be achieved by way of simple methods such as personal contacts, signs and word of mouth.
- Messages need to be targeted towards specific visitors in a multiple use area. For example, since the majority of recreationists who stopped to read the posters and brochures were walkers, those who run or bike the trail may need different communication approaches or poster design to capture attention.

- Another aspect of the study indicates that when authority is an important element to be conveyed in a message, sign design should match the message.
- Only a small number of visitors actually stopped and read the posters, and stopped more at the modern poster when a brochure was also available.
- There is a small portion of visitors who are unwilling to demonstrate appropriate behaviors or obey local laws such as those specific to dog use regardless of education programs. Management actions such as issuing citations may be necessary to target this small group whose actions may cause detrimental impacts to the resource.

While there were some limitations of the study including the small sample size of ART visitors, the overall study reflects that the Leave No Trace messages do have success in frontcountry areas such as the Animas River Trail with simple educational efforts.

Results of Leave No Trace Principles and Local Knowledge

Question	Pre-Test Correct Responses		Post-Test Correct Responses	
1. Creating your own trail to the river can cause soil erosion (T)	217	93.9%	76	97.4%
2. River runners should always yield to anglers (F)	32	13.9%	13	16.7%
3. Orange peels and apple cores quickly decompose (F)	156	67.5%	62	79.5%
4. Tossing dog poop off the trail helps add nitrogen to the soil that promotes native plant growth (F)	167	72.0%	60	76.9%
5. Unposted private property surrounds the Animas River Trail (T)	169	72.8%	60	76.9%
6. Leave No Trace focuses primarily on picking up litter (F)	137	59.8%	55	70.5%
7. City of Durango ordinance requires that dogs be leashed at all times on the Animas River Trail (T)	212	92.2%	74	94.9%

Note: 78 surveys were returned for comparison purposes

The Leave No Trace, Inc. / North Carolina State University
Animas River Trail Corridor Survey

Thank you for agreeing to complete this survey. This survey is an important component of the Durango Leave No Trace (LNT) Lab Project. The primary focus of this project is on public awareness and effectiveness of the LNT message. As a result of this project, a collection of “best practices” will be developed to reduce visitor impacts and enhance visitors' experience on the Animas River Trail.

This survey is designed to collect information regarding your knowledge and practice of low-impact recreation and on important demographic and activity information. Your answers will be kept confidential, and will be reported in group form only.

STAFF USE ONLY: Seen ART/LNT Poster (circle one): **YES** **NO**

PART I. Knowledge and Practice of Low-Impact Recreation. In this section we would like to know more about your knowledge and practice of low-impact recreation (please circle your response).

	<u>True</u>	<u>False</u>	<u>Don't Know</u>
1. Creating your own trail to the river can cause soil erosion.	T	F	N
2. River runners should always yield to anglers.	T	F	N
3. Orange peels and apple cores quickly decompose.	T	F	N
4. Tossing dog poop off the trail helps add nitrogen to the soil that promotes native plant growth.	T	F	N
5. Unposted private property surrounds the Animas River Trail.	T	F	N
6. Leave No Trace focuses primarily on picking up litter.	T	F	N
7. City of Durango ordinance requires that dogs be leashed at all times on the Animas River Trail.	T	F	N

8. Have you ever heard about the Leave No Trace program?
 yes no ---> (go directly to *Question 10*)

9. How did you first hear about Leave No Trace? (Check only one)

<input type="checkbox"/> trailhead contacts	<input type="checkbox"/> signs	<input type="checkbox"/> brochures
<input type="checkbox"/> information board	<input type="checkbox"/> newspaper	<input type="checkbox"/> maps
<input type="checkbox"/> word of mouth	<input type="checkbox"/> don't remember	
<input type="checkbox"/> other (please specify): _____		

10. How often do you estimate that you engage in the following activities when you are visiting the Animas River Trail? (Circle a number for each line) (If you do not walk a dog during this visit, circle “n/a” on *Questions a and b*)

	<u>Always</u>	<u>Usually</u>	<u>Sometimes</u>	<u>Seldom</u>	<u>Never</u>	
a. Keeping your dog on a leash	1	2	3	4	5	n/a
b. Picking up your dog's poop on and off the trail	1	2	3	4	5	n/a
c. Creating your own trail to the river	1	2	3	4	5	
d. Yielding to other visitors	1	2	3	4	5	
e. Picking up and putting <u>your</u> trash in a waste container	1	2	3	4	5	
f. Picking up and putting <u>others'</u> trash in a waste container	1	2	3	4	5	

next page please ▼

11. Please rate how effective you think each of the following contacts would be in influencing your behavior when visiting the Animas River Trail. (Circle a number for each line)

	Very <u>Effective</u>	Somewhat <u>Effective</u>	Somewhat <u>Ineffective</u>	Very <u>Ineffective</u>
a. Talking with a river guide.....	1	2	3	4
b. Talking with other visitors	1	2	3	4
c. Reading a poster	1	2	3	4
d. Reading a brochure	1	2	3	4
e. Talking with Durango Park & Recreation staff.....	1	2	3	4

12. When you don't pick up after your dog, what is the main reason? (Check all that apply)

- Check here if you do not own a dog
- Check here if you always pick up dog poop
- No poop pick-up bag available
- Poop too far from trail
- Don't want to carry a bag of poop
- Dog poop is natural to the environment
- Don't think I need to pick up
- Other (please specify): _____

PART II. Some Information About You. We would like to gather some information that will help us better understand the characteristics of Animas River Trail users.

13. What primary activity will you participate in during this visit to the Animas River Trail? (Check only one)

- walking
- walking with dog(s)
- bike riding
- running/jogging
- inline skating
- fishing (type: _____)
- kayaking
- rafting
- tubing
- other (please specify): _____

14. When did you first visit the Animas River Trail?

- This is my first visit ----> (go directly to *Question 16*)
- If this is not your first visit, how many years ago was your first visit? _____ years

15. How many times in the past month did you visit the Animas River Trail? _____ times

(1) Approximately how far did you travel today to visit the Animas River Trail? _____ miles

(2) How important is the Animas River Trail to you? (Circle a number)

<u>Not At All</u> <u>Important</u>					<u>Extremely</u> <u>Important</u>	----->	If you circle 4 or 5, please explain why it is important? _____
1	2	3	4	5			_____

18. Including yourself, how many people are in your group during this visit today? _____ people

19. What is your age? _____ years

20. What is the highest educational level you have achieved? (Circle the highest grade completed)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17+
Primary School								High School				College		Graduate Work		

21. What is your gender? (Check one)

- Male
- Female

22. What is your ethnic origin? (Check one)

- Native American Hispanic White
 Black Asian or Pacific Islander Other

23. To which of the following organizations do you currently belong? (Check all that apply)

- Audubon Society Trout Unlimited International Mountain Bike Association
 Leave No Trace Wilderness Society National Parks & Conservation Association
 Sierra Club Nature Conservancy Colorado Mountain Club
 None Other (please specify)_____

24. Have you ever volunteered for: (Including Animas River Trail and elsewhere; check all that apply)

- trail maintenance/construction river clean-up
 trash pickup other (please specify)_____ none

next page please ▼



ENTER A DRAWING

Filling out the following information will enter you in a drawing in which you could win FUN PRIZES !!

Thank you very much for taking the time to complete this survey. Your responses are very important to us. In less than a month we would like to ask you to participate in a “follow-up” mail survey. Upon completion of the follow-up survey, you will be entered in a drawing in which you could win one of many prizes. We would appreciate it very much if you would **PRINT** your address below so that we can mail the follow-up survey to you. Your name will not be put on a mailing list nor sold for other promotions or purposes.

Name: _____

Street Address: _____

City: _____

State: _____

ZIP Code: _____

If you prefer to complete the follow-up survey online, please also **PRINT** your complete email address on the line: _____

WE APPRECIATE YOUR PARTICIPATION !

STAFF USE ONLY

Ref. No.: _____ Date: _____

Time: _____

Location: _____ Poster: Y N

The Leave No Trace, Inc. / North Carolina State University
Animas River Trail Corridor Survey -- Part Two

Your participation in this study is critical to the sustainable future of the Animas River Trail. We are looking into effective ways of communicating responsible recreation practices to visitors. Please take a few minutes to complete this survey. Your answers will be kept confidential, and will be reported in group form only. Upon receipt of your completed survey you will automatically be entered in a drawing to win a gift donated by Leave No Trace, Inc. If you are a winner, we will notify you by mail. Again, we appreciate your help!

PART I. Knowledge and Practice of Low-Impact Recreation. In this section, we would like to know more about your knowledge and practice of low-impact recreation (please circle your response).

- | | <u>True</u> | <u>False</u> | <u>Don't Know</u> |
|--|----------------------------------|----------------------------------|--|
| 1. Creating your own trail to the river can cause soil erosion. | T | F | N |
| 2. River runners should always yield to anglers. | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| 3. Orange peels and apple cores quickly decompose. | T | F | N |
| 4. Tossing dog poop off the trail helps add nitrogen to the soil that promotes native plant growth. | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| 5. Unposted private property surrounds the Animas River Trail. | T | F | N |
| 6. Leave No Trace focuses primarily on picking up litter. | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| 7. City of Durango ordinance requires that dogs be leashed at all times on the Animas River Trail. | T | F | N |
| 8. Have you heard of the Leave No Trace program?
() yes () no (if no, go directly to <i>Question 10</i>) | | | |
| 9. How did you first hear about Leave No Trace? (Check only one)
() ' <i>Animas River Trail & Leave No Trace</i> ' poster
() ' <i>Animas River Trail & Leave No Trace</i> ' brochure
() contacts by our staff () other trailhead contacts () other signs
() other brochures () other information boards () newspaper
() maps () word of mouth () don't remember
() other (please specify): _____ | | | |
| 10. In the past few weeks, we have on occasion displayed a number of ' <i>Animas River Trail and Leave No Trace</i> ' Posters (see Page 6 for similar poster designs) along the Trail and at the River take-outs. Did you ever stop and read one of these posters? (Check only one)
NO... YES...
() I have never seen the poster -----
(go directly to Question 13)
() I have seen the poster but never
stopped and read the poster-----
(go directly to Question 12) | | | |
| | | | () I stopped and read the Poster <u>on the same day</u>
I was contacted by the staff of this study
() I stopped and read the Poster <u>on a day other</u>
than the day I was contacted...(Check one below)
[] An earlier date
[] A later date |

() I stopped and read the Poster but I do not remember when
 If yes, how many times did you stop and read the poster? (Check only one)
 () once () twice () 3 times () more than 3 times -----> _____ times

11. Leave No Trace has created principles to guide outdoor recreation behavior and protect recreation resources. In the space below, please list as many principles or guidelines as you can that were shown on the 'Animas River Trail & Leave No Trace' Poster.

12. Have you ever taken a copy of the 'Animas River Trail & Leave No Trace' brochure located in a box below the Poster? (Check only one)

() Yes -----> If yes, do you still have the brochure? [] Yes [] No
 () No, I have never seen the brochures
 () No, I have never taken a brochure though I saw them on the Poster

13. Visitors to a multiple use trail, like the Animas River Trail, have the potential to create a number of problems. To what extent did you find each of the following to be a problem during your visit to the Animas River Trail?

	<i>Not A Problem</i>	<i>Slight Problem</i>	<i>Moderate Problem</i>	<i>Serious Problem</i>
Litter along the trail	1	2	3	4
Litter along the river bank	1	2	3	4
Poorly maintained trail	1	2	3	4
Not enough information for visitors	1	2	3	4
Dog(s) off leash	1	2	3	4
Dog poop along the trail	1	2	3	4
Too many people on the trail	1	2	3	4
Not enough access trails to the river	1	2	3	4
Not enough signs on rules and regulations	1	2	3	4
Cyclists riding too fast	1	2	3	4
Visitors not yielding to one another	1	2	3	4
Too many people on the river	1	2	3	4
Not enough private property boundary signs	1	2	3	4
Not enough dog poop bags	1	2	3	4
Not enough trash cans	1	2	3	4
Dog leashes across trail	1	2	3	4

14. We would like to know the reasons visitors have for behaving in certain ways while on the Animas River Trail. This helps park staff respond with effective management actions. Please rate how important the following statements are to you.

	<i>Not Important</i>	<i>Somewhat Important</i>	<i>Moderately Important</i>	<i>Very Important</i>
I do not want to get caught and fined for my behavior	1	2	3	4
I want urban parks to be maintained in the best condition possible	1	2	3	4
I want to take care of the Animas River Trail: so that <i>my family and friends can enjoy it</i>	1	2	3	4
I want to take care of the Animas River Trail:				

so that <i>other visitors can enjoy it</i>	1	2	3	4
People that I care about would not like me to litter	1	2	3	4
I want to set a good example for others	1	2	3	4
I fear I will be caught by a park staff	1	2	3	4
I want the Animas River Trail to be there for future generations	1	2	3	4
I want to follow park rules	1	2	3	4

15. A variety of techniques are used to enhance your recreational experience and protect the resource. We would like to know your preferences for the following possible management techniques.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>No Preference</i>
Trails should be constructed to allow river access to the Animas River	1	2	3	4	5
Uniformed park staff should patrol the Animas River Trail to enforce rules	1	2	3	4	5
Bulletin boards should be erected along the trail to convey Leave No Trace information	1	2	3	4	5
Visitors who violate regulations should be fined	1	2	3	4	5
Barriers should be erected to close unofficial trails to the river	1	2	3	4	5
Citizen patrols should be initiated to enforce Animas River Trail rules and regulations	1	2	3	4	5
Provide visitors with more information on appropriate behavior while on the Animas River Trail	1	2	3	4	5
More signs should be erected along the trail to convey Leave No Trace information	1	2	3	4	5
More signs should be erected along the trail to convey Animas River Trail rules and regulations	1	2	3	4	5
Maintenance, such as litter and dog poop removal, should be performed more frequently	1	2	3	4	5
Plant native vegetation to close unofficial trails	1	2	3	4	5
More dog poop bags should be made available to visitors	1	2	3	4	5

16. Resource Managers would like to have a better understanding of your feelings towards the Animas River Trail so that they can justify or dedicate more resources toward maintaining the trail.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Do Not Know</i>
I get greater satisfaction out of visiting the Animas River Trail than other urban parks	1	2	3	4	5
I find a lot of my life is organized around the use of Animas River Trail	1	2	3	4	5
Visiting the Animas River Trail is one of the most satisfying things I do	1	2	3	4	5
I seldom take the time to visit the Animas River Trail	1	2	3	4	5
The Animas River Trail plays a central role in my life	1	2	3	4	5
One of the major reasons I live where I do is that it provides opportunities for visiting the Animas River Trail	1	2	3	4	5

17. Have you changed any of the following behaviors since you completed the pre-education survey? (If you do not take a dog when you visit the Animas River Trail, circle "n/a" on statements a and b)

	<u>Do you participate in...</u>			
	<i>Less Often</i>	<i>Same Amount</i>	<i>More Often</i>	
a. Keeping your dog on a leash	1	2	3	n/a
b. Picking up your dog's poop on and off the trail	1	2	3	n/a
c. Creating your own trail to the river	1	2	3	
d. Yielding to other visitors	1	2	3	
e. Picking up and putting <u>your</u> trash in a waste container	1	2	3	
f. Picking up and putting <u>others'</u> trash in a waste container	1	2	3	

18. Please respond to the following items as they relate to your attitudes and beliefs regarding the Animas River Trail. (If you do not take a dog when you visit the Animas River Trail, circle "n/a" next to the questions about dogs.)

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Do Not Know</i>
It is all right to walk on unofficial trails to access the river	1	2	3	4	5
It is wrong not to pick up poop after my dog(s)	1	2	3	4	5 n/a
It is wrong to trespass on private property	1	2	3	4	5
I cannot tell the difference between private or public properties along the Animas River Trail	1	2	3	4	5

It is all right to yield to other visitors	1	2	3	4	5	
It is wrong to litter on the Animas River Trail	1	2	3	4	5	
It is all right to pick up litter left by other visitors	1	2	3	4	5	
It is all right to let my dog off leash	1	2	3	4	5	n/a
If I left dog poop behind, the quality of other visitors' experience will be negatively affected	1	2	3	4	5	n/a
If I trespass on private property the landowner will get upset	1	2	3	4	5	
If I let my dog off leash he/she would chase or bite other visitors	1	2	3	4	5	n/a
The environmental quality of the Animas River Trail would degrade if I litter	1	2	3	4	5	
It is wrong for me to create my own trail to access the river	1	2	3	4	5	

19. We would like to know to what extent your behaviors, while on the Animas River Trail, are influenced by other people. (If you do not take a dog when you visit the Animas River Trail, circle "n/a" next to the questions about dogs.)

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Do Not Know</i>	
Most people who are important to me think that I should not litter on the Animas River Trail	1	2	3	4	5	
Most people who are important to me think that I should pick up poop after my dog(s)	1	2	3	4	5	n/a
My close friends think that it is wrong to let my dog off leash	1	2	3	4	5	n/a
My friends and family members think that it is wrong to use unofficial trails to access the river	1	2	3	4	5	
Generally speaking, I want to do what my family members think I should do	1	2	3	4	5	
Generally speaking, I want to do what my close friends think I should do	1	2	3	4	5	
Generally speaking, I want to do what the Durango Parks and Recreation Department staff think I should do	1	2	3	4	5	
Generally speaking, I want to do what I think I should do	1	2	3	4	5	

A Project to Survey Visitor Behavior and Receptivity Regarding Proper Disposal of Human Waste in the Weminuche Wilderness, San Juan National Forest, Colorado

A cooperative effort conducted by San Juan Mountains Association, Leave No Trace Center for Outdoor Ethics (formerly Leave No Trace, Inc.), Durango & Silverton Narrow Gauge Railroad, and the US Forest Service, San Juan National Forest, Columbine District.

Summary

As part of the overall San Juan Laboratory Project, a study was conducted of visitors to the Weminuche Wilderness in Colorado, specifically the Chicago Basin drainage area. Visitors to this area are primarily backpackers. The primary purpose of the study, conducted in the summer of 2000, was designed to assess knowledge of human waste practices and to determine if behavior could be influenced by Leave No Trace educational efforts. Initial observations made of the area the prior year indicated that human waste, toilet paper and personal hygiene products were disposed of in various ways. Frequently, these items were disposed of under rocks and logs or deposited on the ground with a rock or log placed on top. Animals frequently dug up toilet paper and hygiene products that were buried. This poses concerns to human health, water quality, animals and to the aesthetic value of visitors who encounter human feces, toilet paper and/or personal hygiene products during their visits.

While older practices include leaving human waste and associated materials under rocks or logs, there are newer practices based on research which make less environmental impact. Although, toilet paper is biodegradable, it can be brought to the surface by animals before degradation occurs. Thus, the overall best practice is to use catholes for burying human waste and to pack out used toilet paper and personal hygiene products. Because of the variety of practices being utilized, Leave No Trace messages could be used to educate recreationists on this recommended practice.

Most visitors access the Chicago Basin area by the Durango & Silverton Narrow Gauge (D&SNG) train (exit Needleton train stop), which provided project personnel easy access to visitors both on their arrival to and departure from the wilderness area. During the four-week sampling period visitors were exposed to four different Leave No Trace messages regarding human waste disposal, which were:

- 1) No education (control);
- 2) A brochure accompanying mail-issued train tickets regarding Weminuche Wilderness info and “proper disposal of human waste” information;

- 3) A specific and more detailed “dispose of waste properly” message along with a two-plastic-bag system with instructions on how to pack out toilet paper. The packets were distributed to backpackers as they boarded the train;
- 4) Sources unrelated to the Lab project that regularly distribute Leave No Trace information. Some examples of these sources include website information, agency partners, local retailers and public service announcements that reinforce Leave No Trace guidelines.

337 people contacted during exit surveys indicated the following key findings:

- 61.42% of visitors did receive a message asking them to pack out used toilet paper and personal hygiene products;
- Of those who received a Leave No Trace message, 70% reported that they did pack out their toilet paper;
- Of those who did not receive a Leave No Trace message, 22% reported that they did pack out their toilet paper;
- Overall, visitors were three times more likely to carry out their toilet paper and personal hygiene products, increasing the probability of doing so from 21% to 70% if they received a Leave No Trace message;
- Of the people who received their Leave No Trace message with mailed tickets, 59% packed out their toilet paper;
- Of those who received the message along with the two-bag system 70% reported that they packed out their toilet paper.

As illustrated by the research, implications for site managers could include targeting visitors prior to their arrival but also by continuing on-site educational techniques (e.g. interpretation, personal contact, etc.). By providing visitors with a clear and focused Leave No Trace message regarding the proper disposal of human waste, and a means of carrying out used toilet paper the results did indicate a higher rate of compliance. In summary, this study shows that visitor behavior can be influenced through an effective comprehensive educational approach.

Durango & Silverton Railroad - Trip Planning Information

Weminuche Wilderness

Welcome! The Weminuche Wilderness contains nearly half a million acres in the San Juan and Rio Grande National Forests. Originally designated as Wilderness by Congress in 1975, it is a component of the National Wilderness Preservation System. As you visit, keep in mind that you join thousands of people who come to explore each year. Your actions do affect the quality of this wilderness and the experience of others. This handout provides information which will assist you as you prepare for your trip. Have a safe and enjoyable experience!

To keep it wild . . .

A few recommendations to help you *Leave No Trace* of your visit:

- **Camp at least 100 feet from water.** (100 feet = 35 adult steps.) Select a previously used site when camping in heavily used areas. In areas where there are no established sites, move your camp before impacts begin to show. Avoid meadows, as they are fragile and prone to vegetation loss and soil erosion with repeated use.
- **Do all washing** of yourself, clothes, and dishes at least 100 feet from water sources, using biodegradable soap or no soap. Scatter wash water far from camp and water sources.
- **Bury human waste** six inches deep in individual cat holes at least 100 feet from camp, trails, and water sources. Pack out toilet paper and sanitary items.
- **Pack out all that you pack in**—food scraps and trash. Do not bury any trash or garbage.

- **Campfires** are not allowed in the Needle Creek drainage or in Chicago Basin, or Vestal Basin. If you have a fire outside of those areas, keep it small and only use down and dead wood. Use backpacking stoves to cook.
- **Group size** is limited to 15 people to allow for a quality wilderness experience and to reduce the impact on the land.
- **When hikers meet horses or other stock** on the trail, have all hikers in your party move to the downhill side. Speak to riders to let the stock know you are people, not predators.
- **Protect wildlife** from your food by using bear-resistant methods of storing or hanging food, trash, and other scented items. **Marmots and porcupines** are attracted to sweat stained gear – hang packs and boots above their reach. **Mountain goats** are also attracted to the salt in urine, so urinate away from your camp to give them some space for your safety as well as theirs.

It's wild out there!

To Stay Found, be sure to carry a current topographical map of the area. The Weminuche Wilderness is a large, remote wilderness. Signing is limited.

14,000 Foot Peaks - Mt. Eolus, Sunlight and Windom have seen numerous fatalities. These peaks are serious climbs. Read on!

Altitude Sickness can be fatal. Allow time to acclimate to elevation. Drink plenty of water and snack frequently while hiking. Symptoms are: rapid heartbeat while resting, difficulty breathing, nausea, dizziness, headache, and irritability. Treatment is rapid descent.

Hypothermia can be life threatening. Learn about its causes and remedies before your trip and protect yourself with adequate food, water and clothing.

Weather - Expect and be prepared for rain, hail, snow, or biting wind at any time of the year. Weather changes suddenly and intense afternoon thunderstorms are common in summer. High mountain areas may be snow-covered into late July or mid-August. Carry clothing and equipment that will keep you warm and dry, even when day hiking.

High Water - During snowmelt, muddy conditions and high fast water are common. Water levels of streams and rivers may rise dangerously with warm weather or after rainstorms. Use caution when crossing or delay crossing until water level drops.

Mountain Water often contains Giardia, a parasite which causes a severe intestinal disorder. Purify all drinking water by boiling, filtering or using iodine tablets or drops.

National Forest offices are in Dolores, Durango, Bayfield, Pagosa Springs, and Creede. For information, call 970 247-4874 or 719 852-5941.

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Weminuche Wilderness

In addition to general Forest regulations, the following regulations are in effect to help ensure the protection of the wilderness environment.

Group size

- Maximum group size is 15 people per group, with a maximum combination of people and stock not to exceed 25.

Travel and Equipment

- Possession of motorized equipment and mechanized means of transport are not permitted. Use of motor vehicles, bicycles, wagons, hang gliders, carts, and chainsaws or other motorized equipment is not permitted.
 - To lessen erosion, shortcutting of switchbacks is prohibited.
 - Use of aircraft to land or drop people or materials is prohibited, with the exception of agency-approved administrative use or emergency search and rescue operations.

Camping

- Camping is not permitted within 100 feet of streams or lakes, except as designated or posted.

Waste disposal

- Disposal of human waste and wash water is prohibited within 100 feet of any water source.

Livestock and pets

- Recreational livestock are prohibited from being restrained within 100 feet of lakeshores and streams or within riparian areas.
 - Pets must be under voice control or physical restraint.

	No camping	Camping and fires only in designated sites	No campfires or wood stoves	No restraint of livestock	No grazing of recreational livestock
Needle Creek Drainage including Chicago basin			X		
Twin Lakes In Needle Creek drainage	X		X		
Vestal Basin			X		
Emerald Lake within 1/2 mile of north shore & 1/4 mile of other shores		X		X	X
Little Emerald Lake within 1/4 mile of lake		X		X	X
Flint Lake between shore & Flint & La Osa Trails & within 200 feet of west & north shores	X		X	X	X
Weminuche and East Fork Trails—Park at the junction					X
Fourmile Lake within 200 feet of lake	X		X	X	X
West Fork (Rainbow) Hot springs area		X	X		X
West Ute Lake Within 200 feet of lake	X		X	X	X
Archuleta Lake within 200 feet of lake	X		X	X	X

Forest-wide Regulations

The following regulations are in effect in this area. Violators may be cited and fined. A complete listing of official orders is available for review in Forest and District offices.

Damage to trees

Cutting or damaging live trees without a permit is prohibited.

Caches

Caching or stashing of equipment for more than 14 days is not permitted.

Hunting

Hunting is permitted under regulation by the Colorado Division of Wildlife

Outfitters & Guides

Commercial outfitters and guides must hold a legal permit to operate within National Forests. Contact this Forest to confirm that your outfitter is permitted.

Reserved Campsites

No camping is allowed in or within 100 feet of areas signed as "reserved" or "assigned" to permitted commercial outfitters.

Further Information

* **Suggested Reading:** Walking in Wildness, A Guide to the Weminuche Wilderness by B.J. Boucher
Leave No Trace - learn these skills before entering the wilderness – order from LNT, Inc. 1-800-332-4100

* **Suggested Maps:** Weminuche Wilderness Topographic Map or USGS Topographic Maps

The above may be ordered from: San Juan Mountains Association, P.O. Box 2261, Durango, CO 81302 (970) 247-4874



Appendix B

A Brief History of Chicago Basin

Weminuche (whem a nooch) is the name of one of the seven bands of Ute people who made the Southwest Colorado Rockies their home. They hunted, fished, and held sacred the land that now bears their name.

Because of its remoteness, little entry and development in the Needle Mountains by white settlers and miners occurred prior to 1877. The Animas Canyon Toll Road from Silverton to Animas City (now Durango) was completed in 1877. The toll road opened up commerce through the Animas Canyon and resulted in a number of small developments in subsequent years. The most notable developments in the canyon were the Shaw House at Elk Park, a way station run by John and Almina Shaw whose renowned cooking was its premier attraction, and the town of Niccora at the mouth of Cascade Creek established by Frank Blackledge, which was the area's most short-lived post office (only 134 days). A Mr. Webb bought land at Needleton and promoted the area, which accounts for the present day private land and cabins near the train stop.

The original access and development in the Chicago Basin area was apparently from Vallecito Creek to the east. A mixed party of soldiers and civilians led by Lt. C.A.H. McCauley located a route to the heretofore foreboding Needle Mountains via Johnson Creek, which they named after one of their members, Miles Johnson. The McCauley party also named several other features in the area, including McCauley peak, Valois Peak, and Grizzly Peak. There is an interesting story behind the naming of Grizzly Gulch. One of the party members, James Smith, was an older prospector who was also rheumatic, supposedly so severe that he had to have someone help him on his horse. With such help one morning, Smith rode up one of the tributaries past a lake, slid off his horse, and started prospecting. He looked up after a short time and saw an infallible cure for rheumatism in the shape of a tremendous grizzly. Jim took off and outran the bear the mile and a half back to camp. At one point, he saw another prospector across the gulch and reportedly yelled "How far behind is he?" in lieu of turning around. The bear was right behind him, and people scattered when they reached camp. All except Lt. Valois, who weighed 250 pounds and carried a long sword. Valois swung the sword, danced around, hollered at his men, and scared the bear off.

Miners in the party established claims in Columbine Basin and Chicago Basin. In Chicago Basin you can see small yellow/orange tailing piles on some of the hillsides, marking where miners dug prospecting holes. The mining activity in the area apparently never went much beyond the prospecting stage, because there are no signs of mechanization, e.g., a reduction mill or other ore processing machinery, and the mine dumps are relatively small. At most, the miners hand-sorted their ore and packed it out on mules. After the railroad was completed in the Animas Canyon in 1882, a trail was constructed down Needle Creek to connect with the train at Needleton. Today, that 6.3 mile miner's trail is the principal access to Chicago Basin. There are ruins of several old cabins along the trail. Any cabin ruins that existed in Chicago Basin have now disappeared.

Source: Nossaman, Alan. 1993. Many More Mountains. Volume 2: Ruts into Silverton. Sundance Publications, Ltd., 250 Broadway, Denver, CO 80203.

Leave No Trace

Since the mining era, the Needle Mountains and Chicago Basin area have always been a favorite destination of backcountry users. Especially during the past decade, the beauty of the location and the presence of three 14ers--Eolus, Sunlight, and Windom--has drawn backpackers and peak baggers there in increasing numbers.

In order to maintain the wilderness quality of the area, the Forest Service has found it necessary to have regulations in effect that will minimize the human impact on the area. Those regulations and Leave No Trace principles are detailed in the material you received with your train ticket, and are summarized below. Leave No Trace principles of camping are particularly important in heavily used areas such as Chicago Basin. Please read, and practice the Leave No Trace principles listed on the enclosed card. *(Note The project team decided not to include the LNT card in the plastic bag)*

We want to emphasize an issue that has a significant impact on the quality of the environment and your camping experience in Chicago Basin -- human waste. Carrying out toilet paper and used personal hygiene products are especially important here. Marmots and other animals will dig up and scatter any buried materials. Bury human waste in a 6" deep "cathole" well away from campsites, trails, or water, and (very important) carry out your toilet paper and used personal hygiene products in this plastic bag.

By doing your share to keep the area clean, you'll be contributing to a better wilderness experience in the future for both yourself and others who'll come after you.

Regulations for Chicago Basin

- Camp only in established sites (in trees) at least 100' from water. Leave meadows untouched.
- Camping is not allowed in Twin Lakes basin.
- Campfires are not allowed in the Needle Creek drainage, including Chicago Basin. Use a camp stove.

Leave No Trace Principles

- Bury human waste in a 6" cathole at least 100 feet away from campsites, trails, or water.
 - Carry out all trash, toilet paper, and used personal hygiene products.
-

This Leave No Trace project is sponsored by:

San Juan Mountains Assoc.
PO Box 2261
Durango, CO 81302
970-385-1210
www.lnt.org

Leave No Trace Foundation
PO Box 997
Boulder, CO 80306
800-332-4100

San Juan National Forest
Columbine Ranger District
PO Box 439
Bayfield, CO 81122

Appendix C

LEAVE NO TRACE SURVEY: Waste disposal

Your responses to the questions below are anonymous. We would very much appreciate your complete honesty and detail in answering. It will help us design effective programs that make sense for people and are manageable.

1. Did you receive a "Leave No Trace" message asking you to pack out used toilet paper (TP) and personal hygiene products? Yes No

If yes, where did you receive the message?

Literature received with train ticket or from the Forest Service

Packet given to you at train

Other (please indicate: _____)

2. Did you pack out all your used TP and used personal hygiene products? Yes No

If no, what prevented you from packing it out?

Didn't have a bag to put it in

Didn't know it was important

It seemed messy and unsanitary

Other _____

3. During your trip did you observe any TP or personal hygiene products lying on the ground?
Yes No

If yes, describe where and frequency _____

4. Please rank the effectiveness of the various ways this message might be given to you. (1 most effective, 5 least effective)

Sign posted at trailhead

Personal contact with Forest Service personnel

Provide plastic bags to facilitate carrying out TP

Literature provided with the train tickets

Comments: _____

5. If you received a plastic bag for packing out your TP, what are your comments on that bag system?

Comments: _____

Over

Please fill in this information about yourself:

Entry Trail head: _____ Entry Date: _____

Exit Trail head: _____ Exit Date: _____

Sex: M F

Age: under 18 18 to 30 30 to 50 above 50

Home State: _____ Outside USA: _____

Thank you for your assistance.

Please deposit this form in the receptacle provided. If you have taken it with you, please mail it to:

Leave No Trace Survey
Attn.: Kathe Hayes
San Juan Mountains Association
15 Burnett Court
Durango, CO 81301