



2018 State of the Rockies Report **Western Forests in the Anthropocene**

Research • Report • Engage



COLORADO COLLEGE
**State of the
Rockies Project**

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The Colorado College State of the Rockies Project **Research • Report • Engage**

The Colorado College *State of the Rockies Report*, published annually since 2004, is the culmination of research and writing by a team of Colorado College student researchers. Each year a new team of students studies critical issues affecting the Rockies and the American West.

Colorado College, a liberal arts college of national distinction, is indelibly linked to the Rockies. Through its Block Plan, students take one course at a time, and explore the American West as classes delve into the intersections between humans, politics, culture, geography, natural sciences, and more. Students' sense of place runs deep; their environment is their classroom. They ford streams and explore acequias to study the multifaceted issues of water; they camp in the Rocky Mountains to understand its geology; they visit nearby oil fields to learn about energy production and hike through forests to experience the biology of pest-ridden trees and changing owl populations. Colorado College encourages a spirit of intellectual adventure, critical thinking, and hands-on learning, where education, discovery, and life intertwine.

The Colorado College State of the Rockies Project dovetails perfectly with that philosophy, providing research opportunities for CC students and a means for the college to engage meaningfully with the region we call home. The *State of the Rockies Report* fosters a sense of citizenship for Colorado College graduates, revealing how the nuances and subtleties of the natural world define the very challenges that these graduates will spend their careers solving.

2018 State of the Rockies Report

Western Forests in the Anthropocene

Editor

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State of the Rockies Project Specialist

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The dawning of the Anthropocene was a keystone moment in Earth's natural history. This era was so named by the International Union of Geological Sciences because it marks the start of when human activities became the dominant influence on the environment. While a discreet start-date for the Anthropocene has yet to be determined definitively, the hallmarks of this monumental period are plainly visible. Anthropogenic climate change, driven by modern society's ongoing dependance on carbon-based fuels, is the most easily identified marker of this era. Other detectable phenomenon, some more subtle than others, include the integration of plastics into the strata of Earth's geologic story, the presence of refined radioactive materials in our atmosphere and soils, and the beginning of what biologists call "Earth's Sixth Mass Extinction," to name a few.

The Anthropocene represents more than just these dramatic, global-scale challenges, however. It manifests right in our backyard: the American West, and in particular, the Pikes Peak Region. Human impacts on western ecosystems has many faces, and a similarly varied set of fields must be drawn upon to understand and mitigate these impacts.

Record numbers of enthusiastic outdoor recreationists flock to America's outdoor spaces and public lands. They hike, paddle, ski, and fish in pursuit of community, fitness, and the joy of conquering new challenges. Outdoor recreation has blossomed into an industry worth \$887 billion, but despite growing awareness of the need for "Leave No Trace" ethics, traces are indeed left. Local land managers constantly battle the effects of erosion, vegetation trampling, degraded water quality, and other detrimental effects of visitation.

Similarly, a century-long history of unnatural wild-fire suppression has left western forests in a precarious state. Dense and overgrown, today's forests are especially prone to wildfires which can reach unprecedented, catastrophic scales. Furthermore, the gradual encroachment of urban centers into these forested areas poses tremendous risk to those who choose to live in this "wildland-urban interface." This devastating dynamic was made painfully apparent in 2012 and 2013 when the Waldo Canyon and Black Forest Fires took 4 lives and 857 homes in Colorado Springs.

Impacts on our forests are not only limited to natural systems, but also to the cultural landscape which non-Indigenous people rarely experience. Indigenous peoples

across the state, nation, and world continue to suffer the traumatic loss of cultural resources: ceremonial sites, ancestral burial grounds, sacred objects and more. These losses are driven by unjust, colonial attitudes held by government agencies and private industries alike, and reflect the central tenet of the Anthropocene: significant and detrimental human impacts which are entirely avoidable.

In the pages of this report, you will find meticulously prepared, collaborative research which investigates the most fundamental elements of each of these challenges. The 2017-18 State of the Rockies Student Fellows have channeled their intellect, curiosity, and sensitivity into illuminating the objective truths, nuances, and injustices which define their chosen topics. This has been the essence of the Colorado College State of the Rockies Report since its first publication in 2004.

Now in our 15th anniversary edition, I'm proud to continue this tradition of advancing public understanding of natural resource issues in the American West. It is a bittersweet moment however - as this will be the final State of the Rockies Report - the last of 15 reports which bear witness to the stellar efforts of Colorado College students, staff, and faculty over the past decade and a half. While this may be the end of a defining period in this organization's history, our work is not done. The State of the Rockies Project will live on under the exceptional leadership of Dr. Corina McKendry. The structure, format, and topical focus of our research will surely shift as it always has, but the mission remains quite similar: "The State of the Rockies Project enhances understanding of and action to address socio-environmental challenges in the Rocky Mountain West through collaborative student-faculty research, education, and stakeholder engagement."

When I consider the bright future of this program, I fixate on one word in that mission statement: action. Too often does high-quality research remain on paper, in journals, or online. Translating knowledge into action is an art unto itself, and there has never been a better time to act: to seek balance and resilience for human and non-human communities; to refine our personal commitment to a better, more just world; and to be the change we want to see. Thank you for reading, and I hope the information contained in this report catalyzes your personal passion or interest in addressing the myriad challenges we face today.

Sincerely,



Jonah Seifer, State of the Rockies Project Specialist



Managing the Masses: Recreation Management on Pikes Peak

by Hannah Rider, 2017-18 State of the Rockies Project Fellow

Introduction

Rising high above the eastern plains of Colorado, Pikes Peak occupies a unique place in the interface between wilderness and civilization. While Zebulon Pike, the man contracted to explore this area of the Louisiana Purchase, once thought it to be unclimbable, Pikes Peak is now the most accessible fourteen-thousand-foot mountain in the country. As a result, it is the mountain with the highest rate of visitation in the U. S. (Pikes Peak America's Mountain, 2016). In the past few decades, the demand on Pikes Peak's resources has been increasing. As more people move to the Front Range of Colorado and demand for recreational opportunities increases, current management practices and infrastructure will not be able to keep up with the influx of visitors. In 2016, nearly one million people accessed Pikes Peak through the major access points: the Pikes Peak Highway, the Cog Railway, the Barr Trail and other connected hiking trails, the Manitou Incline, and Barr Camp (see fig. 1).

It is clear that increasing numbers of visitors have been coming to the Pikes Peak area, and it can be reasonably expected that these numbers will continue to rise. One reason for this is the proposed Ring the Peak Trail, a loop trail encircling Pikes Peak. The trail, largely comprised of sections of other trails, is nearly completed, except for a section on the south side that faces ecological and private property complications. In 2016, it was identified by Governor Hickenlooper as a "16 in 16" project, and he believes that "once Ring the Peak is done it will be a national and ultimately an international destination" (Healy 2016). Currently, a consulting firm, hired by the Trails and Open Spaces Coalitions and funded by a Great Outdoors Colorado (GOCO) grant, is developing a plan

for completing the ring (Davies 2017). When this trail is completed, it will draw even more visitors to the area, and will put even more pressure on the peak's fragile ecosystem.

The necessity of sound management is multifaceted due to the social and economic impacts of outdoor recreation. Recreation on public lands is an important economic driver in the West. According to Outdoor Industry Association's economic report, Colorado outdoor recreation annually generates \$28 billion in consumer spending, \$2 billion in state and local taxes, \$9.7 billion in wages and salaries, and 229,000 direct jobs (Outdoor Industry Association 2012). From estimates of visitors to Pikes Peak and estimates of user spending on recreation, Pikes Peak generates around \$117 million for the local economy (see fig. 2). While many cities are embracing this economic trend, Colorado Springs and other communities in the Pikes Peak region have not fully capitalized on Pikes Peak's economic potential.

In order to avoid the negative impacts of overuse and leverage the possible benefits of the Pikes Peak recreation area, a comprehensive management plan is necessary. By examining effective management in other recreation complexes around the country, successful practices can be applied to the Pikes Peak region. The purpose of this study is to estimate future usage of the peak's recreational opportunities, and propose a management plan that will retain accessibility and the overall quality of visitor experience, while maintaining the ecological integrity of this ecosystem.

Pikes Peak Recreation Complex

The Pikes Peak Recreation Complex is defined as the area above 8,500 feet elevation on Pikes Peak's eastern

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slope that is also south of US Route 24, east of Colorado Highway 67, and north of Gold Camp Road. This specific area was chosen to comprehensively include all activities that directly affect the peak, while excluding adjacent attractions that only have indirect ecological and economic effects, such as the Garden of the Gods or city parks. This designation includes attractions, such as the Cog Railway, the Pikes Peak Highway, and the top of the Manitou Incline, as well as backcountry uses, such as the Barr Trail, the Ring the Peak Trail, backcountry skiing, Off Highway Vehicle (OHV) use, and more. The complex can be accessed through frontcountry portals like the Pikes Peak Highway or backcountry portals like Cheyenne Canyon State Park.

Ring the Peak Trail

The Ring the Peak Trail is a proposed loop trail encircling Pikes Peak that is currently under development. The trail, largely comprised of sections of other trails, is nearly completed except for an 8-mile section on the southwest side that faces ecological and private property complications, and a 5-mile section on the northeast side whose construction is already permitted and funded. In 2016, Colorado Springs Trails and Open Space Coalition received a GOCO grant to hire a consulting firm to develop a plan for completing the ring. GOCO, or Great Outdoors Colorado, is born of a constitutional amendment that “redirected lottery proceedings being used for capital construction projects to projects that protect and enhance Colorado’s wildlife, park, river, trail, and open space heritage (Great Outdoors Colorado 2013). The organization provides grants for conservation of public land, maintenance of recreation areas, and expanded access to these areas (Great Outdoors Colorado 2016). The Ring the Peak Trail was also identified as one of Governor Hickenlooper’s “16 in 16” trails, of which he stated, “once Ring the Peak is done it will be a national and ultimately and international destination” (Boster 2016).

Friends of the Peak, a volunteer-based non-profit dedicated to enhancing recreation and education on Pikes Peak, has been the driving force behind the Ring the Peak trail up to this point. They were inspired by Design Workshop Inc.’s Pikes Peak Multi-Use Plan, a 1999 report that envisioned a long-term plan for the future of the Pikes Peak region (Design Workshop, Inc., 1999). This report

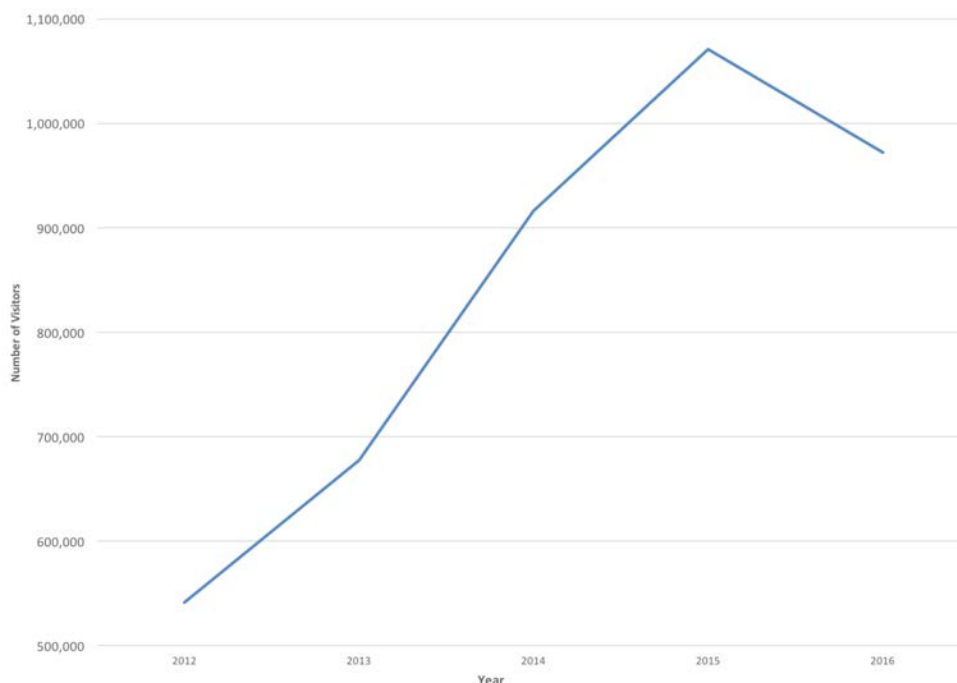
recommended a 60 to 70-mile loop trail around Pikes Peak, consisting of mostly currently existing trails with some new connecting segments (Strub 2015). With the support of the city and guidance from Design Workshop, Inc.’s plan, Friends of the Peak began to connect existing trails and to build new segments where necessary. Through this work, they were able to construct about 80% of the loop. However, the unfinished section on the south side of Pikes Peak is much more complicated than the other portions of the trail. The area through which the trail needs to pass is a complicated patchwork of private property, municipal water sources, and protected bighorn sheep breeding ground. The job of the consulting firm, N.E.S. Inc., is to fully understand the political and ecological landscape, meet with stakeholders, and produce a comprehensive plan to finish the trail that benefits all stakeholders. The Ring the Peak team began working on this project in July of 2017, and expects to conclude the project in the summer of 2018.

Past and Current Visitation of the Pikes Peak Recreation Complex

Between increasing usage and the added draw of the Ring the Peak Trail, the Pike Peak Recreation Complex will continue to be threatened by overuse. When there is more concentrated human activity in an area, there are more impacts to the ecosystem. At a certain point, that impact surpasses the resilience of that ecosystem and creates irreparable damage. High alpine ecosystems are particularly sensitive to human disruption. Erosion, improper disposal of waste, feeding animals, and other disruptions each have negative effects, but multiplied by increasing visitation, Pikes Peak is at risk of permanent ecosystem damage.

In order to understand the current visitation to the Pikes Peak Recreation Complex, data was collected from all attractions located within the complex as defined above. This required collecting usage data from each of the separate managing agencies and aggregating the numbers to estimate overall usage of the Pikes Peak Recreation Complex. While the time span of usage data varied from multiple decades to only a few years, it was possible to obtain data for all known recreational visitation between 2012 and 2016. In this timeframe, there was a significant increase in usage.

Figure 1: Visitation to the Pikes Peak Recreation Complex from 2012-2016



This graph demonstrates the increase in visitors to the Pikes Peak Recreation Complex through the most accessed points: the Pikes Peak Highway, the Cog Railway, the Barr Trail, and the Manitou Incline, as well as large events such as the Pikes Peak Hill Climb and the Pikes Peak Marathon. This does not include backcountry use or access through less popular portals on the perimeter of the recreation complex.

Current Management

The peak is managed by a combination of public and private stakeholders, ranging from the federal to the local level. Each of these agencies is responsible for separate areas and has different goals for their jurisdictions (see **Figure 2**). While this disperses the burden, it allows for gaps in management and does not account for the interaction between the different sections.

United States Forest Service (USFS): The majority of Pikes Peak is part of the Pikes San Isabel National Forest. The Pikes Peak Ranger District manages 230,000 acres which support “recreational opportunities, water, fish and wildlife, timber, grazing, and scenic beauty for the American people” (United States Forest Service). Recreationally, the Pikes Peak Ranger District manages most of the backcountry trails and activities. This includes major trails, such as the Barr Trail and the Craggs Trail.

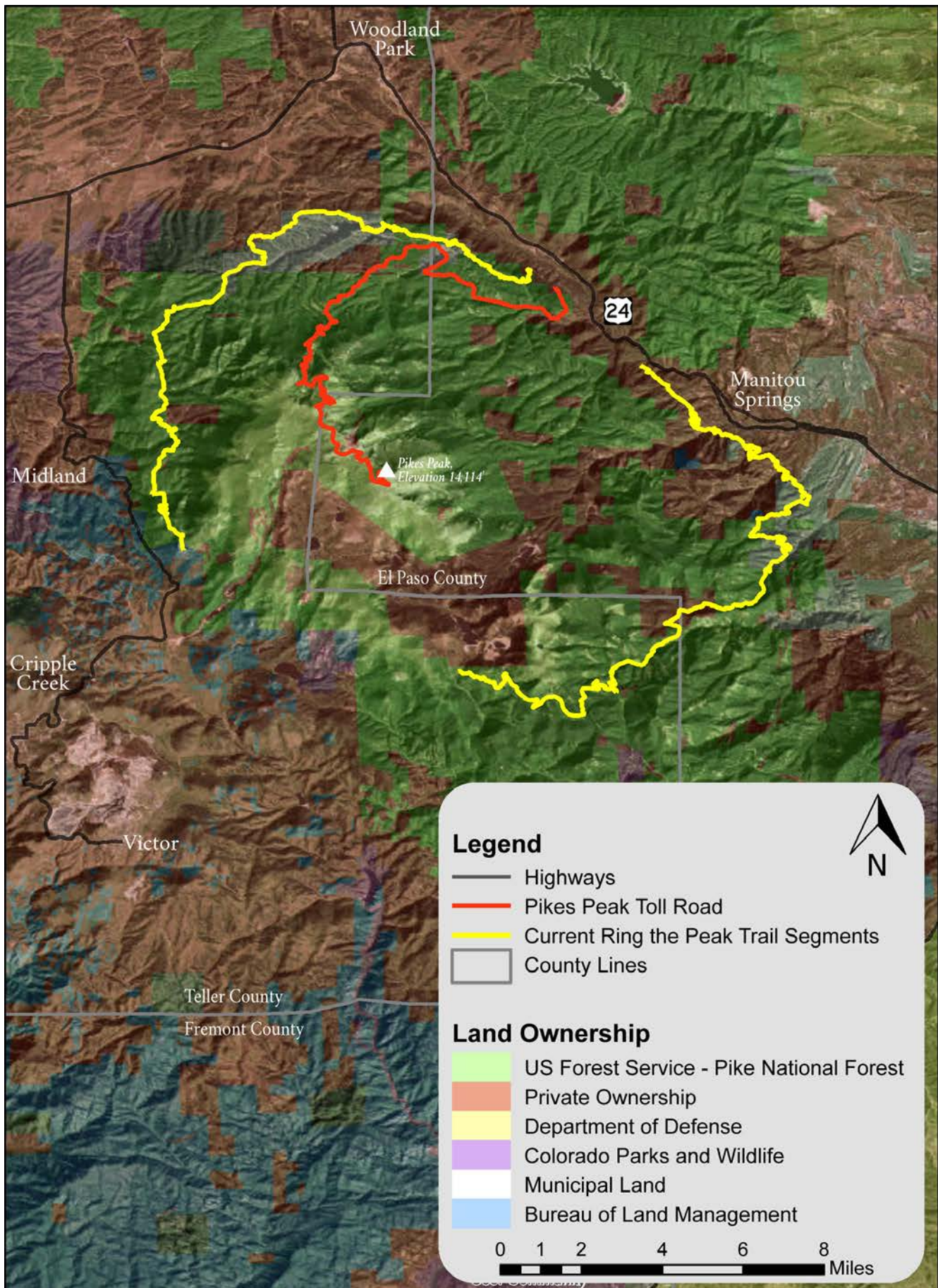
Bureau of Land Management (BLM): The BLM manages small areas of land on the south side of Pikes Peak. While most of the BLM’s land holdings in this area fall outside the boundary of the recreation complex, their land is important in finishing the Ring the Peak Trail.

Colorado Parks and Wildlife (CPW): CPW is responsible for the bighorn sheep populations that inhabit this area. They are mostly located on the south slope of Pikes Peak, and their breeding grounds are protected to ensure the continued survival of the population (Davies 2017).

Colorado Springs Utilities (CSU): Some of the water for the City of Colorado Springs and the surrounding area is collected and stored in reservoirs on Pikes Peak. Around 70% of water serving the Colorado Springs area is imported from western Colorado, and is transported through pipes across the Continental Divide. This water is moved to reservoirs and water treatment on both the north and south slopes of Pikes Peak (Colorado Springs Utilities 2016). These reservoirs and associated infrastructure is vital, and CSU manages these areas to ensure their safety and efficacy.

City of Colorado Springs: Colorado Springs operates the Pikes Peak Highway, the most common visitor experience on Pikes Peak. They hold a contract with Aramark, which operates the Summit House (Davies 2017). Due to the concentration of visitation along this corridor, mitigation efforts were instated in 2001 to

Figure 2: Map of Pikes Peak Recreation Complex



Pikes Peak and the surrounding region is comprised of a fragmented patchwork of different land owners and managers.
 Source: Colorado Ownership, Management and Protection Dataset, USGS National Elevation Dataset, ESRI, Trails and Open Space Coalition

prevent degradation. These efforts specifically focus on erosion and runoff concerns (Resource Information Group, United States Forest Service 2001). Established sightseeing areas and the entrance fee also serve to prevent negative impacts.

The Broadmoor: The Broadmoor operates the Pikes Peak Cog Railway, which has been open since 1891 (see **Figure x**, Cog Railway 2017).

Beyond the agencies that directly manage the land on Pikes Peak, there are many other entities that are stakeholders in the management of this area: Colorado Springs, Manitou Springs, Cripple Creek, Woodland Park, Victor, El Paso County, Teller County, and non-profit organizations dedicated to preserving this area (Design Workshop Inc. 2001).

While each of these agencies operate and manage their areas, there is no umbrella agency responsible for maintaining the ecological sustainability of the whole peak. One result of this fragmented management structure is a lack of conclusive usage numbers.

Economic Impact and Potential

While outdoor recreation has obvious ecological impacts, there is also significant untapped economic potential in the burgeoning outdoor recreation industry. According to the Outdoor Industry Association, Americans spend around \$887 billion on recreation products and services, and the industry brings in an average of \$65.3 billion in federal tax revenue and \$58.2 billion in state and local tax revenue annually (Outdoor Industry Association 2017). This industry is the third largest in revenue nationally, only surpassed by financial services and insurance, and outpatient healthcare (Outdoor Industry Association, 2012). Sources of revenue go beyond gear and guiding services. They include transportation, lodging, food, and many other facets of local economies.

Currently, Colorado Springs does not account for recreation spending as separate from tourism, so the magnitude of economic impact is unclear. Without understanding the extent of the economic benefits of outdoor recreation in the Pikes Peak region, there is little incentive to invest in the industry and increase connectivity between urban areas and the wilderness.

Figure 3: Top of the Cog Railway and the Pikes Peak Summit House



Tourists exit the Cog Railway, one of the three main ways to reach the summit of Pikes Peak. The Cog Railway runs from Manitou Springs to the summit, providing a unique experience of reaching the top of a 14,114' peak by train. Source: Jonah Seifer

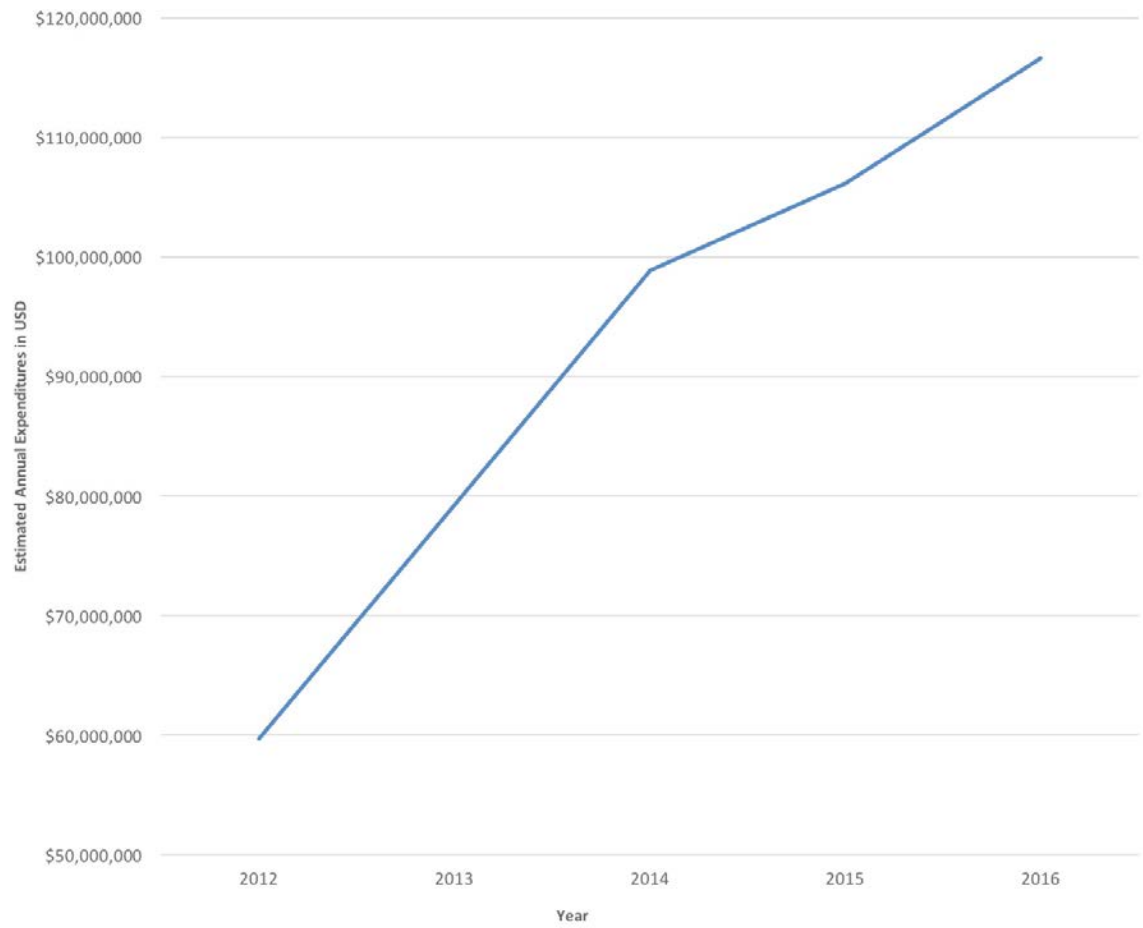
In order to estimate how much profit the Pikes Peak Recreation Complex brings to the area, we calculated the spending of Pikes Peak visitors through averages collected in a study of all national forest public lands. This study categorized National Forest visitors into types, from sightseeing to backcountry overnight use, and further divided these categories into local and non-local. With these divisions, the study estimated the amount that each type of user spends on average. Based on the methods established in this study, it is estimated that in 2016, \$116,636,878 was spent in the Pikes Peak Recreation Complex. While this figure is an estimate, it proves that a significant amount of money is generated by the Pikes Peak Recreation Complex and thus outdoor recreation is a significant sector of Colorado Springs' economy. As demonstrated in Outdoor Industry Association's study, outdoor recreation is becoming an increasingly important industry.

Case Studies

To understand recreation management in general and find solutions for capacity issues in the Pikes Peak Recreation Complex, we selected other recreation complexes as case studies of effective management. These recreation complexes were selected because of similarities to the Pikes Peak region, in size and variety of activities, as well as the effective strategies they have in place.

Arkansas Headwaters Recreation Area is a river corridor between Leadville, Colorado and Pueblo, Colorado. Recreation is focused mostly on river activities, such as kayaking, rafting, and fishing, but the area includes opportunities for hiking, biking, climbing, camping, OHV, and skiing. It is managed through a Cooperative Management Agreement between Colorado Parks and Wildlife, the Bureau of Land Management, and the U. S. Forest Service. A Cooperative Management “engages

Figure 4: Estimated Annual Recreation Expenditures within the Pikes Peak Recreation Complex



This chart shows the average spending of different types of users in National Forest public land, as estimated by White and Stynes in “National Forest Visitor Spending Averages and Influence of Trip-Type and Recreation Activity”. These estimates, multiplied by visitation numbers from 2012 to 2016 and adjusted to 2017 dollars, produced an estimate of visitor spending in the Pikes Peak Recreation Complex.

Figure 5: Artificial Wave in the Arkansas Headwaters Recreation Area



This wave is formed by an artificial hydraulic structure anchored to the bed of the Arkansas River in Salida, Colorado. The town has capitalized on river recreation, constructing a variety of whitewater features to promote tourism in the Arkansas Headwaters Recreation Area. Source: Jonah Seifer

Figure 6: Hecla Junction in the Arkansas Headwaters Recreation Area



Hecla Junction Campground is located on the banks of the Arkansas River next to Browns Canyon National Monument. Source: Alex Harros

the sustained involvement of the local host community residents and their governments, recreation-tourism business and industry, and public land management agencies” (Design Workshop, Inc. 2001). In this case, stakeholders divided up responsibilities between themselves, and established that agreement in a document. This ensures the continuity and feasibility of management.

Figure 7: Summary of Arkansas Headwaters Recreation Area Management

Types of Use	Hiking, whitewater rafting, kayaking, fishing, camping, climbing, biking, OHV, sightseeing, cross country skiing, snowmobiling, horseback riding
Management Structure	Public-private partnership: Cooperative Management Agreement between Colorado Parks and Wildlife, Bureau of Land Management, and United States Forest Service.
Stakeholders	Colorado Parks and Wildlife, United States Forest Service, Bureau of Land Management, Citizen's Task Force
Financial Structure	Colorado Parks and Wildlife collects fees within the recreation area that are directed into management and improvement of the area.
User Restrictions	Boating capacities are established, and camping is restricted to designated sites.

10th Mountain Division Huts are located in Colorado between Leadville, Vail, and Aspen, and offer an alternative to camping for backcountry activities such as hiking, biking, and skiing. They are located on United States Forest Service land, but are managed by the 10th Mountain Division Hut Association, which maintains the facilities and manages use.

Figure 8: Summary of 10th Mountain Division Hut Management

Types of Use	Hiking, backpacking, snowshoeing, cross country skiing, backcountry skiing
Management Structure	Public-Private Partnership: 10 th Mountain Division Hut Association with the United States Forest Service
Stakeholders	10 th Mountain Division Hut Association, United States Forest Service, private hut owners
Financial Structure	10 th Mountain Division Hut Association manages the hut system and fees for overnight stays
User Restrictions	While there is no limit for day use, the hut permit system limits visitors and minimizes their impact.

The Colorado Trail is a 500 mile thru-hike stretching from Denver to Durango. The trail crosses through six different Forest Service Districts, and is maintained by the Colorado Trail Foundation, based out of Golden, Colorado. This complex supports day hiking, backpacking, biking, OHV, equestrian, hunting, and fishing.

Figure 9: Summary of Colorado Trail Management

Types of Use	Day hiking, backpacking, biking, OHV, hunting, fishing, horses
Management Structure	Public-Private Partnership: Colorado Trail Foundation and United States Forest Service
Stakeholders	Colorado Trail Foundation, United States Forest Service - Pike San Isabel National Forest, White River National Forest, Gunnison National Forest, Rio Grande National Forest, and San Juan National Forest, Denver Water
Financial Structure	The Colorado Trail Foundation is a non-profit that does trail maintenance. Through grants and fundraising, they are able to fund maintenance.
User Restrictions	While most of the trail is unregulated, there are permits for the wilderness areas that the trail crosses through. Also, Waterton Canyon is managed by Denver Water and users are restricted to the trail.

The Appalachian Trail is the second longest trail in the United States and runs north-south along the east coast. Completed in 1937, it is one of the most well-known and heavily traveled thru-hikes. This complex is managed by the Appalachian Trail Conservancy, which has a public-private partnership with the Forest Service, state parks, and the National Park Service.

Figure 10: Summary of Appalachian Trail Management

Types of Use	Hiking, camping, backpacking
Management Structure	Public-Private Partnership: Appalachian Trail Conservancy with the National Park Service
Stakeholders	Appalachian Trail Conservancy, state governments
Financial Structure	The Appalachian Trail Conservancy is a non-profit that maintains the trail through grants and volunteer work.
User Restrictions	There are free and uncapped permits in wilderness areas along the trail, but generally there are no restrictions.

The Wonderland Trail in Mount Rainier National Park is a loop trail encircling Mount Rainier in Washington. Activities on and around the Wonderland Trail include day hiking, backpacking, fishing, boating, climbing, biking, skiing, and snowshoeing. Since it is within a National Park, the complex is managed solely by the National Park Service, with no private component to management.

Figure 11: Summary of Wonderland Trail Management

Types of Use	Day hiking, backpacking, fishing, boating, climbing, biking, skiing, snowshoeing, sightseeing
Management Structure	Public: National Park Service
Stakeholders	National Park Service
Financial Structure	The National Park Service has more funding for recreation management than other agencies, and fees return to the park's management.
User Restrictions	The park has an entrance fee, and every activity besides day hiking and sightseeing requires a permit.

Vail Pass Winter Recreation Area is a specified area within the White River National Forest that is used for backcountry skiing, cross country skiing, and snowmobiling. Managed by the Forest Service, this area has an effective permit system that manages number of visitors and minimizes conflict between motorized and non-motorized users.

Figure 12: Summary of Vail Pass Winter Recreation Area Management

Types of Use	Backcountry skiing, cross country skiing, snowmobiling
Management Structure	Public: United States Forest Service
Stakeholders	United States Forest Service - White River National Forest
Financial Structure	Users can pay daily fees or purchase a season pass between the months of November and May.
User Restrictions	Within the recreation area, there are designated motorized and non-motorized areas. Each user must stay within their area.

The Tahoe Rim Trail is a loop trail around Lake Tahoe in California. This trail is used by day hikers, backpackers, bikers, skiers, runners, equestrians, and snowshoers. This trail is managed by the Tahoe Rim Trail Association, which works with the Forest Service, as well as California and Nevada state parks, employing a similar management structure to that of the Appalachian Trail.

Figure 13: Summary of Tahoe Rim Trail Management

Types of Use	Day hiking, backpacking, biking, trail running, horses, snowshoeing, cross country skiing
Management Structure	Public-Private Partnership: Tahoe Rim Trail Association with United States Forest Service, California state parks, and Nevada state parks
Stakeholders	United States Forest Service, state governments
Financial Structure	The Tahoe Rim Trail Association is a non-profit that fundraises and provides volunteer trail work. They have an "Adopt a Mile" program, where individuals or companies can be featured as supporters of the trail.
User Restrictions	Camping is restricted to designated areas in the state parks.

Results

From these case studies, we found that, while public management works in some cases, the most effective management strategy is a public-private partnership. The public agencies own a large portion of the land and have the resources for basic management. However, adding private elements to management allows for an overarching vision across jurisdictional boundaries and over a longer period of time. The Appalachian Trail, the Tahoe Rim

Trail, the Colorado Trail, the 10th Mountain Division Huts, and the Arkansas Headwaters Recreation Area all have public-private partnerships within their management structure. While the specific roles of the public and private stakeholders differ in the different complexes, the cooperation of both is essential to success.

For sustained financial stability, most of these complexes leveraged the fundraising capabilities of their non-profit partners. While public agencies have budgets for maintenance of existing infrastructure, inclusion of a dedicated fundraising team can more readily support new projects or proactive management strategies. These areas attempted to keep fees to a minimum, only charging for activities that are costlier to manage. Since necessary funds can be raised through private donations or corporate partnership, activities can be free or accessed following payment of a non-prohibitive fee.

Another lesson from these case studies is that different uses require different intensities of management. Day hiking, for example, only requires low-intensity management, as long as infrastructure, such as bathrooms and parking, are already in place. Walking on trails has little ecological impact, and places easily accessible for day hiking usually have durable trails in place. OHV and equestrian use, on the other hand, have a much bigger impact and erode the trail more quickly. In this case, limitations can be used to keep use at a sustainable rate, and fees can be levied to fund maintenance. In all cases, however, it is important to know the number of users visiting the recreation complex. Whether through a permit system or trail counters, understanding visitation quantity and type is crucial to successful management.

Management Proposal

Visitation data in the Pikes Peak region and the case studies of other similar recreation complexes informed a proposal for recreation management in the Pikes Peak Recreation Complex.

Management Structure

Due to the diverse group of stakeholders in the area, a non-profit management model would be most effective for sustainable management of the Pikes Peak Recreation Complex. The non-profit model features just

one organization with the long term goal of overseeing all management. As defined by Design Workshop Inc.'s report, the non-profit model:

“involves the formation of a volunteer board of directors, who raises money from grants and corporate donations, and hires an Executive Director. The Executive Director would spearhead the non-profit visioning and fundraising, in concert with the board of directors, as well as develop budgets and implementation strategies to realize the vision” (Design Workshop Inc. 2001).

The managing non-profit will create a Cooperative Management Agreement, which delegates responsibilities to each party. This will be created through a collaborative process involving all involved agencies. Agencies currently holding land jurisdiction continue to manage their sections, but there is oversight by the non-profit which prevents fragmentation in management between the different organizations and manages the complex as a continuous system. Within this structure, management responsibilities would be designated as follows:

Non-profit: Responsible for coordinating the Cooperative Management Agreement, creating the management plan, tracking visitation, and fundraising.

United States Forest Service: Responsible for maintenance of National Forest areas, and implementation and enforcement of permit systems.

Bureau of Land Management: Responsible for maintenance of BLM land, and enforcement on that land.

Colorado Parks and Wildlife: Responsible for monitoring of big game populations, and the implementation and enforcement of permit systems in their areas.

The major stakeholders would meet to update the management plan in order to continue working towards the overall vision. The Arkansas Headwaters Recreation Area case study exemplifies the success of this model. This case exemplified dynamic management without increased burden on the current agencies involved. There are collaboratively established goals to guide future management while external sources of funding allow for preventative and proactive management.

Long Term Financial Support

A major challenge for recreation areas is the inconsistency of funding. Grants for specific projects can fund construction, but rarely are they given with consistent annual funding for maintenance. Similarly, government agency funding is not sufficient to fund every project, so maintenance becomes secondary to fire management and other immediate needs. A first step for financial stability is directing fees collected in the recreation complex to maintenance and monitoring of the area. This was done in the Arkansas Headwaters Recreation Area. All stakeholders agreed to put fees towards operations, executed by Colorado Parks and Wildlife.

Within the non-profit management model, a maintenance endowment can be created, which holds funds for maintenance over time. The endowment fund would have funding sources from both local and non-local users. For local users, the Pikes Peak Recreation Complex could have a membership, which is purchased annually and has benefits to members. These benefits can be events, free gifts, and priority access to permits in permitted areas. This system would build on the 10th Mountain Division Hut Association's model. Priority permits allow guaranteed access to members without excluding non-members from using the system. The 10th Mountain Division Hut Association gives members first access, but then issues the remaining permits by a lottery system. The membership allows for a revenue source from those willing and able to pay, while still allowing fair access through a lottery.

In order to capitalize on the economic benefit of increased visitation, there could be a voluntary 1% tax in industries associated with the recreation complex. People would have the option to opt out, but that tax would directly go to maintenance and allow visitors to give back. This strategy is used in Buena Vista's South Main Development, an area of the town located on the banks of the Arkansas River.

Another potential source of funding is the outdoor recreation industry. Since public lands are the foundation for the industry, it is in businesses' best interests to contribute to their stewardship. Many outdoor gear

companies donate to trails and complexes such as this one (see appendix A). One strategy, employed by the Tahoe Rim Trail Association, is to allow companies or individuals to “Adopt a Mile” or “Adopt a Vista”. This allows for their involvement and benefits them by advertising their contribution.

Once the Ring the Peak Trail is completed, there is potential for a campground or hut system. Having managed sleeping areas for a fee will reduce the ecological impact of dispersed camping, while funding the management of these areas. Similar to the 10th Mountain Division Huts, fees would directly pay for maintaining these areas.

User Restrictions

For this area, day hiking should remain a free activity. Dispersed camping should require a free permit for visitation numbers, and fees for campgrounds and huts will be instituted if these systems are put in place. OHV and equestrian usage should be restricted to durable areas that will not be degraded by this use. Fees for these uses will be required due to the increased cost of managing for these uses. Trail hardening and frequent monitoring is necessary to prevent negative impacts from these activities. Similarly, all other backcountry activity should have monitoring systems, such as permits. These restrictions would be collaboratively agreed upon and enforced by the members of the Cooperative Management Agreement.

Trail Amenities and Signage

Visitation data should inform what types of amenities and signage are necessary. Improvement of this infrastructure will decrease the impact on the areas and reduce future maintenance. The managing non-profit can designate, fund, and delegate the construction and maintenance of these amenities.

Conclusion

At one time in American history, recreation was characterized by individual experiences in the wilderness, without any rules or regulations, a true representation of freedom. However, as population continues to grow in Colorado’s Front Range, and visitors flock from

around the world to Colorado’s open spaces, recreation management is playing an increasingly important role. The Pikes Peak region’s natural beauty and unparalleled accessibility make proactive management necessary. While many specific lessons can be learned from case studies of recreation management, the most important lesson is the necessity of effective collaboration. With different agencies and organizations working together, there is greater efficiency and preferable management outcomes without overburdening any of the individual stakeholders. Creating a management plan for the Pikes Peak Recreation Complex will ensure that future generations can experience the natural beauty of the Pikes Peak region in perpetuity.

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Ring the Peak: Overcoming Political and Physical Trail Development Challenges

by Wileen Genz, 2017-18 State of the Rockies Project Fellow

Introduction

More than 500,000 visitors travel to the prominent fourteener that inspired Katherine Lee Bates' "America the Beautiful," to experience its accessible, breathtaking views. Instead, visitors to Pikes Peak are greeted with graffiti, dog waste, and noise pollution along the Barr Trail, a scenic non-motorized trail that is the most popular hiking trail to the summit. Alternative travel methods require less effort, but experience similar congestion, whether it be the Pikes Peak Highway full of heavy traffic or the Cog Rail that's been described as carrying passengers, "Like cattle going to slaughter" (Faughn 2016).

Tourism is the third largest industry in Colorado Springs. For instance, Aramark, the private concessionaire that pays the City of Colorado Springs \$1 million annually to operate the Summit House on top of Pikes Peak, illustrates the lucrative nature of the mountain ("RFP to be Released"). To gain a broader sense of how much impact the tourism industry imparts to Colorado Springs, the revenue generated from tourism totaled \$2.25 billion in 2016 ("Pikes Peak Region Welcomed").

As more people become aware of the recreational opportunities Colorado Springs has to offer, the attractions are having difficulty accommodating the growing population while still maintaining high quality visitor experiences. Overcrowding is evident all throughout the Pike National Forest, where outdoor recreation is deeply ingrained into the culture of Front Range communities. Garden of the Gods, another popular site that was designated as a National Natural Landmark within the forest, is one of the most densely visited public parks in America, and rated the "Best Park" on Trip Advisor (Benzel 2014). Along with this prestige comes the high cost of maintenance, and the declining quality of user

experience. As a means to satisfy the recreational demand and minimize environmental impacts, the Ring the Peak (RtP) trail's development intends to accommodate those needs. The completion of RtP aims to combat concerns and ecological impacts of overcrowding on America's mountain and neighboring attractions. Moreover, the trail would elevate the profile of Pikes Peak by encouraging overall visitation, providing greater access to the region's natural assets, and promoting economic growth in the region.

Ring the Peak History

Surrounding the iconic Pikes Peak massif lies discontinuous segments of trails yet to be connected. Once the sections are joined, they will comprise the non-motorized trail proposed in the 1999 Pikes Peak Multi-Use Plan (PPMUP), where RtP was referred to as the "Perimeter Loop Trail" ("Pikes Peak Multi-Use Plan"). The finished product was envisioned to be a continuous recreational trail encircling Pikes Peak that would reduce foot traffic on the heavily used Barr Trail, address parking limitations, and improve accessibility for elderly and disabled community members. Since then, the name was changed to Ring the Peak, and 50 miles of the loop (80%) have already undergone planning and construction by Friends of the Peak (FOTP), a non-profit that exists for the purpose of "preserving, restoring, and appreciating Pikes Peak" (Susan Davies, personal communication 2017; "Donate to Friends of the Peak"; TOSC Request for Proposal). Most parts of RtP linked pre-existing United States Forest Service (USFS) trails and backcountry roads, but four sections were constructed by FOTP members (Carol Beckman, personal communication 2017).

The remaining 20% is composed of two gaps. One missing segment consists of a 5-mile stretch on the

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northeast side of the peak, between Manitou Springs and Chipita Park, known as the Ute Pass Regional Trail. The other gap is an 8-mile segment on the southwest side, from Pancake Rocks in Teller County to USFS Road 376 (“Ute Pass”). El Paso County has already approved the Ute Pass Regional Trail Master Plan, and the Colorado Springs Department of Transportation (CDOT) granted funds to the section that permits construction to proceed accordingly under the authority of El Paso County (“Ute Pass Regional Trail”). The trail development process is more contentious for the southwest segment that is still in the nascent stages of development, namely due to challenging natural hindrances and the conflicting values of a complex web of stakeholders.

Remaining Obstacles on Ring the Peak

Trails and Open Space Coalition (TOSC) and FOTP, both local non-profit advocacy groups, are in the process of developing a Trail Master Plan to fill in the missing sections. Their agenda includes identification of the least invasive trail alignment based on public input, and implementing a public outreach program to engage residents and governments. As recipients of a \$100,000 trail planning grant from Great Outdoors Colorado (GOCO), the City of Colorado Springs, in partnership with TOSC, hired the N.E.S. Inc. land consulting team to analyze potential trail alignments (Falcone 2017b; Stanley 2016). They will be responsible for identifying specific issues along the original proposed route to ensure the least ecologically and socially invasive development possible.

The trail’s completion is contingent on addressing several factors. There are sensitive wildlife habitats in the region, such as bighorn sheep areas, Game Management Unit 5B, and the Teller County Shooting Range that requires further discussion with the USFS biologists. The cities of Cripple Creek and Victor have requested for the trail to avoid watershed areas that could potentially contaminate their drinking water. Lastly, the trail traverses multiple categories of land ownership, notably 10-15 private land parcels, depending on the selected trail alignments. Negotiations will be conducted with the identified landowners for potential conservation easements (TOSC Request for Proposal).

Despite these physical impediments and unfavorable

federal environmental politics, RtP has received the support of Governor Hickenlooper, who has designated the trail as one of the 16 high-priority trails under the “16 in 2016” initiative. He proclaimed its importance by declaring, “Once Ring the Peak is done, it will be a national and ultimately an international destination” (Boster 2016).

Methods

RtP’s history and challenges to development were compared to those of six successful trail development case studies in the United States (**see Appendix I**). These trails were selected based on their successes in development and similarities to RtP’s circumstances. The trail case studies were collectively assessed to identify broad trends of preliminary constraints and the respective actions taken to address those constraints. The common themes from the other trail planning processes were divided into four elements. These strategies were applied accordingly to the ongoing RtP master planning process to guide the trail building process on the southwest segment.

Literature review sources include relevant non-profit trail advocacy groups’ websites, federal agencies’ websites, news articles, and books. In-person interviews, as well as written response interviews, were administered to non-profit trail advocacy directors, historians, land stewards, federal park rangers, and biologists. RtP stakeholders were consulted during N.E.S. meetings.

Through Geographic Information System (GIS) mapping tools, maps displaying pre-existing and proposed trail alignments of RtP, as well as fundamental constraints, were produced to illustrate the situation. These obstacles include bighorn sheep habitat and big game areas, shooting ranges, watersheds, and multiple jurisdictions.

Actors

The proposed RtP trail corridor encounters numerous properties and jurisdictions that are impacting development of the trail. Key stakeholders and their conflicting as well as shared interests have been identified to facilitate a collaborative approach to management. The TOSC Request for Proposal planned several stakeholder meetings to convene in the municipalities of interest to establish common ground.

Trails and Open Spaces (TOSC) is a non-profit advocacy group that preserves open space and parks, as well as creates a network of trails and pathways in the Pikes Peak Region. TOSC is initiating the planning process on the southwest side with a \$100,000 grant from **Great Outdoors Colorado (GOCO)**. GOCO, a trust fund supported by the Colorado Lottery, allots grants to preserve and enhance Colorado's parks, trails and wildlife ("About Us"). The organization awarded \$100,000 to TOSC in order to hire a project team and create a Master Plan for completing RtP's southwest side (TOSC).

Susan Davies, the Executive Director of TOSC, is facilitating stakeholder meetings and discussions in the municipalities surrounding the vicinity of the impending trail corridor. TOSC has partnered with **Friends of the Peak (FOTP)**, a non-profit trail advocacy group that has been involved in the development and maintenance of RtP since its inception, and continues to contribute to the southwest side's planning and development.

The **City of Cripple Creek** and **City of Victor** are both strongly opposed to proceeding with trail construction, with concerns stemming from the trail's potential detriment to their water supply system. The Cripple Creek municipal watershed contains two reservoirs that supply the city with drinking water, and are leased to the private Timberline Fishing Club (Volpe 2016). Similar to Cripple Creek's arrangement, Victor's Bison reservoir is leased to the private Gold Camp Fishing Club (Benzel 2015). The city officials are also not convinced of the economic benefits the project would yield, as there is a low possibility of hikers traveling 4 to 5 miles from RtP to either city (Susan Davies, personal communication 2017).

Another obstacle that the trail alignment should avoid is Colorado Springs Utilities' (CSU) South Slope Watershed Area. In response to the erosion from heavy use of the Pikes Peak Highway, CSU was one of the original contributors to RtP's conception in the 1999 Pikes Peak Multi-Use Plan ("South Slope"). Public access to the South Slope Trails is also restricted, a policy intended to protect the Rocky Mountain Bighorn Sheep Habitat, managed by **Colorado Parks and Wildlife (CPW)** ("Ring the Peak Trail"; TOSC Request for Proposal). CPW administers Colorado's state park system and wildlife areas, and owns

a portion of land where the trail may be located. CPW is also collaborating with TOSC, FOTP, and CSU to monitor the welfare of the sheep and analyze alternative routes that would minimize impacts to the population.

Bighorn sheep are not the only wildlife of concern, the **United States Forest Service (USFS)** has designated a significant area of the potential trail to Game Management Unit 5B for big game habitat (TOSC Request for Proposal). Approximately 50% of the proposed trail alignment crosses USFS lands, which is under the jurisdiction of the Pikes Peak Ranger District (Mike Rigney, personal communication, 2017). As a federal agency under the Department of Agriculture, the USFS administers the National Forests and grasslands. Its multi-use mandate includes managing public lands for recreation, sustained yields, and preservation ("What We Believe"). Since the foundation of RtP was realized from pre-existing USFS trails, the federal agency has been very supportive of the project. However, Brent Botts, a retired Pikes Peak District Ranger of the Forest Service acknowledges that unless the bighorn sheep population reaches a healthy level, there are limited options for the final trail development (Brent Botts, personal communication 2017).

The other federal land agency that administers a few isolated parcels of land along the proposed trail corridor is the **Bureau of Land Management (BLM)**, which is under the governance of the Department of Interior. Managing nearly 40% of the public lands in the U.S., its objective is to "sustain the health, diversity, and productivity of America's public lands" ("Our Mission").

The biggest remaining challenge is negotiating with the private landowners whose property the trail could potentially pass through. There are approximately 10-15 parcels of land on RtP that belong to individual property owners, and acquiring conservation easements necessitates building strong relationships between the property owner and RtP advocates.

Results

The six trail development case studies each feature key components that are critical to success. These elements include leadership, public engagement, funding, and conflicting interests.

Appalachian Trail (AT)

Leadership

Witnessing how industrial development in cities during the 1900s compromised the health and landscape of rural communities in Stratton, Vermont, Benton MacKaye envisioned a project that would preserve the natural scenery and protect its residents (Mittelfehldt 2013, 14). His proposal was published in the October 1921 issue of *Journal of the American Institute of Architects*, under the title “An Appalachian Trail: A Project in Regional Planning” (Dalbey 2002, 163). The article failed to mention explicit plans on accomplishing trail development; however, MacKaye acknowledged the power of combining centralized and decentralized power. By involving both government power and private citizens in public resource management, MacKaye believed the environmental protection and economic growth of the nation would be achieved (Mittelfehldt 2013, 15-17). Having held positions in the USFS and possessing connections with influential private groups, MacKaye’s large-scale vision for social well-being earned him the title as the “conceptual father” (Ibid., 23).

However, it was Myron Avery who actually established the trail’s existence, thereby earning the title of “physical father” (Ibid., 43). Avery and his colleagues formed the Potomac Appalachian Trail Club (PATC), which specialized in AT trail advocacy in the South (Ibid.). Serving as President of the PATC for thirteen years, he later became chairman of the Appalachian Trail Conference (ATC)¹ from 1931-1954. His approach to trail development was to first build the trail and then extensively promote it to the public (Ibid.). With this philosophy in mind, Avery set out to recruit influential organizations that were likely to publicize a pre-existing trail. By recruiting interest from other prominent organizations, Avery was able to obtain sponsorship for the establishment of several AT clubs dedicated to specific regions along the trail corridor (Ibid., 44).

Over the years, other AT project leaders have risen to prominence and played significant roles in trail development. Bob Proudman, currently Director of Conservation Operations for the ATC, has been responsible for coordinating land acquisition programs and leading trail-design workshops with volunteers since the 1970s (Mittelfehldt 2013, 123). Starting as a member of the Appalachian Mountain Club’s New Hampshire trail crew in 1965, he became the first Supervisor of Trails in 1972, overseeing the club-wide operations (“A Life of Dedication”). The guidance of Proudman and similar trail leaders has instilled vital knowledge and skills in future generations that have allowed for the continuation of the trail building process. The fact that the trail could be entirely managed by volunteers without external resources was an instrumental factor in its designation as the 1968 National Scenic Trail, rendering it part of the National Trails System² (Mittelfehldt 2013, 123). With this official legitimization of the trail, the number of thru-hikers, as well as general users, significantly escalated (see **Appendix III**).

Public Engagement

In accordance with the National Trails System Act, the Secretary of the Interior organized an Appalachian National Scenic Trail Advisory Council (AT Council) that the **National Park Service (NPS)**³ consulted with before making decisions regarding land acquisition (Ibid., 91). The group included representatives from the USFS, state governments, ATC and its corresponding clubs, as well as owners of private properties that the trail could potentially traverse (Ibid., 92). The establishment of the AT Council mitigated fear over stronger federal involvement, since the heightened presence of government power could jeopardize the positive relations the volunteers had developed with the private landowners.

Volunteers of the ATC were responsible for scouting new routes, as well as mediating and negotiating land transactions. Approaching the landowners as a member of

¹ The Appalachian Trail Conference (ATC) is a non-profit volunteer-based organization that oversaw the individual AT clubs in the development and management of the trail (Mittelfehldt 2013, 35). The organization changed its name to the AT Conservancy in 2005 to focus more on land conservation and community development (Ibid., 187).

² National Trails System is a network of trails created by the National Trails System Act of 1968, which established three different types of trails: National Scenic Trails, National Recreation Trails, and Connecting and Side Trails. The AT and Pacific Crest Trail were the first two National Scenic Trails (The National Trails System Act, 16 U.S.C. § 1241 (1968)).

³ NPS is a federal agency that preserves the ecological and historical qualities of National Parks, National Monuments, as well as conservation and historical properties, including the AT (Mittelfehldt 2013, 86).

the community avoided potential distrust that could arise during land negotiations between private property owners and government officials due to differences in perceived status (Mittelfehldt 2013, 133)

One instance of a citizen volunteer overseeing the process of land acquisition includes the notable individual, Elizabeth Levers. A former experienced AT volunteer and state AT coordinator of New York, Levers committed her time to the negotiations with landowners. (Ibid., 132) Collaborating with local actors, Levers would identify property suitable for relocations and negotiate private property jointly with NPS representatives (Ibid.). Since she gave the impression of a resident and possessed considerable knowledge of the homeowners' situations, the homeowners granted her access to their properties more willingly.

In addition to the volunteers' ability to convey their concern for the homeowners' best interests, they were essential to the trail's construction. For instance, over 4,500 volunteers contributed 185,000 hours of physical labor annually (Proudman et al. 2000). Even the nation's top executive leaders supported the cause during the 1998 Earth Day, in which President Bill Clinton and Vice President Al Gore assisted AT volunteers in Harpers Ferry to build a rock wall (Mittelfehldt 2013, 182).

Once the trail alignments were determined, the ATC undertook trail promotion by sponsoring training workshops and publishing user-friendly manuals to educate volunteers on technical trail building. Citizen volunteers like Proudman and Bill Birchard authored the ATC's *Appalachian Trail Design, Construction and Maintenance* (Proudman et al. 2000).

Conflicting Interests

Before the AT's National Scenic Trails designation that led to the federal recognition of the project, AT advocates relied on oral handshake agreements⁴ during the early construction of the footpath from Georgia to

Maine (Mittelfehldt 2013, 124). This form of "voluntary federalism" established a decentralized organization structure, enabling private citizens and local AT-affiliated clubs to fulfill the trail building objectives (Ibid.)

However, in an era where real estate is at a premium due to competition between development of industrial and recreational zones, gaining the government's support was necessary to facilitate wilderness protection (Mittelfehldt 2013, 92). After the AT's National Scenic Trails designation in 1968, protective measures for the trail's expansion were not immediately taken; it wasn't until the amendment in 1978 that expanded the NPS' leadership and land acquisition roles. This amendment is notable for granting the NPS legalized condemnation authority.⁵ Despite the AT primarily crossing private property, only 3% of the 2,200 mile trail was acquired through condemnation authority, since that approach instilled an unfavorable impression of the AT (Mittelfehldt 2013, 123; Laurie Potteiger, personal communication 2017). When selecting the route of trail corridor, a more flexible approach was implemented to adapt to the landowners' preferences. The center-line survey⁶ displayed the locations and contacts of various property owners within a given segment. When potential sellers were unwilling to cooperate, the proposed trail corridor could be shifted to an adjacent land parcel that belonged to willing sellers.

Most of the private parcels were embedded into the National Park System, known as inholdings (Mittelfehldt 2013, 124). Acquiring these inholdings proved to be one of the biggest challenges, ones which were most commonly overcome by fee simple land acquisition.⁷ In order to evoke a more positive image, the ATC partners presented several acquisition options to the property owners, such as conservation easements that include right-of-way easements and scenic easements, land exchanges, and tax-deductible donations (Ibid., 129).⁸

A problem associated with easements was the hidden costs in managing and enforcing compliance with the

⁴ Handshake agreements generally describe verbal arrangements with private landowners to gain access to private property for trail use (Mittelfehldt 2013).

⁵ Condemnation authority permits the government to exercise eminent domain by forcibly taking private property from uncooperative landowners (Ibid.).

⁶ The first mapping of the AT was through the center-line survey, which located the center of the existing trail to see adjacent land parcels of smaller segments.

⁷ Fee simple acquisition involves a government agency purchasing the full deed to a property and transferring all rights associated with the parcel, which is the most complete ownership possible (Ibid.).

easement. In the case of the Blue Ridge Parkway, the landowner had violated the scenic easement by constructing buildings and cutting trees (Ibid., 129). The costs associated with litigation and scenic damage would have surpassed the property's fee-simple price. Despite the potential risks of easements, they were still crucial to the land acquisition process. Landowners were more likely to accept these legal agreements, since easements could be tailored to an individual property, and the contracts used were penned with intentionally vague language to accommodate evolving conditions (Ibid., 129-130).

In 1982, shrinking federal budgets for land acquisition catalyzed the private

Figure 1: AT at McAfee's Private Property



The views from McAfee Knob are so impressive that the Appalachian Trail was relocated from North Mountain to Catawba Mountain in Virginia. This effort required years of negotiation with private property owners along the route, and is still an ongoing process. Source: Tree Tiemeyer

Figure 2: McAfee's Knob



McAfee's Knob is considered to be the most photographed site along the AT. The view provides a panorama of the Catawba Valley, with North Mountain to the west, Tinker Cliffs to the north and the Roanoke Valley to the east. Source: Shutterbug's Adventures

sector's involvement with the creation of the Trust for Appalachian Trail Lands, a land trust program nested within the ATC. At this time, private entities engaged more actively in collaboration with local conservation organizations (Mittelfehldt 2013, 165). Instead of relying on tenuous federal budgets and the inefficiency of government, private entities that consist of the ATC's land trust program and area-specific local land trusts, such as the Upper Valley Land Trust in Vermont and New Hampshire, provided more flexibility in negotiating with landowners (Ibid., 168). If a landowner was unwilling to accept NPS' offer of appraised fair market value of property, the agency could turn to land trust to negotiate with the landowner and pay the difference. Once the trust acquired that property, it would be transferred to the NPS and protected under federal ownership.

Currently, the AT is 99% within federal public lands, but is still pursuing a completely public trail corridor (Laurie Potteiger, personal communication 2017). Approximately 38-40% of land is under USFS jurisdiction, 35-40% under NPS, and the remaining sections belong to different states and local entities (Ibid.). The Trust for Appalachian Trail Lands dedicates approximately

⁸ Conservation easements are a perpetual, a legally-binding agreement between the private landowner and trail organization that protects the land's associated values by restricting development, regardless of ownership changes (Mittelfehldt 2013, 128; Hill 2013). Right-of-way easements permit hikers to cross the trail corridor through a property and scenic easements protect the aesthetic and environmental qualities of a broader area (Mittelfehldt 2013, 129).

12% of its budget to land acquisition and has pursued multiple types of property holdings, including fee simple acquisitions, conservation easements, and ingress egress⁹ easements (Ibid.).

Funding

The 1978 amendment to the National Trails System Act established a more proactive land acquisition framework for trails that achieved National Scenic Trail status. In order to fulfill the National Trails System Act's objectives, the 1978 amendment allotted the necessary funds to purchase property for the trail corridor's relocation near civilization or lands threatened by private development (Mittelfehldt 2013, 124). While Congress appropriated approximately \$90 million to acquire the trail corridor in 1978, the timeline for funding was limited to a three-year disbursement period (Ibid., 123). During the allotted time, the NPS had to transform 825 miles of private ownership into protected federal land (Ibid., 124). By the end of the 20th century, Congress authorized another \$15.8 million to acquire the remaining land. The Land and Water Conservation Fund (LWCF) also served as a financial resource to supplement the AT's trail corridor acquisition (Ibid.).¹⁰

Pacific Crest Trail (PCT)

Leadership

Several people have been credited with the origins of the PCT, but Clinton C. Clarke is considered as the "Father of the PCT" (Larabee 2016, 13). At the time of the PCT's conception, Clarke was serving as chairman of the Executive Committee of the Mountain League of Los Angeles (Schaffer et al. 1982). He envisioned the trail to be a continuous wilderness trail across the U.S, "traversing the best scenic areas and maintaining an absolute wilderness character," from Canada to Mexico (Schaffer et al. 1982, 2).

The PCT's formation was made more feasible through the linkage of the following existing trails: the John Muir Trail and the Tahoe-Yosemite Trail in California; the Skyline Trail in Oregon; and the Cascade Crest Trail in Washington.

Initiating the PCT's development, Clarke established the Pacific Crest Trail System Conference (PCTSC)¹¹ that would include representatives from California, Washington and Oregon. In his 25 years as President of the PCTSC, he relentlessly sent letters and maps to the USFS and NPS to receive the support of either federal agency for the trail. Among all his undertakings, it was Clarke's YMCA PCT Relay idea that cemented the PCT's existence (Larabee 2016, 13).

Under the guidance of Warren Rogers, the YMCA Secretary, as well as PCTSC Executive Secretary from 1932-1937, the Relays were carried out during the summer months of 1935-38 (Schaffer et al. 1982, 2). Roger's continued dedication to the PCT focused primarily on personally publicizing the project instead of seeking advertisers to fund his promotion efforts. As a result, he sustained overwhelming financial burdens and the accumulation of significant debt (Larabee 2016, 53).

Public Engagement

One of the most iconic events that successfully promoted the PCT and contributed significantly to its ultimate 1968 National Scenic Trail designation was the YMCA PCT Relay (Mann 2011). Forty teams of YMCA backpacking youths started from different positions and passed down one logbook¹² from one team to the next to complete a continuous Canada to Mexico trek (Ibid.) The relays mapped 2,300 miles of the proposed trail, proving that the route was indeed "passable, continuous, and existing," and that its completion would be all the more achievable (Larabee 2016, 35).

⁹ Ingress egress easements ensure the right of entry and exit (Carlen Emanuel, personal communication 2017).

¹⁰ LWCF is a national land trust established in 1965 to fund the protection of various parks, forests, wildlife refuges, public lands and other community spaces, without expending any tax dollars (Mittelfehldt 2013, 90). The program relies on earnings from offshore oil and gas leasing and has maintained bipartisan support in Congress (Wargo 2017).

¹¹ The PCTSC linked the local PCT advocacy clubs from regions that the PCT traversed. This federation later became the PCT Conference in 1977, and is currently known as the PCT Association (PCTA). The change reflects the structure of the new group as an individual membership organization, rather than a federation of outdoor clubs ("Pacific Crest Trail History").

¹² A leather-bound journal carried during the YMCA Relays, the logbook recruited boy scouts to track and evaluate the PCT route on the logbook. The 40 teams hailed from 28 YMCA's and each team was designated a starting location from which each team would carry the logbook for 50 miles, then pass it onto the next team (Larabee 2016, 35).

In 1965, the USFS held a series of meetings concerning the PCT route involving the USFS, NPS, California State Division of Parks and Beaches, and other government entities with jurisdiction over the proposed trail areas (Schaffer et al. 1982, 2). These meetings produced drafted maps of the trail alignment. After the PCT's 1968 National Scenic Trail designation, Congress' National Trails System Act created a Citizens Advisory Council, which used the draft from the 1965 USFS meetings to finalize the PCT route. The Council would also establish standards for the physical trail, route markers, and trail policies (Ibid.). The USFS later applied the citizens' decisions and adopted the route in the Federal Register on January 30, 1973 (Ibid., 3). Having public input enabled a trail that appealed to a wider audience based on scenery, cross country routes, and steepness.

Clarke's 1935 *Pacific Crest Trail Guidebook* briefly provided an overview of a rough outline of the PCT. Since 1973, PCT guidebooks saturated the market, with Thomas Winnett and Jeff Schaffer initiating the PCT guidebook series. The most notable works were the 1973 *Pacific Crest Trail - Volume I: California* and *Pacific Crest*

Trail - Volume 2: Oregon and Washington. A later edition of the latter was recognized with the National Outdoor Book Award in 2008 (Larabee 2016, 35). After the release of these initial guidebooks, *National Geographic* published another bestseller in 1975, titled *The Pacific Crest Trail* (Larabee 2016, 37). As the PCT Association (PCTA)¹¹ encountered financial struggles later on, the organization still managed to produce the *Communicator*, a magazine promoting the PCT between 1995-2001 (Larabee 2016, 143). Maintaining this publication played a crucial role in generating continued interest in the PCT, enabling subsequent monetary support.

After the finalization of the preliminary trail, Eric Ryback captured the attention of the recreation community as the first person to thru-hike the PCT on October 16, 1970 at the age of 18 (Larabee 2016, 67). Ryback immediately received a congratulatory telegram from Edward P. Cliff, Chief of the USFS, and was featured on the cover of the nationally distributed *San Diego Union*. A year later, he published a book that recounted his journey, *The High Adventure of Eric Ryback*, which became a bestseller with more than 300,000 copies sold. Controversy ensued in 1972 over the fact that he did not walk the entire trail as claimed, but had accepted rides for some portions of the route (Larabee 2016, 69). The lawsuit that culminated from the dispute further promoted the recognition of the trail. Despite the controversy, it is still widely accepted that the 130-pound, 18-year old hiked most of a 2,000 mile trail without a guidebook or detailed map. The Kelty backpack that he used, decorated with U.S., Canada and Mexico flags, became symbolic of the trail and inspired other stewards' involvement in the PCT (Schaffer 1982, 4; Larabee 2016, 69).

To mark the trail's official completion in 1993, the "Golden Spike" ceremony was held in the Angeles National Forest in southern California (Larabee 2016, 38). After the ceremony, the PCT experienced a substantial increase trail completions (see **Appendix III**).

These programs and trail leaders from the PCTA inspired more people to join the PCT community. In 1995, the PCTA was an all-volunteer operation, often requiring donations from the volunteers themselves to sustain the group's activities (Ibid., 143). When the organization was

Figure 3: PCT Volunteers



The Dark Meadow Trail on the Pacific Crest Trail is a popular loop that has suffered drainage issues. The Back Country Horsemen of Washington and the Pacific Crest Trail Association volunteers resolve the problem by constructing a turnpike to elevate the trail tread out of a wet area. Source: Deb Wesselius

on the verge of dissolving, PCTA President Alan Young asked each board member to contribute \$1000. Unable to afford the amount, Lee Terlesen offered his journalism skills instead, by taking over the PCTA's monthly publication, the *Communicator* (Larabee 2016).

Funding

The LWCF has served as the primary organization that appropriated funds for the PCTA to finance the trail's operations. PCTA also collaborated with land trusts at all scales; at the national level, this includes the Pacific Forest Trust and The Nature Conservancy, and at the local scale is the Southern Oregon Conservancy. Several land trusts have committed to land acquisition and conservation easements on a specific portion of the trail. Private fundraising that contributed towards federal land acquisition include the M.J. Murdock Charitable Trust and the Doris Duke Charitable Foundation (Ian Nelson, personal communication 2017).

Conflicting Interests

The PCT traverses predominantly on USFS-managed land, which constitutes 69% of the trail (Beth Boyst, personal communication 2017). Additionally, the trail is composed of 12% BLM, 19% NPS, as well as state and private land (Ibid.). When the PCTA partnered with the USFS, the non-profit organization didn't have official regional representatives to negotiate with the USFS in terms of projects and funding. It relied on volunteers to individually meet with each of the forest districts (Larabee 2016, 123). Despite the PCTA declaring the trail as completed in 1993, approximately 10% of the land is not under federal protection (Ian Nelson, personal communication 2017).

In terms of attaining right-of-ways across private property, the PCTA has held its own easements, as well as collaborated with the aforementioned land trusts and federal agencies. The effectiveness of the partnership between private and public entities is evident in the case of the BLM-managed Cascade Siskiyou Monument. In

response to the protection of a one-mile segment of the PCT route that passed through this monument, the PCTA collaborated with the Pacific Forest Trust and BLM (Ian Nelson, personal communication 2017; "More Pacific Crest Trail Conserved" 2017). The trail was embedded in the 300-acre Montcrest Working Forest owned by the Parsons family, which the Pacific Forest Trust bought and held onto until the BLM became financially capable of purchasing it in 2017. Transferring the property to the BLM enabled this portion of the PCT to become a permanent, protected feature of the Monument (Ibid.).

Colorado Trail (CT)

Leadership

In 1948, the Roundup Riders of the Rockies (RRR), a group of men with diverse occupations traveled through the Rocky Mountains on horseback (Lucas 2004). They described the beauty of the experience to Bill Lucas, expressing their desire to make the area more accessible to the public. Twenty-five years later, Lucas, the USFS Forester of the Rocky Mountain Region, met with the Colorado Mountain Club (CMC),¹³ where he learned of a similar interest in the "Rocky Mountain Trail" to mitigate overuse on wilderness areas (Ibid.). Attributing these two groups as inspiration for the project that became officially known as the Colorado Trail in 1974, Lucas began undertaking the design and funding of the trail. The process was initially expedited by the CT's designation as a Bi-Centennial trail in 1976 to honor the nation's 200th anniversary (Faison 2017).

Since the proposal for the CT utilized mostly existing trail that connected the major tourist centers from Denver to Durango, only 61 miles of new trail was required (Quillen, 1984). This information, along with ample funding from the Gates Foundation, professional support from the USFS, and trail oversight from the Colorado Mountain Trails Foundation (CMTF),¹⁴ the trail's completion seemed imminent. However, conflict among the CMTF's board members and the USFS' shrinking budget hindered progress, and interest in completing the

¹³ CMC is a non-profit organization dedicated to recreation, conservation and education. One of its functions is to arrange for volunteers to maintain USFS land (Quillen 1984).

¹⁴ CMTF is a non-profit trail advocacy group responsible for the planning, development and management of the CT. It served as the predecessor of the Colorado Trail Foundation (CTF) that was established in 1987 (Ibid.; Colorado Trail Foundation 2016).

project dwindled. It was Gudy Gaskill, chairperson of the CMC's Huts and Trails Committee, who was able to rectify the situation. For this effort, she is aptly named by recreationists as the "Mother of the Colorado Trail" (Ibid.)

Gaskill made the trail a priority for the CMC, organizing volunteer trips to the trail from 1984-1987. One year, she sent 32 trail crews to connect the remaining sections, ensuring weekly visits to each group and acquiring food from wholesale companies for them ("Gudy Gaskill"). Due to her tireless effort, she was able to witness the "golden spike" ceremonies on September 4, 1987, commemorating the completion of the CT. Once the trail was completed, its popularity was evident based on the sharp increase in trail completions (see **Appendix III**). The Colorado Trail Foundation (CTF)¹⁴ was also established the same year, appointing Gaskill as the first President (Ibid.).

Both Lucas and Gaskill's dedication and influential connections provided significant monetary and promotional assets to facilitate the formation of the CMTF (Lucas 2004).

Public Engagement

USFS engineers first marked the 11 USFS districts, linking early trails to existing mining and logging roads. Inquiries were sent to each district to permit construction of the trail (Colorado Trail Foundation 2017). Volunteers included incarcerated individuals from the nearby Buena Vista Correctional Facility who were grateful to be outdoors in return for performing some initial trail clearing with chainsaws (Quillen 1984). As for the actual trail-shaping work, the CMC arranged for volunteers to work on National Forests (Ibid.). Conflicting estimates exist for the trail building costs; the cost using USFS crews in the 1970's varied from \$8,000 to \$25,000 per mile depending on the source (Along the Colorado Trail 1992; Colorado Trail Foundation 2017). Ultimately, the volunteers achieved the same objectives at a rate of \$500 per mile (Fielder 1992). The trail continues to rely on volunteers, with over 800 volunteers offering their labor in 2008, saving the CTF over \$400,000 in labor costs (Colorado Trail Foundation 2008).

Notable volunteers have undertaken educational initiatives by publishing guides that assist trail crews. Ray Adolphson's pamphlet, "A Guide for Mountain Trail

Development," and Bill Rufsynder's booklet, "Guide to Mountain Hut Development" have been distributed not only to volunteers of the CT, but also to other states and countries (Lucas 2004).

Students from educational institutions led by professors have also participated in the volunteer effort. For instance, Dr. Hugh Ferehau of Western State University performed research with 20 volunteer students on trails from Taylor Reservoir through the La Garita Wilderness. He subsequently organized and developed the studies into a proposed guide for public use. In addition, some 15 students participated in a monitoring program on winter trails in the Taylor River and Creede areas (Ibid.).

During the early stages of development, several print and media sources have promoted the inception of the trail. Merrill Hastings of the *Colorado Magazine*, an acquaintance of Lucas, was responsible for featuring the proposal for the CT in David Sumner's article, "The Colorado Trail Takes Shape" (Sumner 1974). Al Flannagan of Channel 9 TV accepted the CTF's request to air an appeal for volunteers to work on the CT (Lucas 2004). This broadcast inspired volunteers to participate beyond just the CT cause, but in trail building across the nation (Ibid.). In addition to outside sources, the CTF published its own promotional material with the publication of guidebooks and handbooks. The guidebook, *The Colorado Trail* is currently in its ninth edition (Ibid.).

Gaskill's strenuous effort convinced prominent figures to support the CT cause. Governor Richard Lamm and his wife, Dottie Lamm, have actively participated in the trail crew, hosted fundraisers, and mediated support between the state and USFS. Project Mercury astronaut Scott Carpenter has also highlighted trail development efforts by volunteering to help build sections of the trail (Brown 1994, 271).

Gaskill's dedication also led to her being a recipient several honorary awards. She has been recognized with the GOCO service award; commended by President Ronald Reagan with the Take Pride in America Campaign Award, and honored by President Bush through the Points of Light Program ("Gudy Gaskill"). Her numerous appearances in the media made her one of the most memorable and remarkable women in Colorado, leading

to her induction into Colorado Women's Hall of Fame in 2002 (Colorado Trail Foundation 2016).

Some of Gaskill's trail planning efforts include leading volunteer crews who contributed a registration fee of \$25 in the mid-1980's to work as trail builders for a week. During these trips, accommodations such as food and camp facilities were included in the cost (Marston 1986).

Funding

The CTF has also been honored with generous contributions from private donations (Colorado Trail Foundation 2017). In honor of the CT's status as a Bi-Centennial project, the CTF received pledges of \$122,000 and \$5,000 from the Colorado Centennial-Bicentennial Commission (Lucas 2004). The prominent Gates Foundation has also contributed donations of \$100,000 (Quillen 1984).

There have also been three decades of paid, week-long supported treks throughout the building process, a kind of "backcountry glamping" in which Colorado Trail crews bring the campers' gear to the campsite and cook gourmet meals (Colorado Trail Foundation 2016). The considerable trip fees supplement the cost of sustaining the CT's operations (Ibid.).

Conflicting Interests

Development of the CT required crossing multiple jurisdictions, including Denver Water, Colorado Division of Wildlife, Pueblo Water, private property, and several USFS Districts (Bill Manning, personal communication 2017). Despite the CMTF and USFS' cooperative agreement in 1976 to jointly establish communication strategies, financial resources, and time commitments, the CMTF members coordinated individual arrangements with each management entity (Lucas 2004; Bill Manning, personal communication 2017). They would visit each ranger district separately to select prioritized projects and establish a budget in order to create a more coherent line of communication.

The advocacy group primarily depended on the USFS for negotiating and holding easements. None of the easements were purchased; the CTF relied on charitable easement donations. An issue that arises from purchasing

one easement is the potential for increased prices of future easement transactions (Bill Manning, personal communication 2017).

Portions of the CT that traverse through protected areas include Waterton Canyon and Hermosa Inventoried Roadless Area. Waterton Canyon serves as the CT's Denver terminus and is located 6.5 miles above the Strontia Springs Reservoir, which stores up to 80% of Denver's drinking water (TAP Staff 2017). Due to the development restrictions in the area, the CT utilized a pre-existing gravel service road leading from the Reservoir to the mouth of Waterton Canyon (Bill Manning, personal communication 2017). This portion also overlaps with the Waterton Canyon Trail administered by Denver Water.

At the time, the newly instated National Environmental Policy Act (NEPA) did not yet pertain to trails (Ibid.). Thus, the potential for adverse impacts to bighorn sheep were not considered at the time this portion was connected to the CT. While the trail alignment is not located near any critical areas for bighorn sheep, they have been frequently spotted in the area (Shannon Schaller, personal communication 2017). In order to protect the bighorn sheep population, the road is closed off to dogs and all motorized use except for administrative operations by Denver Water vehicles to access the Strontia Springs Dam. In addition to these measures, wildlife ambassadors

Figure 4: Colorado Trail at Waterton Canyon



A group of bighorn sheep examining a bike on the Colorado Trail's Waterton Canyon gravel road. Source: Rick Pawela

from CPW have been educating the visitors on wildlife etiquette to mitigate the loss of habitat from human disturbance (“New wildlife ambassadors” 2017).

The Hermosa Wilderness Designation in 2008 rendered a portion of the Hermosa Inventoried Roadless Area to be included in the National Wilderness Preservation System.¹⁵ The legislation threatened the trail’s permitted uses on approximately 21 miles of the trail, notably in activities like mountain biking. The CTF worked closely with the USFS to appeal to both the recreationists’ and preservationists’ interests. Recognizing the overlapping designations between the National Conservation Area and National Protection Area, the CTF recommended a larger preservation area under a specific type of protection tailored to the ecological and user values. This would permit mountain bike travel on the CT, but limit the nearby wilderness area to footpath and equestrian only (Colorado Trail Foundation 2008).

Manitou Incline (Incline)

Leadership

Once a former railroad line above Manitou Springs, the Incline’s deteriorating conditions prevented it from being a profitable attraction (“Timeline: Incline history winds through a century”). After the train closed, elite athletes like Matt Carpenter, an established runner, played an integral role in the transformation of rail to trail (Ibid.). Since founding the Incline Club in 1977, Carpenter and the Club’s members used the Incline for training sessions (Ibid.). Despite signage prohibiting trespassing in 1999, runners continued to use the route; however in 2000, the Incline Club discontinued their use of the Incline out of deference (Swab 2015). However, the Incline’s popularity spread, and in 2004, a group of runners began negotiations with the Cog Railway, USFS and local officials to legalize the trail (Ibid.).

Public Engagement

Through social media promotions and the formation of several Incline clubs, the defunct railroad alignment captured national attention. The first publication to include the Incline was the 2006 guidebook, “Best Loop Hikes: Colorado”(Rappold 2012). Later publications, such as *Sports*

Figure 5: Manitou Incline “Incliners”



Brothers Fred and Ed Baxter install new steps along the Manitou Incline in 2005, before the trail was legalized. These “Incliners” have organized clandestine workdays to repair the former railway since the early 2000s. Source: Christina Murdock

Illustrated and *The New York Times*, featured the Incline as the ultimate training ground for Olympic athletes like speed skater Apollo Ohno (Swab 2015, 79).

On January 14, 2010, the Manitou Incline Task Force convened to discuss the possibility of legalizing the Incline for recreational use. The Task Force was comprised of representatives from the alignment’s three owners as well as staff members from the cities of Colorado Springs and Manitou Springs, and other stakeholders. A year later, the group’s objectives were published in the *Manitou Incline Site Development and Management Plan*, which outlined the process to open and develop the railroad. As part of the Plan, the Incline Friends group was formed to oversee public outreach, advocacy and education programs (Ibid., 80). It has assisted with volunteer projects and identified funding for improvements.

Before the trail was legally opened to the public, the railway’s restoration efforts were attributed to its dedicated users. “Incliners” like Fred Baxter hiked up the trail equipped with expensive tools (Boster 2017).

¹⁵ In accordance to the Wilderness Act of 1964, a site that is designated as a Wilderness Area to protect its natural qualities becomes part of the National Wilderness Preservation System (The Wilderness Act, 16 U.S.C. § 1131 (1964)).

These self-appointed volunteers were responsible for repairs to the trail's upper stretch, which was subjected to significant damage. When the trail was officially legalized, Timberland Construction assessed the damage and identified that, despite the substantial amount of detriment inflicted to the trail, the Incliners had mitigated much of its degradation (Ibid.).

Saturday workday sessions were organized by the Incline Friends group, REI, FOTP and TOSC. In eight hours, 50 volunteers cleared the waste and debris in the heavily used areas of the Barr Trail,¹⁶ undertook efforts to discourage hillside use by erecting a split-rail fence, and posted signage (Rosenberry 2012).

Funding

In December of 2009, a \$70,500 grant from GOCO and \$25,000 from Lyda Hill Foundation were awarded to the City of Colorado Springs to initiate a management plan for the Incline ("Timeline: Incline history winds through a century"). The repair and maintenance efforts totaling \$2 million, were funded by GOCO, CPW's State Trails Grant and Federal Emergency Management Administration (FEMA) (Swab 2015, 82).

Conflicting Interests

The Incline passes through property owned by the Manitou and Pikes Peak Cog Railway (Cog Railway), the USFS, and CSU (Swab 2015, 79). Transferring land to public ownership was achieved through a series of property exchanges. In 2008, Colorado Springs City Councilman and Incline user Scott Hente facilitated one such property swap. The Cog Railway, which owns the bottom portion of the Incline, arranged an easement with CSU to use its parking lot on the upper end of Ruxton Avenue in exchange for an

easement on the Incline ("Timeline: Incline history winds through a century").

In 2016, Colorado Springs traded The Broadmoor over 180-acres of Strawberry Fields and a half-acre of parking space near the Cog Railway after a public access agreement between The Broadmoor and El Paso County expired in 2012 for The Broadmoor-owned section of the Barr Trail (Zubeck 2016). In return, the Broadmoor gave 155 acres of Ruxton Canyon, which includes segments of the Incline and the Barr Trail (Paul 2016). Meanwhile, there is still an existing agreement between Colorado Springs and The Broadmoor on this portion of the Incline that offers access to the public. However, this arrangement would enable the private sections of the Barr Trail and the Incline to become public property ("Barr Trail & Manitou Incline").

10th Mountain Division Huts Trail

Leadership

While hiking and skiing in the backcountry in the early 1980s, Frederic A. Benedict conceived the idea to construct a system of trails connecting huts between Aspen to Vail (Demas 2015). Having written a university thesis on "A Trail System for Southwestern Wisconsin," trail planning had always a subject of interest to him (Benedict 2018). He felt the two selected destinations were logical because Vail was considered to be the "offspring" of Aspen. Benedict, along with several associates, established

Figure 6: 10th Mountain Huts and Trails



Two backcountry skiers approach the Fowler-Hillard Hut, a backcountry hut owned and operated by the 10th Mountain Division Hut Association. Source: 10th Mountain Division Hut Association.

¹⁶ Barr Trail is the most commonly used path to reach the summit of Pikes Peak. It also serves as route to descend from the summit of the Incline.

the 10th Mountain Trail Association (TMTA),¹⁷ launching the hut concept into reality (Ibid.). Today, the TMTA is known as the 10th Mountain Division Hut Association (10MD) (Ben Dodge, personal communication 2017).

While the USFS initially feared disinterest in using the hut system, Robert McNamara, one of the TMTA members, was able to convince the agency otherwise. In 1980, the USFS agreed to lease two of its hut sites (Benedict 1982). Throughout the process, Benedict donated not only his time, but also personal assets, from his truck to his money (Benedict 2018). His sacrifice and dedication contributed to the completion of two of the huts in 1982, which presently amounts to 12 huts owned by 10MD¹⁷ (Ibid.).

Public Engagement

During the initial period of the trail and hut building venture, minimal effort was undertaken by the TMTA to publicize the system (Ben Dodge, personal communication 2017). The USFS was primarily responsible for recruiting volunteers from the community (Ibid.).

Besides the TMTA members, GOCO, USFS, and other local groups have joined the volunteer effort. They designed the routes, built huts, and connected trails. One of the primary facilitators of the hut business was Elizabeth Holecamp Boyles, who volunteered for Benedict as a planner. She donated time on weekends to work on the trail and hiked the Appalachian Mountain Club huts on her vacation for inspiration.

Currently, the 10MD's volunteer program provides a more desirable incentive than most trail systems. For each day's work, the volunteer receives a free hut night. The labor entails processing wood, trail work, re-vegetation, and refurbishing huts ("Volunteer Work Dates & Information").

Funding

Contributions have mainly been sourced from private benefactors, such as the TMTA Board Members who have made personal donations (Benedict 2018). The Robert McNamara family and Dr. Ben Eiseman raised

money for the first two huts. Construction of subsequent individual huts, like the 10th Mountain Division Hut, was funded by the following TMTA veterans: Bill Boddington, Colonel Pete Peterson, Bill Bowerman and Maury Kuper. The Gates Foundation also provided a \$100,000 grant. Funding to supply water to the huts was granted by the Coors Foundation (Ibid.).

As a way to encourage larger donations, the 10MD offers name-recognition for gifts larger than \$5,000, which can come in the form of any asset, including cash, stock, real property, and in-kind gifts ("Other Gift Opportunities"). Each type of gift is designated to a specific need, which accommodates the donors' personal interests.

Conflicting Interests

The 350 miles of trail passes through both USFS managed land and private property (Ben Dodge, personal communication 2017). The TMTA collaborated with the USFS personnel for route planning and reconnaissance of pre-existing USFS trails (Benedict 2018). The trail alignments were determined by the TMTA through skiing and hiking of existing routes (Ibid.). Each time a TMTA hut or privately built hut joins the system, additional trail segments are cleared to connect the existing USFS trail to the trailhead (Ben Dodge, personal communication 2017). The effort transferred to the trail construction process was relatively minor, such as cutting dead trees, pruning branches, and removing vegetation from the area (Ibid.).

The TMTA has secured its own easements through unconventional approaches (Ibid.). These unique strategies were implemented in the realignment of the trail extending from Buckeye Gulch Trailhead to Sangree's Hut. When TMTA purchased this hut and 140 acres of surrounding private land in 2004, they planned on relocating a section of the trail onto an adjacent parcel of private land. TMTA traded a 30' yurt for a permanent easement across one of the nearby properties, while a woodstove, solar panels, and solar batteries were traded for a temporary, 10-year easement on another land parcel (Ben Dodge, personal communication 2017).

¹⁷ 10th Mountain Trail Association (TMTA) was the former name of the non-profit organization dedicated to the development of the 10th Mountain huts system. It was later changed to 10th Mountain Division Huts Association (10MD) in response to an issue involving the trail use and liability with the TMTA's operating plan (Ben Dodge, personal communication 2017). 10MD manages a system of 34 huts, 12 of which it owns outright (Ibid.).

Tahoe Rim Trail (TRT)

Leadership

In 1977, USFS Recreation Officer Glen Hampton was newly transferred to the Lake Tahoe Basin, which gave him the opportunity to explore the trails and scenery in the area (“Happy Trails Glenn!”). Hampton recognized that over 50% of the route connecting the surrounding peaks of Lake Tahoe was already on pre-existing trail. As a result, he became inspired to propose a loop trail overseeing the breathtaking views of the highest and largest alpine lake in North America (Foldstadt 1984).

The undertaking of the TRT officially began in 1980, when Hampton was enrolled in a mandatory eight-week graduate course in Outdoor Recreation Management for USFS employees (“Happy Trails Glenn!”). Singlehandedly tasked with route planning and funding procurement of the proposed trail system, Hampton persisted in carrying out the initial endeavors. Support from Bill Morgan, the head of the Lake Tahoe Basin Management Unit (LTBMU) galvanized Hampton to achieve approval from the USFS. Due to the shrinking federal budget for natural preservation in the 1980s, Hampton devoted himself to researching foundations and non-profit agencies that would financially contribute to the Tahoe Rim Trail Fund (TRTF) (Ibid.).¹⁸ Even after Hampton moved to the East Coast following his retirement from the USFS, he returned to the TRT to deliver the keynote address when the trail was completed in 2001. Thereafter, Hampton continued to correspond with the Tahoe Rim Trail Association (TRTA),¹⁸ providing insight into the trail’s history and progress (Ibid.).

Public Engagement

Development of the TRT can be attributed to an entirely volunteer-based effort. From the trail’s design to its ultimate construction, the earliest volunteers consisted of the Boy Scouts from Nevada and California

Figure 7: Tahoe Rim Trail



Hikers oversee the Lake Tahoe Basin’s scenic views that the Tahoe Rim Trail encircles.
Source: Erin Saver

camping and working under the supervision of USFS personnel (Foldstadt 1984). Over the years, the TRTA has organized volunteer and maintenance workdays that sent over 10,000 volunteers contributing over 200,000 hours (“Happy Trails Glenn!”). These volunteers have served as trail builders and maintainers, guides, ambassadors, office assistants, and board members (Hauserman 2008). The type of physical assistance needed depends on the season. Once the snow begins to melt in spring, the volunteer crews assess the trail conditions to inform the trail users (Hoffman 2017). The sides of the trail require brush and vegetation removal, or “brushing,” and clearance of deadfall, or trees that fell over winter. During the summer months, volunteers begin reconstruction and rehabilitation projects, such as moving the trail off roads and onto single-track paths (Ibid.)

Early volunteer recruitment efforts in the 1980s displayed posters in outdoor recreation companies, such as REI (Hoffman 2017). Volunteers have facilitated the TRT’s promotion by planning outreach events and mobilizing other volunteers. Current outreach programs the TRTA sponsors include the Annual Outdoor Leadership and Guide Training, which prepare TRT enthusiasts in proper outdoor etiquette to potentially become future guides. The Youth Backcountry Camps provide teens with wilderness experiences during its four-day journey along the TRT backcountry.

Printed guidebooks consist of Tim Hauserman’s

¹⁸ Founded by Hampton in 1982, the TRTF was an organization dedicated to completing the loop around the lake. The TRTF later changed the name to the TRT Association (TRTA) (Chris Binder, personal communication 2017).

Figure 8: Tahoe Rim Youth Backcountry



Teens participate in Tahoe Rim Trail Association's Youth Backcountry Camps over the summer. Source: Tahoe Rim Trail Association

bestseller, *The Tahoe Rim Trail - The Official Guide for Hikers, Mountain Bikers and Equestrians*, which is currently in its third edition. Another publication written primarily for volunteers is *The Tahoe Rim Trail: A Guide to Construction*, authored by Frank A. Magary, a Landscape Architect of the USFS, and members of the TRTA. This pocket-sized paperback compiles an overview of the trail building basics (Magary 1988).

In response to increasing popularity of the trail, the TRTA's application to designate 96 miles of the TRT as National Recreation Trail¹⁹ was approved in 2003. Since its designation, trail completions have sharply increased (see **Appendix III**). Regarding general usage, trail counters indicate that over 400,000 people used the trail in 2016 (Chris Binder, personal communication 2017).

Funding

The Alpine Winter Foundation provided the initial capital to develop and coordinate a volunteer organization that would expedite the inception of the trail. Establishing this foundation facilitated future donations from private entities. The Whole Foods Market in Reno has selected the TRTA for one of its "5% days", when 5% of its sales would be donated to the TRTA ("Whole Foods Market Reno 5% Giving Day, April 19th" 2018).

One of the TRTA's fundraising methods includes selling annual or monthly gift memberships, a one-time donation, or a tribute donation. By implementing a graduated fee structure, the TRTA offers more flexibility to the donors ("Happy Trails Glenn!"). Additionally, the participation fee from TRTA's outreach programs provides a source of revenue to sustain the trail's operation ("Youth Backcountry Camps").

Conflicting Interests

The 165-mile trail traverses California and Nevada, six counties, one state park, and three national forests, with the majority of the trail under USFS jurisdiction ("Pacific Southwest Region Viewing Area: Tahoe Rim Trail"). 49 miles of the TRT also overlaps with the PCT, which involves cooperation between TRTA and PCTA to accomplish the missions of both trails ("The Tahoe Rim Trail, Nevada and California").

With respect to challenges along the proposed route, the TRT was generally able to avoid private property by issuing trail reroutes. However, in some cases, informal handshake agreements to gain right-of-ways were employed for 20-foot sections that occupied an insignificant portion of private acreage (Chris Binder, personal communication 2017).

During the course of its development, the TRTA tried to minimize trail construction in the three wilderness areas. In the case of Mt. Rose Wilderness, the TRTA built a 2.5-mile trail along the outskirts of the wilderness area, avoiding close proximity to the Lake Tahoe Basin. Source water protections tend to be highly restrictive due to the potential for contamination and impact on native species. Having access to a trail in one of the more visited wilderness areas enabled humans to limit interactions with the protected areas by concentrating them on the trail.

As one of the more recent trail construction endeavors, the TRT underwent extensive NEPA processes, in which each section built was subjected to an individual analysis. Regarding protected wildlife, such as the yellow-legged frog, the USFS would survey areas in advance

¹⁹ A National Recreation Trail is incorporated into the national trail system. However, instead of its designation by an act of Congress, the trail is designated by the Secretary of Interior or the Secretary of Agriculture that recognizes its local and regional significance ("About the NRT Program")

to ensure that the proposed trail was a certain distance away from potential or actual habitat, and reroute when necessary (Ibid.).

Relevance

The actions undertaken by the trail case studies were summarized based on the common themes identified for each component. These generalizations structure the guidelines for each of the aforementioned elements.

Leadership

The most effective leaders often begin as trail users, volunteers or employees affiliated with conservation organizations. Unsatisfied by the available recreational opportunities, they conceive a project encompassing preservationist, conservationist and recreationist objectives. In order to oversee such substantial projects, these long-term leaders have been involved in the field long enough to become familiar with the political and physical terrain. These leaders possess the necessary qualities to create and maintain connections with prominent figures to secure the approval, funding and workforce for the trail's development. Their dedication to the cause compels them to sacrifice time, money and labor to see the trail come to fruition.

Public Engagement

While paid professionals tend to provide the technical expertise and volunteers typically offer labor, several case studies illustrate periods when the trail development process was solely driven by volunteers. Despite the fact that volunteers come from diverse backgrounds and possess a wide variety of skills from their professional careers, they are linked by their unwavering interest in the trail's realization. Their contributions in the form of time and labor have built the trails' credibility to ultimately receive financial and political support from private entities and federal agencies.

Volunteers have played an instrumental role in raising public awareness. For a nascent trail, gaining public exposure facilitates the trail development process. Trail promotion strategies rely on the formation of non-profit advocacy groups to inform the public through education and outreach efforts, assemble volunteers for trail

projects, and secure funding. A common approach the trail advocacy organizations employ to engage citizens with the trail is training volunteers in construction, maintenance and restoration techniques. These sessions help volunteers recognize and appreciate the trail corridor's cultural and social values, as well as encourage their further involvement with the project.

Funding

Non-profit trail advocacy groups depend on outside sources of capital to sustain costs that go toward development, construction, and maintenance of the trail's operations. Some indirect costs that the monetary contributions finance include reimbursing staff members, purchasing volunteer food and equipment, and sponsoring public engagement programs, signage, and print literature. Funds are generally obtained from national-scale land trust grants, foundations, federal agencies, organizational fundraisers, and private donations. Older trails, like the AT and PCT received more federal backing, while more recent projects, such as the TRT and Incline, relied on private sources.

Conflicting Interests

Trail proposals inevitably cross multiple land jurisdictions, which necessitates the need for cooperation among federal, state, and local stakeholders. Since the federal agencies were divided into multiple districts along the proposed trail, they often acted individually. In the absence of a cohesive line of communication, members of the non-profit trail advocacy groups often approached each district separately to organize plans for the trail.

Gaining right-of-ways through private property is another challenge that requires public-private collaboration. The non-profit organizations often had limited financial means, prompting their reliance on more financially viable conservation easements. For trail corridors that crossed an inconsequential portion of the land over which owners denied restricted authority, handshake agreements were employed. If funds are sufficient, property could be purchased in fee simple, which is the most complete ownership possible. Efficacy was an important factor in land acquisition, and private entities, such as the trail advocacy group and third-party

land trusts, often acted much faster than federal agencies.

Lastly, the dual-purpose of trails resulted in conflicting objectives between their recreational and conservation use. Trail construction was generally avoided in areas containing protected natural resources and wildlife, especially once NEPA was formally implemented. However, the extent a species or characteristic should be preserved in place of recreation is subject to controversy. This dilemma will influence the course of action taken toward natural features that serve as preliminary constraints along RtP.

Current Status of Ring the Peak

Substantial progress has been made in the technical aspects of trail development on the southwest side of RtP, facilitating a projected completion within the next five years. The current status of the project has been organized into the same four elements as the Results section.

Leadership

Since RtP's conception in the 1999 PPMUP, there have been notable advocates who persistently dedicated their personal resources to the project. The earliest advocates for RtP were Mary Burger, President of FOTP; Josh Osterhoudt, President of Medicine Wheel Trail Advocates; and Jim Strub, a member of the North Slope Watershed Committee and Pikes Peak Highway Advisory Commission (Strub 2015). They realized that in order to effectively undertake the trail development process, such as promoting the trail and reviewing meeting agendas, a non-profit organization was necessary. Burger offered to send a request to the FOTP Advisory Board for the expansion of FOTP's charter to include RtP (Ibid.). After receiving their approval, Burger and Strub scouted routes and coordinated their identification efforts with USFS and CSU (Ibid.).

Currently, the push to close RtP's southwest gap can be attributed to the efforts of Susan Davies, Executive Director of TOSC. Having over 30 years of experience in television specializing in environmental reporting, Davies's communication skills, among others, qualify her to bring this segment into fruition (Collier 2016). She maintains contact with prominent organizations, such as the Regional Business Alliance, Sierra Club, and Audubon Society, representatives of which used to be a part of

TOSC's Board of Directors (Ibid.). Ever since TOSC concentrated its efforts on RtP, Davies' enthusiasm and dedication to the trail's realization resulted in substantial exposure from media sources. Her frequent updates on the final connection's progress and benefits have been featured in the *Colorado Springs Gazette* and *Colorado Springs Independent*. Further promotional efforts to introduce the project to a more expansive audience were facilitated by Davies' appearances on news stations, such as Bob Falcone's Studio 809's podcast and FOX21 Morning News ("Outdoors with Hiking Bob"). Regarding her media presence, FOX21's TV anchor Craig Coffey proclaimed, "When I think outdoors, I think Susan Davies" (McDonald 2017).

Public Engagement

The majority of RtP's progress has been regarded as a volunteer effort ("Volunteers Enhance Recreational Opportunities and Restore Resources"). Primarily recruited by FOTP, which organizes weekend group workdays on the trail, volunteers have been responsible for trail planning, signage, fundraising, maintenance, and reviewing the USFS initiatives. Burger led much of the early trail building efforts by arranging volunteers to connect existing USFS paths and constructing new trail sections. Carol Beckman, former President of FOTP, was responsible for scouting several trails along the route through Raspberry Mountain (Carol Beckman, personal communication 2017). In 2003, Beckman and Strub undertook the signage task. Strub designed the RtP logo,

Figure 9: RtP Logo



which became so popular that external donations paid for the signed trail posts, decals and other memorabilia.

Regarding the unfinished 8-mile section, NES Inc. has formed a Project Team consisting of representatives from TOSC, FOTP and the City of Colorado Springs Parks, Recreation and Cultural Services (COPR) to develop a Master Plan that oversees the physical and promotional aspects of RtP (TOSC Request for Proposal). In order to address the community engagement gap, NES Inc. has partnered with Bachman PR to accomplish objectives that include “[building] enthusiasm, [providing] a forum for community input, and [building] relationships.” Current undertakings include updating the RtP project website and other social media, distributing E-newsletters and emails, and initiating professional correspondence with private property owners (Ibid.).

The Project Team has undertaken several events to promote RtP’s southwest gap. On November 18, 2017, the Team hosted the Outdoor Recreation Forum in conjunction with the Pikes Peak Outdoor Recreation Alliance (PPORA)²⁰ at Cripple Creek’s Heritage Center (Healy 2017). The event focused on the vision, issues, and opportunities for RtP, as well as the broader Pikes Peak Region. Driving the discussion were strategies to address the southwest gap, namely concerning opposition from the cities of Victor and Cripple Creek. As the first in a series of public meetings, the symposium used the recreationists and affected communities’ collective sentiment to inform its decisions regarding the proposed trail alignment (Ibid.).

The second public meeting on February 13 convened at the same venue and provided another opportunity for public input on trail alignment recommendations (“Ring the Peak News”; Chris Lieber, personal communication 2018). The outcome of these meetings include suggesting necessary components to appeal to visitors as an international attraction as well as a local, wilderness experience; underscoring the economic benefit of the project by connecting RtP trails to communities that could serve as access portals; and developing additional infrastructure after the trail’s completion, such as shuttles and yurts (Ibid.).

Another major event that generated public interest was the RtP Discovery Tour, a series of guided hikes during the fall of 2017 to inform the participants on the various modes of transportation for trail navigation. Mike Rigney, the Complete the Ring Project Manager of TOSC, along with Carol and Jim Beckman, and Bob Falcone, lent their expertise to lead the hiking, biking, and equestrian riding through various sections of RtP (“Ring the Peak Discovery Tour Recap”). The publicity from social

Figure 10: RtP Tour



In the fall of 2017, Susan Davies led one of a series of Ring the Peak Discovery hikes covered by FOX21 Morning News. This event provided the public an opportunity to explore existing segments and contribute ideas for further development. Source: Trails and Open Space Coalition.

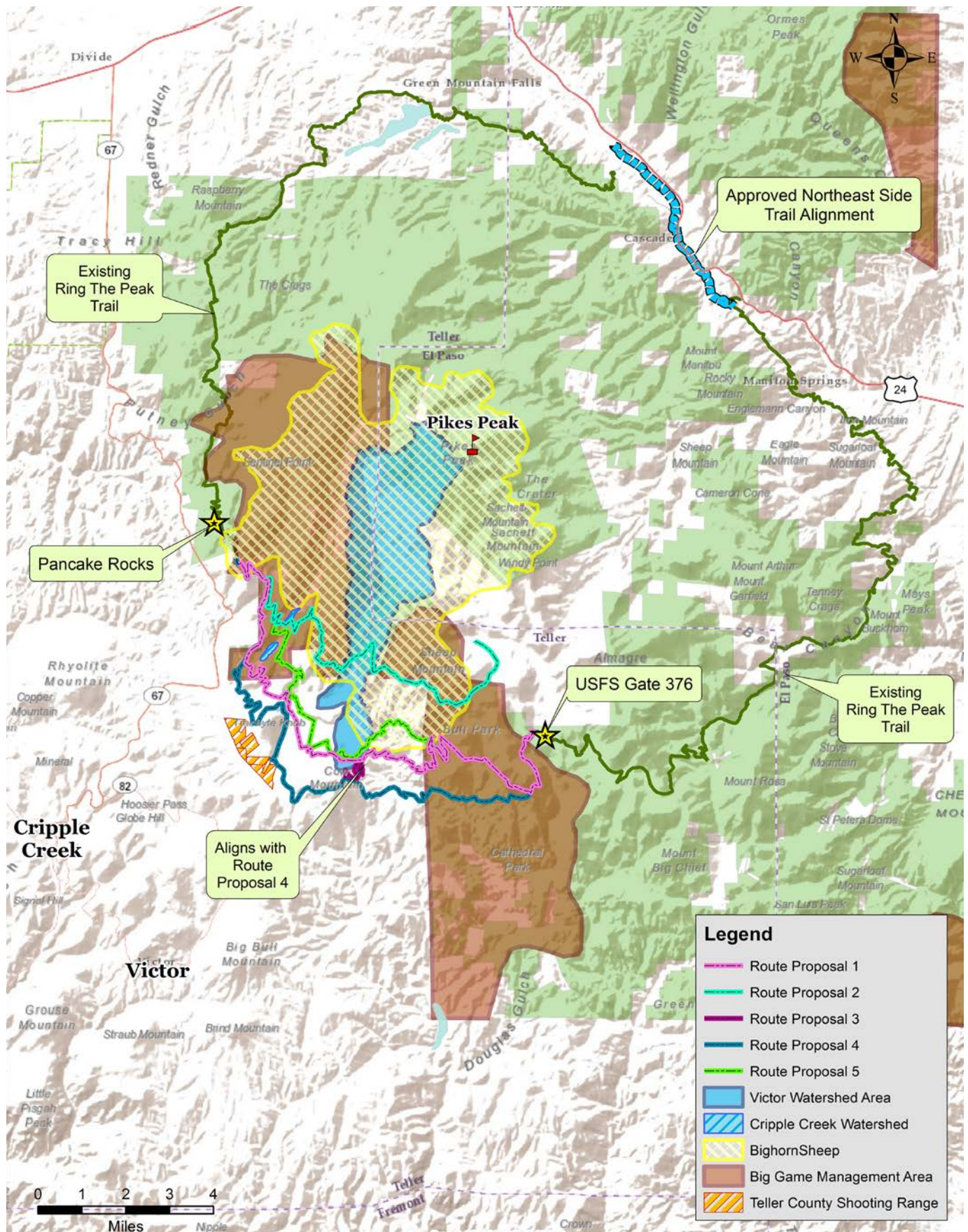
media and FOX21 Morning News led to the event’s high participation rates and informed recreationists who were previously unaware of the trail’s existence (Ibid.).

As a strategy to build positive relations with stakeholders along the trail corridor, the Project Team organized informal discussions, or “coffee chats,” to provide a listening forum that addresses individual property owners’ concerns (TOSC Request for Proposal). These sessions are led by experienced negotiators: N.E.S. consultants Tim Seibert and Chris Lieber, who are well-regarded for prioritizing private property owners’ rights (Ibid.).

External sources of publicity have included numerous local media outlets featuring news articles on RtP’s

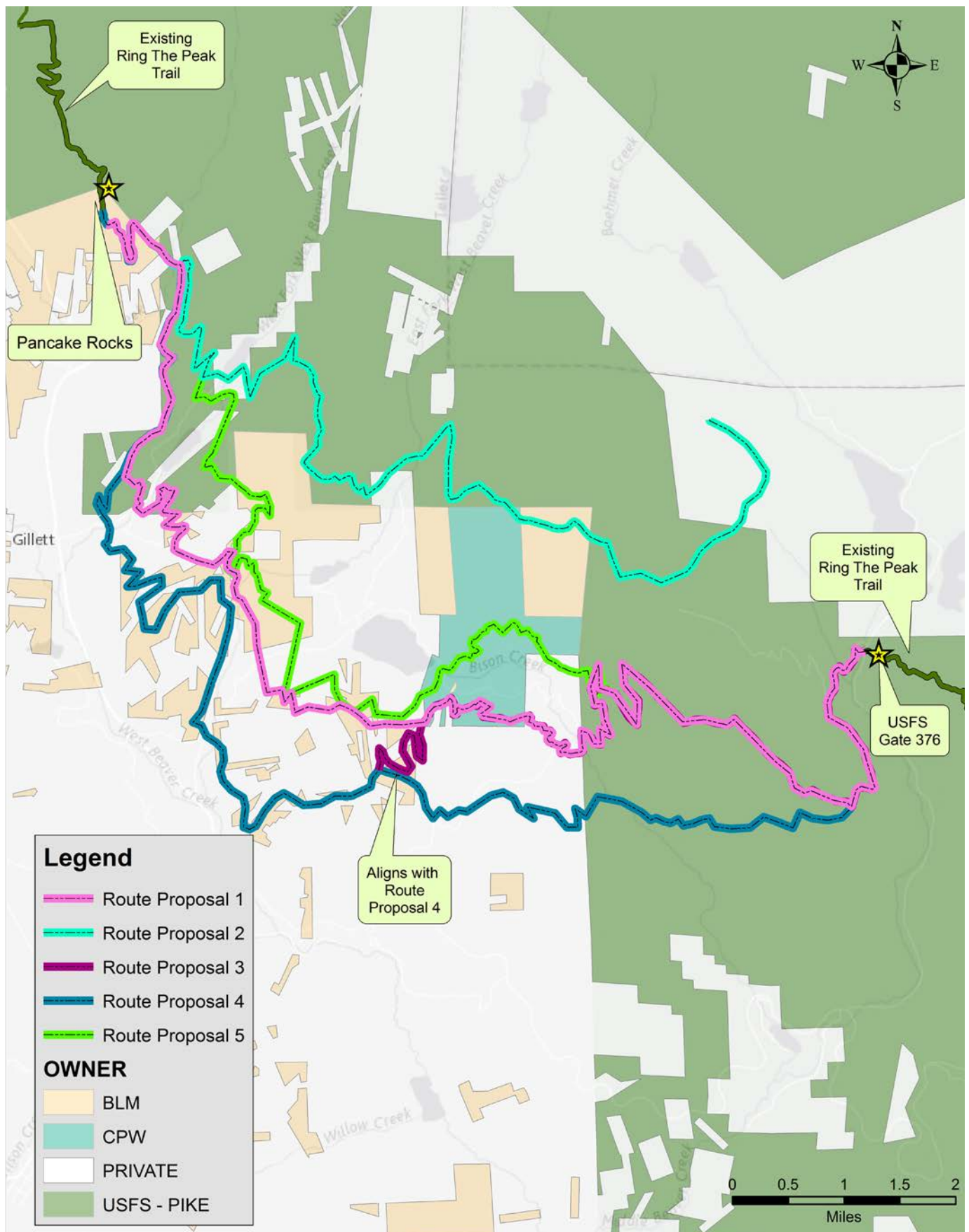
²⁰ Pikes Peak Outdoor Recreation Alliance is a collaborative of businesses and individuals who recognize and advocate for the southern Front Range’s natural and recreation assets, both as an economic drivers and for community health and well-being.

Figure 11: Ring the Peak Trail Proposed Alignments and Preliminary Constraints



There were originally five proposed Ring the Peak trail alignments on the southwest side of Pikes Peak. Each route acknowledges the different obstacles encountered to connect the trail from Pancake Rocks to USFS Gate 376. On the northwest side, the Ute Pass Regional Trail Alignment has already been approved.

Figure 12: Ring the Peak Trail Proposed Alignments and Jurisdictions



Depending on the chosen alignment, ten to fifteen parcels of private property are present along the proposed trail alignments. Arrangements have been made with BLM, USFS, and CPW managed areas for the proposed trail.

updates and its potential to positively impact the Pikes Peak Region. The most prominent ones are the *Colorado Springs Gazette*, *Colorado Springs Independent*, KOAA, and FOX21 News. Outdoor retailers, such as Mountain Chalet, have shown support for the trail by displaying RtP content on their website (Mountain Chalet: “Ring the Peak”). FOTP President, Steve Bremner, produced two documentaries that depict the benefits and challenges of completing RtP through the perspectives of various stakeholders.

Notable individuals who advocate for the trail’s completion include the Governor of Colorado, John Hickenlooper. His visit to the trail cemented RtP’s designation as one of the “16 in 2016” priority projects under the Colorado Beautiful Initiative (Boster 2016).

Funding

With regards to RtP’s southwest side, financial limitations have delayed progress in the trail’s planning process. The only source of funding dedicated to this segment has been GOCO’s new Connect Initiative trail planning grant program, which provided the project with \$100,000 to hire a consulting team (Stanley 2016). The funding would fulfill N.E.S.’s objectives to develop and undertake the Master Plan in preparation of RtP’s future construction phase (TOSC Request for Proposal). With reductions in the Pikes Peak Ranger District’s operating budget, the USFS contributions are minimal (Susan Daives, personal communication 2017.). Since the missing segment is still in its planning stages, the actual costs of land acquisition, trail construction and maintenance have yet to be determined (Ibid.).

A \$680,000 contribution from CDOT is directed to the design phase of the Ute Pass Regional Trail segment, linking to RtP on the northeast side (“Ute Pass Regional Trail Awarded \$680,000 Grant”). This segment is part of a larger trail system that will provide a continuous route from Manitou Springs to Cripple Creek and Victor (“Ute Pass Regional Trail”). A one-mile portion of the Ute Pass Regional Trail also received \$150,000 from LWCF for its design and construction (“Ute Pass Regional Trail Awarded \$680,000 Grant”).

Conflicting Interests

The initial RtP trail alignments encountered several challenges between Pancake Rocks and USFS Gate 376 (TOSC Request for Proposal). Regarding jurisdiction, the proposed path crosses approximately 10-15 private land parcels. N.E.S. is in the process of identifying and negotiating land and easement acquisitions with the property owners (Ibid.). Palmer Land Trust (PLT), which focuses on acquiring land to protect public spaces and parks in the Front Range, is also available to respond to land valuation and conservation easement questions (TOSC Request for Proposal; “About Palmer Land Trust”)

Other restricted areas the proposed alignments encroach upon are the watersheds in the City of Cripple Creek and City of Victor. The Cripple Creek municipal watershed contains two reservoirs that supply the city with drinking water and are also leased to the private Timberline Fishing Club (Volpe 2016). Similar to Cripple Creek’s arrangement, Victor’s Bison reservoir is leased to the private Gold Camp Fishing Club (Benzel 2015). Other sensitive areas include the Game Management Unit 5B, which is inhabited by animals such as elk and white tailed deer; the Rocky Mountain Bighorn Sheep Habitat, which serves as the sheep’s breeding ground; and the Teller County Shooting Club Range, an area closed for recreational target shooting (TOSC Request for Proposal). USFS and CPW Biologists have recommended minimizing human activity in the area to encourage growth of big game populations. The CPW has jurisdictional authority to make suggestions that inform the USFS of possible impacts on wildlife from trail construction and use. However, the CPW cannot enforce these recommendations on the final trail alignment (Shannon Schaller, personal communication 2017).

Originally, the N.E.S. consulting team had planned on selecting one trail alignment to connect the southwest side. However, based on input from the public meetings, they have realized that in order to accomplish the requests of the stakeholders and appeal to a broader range of users, a combination of corridors would be necessary (Chris Lieber, personal communication 2017). Thus, N.E.S. proposed a network of trail alignments along three broad corridors (Mike Rigney, personal communication 2017). These broad corridors consist of the Year-Round Route,

Seasonal Route, and Community Route, each designated for a particular use (Chris Lieber, personal communication 2017).

Out of these suggestions, the most readily accomplished alignment is the Year-Round Route, which follows along the Gold Camp Road and Highway 67. As the name suggests, the trail is intended to be open to the public year-round, and serves as a short-term solution to the final connection. The alignment's reliance on gravel service roads and trails adjacent to highways can degrade the user experience. For a more wilderness experience, the Seasonal Route provides a higher elevation path that is suitable for mountain biking. Due to the backcountry nature of the trail and its proximity to bighorn sheep and other environmental challenges, its access would be weather-dependent. The Community Route fulfills the economic development objectives of the cities of Victor and Cripple Creek by extending to both cities. This route would avoid more sensitive areas to permit motorized vehicle use. Given the resources, the latter two routes would take a significantly longer time to realize because they encounter more instances of private property and sensitive areas, and require more new trail to be built (Ibid.).

Proposal for Ring the Peak

A proposal for future actions necessary to complete RtP was formulated based off of the trail development case studies, discussions with federal land managers, and current information on the southwest gap. While some of these methods may not be applicable due to the obsolete nature of their approaches, several relevant strategies were identified to frame recommendations according to RtP's current situation.

Leaders

RtP's current status of 80% completion required the guidance and commitment of dedicated leaders. Like Gaskill who has been involved in several trail projects prior to the CT, Davies has led several projects as part of TOSC's mission to conserve natural areas in the Pikes Peak region. In order to facilitate RtP's future success, it is recommended that Davies or other experienced RtP advocates who possess similar admirable qualities continue to demon-

strate their long-term commitment to the project, just as Gaskill's indomitable qualities enabled her to rectify the CT's stagnant trail development.

Considering that Gaskill's connections and devotion attracted support of the trail from eminent figures, perhaps Davies could convince Olympic athletes who just returned from the 2018 Winter Olympics, or Mayor John Suthers of Colorado Springs to join RtP's volunteer committee.

With TOSC's involvement in so many projects, it is crucial that Davies maintains focus on RtP, provides managerial direction, and continues to train and guide future trail stewards after the segment's completion (Collier 2016). Expanding upon TOSC's collaboration with several Friends Groups, including FOTP and Incline Friends, the creation of an umbrella organization similar to the AT Conference would be an effective way to champion the cause.

This organizational structure would allow for a centralized body, potentially called the RtP Conference, to oversee autonomous trail clubs that focus on the development and management of individual sections of RtP. These individual membership organizations could be the existing Friends Groups, or new RtP clubs. Broadening the influential connections associated with each group would foster the expansion of the trail advocate network, cultivation of positive relationships with its area of the community, and procurement of a more diversified financial and political support. The result would curtail the level of personal sacrifice that other trail leaders, such as the PCT's Rogers and 10MD's Benedict, have endured.

Public Engagement

Recruiting more volunteers is a recommended course of action to not only sustain the physical operations of the trail, but also reinforce the strength of the community's relationship with the trail. In adherence to the wide range of skill sets possessed by volunteers of the AT and PCT, the Project Team should encourage people with backgrounds and interests not just limited to the physical aspects of trail development; concurrently, skills like communication and journalism would facilitate private land negotiations and RtP-specific publications. In the case of land acquisition,

Lieber may find it advantageous to enlist private citizens who possess knowledge of the private property owners' community and interests. Drawing from the success of New York State's AT coordinator, Levers, using someone familiar with the residents of the community and the local political terrain would gain more leverage in the negotiation process.

Incentives to achieve higher volunteer participation during the physical construction of RtP may include offering accommodations, such as food and transportation, in exchange for labor. Tenuous plans have called for a yurt system along RtP, which should be modeled after the 10MD. If this were to come to fruition, RtP volunteers should receive a free night at one of the yurts for each day worked.

Veteran members of FOTP and TOSC familiar with RtP's portals and the trail building process, such as Bremner, Beckman, Davies, and Rigney, should hold trail development workshops, as Proudman had previously done for the ATC. These programs would train volunteers in construction and maintenance, as well as promote the vision of RtP. Other outdoor education programs could feature extended camping sessions on the trail's existing sections, such as the TRTA-inspired youth backcountry trips and guided hikes. The participants would enjoy accommodations and professional expertise in backcountry ethics and future trail stewardship, while the cost of the trip would support RtP advocate groups' operations.

Additionally, hosting an event for every mile of connected trail would also generate interest in RtP. Gathering the recreational community at the finished portion of the trail so they could witness its progress would be an effective way to introduce the public to the significance of the project.

All the preceding trail case studies have published guidebooks that introduce the history, route descriptions, and hiking insights before the trail's formalized completion. Since 80% of RtP is open to use, FOTP or other non-profit advocacy groups should consider producing a handbook for RtP, and continually update the editions to record the trail's progress. To further expand the online presence of the trail, comprehensive coverage of the loop should be added to major hiking directories such as AllTrails, Hiking

Project, and 14ers.com. Even though E-newsletters are in existence on TOSC's website, a monthly or quarterly online or print magazine containing the trail's most notable accomplishments and upcoming events would present a more visually coherent brand.

Funding

Being so early in the planning stage, the Project Team is in the process of identifying options of long term financial support for the trail's creation. The detailed budget proposal would include allocating money towards employees, trail building, maintenance, and managerial personnel. Hiring full-time staff who are continually exposed to RtP's daily operations would train them to handle the trail logistics. For land acquisition, the established cost would depend on the real estate location, and whether the fee simple property or easement will be purchased, exchanged or donated. On average, the cost of land acquisition for every mile of trail is \$48,300 (Flink et al. 2001). After adjusting for inflation, this equals roughly \$68,000 2018 dollars. To minimize labor costs, every trail case study has utilized volunteer labor for the majority of trail construction, save paid professional trail builders for the portions that require technical expertise. Construction expenses also takes into account equipment, signage, and material to surface the trail, in which native soil is recommended as the most cost-effective way (see Appendix II).

With the shrinking federal budgets for land protection, the Project Team would also need to rely on other sources of funding. Potential sources of private financing for these trail purposes include the Gates Foundation, Lynda Hill Foundation, Doris Duke Charitable Foundation, and Coors Foundation, which the CT, PCT, and 10MD have employed. As for federal programs, despite the LWCF already contributing to the northeast side of RtP, the Project Team should consider applying for additional funds from the LWCF for RtP's southwest development and construction needs. CPW's Trails Grant program is another option that accepts applications on an annual basis.

Internal sources of funding could include paid camping trips and a graduated membership structure. As demonstrated by the TRTA, TOSC or FOTP could consider partnering with local businesses to ensure a certain percentage of their sales on a day go toward fundraising for

RtP. Mountain Chalet, REI, Whole Foods, and Mountain Mama Natural Foods are some possible options. Additional revenue streams could also include monies from sales of RtP's guidebooks or subscriptions to its magazine.

Conflicting Interests

The trail case studies have initially sought development of the fundamental components of the trail alignments, such as utilizing existing roads or holding temporary conservation easements. Once the outline of the trail was established, future land acquisition opportunities would allow for relocation of specific trail sections to improve the users' recreational experience. Thus, the Year-Round Route would serve its rudimentary function that could later be developed upon. As for the Seasonal Route, enforcement of its seasonal closure would be difficult and requires collaboration with USFS personnel.

That being said, substantial projects like the AT and PCT were aided by the environmental movement during the 1960s and 1970s which strengthened federal involvement in environmental affairs (Mittelfehldt 2013, 185). This period saw the enactment of several pieces of key environmental legislation, such as the Wilderness Act, NEPA, and the National Trails System Act. Since these laws were implemented differently at the time, their statutes were easier to bypass in recreational projects like trail construction. As the age of New Right conservatism swept the nation in the 1980s and 1990s, the natural landscape suffered from the downsizing of federal spending on environmental protections as well as the growing property rights movement in response to restrictions on individual and corporate rights to land (Ibid., 186).

Thus, the modern political climate relies more on the private, non-profit sector to achieve land conservation objectives (Ibid.). More recent proposed cuts to the LWCF threaten the existence of RtP and other public land projects. Increased oversight of trail development requires trail advocacy groups like FOTP and TOSC to obtain legal approval of the Trail Master Plan before any trail construction is permitted to proceed. Developing this comprehensive plan to establish the physical, promotional and management aspects of the trail is an extensive

process that protracts the time of its conception to realization.

Regarding land acquisition options to present before the property owner, the historic context to some of these case studies render elements of their approaches impertinent. For instance, informal handshake agreements that were commonly used in the past are no longer an option in the modern political era. In order to bring legitimacy to the recreational industry in the face of financial limitations, RtP would more likely have to depend on fee simple donations, purchasing or exchanging easements with private landowners. The Project Team has expressed interest in fundraising to obtain fee simple ownership if necessary (Susan Davies, personal communication 2017).

Since easements are the primary means of acquiring property, the Project Team must decide which entity would hold the easements. While TOSC may be too occupied with several other projects to take on a land trust charter within its organization, FOTP, whose trails of interest are all situated on Pikes Peak, or the proposed RtP Conference would be a better choice to take on this responsibility. Forming a land trust program within its organization to gain more control and efficiency over the land acquisition process was an effective strategy employed by the ATC in the formation of the Trust for Appalachian Trail Lands. However, FOTP would have to be responsible for all the fundraising opportunities, which may hinder its other roles in trail development.

Alternatively, an approach modeled after the case of the Montcrest Working Forest situated on the PCT would distribute the financial burden across multiple parties. By keeping the FOTP or TOSC's existing charters, the trail advocate group would collaborate with a third party land trust and USFS to acquire and hold RtP's easements. The best candidate for this task would be Palmer Land Trust, since the organization has initiated a separate Protect the Ring Campaign in 2012 to create a contiguous ring of permanently protected land around Pikes Peak ("Donate Now to Protect the Peak").

PLT has the ability to purchase properties at or above market value, potentially more expediently than the USFS. After PLT obtains the land or easement, the rights could

be transferred to the USFS once it is capable of buying the parcel or easement at market price. While federal agencies' operations tend to be more time-consuming, this process would render the property to be perpetually protected under public ownership. At the same time, the USFS would be able to achieve its objectives, which include providing opportunities for recreation and improving access upon public lands ("What We Believe").

Conclusion

While the trail development case studies provide great insight into the complex landscape of the trail building process, some outdated strategies may not necessarily apply to the current process of RtP's trail development efforts. There is a clear shift in the level of federal financial and administrative support during trail development in the 20th century as compared to contemporary projects. Presently, more rigid environmental oversight and diminishing federal and state funds complicate RtP's realization. This political landscape, coupled with the physical impediments along the proposed trail alignments, inevitably prolongs the loop's completion. The formation of a Ring the Peak Conference, updating the trail's progress through a comprehensive online communication plan, and other aforementioned strategies will serve to combat these challenges.

Despite the trail development process occurring during an unfavorable political era, the benefits associated with RtP are undeniably significant. A completed RtP would provide recreational and economic development opportunities, as well as serve to evenly distribute traffic and mitigate degradation of Pikes Peak. Furthermore, with the Project Team's active dedication, RtP's status as a "16 in 2016" trail, GOCO's funding of NES, and RtP's proximity to completion - public and financial support are likely to ensue. "Trails are a common thread, and we expect to complete the trail within the next five years" (Susan Davies, personal communication 2017).

Appendix I: Tabular Summary of Case Studies

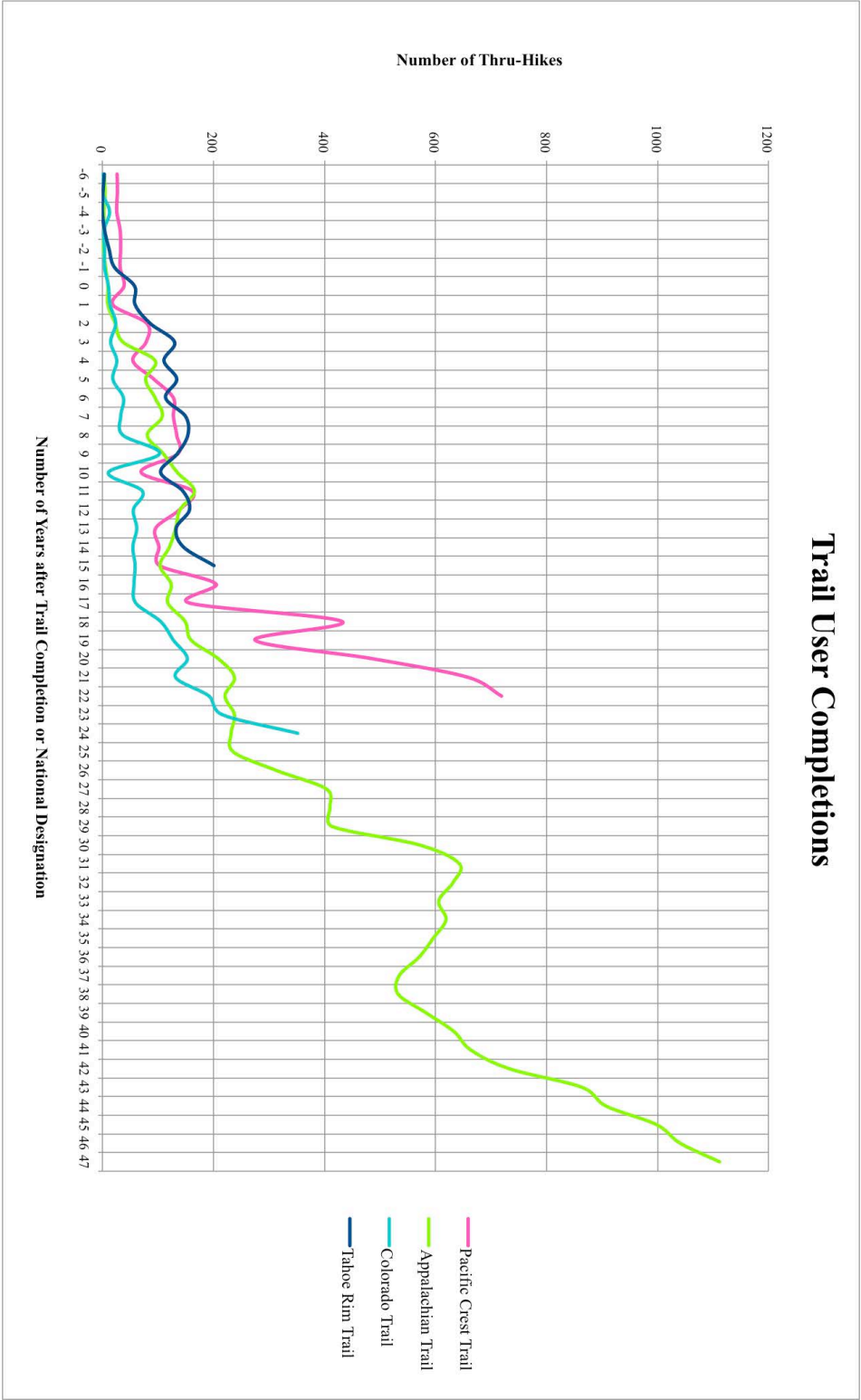
Component	Ring the Peak	Tahoe Rim Trail	Colorado Trail	Pacific Crest Trail	Appalachian Trail	Mantou Incline	10 th Mountain Division Huts Trail
General Type of Use	Hiking Equestrian Biking	Hiking Equestrian Biking	Hiking Equestrian Biking Snowshoeing Cross-country skiing	Hiking Equestrian	Hiking	Hiking	Hiking Biking Cross-country skiing Snowshoeing Snowboarding
Length	63 mi.	165 mi.	486 mi.	2,650 mi.	2,190 mi.	0.88 mi.	350 mi.
Lowest Point	6,400 ft	6,240 ft	5,577 ft	140 ft	124 ft	6,500 ft	9,700 ft
Highest Point	11,300 ft	10,388 ft	13,271 ft	13,153 ft	6643 ft	8,590 ft	11,370 ft
Non-Profit Management Entity	Friends of the Peak	Tahoe Rim Trail Association	The Colorado Trail Foundation	Pacific Crest Trail Association	Appalachian Trail Conservancy	Incline Friends	10 th Mountain Division Huts Association
Date operational	Incomplete, but several segments in use.	1985: Section hiking 2001: Completed	1987: Completed	1968: Designated as National Scenic Trail 1993: Completed	1937: Completed, but still acquiring inholdings 1968: Designated National Scenic Trail under National Trail System Act 2014: Officially acquired all the land	1997: Illegal usage 2013: Repaired and legally opened	1982: 1 st hut built
Administrative Authority	City of Colorado Springs Parks	Lake Tahoe Basin Management Unit (LTBMU) of USFS	USFS	USFS	NPS	City of Colorado Springs & Mantou Springs	USFS
Agencies & Groups Involved	<ul style="list-style-type: none">• Colorado Parks & Wildlife• City of Manitou• El Paso County• Colorado Springs Utilities• BLM, USFS	<ul style="list-style-type: none">• LTBMU/USFS• BLM• NPS• California State Parks• Lake Tahoe-Nevada State Park	<ul style="list-style-type: none">• USFS	<ul style="list-style-type: none">• USFS• BLM• NPS• California State Parks	<ul style="list-style-type: none">• NPS• USFS• ATC• 31 Trail clubs and partnerships	<ul style="list-style-type: none">• City of Colorado Springs• The Manitou Pikes Peak Railway Company• USFS	<ul style="list-style-type: none">• 10th Mountain Division Huts Association• USFS

Appendix II: Trail Material Longevity and Costs

Surface Material	Cost per mile	Longevity (years)
Soil cement	\$60k-100k	5-7
Granular stone	\$80k-120k	7-10
Asphalt	\$200k-300k	7-15
Concrete	\$300k-500k	20+
Boardwalk	\$1.5m-2m	7-15
Native Soil	\$50k-70k	Varies
Wood chips	\$65k-85k	1-3

Appendix III: Trail User Completion Rates

Since there is no feasible nor accurate method of obtaining an estimate of the general visitor use on the trails, the thru-hike completions are displayed instead for four of the trails from the case studies. In order to identify the impact of completion or federal recognition on the trail, the years the thru-hikes took place have been normalized to the number of years before and after such characterization.



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A Quantitative Approach to Living Sustainably with Wildfire

by Alex Harros and Matt Valido, 2017-18 State of the Rockies Project Fellows

Introduction

This past summer marked the five-year anniversary of the Waldo Canyon Wildfire in Colorado Springs, Colorado, which consumed over 18,000 acres, 346 homes and took the lives of two individuals. The fire's destruction persisted long after the last of the embers smoldered out; downstream of Waldo's burnscar, the city of Manitou Springs and sections of the Highway 24 corridor, a major Colorado highway, experienced numerous flood events and debris flows during the year following the burn. Though homes are being rebuilt and the forest is recovering, how can Colorado Springs and the greater Pikes Peak region reconcile its extensive wildfire history to better prepare for the next catastrophic fire?

Adding to wildfire's complexity, wildfires have been, and continue to be, significantly modified by anthropogenic influences which make them burn hotter, longer and extending the length of the fire season itself (Gorte 2013). Perhaps the most immediate effect of anthropogenic influence is on vegetation density and type in North American forests. In the twentieth century, economic pressure from the logging industry as well as the biblically destructive "Big Burn of 1910", spurred the newly formed United States Forest Service to develop a strict wildfire exclusion policy. This lofty campaign mandated that all wildfire on national forest were to be suppressed as quickly possible, regardless if the ignition source was naturally occurring or not. As a consequence, the naturally occurring fire regimes of forests were halted, leading to overgrowth of vegetation that would have normally been consumed by fire. This change in

vegetation density has drastically increased the fuel load for wildfires increasing "the likelihood of unusually severe and extensive wildfires" (Arno et al., 227).

Fuel loads of forests are also increased by insect and disease epidemics which are more likely due to decreased vegetation resiliency from the added competition of overgrowth (Ibid). Though the extent of influence is not clear, the unusually high severity of the Front Range's Hayman Wildfire of 2002 was undoubtedly influenced by decades of fire suppression, leading Front Range forests to "have developed a very different stand structure during the 20th century" (Romme et al., 198). Currently, mitigation efforts such as prescribed burning or vegetation chipping reduce fuel loads in forests, however performing these efforts on large scales is unfeasible.

The next significant source of anthropogenic influence on wildfire is from global climate change. Climate change increases the severity and frequency of wildfires via three mechanisms: hotter temperatures, earlier mountain snowpack melt, and drought (Gorte, 2013). Hotter temperatures and drought make wildfires burn hotter and increase the chances of ignition through the decrease of water content of vegetation. Earlier spring snowmelts lengthen the fire season itself by extending the period of time Western forests rely on summer precipitation for moisture (Ibid). Both the Hayman and Waldo Canyon wildfires occurred during summers of extreme drought and hot temperatures on the Front Range. Another climatic influence, though understudied, is the increase of insect outbreaks (mentioned above) with rising temperatures. Increasing epidemics in Western

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forests could influence wildfire severity due to greater fuel loads from mortality and less fire-resilient tree stands (Ibid). Though the extent is not fully understood, climatic influence on wildfire needs to be considered when preparing for the annual fire season.

As a natural occurrence in our ecosystem, wildfires are an inherent burden to those living in the West. Yet, fires play a key role in healthy forest dynamics by clearing out layers of vegetation, and at times entire tree stands, thereby decreasing competition and promoting succession within the fire-adapted ecosystem. Front Range's forests are characterized by a mixture of Ponderosa pine and Douglas-fir trees, which are dependent on wildfire regimes. Wildfire assists Ponderosa Pine seedlings by clearing out competing shrubs and grasses as well as creates fertile, nutrient rich soil for Douglas-fir and Ponderosa pine seeds to grow (CSU 2012). The Rocky Mountain's iconic aspen stands are also dependent on fire as being the primary successional species to rapidly grow following a burn (United States Forest Service). The duality of wildfires, as a source of both destruction and regeneration within forests, creates difficult and complex policy issues for communities living in landscapes where wildfires are a natural phenomenon. Colorado Springs is no exception. Wildfires are not influenced by jurisdictional boundaries yet people and policy decisions are. The difficulty of living with wildfire necessitates research to better assist ecosystem managers, policy makers, and private citizens alike.

Over the past twenty years, the Pikes Peak region has experienced the costly and lethal consequences of catastrophic wildfires, namely the Hayman, Waldo Canyon, and Black Forest wildfires. As evidenced by the Waldo Canyon Wildfire of 2012, burn scars alter the hydrology of a landscape and significantly increase the likelihood of flooding and debris flows (Young et al., 2012). Again, the destructive perimeter of a wildfire expands spatially and temporally beyond the burn scar itself, endangering homes, roads and lives that are downstream. Increased erosion and chemical transport following a burn damages the health of aquatic ecosystems as well as vital water resource infrastructure such as reservoirs and water treatment plants.

The Waldo Canyon Wildfire was particularly potent due to its proximity to Colorado Springs' wildland-urban interface (WUI), which in this study is defined as the margins between Pike National Forest and Colorado Springs. The term is also more generally used as a working definition for areas of Colorado Springs primarily at risk from wildfire.

To prepare for the next catastrophic wildfire effecting Colorado Springs, this report uses qualitative 'lessons learned' and quantitative data from the Pikes Peak region's extensive wildfire history. By using the Hayman and Waldo Canyon fires as model wildfires, this research extracted remotely-sensed, physical data from the burns' respective pre-fire landscapes and correlated those data to the resultant burn severity. From this correlation, a predictive model was made that is used to simulate both the magnitude and spatial extent of a potential wildfire within the research's area of interest (AOI) encompassing the Colorado Springs WUI. To understand the impacts of post-fire flooding, elevation data from the AOI was then used to measure potential hydrologic flow power, which is used to identify areas with highest potential for debris flows. Using geographic information systems (GIS), a composite model of both burn-severity and erosive potential was rendered over the AOI. The results display areas most susceptible to the severe burn and erosion intensity.

The AOI is, overall, bounded by Colorado Springs' WUI. Further, to interpret the results of the predictive model more clearly, Colorado Springs' WUI was subdivided by watersheds. The predictive model overlaid on a watershed scale allows for comparison between different areas of the WUI.

By mapping areas within Colorado Springs of highest concern, our research can be used to prioritize mitigation efforts and resources. Further, by highlighting the high number of people, property, and infrastructure at risk, our research can be used to stimulate policy and management decisions.

Lessons Learned

Though over a decade has passed since the Hayman Wildfire of 2002, it remains the geographically largest

Figure 1: “Moonscaping” in the Hayman Burn Scar



The Hayman Wildfire in 2002 severely burned 35% of its total area, resulting in “moonscaping” which is still visible 15 years later. Source: Jonah Seifer

wildfire in Colorado’s history and become a pivotal event in shaping the relationships between Front Range communities, the USFS, and wildfires. The fire consumed approximately 138,000 acres of Pike National Forest and the South Platte River corridor and ‘moonscaped’ vast swaths of land, leaving areas so intensely burned that the landscape, devoid of any vegetation, resembled the surface of the moon (Graham 2003). The fire ignited on June 8th, 2002 from a campfire near Lake George, Colorado and burned until June 28th (Ibid). In total, the wildfire completely destroyed 132 homes, damaged another 662, and scorched Cheeseman Reservoir, a vital link in a chain of water resource infrastructure utilized by the City of Denver (Ibid). The fire was also responsible for the deaths of six individuals. Many lessons can be extrapolated from the Hayman wildfire, including being an example of a mega fire whose behavior was undoubtedly exacerbated by anthropogenic influence.

The most striking feature of Hayman’s burnscar is the continuous amount of severely burned landscape where the fire’s intensity was able to burn entire tree stands. Though the Hayman burnscar is considered a mosaic of burn severity ranging from unburned to severe, a post-burn analyses by the USFS concluded that the majority of the landscape, 35% or 48,000 acres, ranked as severely burned (Robichaud et al., 2003). Wildfire intensity classification is measured through the condition of the landscape’s physical characteristics, such as vegetation

and soil. In general, a burned area is classified as ‘high severity’ when all biomass at ground level and entire tree-stands are killed, whereas ‘low severity’ burns are characterized by the fire’s consumption of vegetation only at the ground level and not tree-stands (Ibid). The USFS has a standardized method of measuring this using pre- and post-fire satellite imaging. The scale and intensity of the Hayman wildfire brings into question of the role that 20th century fire exclusion and grazing practices played in the fire’s behavior. Dendrochronology records show that Hayman’s high intensity and total fire perimeter were consistent with the historic fire regime of the region (Romme et al., 2003). However, the isolated feature of Hayman to consider is the size of severely burned areas: “[no] fires documented from the early 1300s through 1880 created such a large contiguous patch of severe stand-replacing fire” (Romme et al., 193). That the fire reached stand-replacing intensity is not unprecedented, however it is unprecedented that 35% of the total area was severely burnt in contiguous pieces.

20th century fire exclusion has occurred in the Hayman landscape: before the summer of 2002, the last large fire in the Hayman area occurred in 1880 yet the one before that burned in 1851 (Ibid). The time period between Hayman and the last large wildfire in the area is over four times longer than the previous fire interval of only 29 years. While the extent to which fire suppression and human activity contributed to the fire’s behavior

and magnitude is uncertain, the high vegetation density within Hayman's landscape directly contributed to the fire's growth and intensity. Historical photographs of the Cheeseman Reservoir show "in 1900... a canopy cover of 30 percent or less, and only 7 percent was dense enough to support a crown fire "and thus "it is clear that the contemporary forest and landscape structure contributed to the size and severity of the fire" (Romme et al., 2000).

the severity and size of Hayman. Anthropogenic climate change increases a landscape's predisposition to wildfire through magnified drought and decreased vegetation resilience (Gorte 2013). Further, once a wildfire has started, hotter temperatures can contribute to the severity of the fire directly, providing more ambient heat energy (Quadrennial Fire Review, 2014).

Figure 2: Comparison to Historic Forest Density in Manitou Springs



Historically, forests have been far patchier and spatially variable, as seen in the left photo from Manitou Springs in 1906. Recent trends in fire suppression have led to denser forests which store more fuel and have the potential for more catastrophic canopy fires. This increased density can be seen in the right photo which was taken from a similar location in 2017. Source: Colorado Springs Pioneer Museum (left) and Tom Kuehl (right)

Another unprecedented aspect of the Hayman fire was its speed. Fires of similar size took up to months to burn whereas Hayman burned on the order of mere weeks (Ibid). Colloquially referred to as 'the blowout day', on June 9th extreme wind caused the fire to grow from "1,200 acres to approximately 61,000" (Finney et al., 59), close to half of the total burned area. Like other wildfires, Hayman's behavior was most strongly influenced by local weather and climate. Anthropogenic influences like climate change need to be considered when analyzing Hayman's behavior. These influences may be indirect but are still contributing factors, especially when considering Hayman's unprecedented burn-severity and the blowout day of June 9th.

The summer of 2002 marked the fourth year of acute drought in the Front Range where "fuel moisture conditions were among the driest seen in at least the past 30 years" (Graham, 4) which greatly contributed to

The Hayman wildfire is, in part, a product of two anthropogenic influences: 20th century fire exclusion practices and climate change. For the Pikes Peak community, the unprecedented size of the Hayman wildfire acted as a major wake-up call. Since 2002, wildfire awareness by private homeowners and management by the USFS and municipalities has improved. USFS wildland fire crews have improved their effectiveness by using a standardized procedure for organizing resources and people most efficiently between themselves and other responding agencies (Botts, personal communication 2017). In 2011, the City of Colorado Springs issued its Community Wildfire Protection Plan (CWPP) that includes fuels mitigation projects, at-risk neighborhood mapping, and promotes sound homeowner practices and awareness. Unfortunately, the Pikes Peak region was reminded of their vulnerability to wildfire when the Waldo Canyon wildfire burned in June of 2012, a decade after

Hayman. The Waldo Canyon wildfire stands as the current model fire occurring closest to Colorado Springs.

The Waldo Canyon wildfire was markedly different than Hayman in both size and effect. Though Hayman remains catastrophic in its own right, the Waldo Canyon wildfire is comparatively more destructive despite being significantly smaller in size and intensity. The fire started on June 26th, 2012 on Pike National Forest land between Colorado Springs and Woodland Park and was fully contained by July 10th. In total, the fire burned 18,247 acres, completely destroyed 347 homes, and took the lives of two people (City of Colorado Springs, 2013). The fire also scorched the perimeter of Rampart Reservoir, one of the major drinking water sources of Colorado Springs. A post-fire analysis by the USFS concluded that the majority of the burnscar, 41.6%, is either unburned or low in severity, with only 18.6% classified as high severity (Young et al., 2012).

Unlike Hayman, the Waldo Canyon wildfire's destructive potency is based on its proximity to communities and human infrastructure. The most poignant lesson learned from Waldo Canyon is that Colorado Springs has a WUI problem: one of the largest in the nation, the Colorado Springs' WUI comprises of 28,800 acres, 24% of the population, and 36,485 homes (Colorado Springs Fire Department, 2014). During the fire, all of the homes destroyed were located in the Mountain Shadows neighborhood, which was previously identified as being in the WUI (Fire Adapted Communities, 2012). Not only are many lives and homes at risk within the WUI, fire protection against homes is largely ineffective and highly challenging. In an analysis of home destruction within the Mountain Shadows community, 54% of homes ignited were from fire embers blown downwind from the burn while only 8% of home ignitions were sourced from the fire front itself (Colorado Springs Fire Department, 2014). Further, "90% of homes ignited were completely destroyed" (Fire Adapted Communities, 10). These two alarming findings further expose Colorado Springs' WUI problem.

The Waldo Canyon wildfire also reflects the lasting, destructive implications after the fire itself has burnt out. In an initial assessment of watershed burn severity, the

USFS found that "large runoff producing storms will likely create increased surface flow volumes and velocities that can transport available sediment from the slopes" (Moore et al., 7). This prediction came true as major flooding and sedimentation events occurred just weeks after the fire and in the following summer of 2013 within the City of Manitou Springs and the Highway 24 corridor.

Ultimately, the Hayman wildfire represents an apocalyptically severe force lurking in the Front Range's forests while the Waldo Canyon wildfire represents a less severe yet more destructive fire due to its proximity to a WUI. If a "Hayman" level of wildfire were to occur in the same geographic location as Waldo Canyon, its destructive potential would dwarf that of Waldo Canyon and be unprecedented to any Western city living with wildfire.

Figure 3: Flash Flooding after Waldo Canyon Fire



Flash flooding events continued to damage infrastructure weeks after the Waldo Canyon Fire was extinguished. Source: Colorado Springs Water Resources Engineering

Methods

The purpose of this work was to create a map of wildfire severity in the wildland-urban interface based on the ecosystem characteristics of the Hayman and Waldo wildfires. The quantitative focus of the research primarily utilized ArcGIS, a popular GIS software. Per our objective of using GIS techniques to compare the Hayman and Waldo Canyon pre-fire landscapes to the resultant burn severity, the first step in our research was compiling historical data from both fires. The United States Geological Survey's (USGS) *Earth Explorer* website provided open access to federal research satellite imaging from which raster filetypes were downloaded. Images from the National Aeronautical and Space Administration's (NASA) Landsat 5 and Landsat 7 satellites were used, which provided 30-meter resolution images in both the visible color and infrared spectra. Image searches were filtered by geographic area and date using *Earth Explorer's* user interface. Only images encompassing the entire Hayman or Waldo pre-fire landscape were used. Further, image dates were refined to June through August and up to three years prior to each wildfire. Images with excessive cloud and snow cover had to be omitted due to processing challenges encountered later on.

The Normalized Difference Vegetation Index (NDVI) was selected as a key landscape characteristic to measure and correlate to burn severity. NDVI is a calculation derived from the relative amounts of red and near-infrared spectral reflectance from vegetation which, in turn, is a measure of the 'greenness' of the photosynthetically active vegetation (NASA, 2017). NDVI was selected as a variable to measure for a variety of reasons. In accounting for wildfire fuel conditions, NDVI can be used as an approximation of live fuel moisture content (Dennison et al., 2005). As acute drought was shown to be a major factor in the Hayman wildfire, an interpolation of vegetation health was desired to be used in our model. Further, NDVI could be calculated from our available dataset in ArcGIS.

The next pre-fire landscape features calculated were topographical slope and aspect, using Lidar-based digital elevation models (DEM). For both the Hayman and Waldo

Canyon wildfires, the steepness of the terrain and the orientation of hillsides relative to the Sun were variables effecting wildfire behavior (Finney 2003, Botts personal communication 2017). Topographic data would also be used later on in flood and sedimentation modeling.

The USFS's *Monitoring Trends in Burn Severity* (MTBS) program provided geospatial burn severity data for the Hayman and Waldo Canyon wildfires. The MTBS program uses the differenced Normalized Burn Ratio (dNBR) to classify burn severity. dNBR is a calculation of the difference in pre- and post-fire thermal reflectance in the infrared spectrum (United States Forest Service, 2017).

Having compiled pre-fire data on NDVI, slope, and aspect as well as burn severity data post-fire, we then geospatially aligned the four data points. Within each burnscar, every 30x30 meter pixel had attached numerical values of the pre-fire landscape variables and of resultant burn severity, resulting in a dataset with ~500,000 pixels for each day for 10 days. Aligning the data this way allowed compiled data to be represented and manipulated in a tabular format, a necessary step towards burn severity modeling.

Two tabular data sets, one for Hayman and the other for Waldo, were input into *R*, a statistical computing software. The software was used for statistical comparison between burn severity and individual variables. The software was also used to create two linear regression models, correlating each fire's burn severity to NDVI, slope, and aspect. Because slope aspect is not mathematically linear, the dataset was split into different aspect classes and then the model was run for each aspect grouping.

The two respective burn severity equations could then input back into the GIS software. Using current data on the AOI's NDVI, slope, and aspect as the input variables, the models computed a predictive burn severity spectrum overlaid on the AOI. A range of potential burn severity was visually depicted over a map of Colorado Spring's WUI. To better interpret the results, the models were depicted over the watersheds comprising the WUI, specifically the North & South Cheyenne, Bear, Sutherland, and Ruxton Creek watersheds. Further, the burn severity models were filtered to depict only the areas with the highest potential for a severe burn.

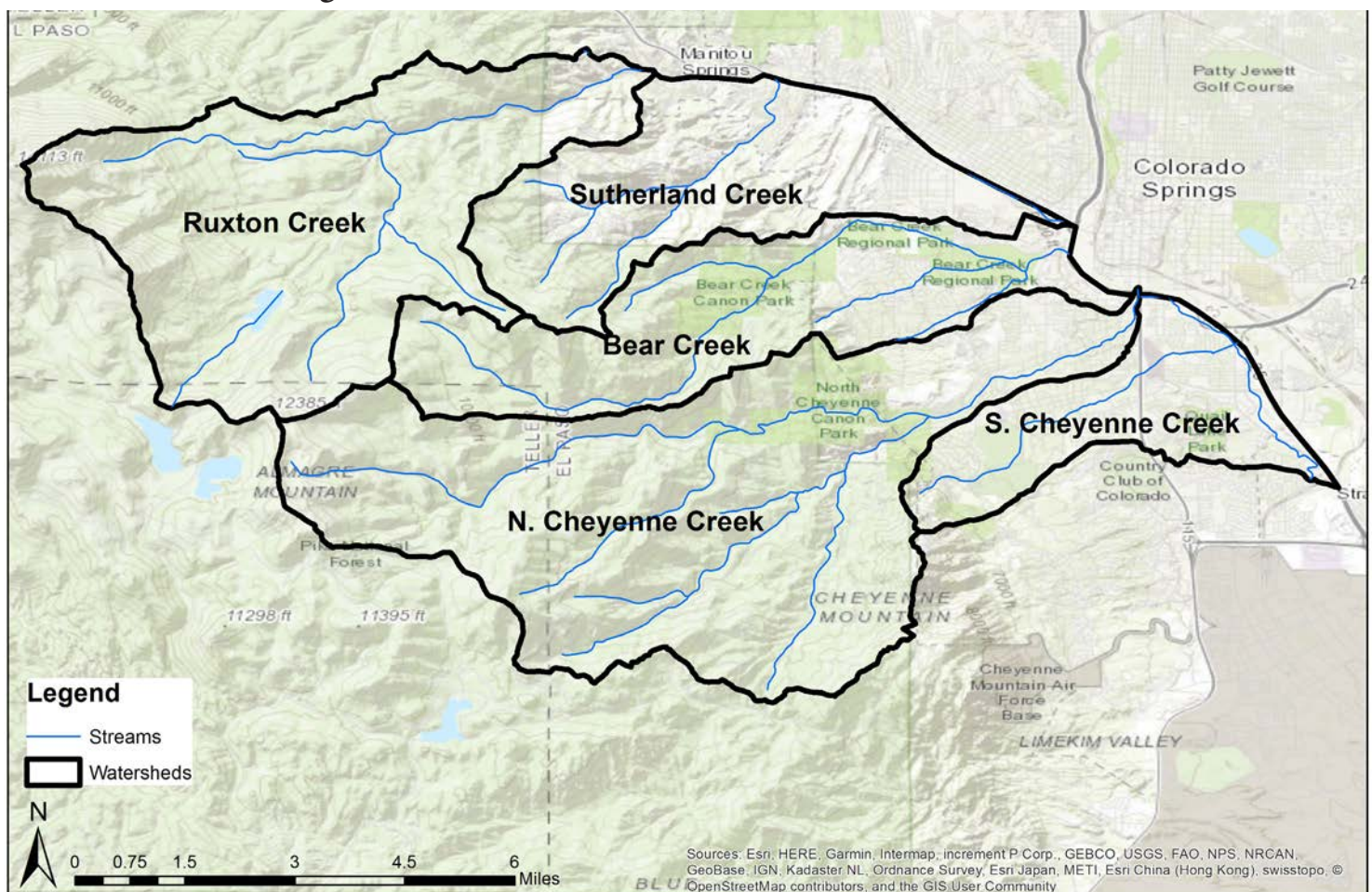
To address the soil instability and erosion that follows a severe burn, we coupled the existing burn severity map with a map of erosional power. ArcGIS's Hydro Tools used the DEM layer to compute a Stream Power Index (SPI) layer. SPI is a measure of the erosive power of flowing water and is calculated based upon slope and upstream contributing area. SPI approximates locations where gullies might be more likely to form on the landscape. The SPI layer was multiplied with the burn severity map and rendered a map depicting where heavy erosion is likely to occur if an area were to burn severely.

While no technical definition of 'wildland-urban interface' (WUI) was created by our research project, a parcel-scale WUI map created by University of Wisconsin's SILVIS Lab was used in conjunction with the burn severity model to calculate the proportions of Colorado Springs' WUI subject to varying degrees of potential burn severity. Proportions of the Springs' WUI (bounded by the AOI) overlapping with the burn severity potential, broken into

a four-point scale, were calculated in ArcGIS. Tabular data was then extracted from the spatial overlap of the two maps.

Because this analysis required geospatial calculations in ArcGIS, Colorado Springs' WUI was implicitly defined through the WUI map used from UW's SILVIS Lab. The WUI map is also distinguished into two WUI types, intermix WUI and interface WUI. The technical definitions for each designation are as follows: a parcel is first considered WUI if it contains a minimum density of one structure per 40 acres (Stewart et al 2007). Next, if a parcel is also covered by greater than 50% wildland vegetation, it is considered intermix WUI. If a parcel is not covered by at least 50% wildland vegetation, but is within 1.5 miles of significant wildland vegetation, then it is considered interface WUI. This distance is established to account for the distance a fire ember can travel during a wildfire (Ibid).

Figure 4: Wildland-Urban Interface Area of Interest



This research's area of interest is comprised of the Bear Creek, Ruxton Creek, Sutherland Creek, North Cheyenne and South Cheyenne Creek Watersheds. Source: National Hydrography Dataset and inset sources.

Colorado Springs WUI Study Area

Our study's area of interest (AOI) is the Colorado Springs WUI, which is located in the eastern foothills of Pikes Peak and is largely contained within the Pike National Forest in the southern portion of the Colorado Front Range. The AOI is comprised of a mixed-conifer forest predominated by Ponderosa pine and Douglas fir. The lower montane and grassland portions of the AOI are historically predominated by Pinyon pine, Ponderosa pine and Gambel oak woodlands. This area was chosen as the area of interest in response to the spatial nature of the Waldo Canyon Fire. It burned up to the edge of the AOI and would have likely burned this area at a similar severity if not for specific environmental factors and effective wildland fire-fighting. The AOI has the same fire regime and anthropogenic consequences that were covered in the introduction, and as a result, is predicted to burn severely.

To further our understanding of the preventative and reactive actions taken in the face of fire risk and to better understand the resources needed for this region's management, the State of the Rockies Project Wildfire team studied the impacts of the Hayman and Waldo Canyon Fires on the local Colorado Springs community. The team received first-hand information from Forest Service personnel, Colorado Springs Utilities professionals and local management groups regarding their views on the response to the two fires. Time and time again experts in forest fire management claimed that resources are scarce in forest management, and with the fire season becoming longer and more severe, means to efficiently identify fire prone areas of forest for preventative management are extremely useful. Our predictive burn severity model was developed to address this need, and the following section outlines key experts who provided first-hand accounts that helped inform the predictive burn severity model.

Actors

Brent Botts – United States Forest Service (USFS), Pikes Peak District Ranger from 1981 to 2011:

Botts' thirty years of experience working in the Forest Service was invaluable throughout the development of the model. Fire mitigation in the WUI and the greater

Pikes Peak Region, Botts said, is a difficult task. Noting the lack of jurisdiction that the USFS holds over the private property of the WUI, Botts spoke on homeowners' views on fire mitigation and forest thinning. Given that the majority of the WUI is privately owned, the USFS has to communicate with homeowners and educate them on the necessity of creating defensible space around properties. Many understand the danger of fire within the Colorado Springs WUI and are willing to work with managers to decrease fire risk. Unfortunately, some residents are more difficult to work with, which, as Botts noted, stems from a lack of education.

When a problematic area of the forest is identified and under USFS jurisdiction, they can carry out mitigation practices such as thinning. Due to the immense amount of private property, Botts' staff often had to speak with owners and homeowners associations regarding the necessity of risk mitigation. He spoke solemnly about this process because many homeowners cherish the dense forest aesthetic and the privacy it affords. As a result of these values, many homeowners are reluctant to change this aesthetic. Another problem arises in the Colorado Springs WUI given the steep topography of many fire-prone areas. Botts explained how expensive it is to thin a sufficient stand of forest to effectively mitigate fire risks, and how this is even harder in the steep slopes of Cheyenne Canyon. The issue of fire mitigation boils down to funding; with limited resources managers need to be highly calculated about where they direct their efforts.

Botts also gave detailed accounts of combatting the Waldo Canyon Fire. He was on site throughout the fire and shared how the topography of the area made it unusually difficult to contain. He confirmed slope aspects' role in fuel production, and how denser parts of the forest were "hot spots" for thinning. He commented further on how steeper slopes burn extremely fast and should therefore be a focus for thinning.

John Markalunas – United States Forest Service, Salida Ranger Station Incident Commander

The Incident Commander "keeps the trains running" at a wildfire operations center. They are responsible for all aspects of emergency response in a team of wildland firefighters, ranging from quickly improvising incident

objectives to allocating resources to different parts of a burning area and maintaining the safety of his teams. Markalunas has been at the forefront of operations at many fires within Colorado and knew exactly how the Fire Team could help. He emphasized how quickly protocols need to be triggered when a severe wildfire is burning, especially near a WUI. Usually, homes are prioritized if they are near the front of the fire. However, in other scenarios, fire spread modeling allows for the quick allocation of fire-fighting personnel. Dozens of topographic, vegetative, and weather based variables are considered, as accurately as possible, to predict fire spread and show Markalunas where he should send his fire crews. Predictive fire spread modeling was immediately highlighted as one of the most important resources and his emphasis on the necessity of predictive burn severity models provided additional confidence in the value of this study.

Kim Gortz - Colorado Springs Utilities, Source Water Protection Project Manager

Gortz provided a tour of the Rampart Reservoir, one of Colorado Springs' main water sources where the Waldo Canyon Fire burned up to its perimeter. She took this time to explain the consequences that a catastrophic fire has on water resources, and the immense amount of work necessary to maintain the integrity of our water system. Given the severity of the Waldo fire, Gortz explained, her team knew that there was no fix to the post-fire erosion that would come, they could only lessen the impact of soil instability. She recounted stories of her work after the Waldo Fire in Manitou Springs. She explained how the reservoir itself wasn't badly damaged, but the drainage culverts overflowing and flooding downstream in Manitou brought about problems. Specifically, a "2-year" storm (that is, a storm whose severity has a 50% chance of occurring each year) on July 30th, 2012, produced a "10-year" flood in the burn area. The debris flows brought massive mudslides into the Manitou Springs area, inundating homes and businesses with sediment,

destroying cars, and even killing one man. She described this as a "wake-up call" for Colorado Springs Utilities, and they quickly responded with increased preventative measures after this event.

Gortz also demonstrated different parts of the burn scar that required significant flood mitigation. Gortz explained to us the different hydraulic features, like the log-drop, which in absence of roots, stabilizes slopes, disperses runoff and prevents massive gullies from forming. These gullies, she explained, create fast moving runoff that cuts down hillsides, rushes downstream, and can lead to devastating floods like the one which ravaged Manitou Springs. Today, thanks to Gortz and her team, vegetation is beginning to grow back in the burn scar and stabilize the soils, and massive concrete reinforced storm water diversion drainages protect the city from future floods. Kim's emphasis on the danger of post fire erosion and debris flows inspired us to include an erosion prediction variable into our model.

With limited resources, management agencies like the USFS have increasingly supported the use of software based models to quickly find and analyze at-risk areas that are appropriate for wildfire mitigation. With massive swaths of land under their jurisdiction, the United States Forest Service utilizes predictive models that take into account fuel levels, topography, and local weather data to streamline the management process (Botts, 2017). Robust

Figure 5: Kim Gortz near Log Crib Dam



Kim Gortz gestures toward a log crib dam upstream of a partially filled sediment-catch basin near Rampart Reservoir. The dam is constructed of local timber and helps slow the flow of water, encouraging sediment deposition. Source: Jonah Seifer

predictive burn severity models exist to this end (Holden and Jolly 2011, Holden et al. 2009) but few “learn” from previous fires in the region of study.

As a response, this study’s predictive burn severity model is based off of some key pre-fire topographic and biological factors that directly influenced the resulting burn severity of the Hayman and Waldo Canyon wildfires. This study’s model was built as a preventative fire tool, intended to find fire prone areas and enable management personnel to treat them before a wildfire event. The model was then applied to the Colorado Springs WUI to create a map of predicted burn severity and erosion potential for land managers to consider when planning and carrying out projects.

Results

The results of the burn-severity model were rendered over the research’s AOI, comprised of the Ruxton, Sutherland, Bear, and North and South Cheyenne Creek watersheds. The burn-severity spectrum ranges from the lowest, in blue, through the highest potential, in red. In general, the highest burn-severity potential is concentrated in the foothills of Pikes Peak, at the transition of plains to mountains and also penetrates into some of the Springs’ parks and open spaces. Burn-severity potential then extends westward into Pikes Peak, concentrated on slopes surrounding roads and creeks. Burn-severity potential is proportionally higher on steeper areas versus flatter areas. In the event of a wildfire in the Pikes Peak area, the fire would prominently burn into the hills of Colorado Springs’ WUI due to its heavily saturated burn-severity potential. The fire would also heavily burn into the drainages surrounding the creeks and rural roads that extent into Pikes Peak, leaving substantial repercussions for the precipitation events that follow.

A stream power index (SPI) was also rendered over the AOI, where the highest erosive potential are highlighted in dark blue while the areas with the least erosive potential are highlighted in light green. Exacerbated by the brittle composition of Pike’s Peak Granite and steep gullies, the potential for debris flows is very high for communities situated on the eastern alluvial plains.

Areas of erosional concern are expectedly concentrated around the streams of the AOI. Specifically, in the northern portion of the AOI in Manitou Springs, Ruxton Creek will be heavily impacted by rain events. Ruxton flows along the iconic Pikes Peak Cog Railway and into Manitou Springs on Ruxton Ave. In Manitou Springs the urban creek is lined with residences and driveways are bridged across the culvert. Heavy debris flows, like the one following the Waldo Canyon Fire could block the culvert and potentially overflow and inundate homes and roadways. Further south, Bear Creek has high SPI values. Gold Camp Road and Bear Creek road run adjacent to this creek and could similarly be impacted by heavy debris flows and runoff. Continuing south, both North and South Cheyenne creek have high SPI values. The residences at the lower elevation eastern portions of the canyons are in the trajectory of runoff. It is important to note the high SPI values in the steeper areas above all of the mentioned WUI neighborhoods in the AOI. It can be inferred that the higher SPI values upstream to the west of the densely populated WUI will likely erode significant portions of the landscape and bring debris into the more populated areas.

The changing fire regime raises concerns for nearly all residences within the Intermountain West’s WUI areas. Our predictive burn severity-erosion potential model only confirms these concerns with specific areas within Colorado Springs’ WUI that are in dire need of preventative fire management. The compounding impacts of wildfire and debris flows have not been studied at great length and we believe that the ability to pinpoint fire-prone areas that can trigger soil instability is invaluable for resource managers given the limited funding that they are afforded.

In order to account for erosive potential and to view the burn-severity model on a finer scale, the watersheds comprising the AOI were split into two groups. The following maps depict areas of intermediate to highest composite burn severity-erosive potential over the Ruxton and Sutherland Creeks watersheds, and Bear and Cheyenne Creek Watersheds. The results of the composite model show that the two groups of watersheds act as case studies in different, yet nonetheless destructive, outcomes of a wildfire in the Colorado Springs WUI.

Figure 6: Predicted Burn Severity over the AOI

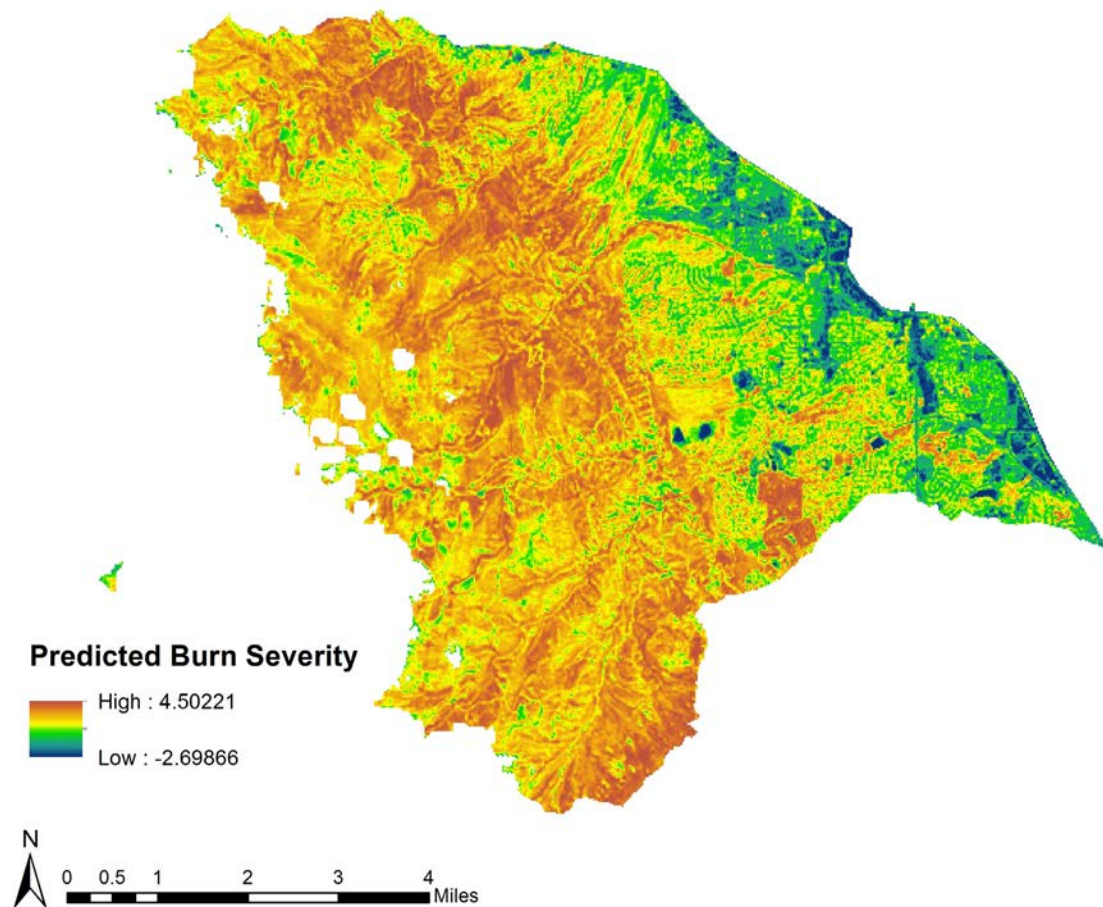


Figure 7: Erosive Potential within the AOI

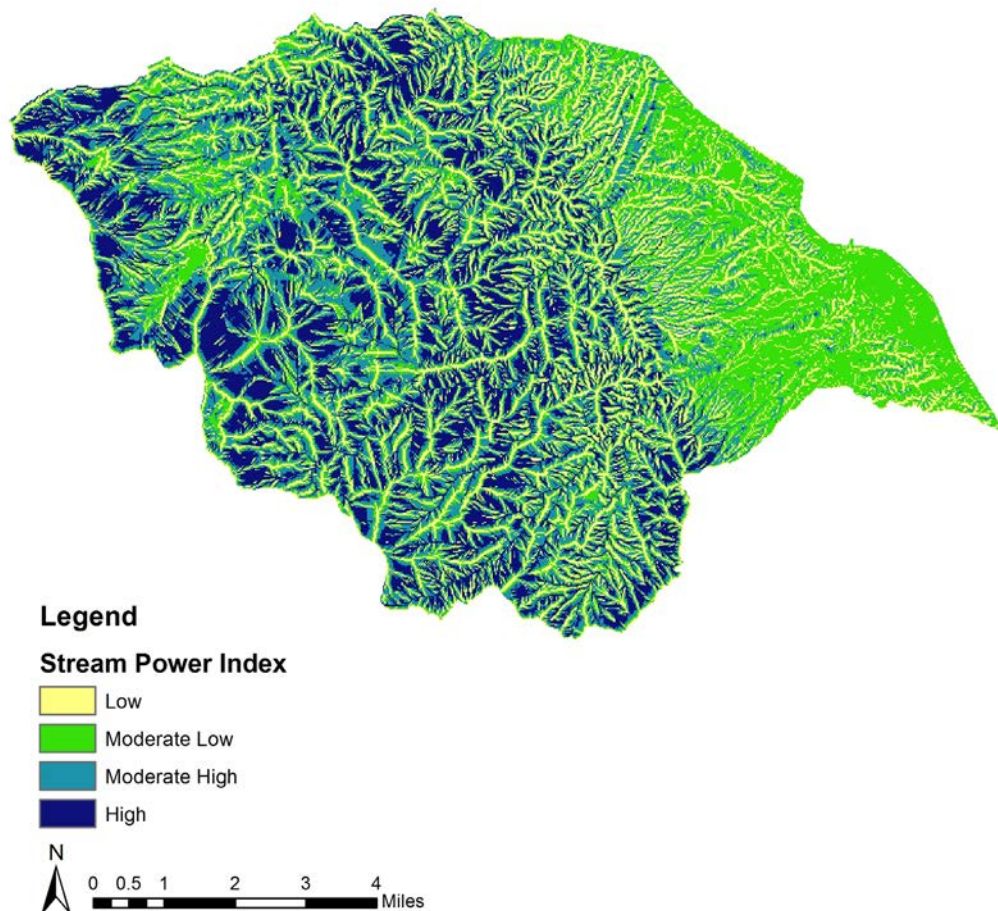


Figure 8: Composite Burn Severity-Erosive Potential in Ruxton Creek and Sutherland Creek Watersheds

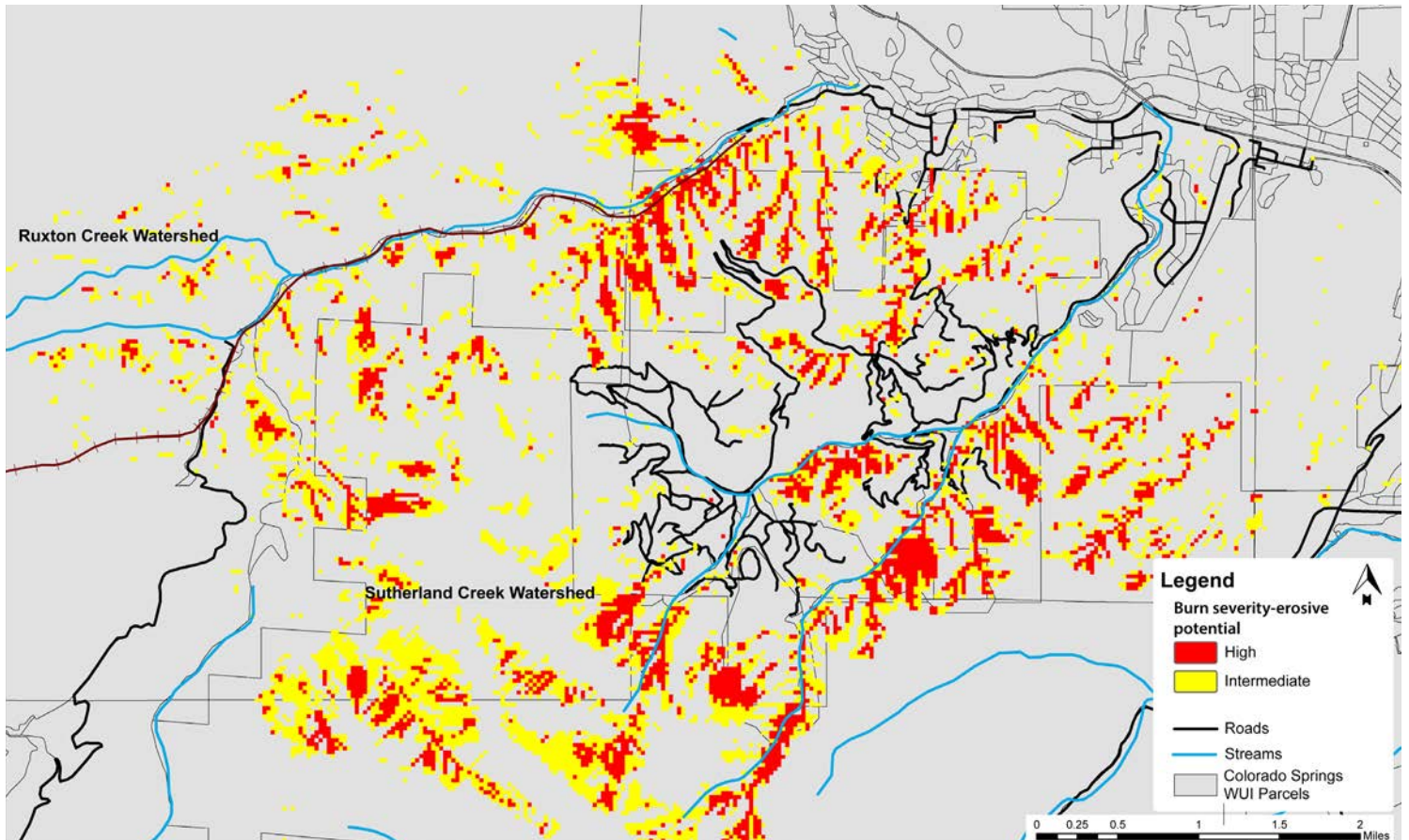
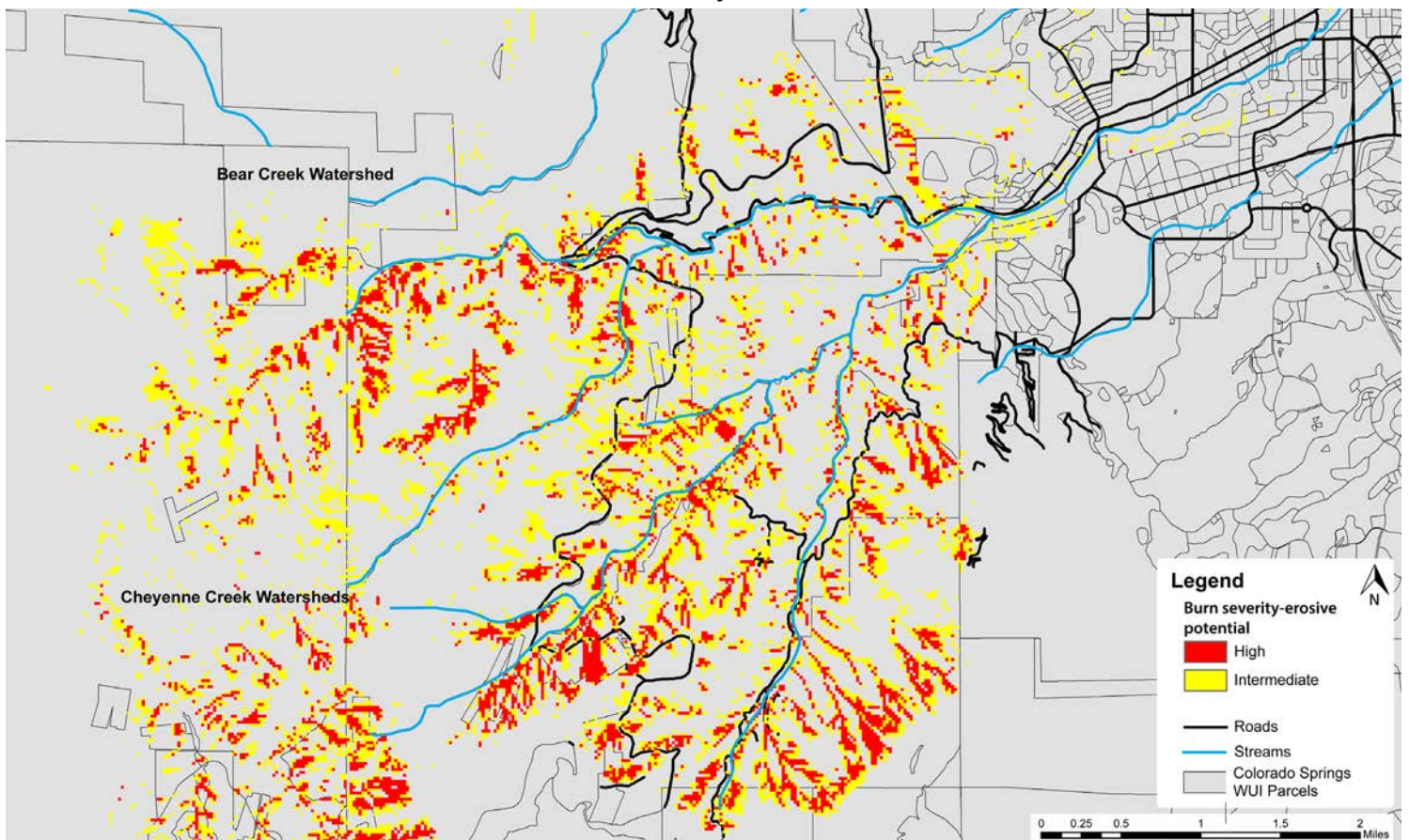


Figure 9: Composite Burn Severity-Erosive Potential in Bear Creek and Cheyenne Watersheds



Overall, the upper portion of Sutherland Creek and the lower portions of both Ruxton and Sutherland watersheds display the potential for acute burn and erosive severity. The upper portion of the Ruxton watershed reflects lesser burn-erosion potential, which, in the aftermath of a wildfire in the area, may have a lesser flood risk. However, the lower portion of the Ruxton watershed shows a different story. When considering the combined effects of the upper and lower portions on the waterway, there is potential for severe debris flows and erosion: Manitou's iconic Cog Railway, hydroelectric plant and the surrounding homes and other infrastructure at the top of Ruxton Avenue are all located in areas of severe burn-erosion potential.

Further, Ruxton watershed's lower side drainages contain acute burn-erosive potential. These drainages increase the magnitude of debris flows into Manitou Springs following a fire. As demonstrated by the aftermath of the Waldo Canyon Fire, a culvert backed up by debris impedes the downward flow of water and pushes any and all sediment that has flowed down the mountain up and over the culverts and into the surrounding areas. The high erodibility of the AOI's gravelly soils compounds this process and further exacerbates this risk. Residents of Manitou Springs must be educated on the risk that they are taking in living downstream of Ruxton Creek and city officials should prioritize the danger posed by this watershed and take preventative action.

For an area still at risk of flooding and debris flow from the Waldo Canyon burnscar, Manitou Spring's infrastructure, including some of its critical economic sources, are at extreme risk from another wildfire and precipitation events. In the case of the predicted fire event, Manitou springs would be surrounded by unstable soil from the predicted fire and from the Waldo Canyon burn scar. If preventative, reinforced culverts aren't strategically placed around Ruxton Creek, flooding could severely damage Manitou Springs' infrastructure.

The model depicts large, contiguous swaths of severe burn-erosion potential in the upper portion of the Sutherland Creek watershed. This elevates the magnitude of post-burn flooding and debris flow, posing severe risk downstream of the Sutherland Creek watershed. Crystal

Park neighborhood is located within the Sutherland Creek Watershed, where nearly all of its course occurs within potentially moderate or severe burn-erosive areas. These high burn-erosive values are consistent across the AOI but the limited accessibility of this neighborhood raises extreme concern.

The gated community's only ingress and egress road is Crystal Park Road, a two lane paved road that runs adjacent to Sutherland Creek. Its proximity to Sutherland Creek should invoke thoughts of the devastation that the flooded culverts of Manitou Springs created in the surrounding WUI communities. The high erosion potential along this road is severe and the event of a reactive evacuation in response to either fire or a debris flow should be concerning to residents. Helicopter evacuation sites are in place amongst the community, however, given the limited air resources experienced during the Waldo Canyon Fire, they should not instill total confidence in residents. We suggest heavy thinning of the area and further flood mitigation along the Crystal Park Road. Further, the Crystal Park Homeowners Association must alert community members of this risk. The danger posed in this area should call for mandatory development of defensible space in and around the neighborhood. The relatively gradual grade of the area makes Crystal Park an ideal location for mechanized thinning and preventative fire management.

The model depicts severe burn and erosive potential for the Bear and Cheyenne Creek areas that extend into the steep canyons on the southeastern flanks of Pikes Peak. Infrastructure directly at risk includes neighborhoods of West Stratton, Gold Camp, Old Stage, and Cheyenne Canyon Roads, as well as Helen Hunt Falls and the Seven Falls recreation areas, two popular tourist sites for Colorado Springs. Relative to the Ruxton and Sutherland watershed analysis, the model depicts less at-risk human infrastructure within the Bear and Cheyenne Creek watersheds. However, due to the high and widespread burn-erosion potential in the upper portions of each watershed, a flood event would have catastrophic consequences downstream from the Broadmoor/Cheyenne area to as far as the Nevada Bridge, at the junction of Highway 25 and Nevada Avenue. The steep, rugged terrain of Cheyenne Canyon prevents

feasibly performing wildfire mitigation efforts, such as tree-thinning, this characteristic also contributes to the canyons' especially high-velocity flows over loose gravel (Botts, personal communication 2017).

This section of our AOI's WUI presents a good opportunity for education of residents. The WUI is a common source of ignition and if residents were required to thin around their homes and create defensible space, the spread of a fire throughout the WUI could be mitigated. Unfortunately, given the private property that dominates the WUI and Cheyenne Canyon neighborhoods, mandatory fire mitigation is not a feasible option. Rather, if information on the risk of wildfire and debris flows is provided to homeowners, similar to our modeled burn-erosive potential map, research like ours could directly catalyze the creation of defensible space.

Using the burn-severity potential model in conjunction with a Colorado Springs WUI map, proportions of burn potential, on a four-point scale, were spatially analyzed into two categories of WUI: intermix and interface. Areas within the Colorado Springs WUI are considered intermix WUI if the area of human development also contains 50% or more wildland vegetation (Stewart et al. 2007). Areas within the Colorado Springs WUI are considered interface WUI if areas of human development contain less than 50% wildland vegetation but are within 1.5 miles of wildland (Ibid). For the intermix WUI, burn severity potential is relative uniform where extreme burn potential encompasses ~28% of the area while low burn potential encompasses ~22% of the intermix area. The interface WUI displays more variability where extreme burn potential encompasses ~9% of area and low burn potential encompasses ~59% of the interface area.

While Colorado Springs' WUI as a whole necessitates wildfire management, the differences in burn-severity potential between the two WUI types could influence specific management practices. Because areas of intermix WUI show higher proportions of extreme burn severity than do areas of interface WUI, 28% and 9% respectively, fuels mitigation efforts could be prioritized in intermix areas to most efficiently use limited resources. Further, fire-resistant construction requirements and zoning

laws could be refined to distinguish between human development in intermix versus interface.

An important feature to note of this analysis is that only areas of WUI that contain a minimum of human development at one structure per 40 acres were used (Stewart et al 2007). The analysis does not factor undeveloped WUI areas nor areas with relatively high infrastructure density. To further mitigate Colorado Springs' WUI problem, potential growth in non-developed WUI areas as well as further growth in WUI areas overall must be managed to sustain annual wildfire risk.

This cautionary information needs effective dissemination to residents and stakeholders alike. The disconnect between the scientific community and those who could benefit from research and act upon it is discussed but not effectively addressed. Further research is necessary to find an effective means to bridge this gap and avoid the lack of education that contributes to stakeholder complacency.

The movement of a fire is heavily based on the specific weather conditions that are present at the time of ignitions. Because this study's predictive model is strictly based on topographic and biological factors, it's results should be viewed as strictly hypothetical. This study intended to provide a rough prediction of which areas within the Colorado Springs WUI are the most fire prone and have the greatest chance of influencing dangerous debris flows after a burn. The information provided should be used in conjunction with other models and field study to confidently ascertain adequate areas for thinning.

Reconciling the Past and Future for a Community Living with Wildfire

Five years from the Waldo Canyon wildfire, Colorado Springs is still reeling from its lasting effects. More recently, the West as a whole has also experienced the perennial devastation of wildfires that raged during the 2017 fire season, as seen in Southern California, Montana, Oregon, and British Columbia. Currently, the 2017 wildfire season is the most expensive on record, with suppression costs from the Forest Service alone exceeding \$2 billion dollars (USDA 2017). As evidenced by the composite burn-erosion severity model, the Colorado

Springs WUI and the surrounding community is saturated in extreme risk from the inevitability of the next wildfire. In preparing for the 2018 wildfire season and beyond, Colorado Springs and the Pikes Peak region must adapt to this risk to sustainably live with wildfire.

Figure 10: Wildfires as seen from the International Space Station



The 2017 Wildfire Season cost the USFS over \$2 billion in firefighting costs, making it the most expensive on record. Pictured above is a photograph taken from the International Space Station of fires in Southern California in December of 2017. Source: NASA.

In October of 2017, the Pikes Peak Forest Health Symposium served to highlight the people, policies, and recent advances in addressing wildfire. The conference brought together the local leaders of wildfire management including historians, scientists, non-profit organizations, and wildland firefighters as well as three key stakeholders: the US Forest Service, Colorado Springs Utilities, and the City of Colorado Springs, represented Mayor John Suthers. Though many individuals across different fields contribute to understanding the issue, these three main stakeholders are primarily shaping Colorado Springs' future with wildfire. The efforts and policies put forth by each stakeholder need to be critically examined in their function across the checkerboard of jurisdiction that characterizes Colorado Spring's geography.

The most current and extensive wildfire mitigation project in the Pikes Peak area is the *Catamount Fuels Reduction Project* (CFRP) which is a dual-partnership between Colorado Springs Utilities and the USFS. The

CFRP is a technical approach to address wildfire through the use of prescribed burning, tree-thinning, and other physical mitigation efforts with the primary goal of protecting CSU's various water resource infrastructures scattered across Pikes Peak. CFRP is also working

to protect priority WUIs of the region (Catamount Environmental Assessment 2011). Of the project's ~100,000 acre scope, 70% is on federal land with the remaining consisting of private ownership (Ibid). The CFRP's project scope encompasses this research's AOI and also identified the research's AOI as being of high priority. As of 2017, the CFRP has treated ~4500 acres with another proposed treatment of ~6500 acres in the immediate future (Howell 2017).

While the CFRP is a major component of Colorado Springs resilience to wildfire, physical solutions to mitigating wildfire risk are severely limited. In referring to the vast extent of at risk area of Pikes Peak, Eric Howell, spokesperson for the CFRP, concludes that "there is neither enough time, money or capacity to mitigate ourselves out of this situation". Colorado Springs' wildfire resilience

cannot solely rely on physical mitigation and attempting to return Pike National Forest to its historical tree-stand density. Furthermore, even in the absence of anthropogenic influence on forest structure and climate, wildfires will naturally occur within the Pikes Peak ecosystem.

The City of Colorado Springs, including the Colorado Springs Fire Department and Office of Emergency Management, is the other key stakeholder in shaping Colorado Springs' wildfire resiliency through a variety of ways. In the event of a wildfire in the WUI, CSFD and the City's other emergency agencies will respond to structural fires, evacuation orders, and other necessary procedures in coordination with other responding agencies (see Appendix for detailed description of local and federal agency response during a wildfire). The City's proactive response to wildfire resiliency involves educational outreach, physical wildfire mitigation and, of particular note, policy. Colorado Springs' Community Wildfire Protection Plan engages the homeowner through stewardship education and extensive

wildfire risk mapping down to a parcel-by-parcel scale.

The City also uses resources for wildfire fuel mitigation in parks and open spaces, such as the extensive fuels reduction in Stratton Open Space in the Spring of 2017 (Will, personal communication 2017). The City's most prominent policy-based response to the wildfire issue is the Hillside Overlay design manual, adopted in 2011 and updated following the Waldo Canyon fire (City of Colorado Springs 2013). This legislation requires all homeowners residing in the WUI, as defined by the City, to adhere to the technical requirements as described by the fire code such as minimum vegetation clearance around structures and use of approved roofing materials.

When polled about the single most important step in wildfire mitigation, a 42% majority of wildfire speakers and attendees at the Pikes Peak Forest Health answered with **'increase fuels reduction and forest restoration efforts'** while only 14% answered **'manage the wildland-urban interface.'** With a WUI that is 28,000 acres large and containing approximately a quarter of the total population, the City of Colorado Springs' extensive efforts to promote homeowner stewardship, along with the use of the Hillside Overlay ordinance, is a significant step. Ultimately, these efforts fall short of achieving a sustainable relationship with wildfire. Overall, the City's lack of a policy response is a significant gap in wildfire resilience and mirrors, anecdotally, the sentiment of local wildfire leaders and stakeholders.

To reiterate, the Waldo Canyon wildfire was devastating due to its proximity to the Colorado Springs' extensive WUI, not necessarily due to its abnormal intensity. Further, the results of the burn-erosion severity model of this research reflect a heavy reality for the future: the wildfire issue in Colorado Springs will get worse before it gets better.

Policy-based land-use planning decisions that manage Colorado Springs' WUI could significantly improve our long-term resiliency to wildfire. The growth of the WUI into at-risk lands in the West is primarily responsible for the rising costs of wildfire, though the extent to which this is true in Colorado Springs and the Pikes Peak region is unclear (Headwaters Economics 2014). Further, analyses show that 84% of WUI land in the West has yet

to be developed (Ibid). These trends show that the West, including Colorado Springs, is at a tipping point regarding the future consequences of wildfire: the massive potential for growth and development in the WUI also carries the massive burden of increased wildfire risk. Though responsibility of wildfire is shared across many different stakeholder utilizing an array of effective strategies however, effective land-use planning in the WUI needs to be implemented to sustainably live with wildfire.

Conclusion

Annually increasing fire frequency and severity due to two centuries of land use change highlights the need for wildfire management reform. However, the top-down influence that climate has on the fire regime, considering climate change, is especially concerning because land management reform alone will not return forests to historical conditions. To minimize risk of wildfire, we must first and foremost maintain the historical lengths of the fire season by curtailing climate change and further restore montane ecosystems to their natural processes.

Further, the role that humans play in forest management must change from an anthropocentric management that focuses on human utility and, to an ecocentric system, that places pre-settlement characteristics (length/severity) of the fire regime at the forefront of concern. These levels must be used as a baseline to which managers strive to return the forest structure. At that point, we will have manageable low severity fires among western forests with much smaller extents every 20 or so years (Brown et al. 1999) that maintain a healthy and resilient forest. These resilient forests would act as carbon sinks, rather than a forest that is frequently burning and contributing to heightened atmospheric carbon dioxide and a warming climate.

The Colorado Springs WUI is located in a similar ecosystem to that which burned severely in the Waldo Canyon and Hayman Fires. Given the densely populated neighborhoods that fall within this fire prone area, management reform is essential in order to decrease risk to those living in the WUI. This study and its findings should be viewed as a guiding precautionary outline of areas to further study before performing much needed wildfire mitigation.

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RESPECT THE RESOURCES

Cultural resources in the Lake Nighthorse vicinity are fragile and irreplaceable. Federal Law protects them for the benefit of all Americans. You are on Federal Lands.



Please Don't Erase the Traces of America's Past

Any person who, without authorization, injures, excavates, removes, damages, or otherwise alters or defaces any historic or prehistoric site, Native American cultural item, artifact, remains, or any object of antiquity on the public lands of the United States is subject to arrest and penalty of law. (16USC433, 16USC470, 18USC641, 18USC1170, 18USC1361).

Penalties prescribed by law may be up to a **\$250,000 fine**, imprisonment for up to 6 years, or both. Forfeiture of vehicles and equipment and other civil penalties may also be imposed.

If you observe suspicious activity or suspect a violation of these laws, contact law enforcement at:



When Forever Comes, We Will Be Here: Cultural Resource Management and Indigenous Peoples of the Pikes Peak Region

by Nathan Goodman, 2017-18 State of the Rockies Project Fellow

Indigenous peoples' claims to ancestral lands in the Pike's Peak Region are moderated through a complex, multi-lateral policy network that often fails to account for traditional world views. This research explores tribal consultation – both theoretically and in praxis – in depth, along with a comprehensive analysis of problems intrinsic to intergovernmental cultural resource management. Research conducted in summer of 2017 examines best methods practices, interrogates notions of 'meaningful consultation' and 'creative mitigation', and explores means of engaging more effectively in a 'bicognizant' worldview. Methodologically, this research is based on thirty-five interviews with local, state, federal, and tribal, and private policy actors as well as extensive fieldwork on the Southern Ute Reservation in southwestern Colorado. Seldom does academic literature consider the implications of Indigenous displacement on cultural resource management in far-away places. This research seeks to break that trend, encourage a more open dialogue, and catalyze attitudinal reform in the Pikes Peak Region.

Introduction

Pike's Peak, 'America's Mountain,' has the second most traffic of any mountain in the world (World Wildlife Foundation 2018). It is an icon of the American West, with significance locally, regionally, and internationally for tourism, and outdoor recreation. Chief among concerns for the popularization of the mountain landscapes and neighboring forests are overuse – 'loving it to the death' – and the consequent environmental fallout that occurs with user traffic. This worry is magnified by new efforts (such as 'Ring the Peak' and a new Summit House) to increase what is already an extensive recreational complex and consumer base. One area of concern, however, that seldom receives requisite attention is the condition and management of Indigenous cultural sites. Save an occasional passing mention, it is often forgotten that this region once was – and in many respects still is – occupied by ancestral peoples. It is curious, then, why the oldest continuous residents of Colorado receive the least attention in public lands management decision calculi and this report, at least in small part, seeks to rectify that trend.

The intersection between Indigenous peoples and

public lands begs many questions, most notably engaging with ideas of sovereignty, migration, cultural displacement, diverging epistemologies on nature and resources, and intergovernmental jurisdiction disputes. This report by no means claims a totality of information – its purpose is largely to raise awareness of conversations that need to take place. The impacts of public lands management on Indigenous peoples in the Pikes Peak Region have for too long been overlooked. The regional community, currently, is at a unique position in which it is capable of instigating institutional changes to long-standing land management programs and procedures.

While there are a host of critical implications regarding public lands management (use of fire, patchwork ownership, for-profit uses of tribal lands, accessibility by private users, extractive resources, and so forth) the 'lowest hanging fruit' is the status of Indigenous cultural sites on city, state, and federal land. It is a more accessible starting point given the dislocation of Indigenous communities from the Pikes Peak Region – cultural resource management is a field in which policy issues are still relevant even if ancestral communities live hundreds of miles away (Cassandra Atencio, personal communication 2017).

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Figure 1: Ute Teepee



A reminder of the Indigenous presence that still occupies the heart and ethereal body of the Peaks Peak Region. Source: Library of Congress.

The process of identifying, managing, and mitigating damage to cultural sites involves an intense policy network (NHPA¹, NEPA², NAGPRA³, and other policy frameworks), with diffuse and often competing stakeholders. This research is intended to unravel that network and uncover procedural areas of concern, most notably regarding the tribal consultation process. Alternatives will be proposed that can help lead to more comprehensive and robust interactions between Tribal and U.S. local, state, and federal governments, with special attention paid towards the unique policy theatre of the Pikes Peak Region.

Methodology

Literature review ranges from books, peer-reviewed journal articles, and formal United States Forest Service and National Park Service (NPS) reports (ethnographic studies and Environmental Impact Statements) to newspaper and magazine periodicals. Fieldwork includes attending talks, performing panel and one-on-one interviews (Weiss 1994, 9), and conducting direct observation of the Southern

Ute Sun Dance (July 7th-10th, 2017) as well as a tribal consultation taking place at Lake Nighthorse (August 3rd, 2017). Methods of conducting observation often include immersion into the local culture and tradition to minimize outside interference (DeWalt 2002, 4). Research is mostly qualitative and, given the sensitivity of certain topic areas, limited quantitative, graphical, or geographic data will be provided.⁴

Notes were taken at meetings and interviews, except where requested otherwise, and direct observation field notes were recorded after the fact to avoid alienating subject communities (DeWalt 2002, 19). Analysis will reference these interviews, although direct quotes will not be given absent direct approval from interview subjects.

A common methodological blunder in conducting ethnographic research (especially of Indigenous peoples) is the lack of awareness of the inherent bias in the discipline. “Knowledge is not something that we can passively or actively acquire because we are always involved in its production and interpretation. Similarly, knowledge production is never a ‘value-free’ or unbiased process” (Cope 2002, referenced by Cordova 2016, 4). The notion of decentering the research narrative is advanced further by Shaw (2006, p.273), who writes: “Engaging with indigenous geographies thus allows us to remove the epistemological blinders which perpetuate residual, static and uniform forms of ‘truth’ to reveal instead a cornucopia of worldviews that open up new vistas to understanding the world and humanity’s place within it” (Referenced by Cordova 2016, 6). These types of ethnographic considerations are embodied, not only by the practice of conducting research, but is similarly integral to the mission of the *State of the Rockies Project*.

¹ National Historic Preservation Act (1966)

² National Environmental Protection Act (1970)

³ Native American Grave Protection and Repatriation Act (1990)

⁴ “Shaw et al. (2006) note that mapping and documentation of sacred sites and other culturally relevant resources have the potential to make indigenous groups vulnerable to outside exploitation, while cartography conducted on indigenous lands has the potential to portray lands as “empty” and therefore unutilized in the eyes of the colonizer” (Cordova, 8).

A main drawback to research is the inability to engage more fully with a wider breadth of Indigenous people who have occupied the region (numbering close to 40 distinct tribes). Given time and research limitations, attention has mostly been directed towards the three Ute Tribes, with particular attention paid to the Southern Utes due to an invitation to their Sun Dance.

Policy Summary

The history of interactions between the U.S. government and Indigenous peoples begins, first and foremost, with blatant disregard for the wellbeing of Indigenous people. In the early twentieth century, policy measures such as the introduction of Indian boarding schools and Indian urban-resettlement were clearly intended to whitewash Indigenous communities and break the bonds of cultural heritage (Angie Krall, personal communication 2017; Site visit to Southern Ute Museum, 2017). Critics of Indian policy at the time rightly lambasted the centuries of genocide and the absence of economic opportunity on reservations, yet neglected to fully recognize the dimensions of cultural loss and appropriation.

Human remains were excavated on ancestral lands and put up on display in museums and catalogued in university annexes (Johnson; Krall, personal communication 2017). The feeling is epitomized by the statement of one tribal member – “How would you feel if your grandma was dug up? You would scream” (Lake Nighthorse Consultation, personal communication 2017). It is an indiscretion that runs deeper than simple theft – it is the physical removal and erasure of a culture that scholars claim they are attempting to protect. Therein lies the central incongruence between old-school archeology as the study of a mostly dead past and the Indigenous peoples occupying the living present with a full suite of vibrant cultural traditions.

National Historic Preservation Act

Consultation – described by Susan Johnson as the “gift and mandate that pulls everything together” – began to resemble what we see today with the passage of the

National Historic Preservation Act (NHPA) in 1966 (NEPA & NHPA 2013, 8). A wide-sweeping piece of legislation, the document placed protections on culturally and historically significant sites with registries at both the state and federal level. Accordingly, several new offices were put into effect to enforce the legislation – two of particular interest being the State Historical Preservation Officer (SHPO) and the Tribal Historic Preservation Officer (THPO).⁵ The SHPO is required to perform checks on any site considered for state or national landmark registry and keeps a record of documents, testimonials, and field reports for current and forthcoming sites.

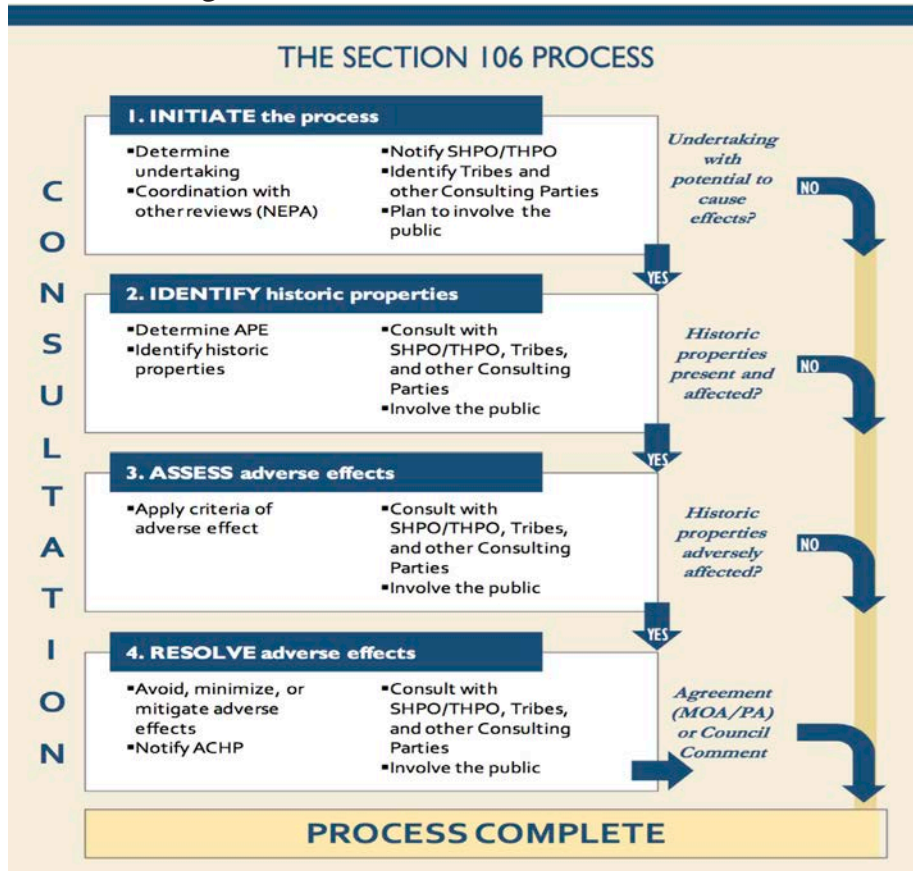
A single part of what is an already extensive set of duties, Section 106 of the NHPA put into effect measures regarding the management of recognized Indigenous archeological or cultural sites on public and private lands. Principal to the proceedings is establishing if, indeed, the proposed project has an “adverse effect” on cultural resources in “a manner that would diminish the property’s integrity” (NEPA and NHPA, 7). The process of determining what constitutes an “adverse effect” depends significantly on culturally-relevant factors and the perspectives of agencies performing the evaluation. As such, to help assert the primacy of Indigenous worldviews, each tribe is entitled to designate a THPO. That said, many tribes opt out.

In Colorado, Terry Knight, Sr. (Ute Mountain Ute member) is the only official THPO and Dr. Holly Norton is the Deputy SHPO and State Archeologist. While these offices are generally on good terms, there exists an inherent level of inequality between the SHPO and THPO, especially when it comes to the availability of resources. According to Dr. Norton, recent records show that SHPO offices nationwide (of which there are 55) receive \$49 million in funding annually, whereas THPO’s (of which there are 171 nationally) receive a paltry \$9 million by comparison – a 17:1 ratio. Figures such as these demonstrate just some of the institutional barriers posed towards Indigenous communities’ participation in inter-governmental decision-making. Still, the formal role of *initiating* consultation – given it is a government-to-

⁵ “Appointed by the governor, the State Historic Preservation Officer (SHPO) coordinates the state’s historic preservation program and consults with agencies during Section 106 review... [created by the 1992 amendments to the NHPA]. Some tribes officially designate Tribal Historic Preservation Officers (THPOs), while others designate representatives to consult with agencies as needed” (Citizen’s Guide to Section 106, 5).

government interaction – must begin high in the chain-of-command (Michael Troyer, personal communication 2017). This task is typically delegated to a Forest Supervisor (USFS), Field Office Manager (BLM), or Park Superintendent (NPS), who submits a certified-letter to a Tribal Chair, President, and/or Governor.

Figure 2: NHPA Section 106 Process



Section 106 is a highly formalized process – the above graphic streamlines the complexities of the policy. Source: Colorado Commission of Indian Affairs.

National Environmental Policy Act

In 1970, the NHPA was augmented and emboldened by the National Environmental Policy Act (NEPA).⁶ It mandates that, whenever any public or private entity

plans a project that, in some way, threatens to harm the environment, they are required to produce an Environmental Assessment (EA).⁷ Similar to the NHPA usage of “adverse effect,” NEPA seeks to determine the presence of a “significant impact.” If the impacts – analyzed on the basis of “context and intensity” (NEPA and

NHPA, 7) – are negligible or non-existent, the project goes through. In the event there is significant risk of environmental fallout, then a more extensive Environmental Impact Statement (EIS) is conducted and will be put to review by the Environmental Protection Agency (EPA).

The NEPA Lead Reviewer is tasked with proposing mitigation procedures based off recommendations from various specialists. (EPA Region 8 site visit and personal communications 2017). That is, at least, how the legislation was designed to work.⁸ Environmental Impact Assessments and Statements are required by Section 106 of the NHPA to take into account harm rendered to cultural property or heritage sites. NEPA mandates that these reports include some mitigation measure. The question of ‘mitigation’ is really where consultation enters its most critical stage,⁹ an “open-ended” process that, if done correctly, seeks to escape the age-old auspice of “data recovery” (Troyer, personal communication 2017).

NEPA is very specific in its stance that, before an EA or EIS is actually written, the management entities necessarily

⁶ “The passage of the National Environmental Policy Act of 1969 (NEPA) (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321) in December 1969 and its subsequent signing into law on January 1, 1970, expanded environmental reviews and formally established environmental protection as a Federal policy. NEPA and NHPA require Federal officials to “stop, look, and listen” before making decisions that impact historic properties and the human environment” (NEPA and NHPA, 4).

⁷ “ENVIRONMENTAL ASSESSMENT (EA) When a CE is not appropriate and the agency has not determined or is uncertain whether the proposed action will cause significant environmental effects, then an EA is prepared. If, as a result of the EA, a finding of no significant impact (FONSI) is made, then the NEPA review process is completed with the FONSI; otherwise an EIS is prepared. ENVIRONMENTAL IMPACT STATEMENT (EIS) NEPA and CEQ’s regulations require the preparation of an EIS when a proposed Federal action may significantly affect the human environment” (NEPA and NHPA, 9).

⁸ “When the NEPA review and Section 106 are integrated, whether through coordination or substitution, an agency assesses ways to avoid, minimize, or mitigate adverse effects while identifying alternatives and preparing NEPA documentation. It is important for agencies to consider ways to avoid affecting historic properties before assessing potential mitigation measures to resolve adverse effects” (NEPA and NHPA, 7).

⁹ “WHAT IS MITIGATION? In the Section 106 process, the term “mitigate” is distinct from the terms “avoid” and “minimize,” and means to compensate for the adverse effects to historic properties. In the NEPA environmental review process, the term “mitigate” includes avoiding, minimizing, reducing, as well as compensating for the impact to the human environment” (NEPA and NHPA, 24).

must reach out and consult with all legitimate stakeholders. In the case of Indigenous affairs - for which there is an additional level of government-to-government legal requirements - this would include any and all tribes who consider the region their ancestral home. For context, nearly forty-tribes make that claim in the Pikes Peak Region alone (Anna Cordova, personal communication 2017). Consultation is meant to be 'meaningful,'¹⁰ though all too often a non-response to a nebulous email request from the government will be taken as a lack of interest, and the party is subsequently disregarded in the management dialogue (Amanda Sanchez, personal communication 2017).¹¹

For those parties that do respond in timely fashion, their input is considered when forming a mitigation proposal. At a later stage, the same parties are to be consulted again regarding the full text of the EIS and to ensure the mitigation is up to standard and suitably comprehensive. At both the pre- and post-planning stage, the SHPO and THPO are meant to advise as well and, at either juncture, their disapproval would mark a reformulation of the proposal (Dr. Holly Norton, personal communication 2017). This latter measure provides a state-level check to guarantee there has been no gross abuse in the proceedings.

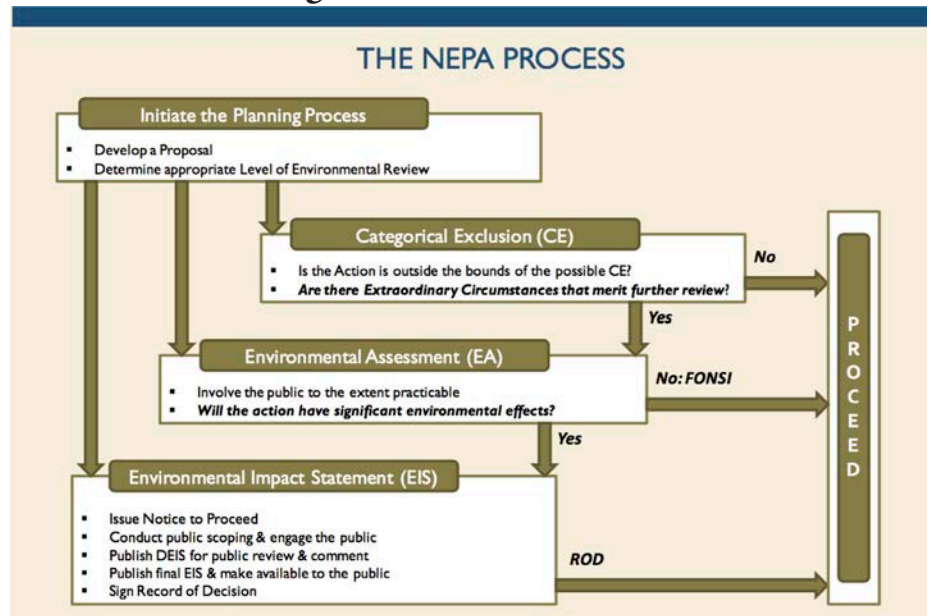
Unravelling Jargon

Terms – especially when swimming through the jargon of policy – take on special significance. Phrases like “adverse effect,” “significant impact,” and “mitigation” are critical for the very reason they are incredibly vague. They are prone to various interpretations that even more deeply obscure the management process. Additionally, they became the vehicle through which conflicts are fought between opposing worldviews, consultation emerging as the mediating middle-ground.

¹⁰ Meaningful consultation is a two-way road: it is more than a letter notifying a Tribe about an undertaking, a “legal notice” in a local newspaper, or any other form of unilateral communication. Meaningful consultation requires in-depth and candid dialogue with and by all the consulting parties” (Hanschu, 8).

¹¹ “A note on timeframe for communication: communication early and often with Tribes is critical to a successful consultation. The time frame for developing relationships, conducting consultations, and negotiating protocols with Tribes are frequently time consuming, particularly when relations have not been established or maintained. Plan to spend substantial amounts of time and personal involvement to develop relationships that will lead to productive consultations. “Sometimes, before a Tribe can take an action, approval must be obtained from the Tribal Council/ Government. When planning meetings with a tribal government, or placing matters before them for their consideration, attention needs to be given to the Tribal Council’s schedule” (Hanschu, 23).

Figure 3: NEPA Process



A visual representation that situates the relationship between Categorical Exclusions (CE's), Environmental Assessments (EA's), and Environmental Impact Statements (EIS's). Source: Colorado Commission of Indian Affairs.

Adding to the alphabet soup are Programmatic Agreements (PA's), Categorical Exclusions (CE's), and Memorandums of Understanding (MOU's). PA's inhabit the NHPA world as pre-established, binding agreements between agencies and tribal partners (built during consultation) that set precedents for actions agencies can take absent itemized consultation according to Section 106 criteria (NEPA and NHPA, 18). CE's "describe a category of actions that are expected not to have individually or cumulatively significant environmental impacts" and create a short-cut for actions agencies can conduct without an EA or EIS (NEPA and NHPA, 9). Only once "the Section 106 process concludes there are no historic properties present... may [the agency] proceed with the CE" (NEPA and NHPA, 19).

MOU's, by comparison, are non-binding compacts between inter-agency partners that set "norms of practice" – terms and conditions agreed-upon by consenting parties that are expected to be upheld within their jurisdiction (Norton, personal communication

2017). Studies analyzing the Northwest Forest Plan demonstrate how MOU's "contribute to strengthening government-to-government relationships by defining federal trust responsibilities and establishing frameworks for how consultation... should occur... [and] can be key components in effectuating strategies for communication, coordination, information sharing, and collaboration intended to meet the goals of protecting... cultural resources" (Chief 2014, 168).

The Imperfect World of Policy:

More often than not, however, consultation is much more complex and problematic than policy may suggest. To list a few central complaints from a range of stakeholders: timelines for performing consultation provide an easy-out for negligent agency officials to abuse the system, the bureaucracy of consultation just becomes 'checking another box' (Norton, personal communication 2017), some land managers neglect to perform consultation before writing the EA/EIS (Atencio, personal communication 2017), SHPO recommendations are seldom fully considered (Norton, personal communication 2017), the EPA's ability to substantively challenge an EIS mitigation proposal is minimal at best, and the very premise of 'mitigation' speaks to an essentially western, colonial worldview.

To complete the Section 106 requirement, there are a series of deadlines under which agency officials are required to contact tribes (after which, there is a 120-day consultation period), while others mandate the inclusion of "culturally significant" sites in the national registrar within an additional 60-days following consultation. Altogether, Section 106 proceedings should be completed in just under six-months (Johnson; USFS Region 2 site visit and personal communication 2017). That said, even with 180-days, agencies tend to run behind and, according to the colloquialism, "everything should have been done yesterday".

Most disconcerting, however, is the "30-day nonresponse" loophole (Ernest House, Jr.; Norton, personal communication 2017). If a tribe fails to respond to a "request for consultation" e-mail within thirty days of it being sent, federal agencies have the authority to assume disinterest and discount said tribes from further

rounds of consultation. For agency partners trying to skirt around the nuisance of contacting tribes, they are given relative liberty to do so by adhering to worst-case practices for consultation – sending an ambiguous letter, without any follow-up, almost guarantees an over-worked tribal office will fail to respond in due time. The policy precedent is such that tribes have the chief legal burden of claiming their right to consultation, with little-to-no large scale recourse against institutional bias that prohibits participation.

On top of that, the frequent turnover of agency positions poses a critical impediment to forming intergovernmental relationships and building trust. "The Forest Service keeps turning over in staff," reflects a tribal member. "It seems like just as soon as somebody gets to know us, they're gone, and that really harms the relationship. When we help teach people about us and they leave, the band loses" (Bussey 2016, 104). Part of the issue is the prospect of career advancement, where high-performing USFS officials are given incentive to move-up the agency ladder which, consequently, interrupts relationship continuity (Mason 2012, 190). That said, the problem can be seen as two-fold, especially given the frequency with which elected tribal officials and cultural representatives are liable to change (Hanschu 2014, 21). "Because of frequent elections at the tribal level, it is important to include specific tribal department heads and staff [in consultations]... as department personnel tend to be more consistent over time."

While the administration of environmental policy inevitably becomes a bureaucratic task at some level, corresponding tribal members are not of the same ilk. Indeed, for many – even tribal administrators – email is not a sufficient form of communication (House, Jr., personal communication 2017). For one, it is outside the context of their cultural heritage; when conducting work ostensibly focused on restorative justice, marginalized peoples should not be forced to communicate according to the language and temporality of the majority group. Such an imposition becomes another form of material oppression.

For tribal members – with depleted administrative funds and an office of one or two to complete the work

of a dozen – a *combination* of emails, physical letters, and phone calls are needed to communicate effectively (Krall, personal communication 2017). This is doubly the case when put into perspective of the sheer volume of correspondence these officials receive.¹² Without some level of redundancy, it is impossible to prioritize one missed invitation over another. Consultation is not ‘checking a box,’ but sometimes that becomes the ceiling of U.S. officials’ administrative effort. Even worse are episodes in which agency officials fail to document consultation proceedings, a practice derided by more forthright public servants (Nat Miullo, personal communication 2017) and deemed “heartbreaking” by members of the Cultural Resource Management community (Jessica Yaquinto, personal communication 2017).

In a similar cost- and time-saving measure, *sometimes* consultation only takes place after the EA/EIS has been compiled. If the tribal representatives were to have serious complaints, the management body is much more reticent to change an already existing (and paid for) proposal (Krall, personal communication 2017). In cases like these, it is clear the extent to which certain agency representatives (from all levels of government) hold consultation only as a formality. Consultation is conducted, here, only after its utility is mostly lost. Not only is this practice inadvisable, but so too does it go against the legal mandate set by both the NHPA and NEPA (with deference to documents provided by the American Cultural Historic Preservation Society¹³ and the Council on Environmental Quality¹⁴). The same can be said for withholding any form of meaningful engagement with the SHPO, an office for which there is no clear enforcement apparatus. Dr. Norton, herself, cites the degree to which her office’s role is diminished, holding more “verbal” than “legal” authority; citing Stephen Hart, “they [agencies]

don’t take advice, but they still have to ask for it” (Norton, personal communication 2017).

The damage from practices such as these is more widespread than the fallout from a single event. The success of consultation is built upon years-long relationships and trust between tribes and U.S. governmental officials (Troyer, personal communication 2017). Overlooking consultation at critical junctures chips away at that relationship and builds a dynamic in which some tribes stop participating after seeing how their voice has been disvalued (Sun Dance Interviews, personal communication 2017). Reducing Section 106 to its most bare components – the “determination of effects and determinations of eligibility” – puts a stake in the heart of efficacious consultation (Norton, personal communication 2017). Later sections will explore the dimensions of successful Tribal-U.S. working relations.

When all fails in the world of environmental management, the EPA is imagined as the ultimate safeguard – an agency with federal jurisdiction, relatively deep pockets, and the final say on issues of critical import. If that ever was the case, it certainly is not so today. As the Department of the Interior is facing severe cutbacks and related agencies are facing increased challenges, the EPA has been at the forefront of the chopping block (Jon Dow, personal communication 2017). Meeting with members of the Region 8 office in Denver, their hand is often held back, as they lack the funding, support, and enforcement mechanism to seriously dispute any NEPA report which lands on their desk (EPA site visit and personal communication, 2017).

Even the language of their consultation guidelines¹⁵ leaves the door wide-open for varying levels of follow-through; “To the fullest extent possible, EPA plans to use existing EPA business operations to put this Policy into

¹² “The council receives mountains of documents and information on a weekly basis, so consider including a one-page summary of the information at the front of the packet” (Hanschu, 36).

¹³ “A federal agency must conclude Section 106 review before making a decision to approve a project, or fund or issue a permit that may affect a historic property. Agencies should not make obligations or take other actions that would preclude consideration of the full range of alternatives to avoid or minimize harm to historic properties before Section 106 review is complete” (Citizen’s Guide to Section 106, 20).

¹⁴ “By statute, the Section 106 requirements must be met prior to an agency approving the expenditure of funds on an undertaking (other than funds for non-destructive planning) or prior to issuance of a license, permit, or approval needed by the undertaking. Further, an agency must complete the NEPA and Section 106 reviews before signing a decision document” (NEPA and NHPA, 35).

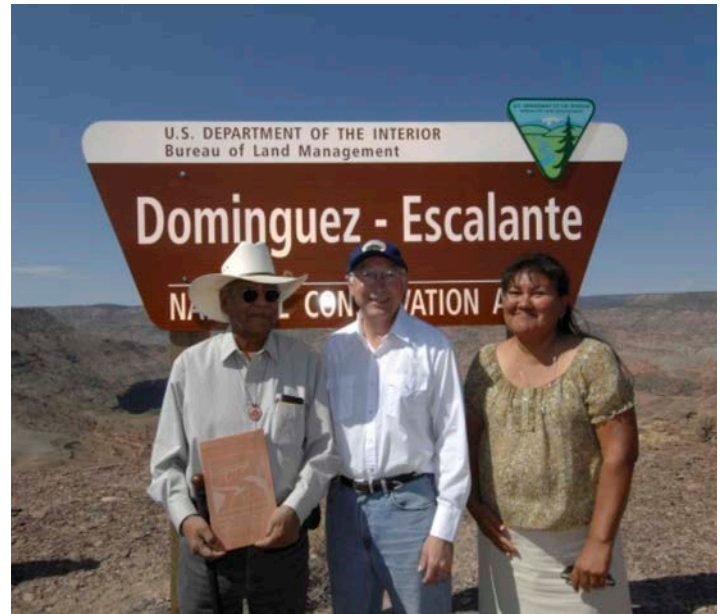
¹⁵ “The Policy complies with the Presidential Memorandum (Memorandum) issued November 5, 2009, directing agencies to develop a plan to implement fully Executive Order 13175 (Executive Order). The Executive Order specifies that each Agency must have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications” (EPA Policy on Consultation, 2).

effect” (EPA Policy on Consultation 2011, 4). Absent an absolutely irreconcilable complaint, their feedback mostly registers in the range of ‘suggestions,’ utilizing language that indicates passivity – “We recommend you consider...” (EPA Site Visit and personal communication 2017). EPA officials have to walk lightly and with tact to make a meaningful mark on a proposal. The checks intended as part of NEPA and Section 106 of the NHPA are not functioning as intended and, as a result, the system suffers.

Still, even when the system is working, there are essential flaws with the rhetoric. The term ‘mitigation’ bears with it the implication that some, ideally minimal, harm will be rendered. From a western perspective based on a net-benefit calculus, the harms are outweighed by the process of development; i.e. trail development is ultimately good, even if it disrupts some forest corridors. That same trade-off does not work from an Indigenous perspective. Justifying a management procedure by claiming it is the “lesser evil” of all the different iterations of the proposal does not take away the fact it will inevitably damage, at least in some way, cultural resources. Advocating “mitigation” becomes an admission of intentions to prioritize development over respecting Indigenous sovereignty and accessibility to ancestral lands.

Often, when a THPO or tribal representative enters the bargaining table, it is with the understanding they have already lost. While covering a consultation in Durango, Betsy Chapoose – cultural liaison for the Ute & Ouray Indian Tribe of Northern Utah – discussed how “consultation is mostly there to make white people feel better” (Chapoose, personal communication 2017). A valuable exercise, the initial feeling of legitimacy inspired by seemingly ‘progressive’ government action belies the basic injustice that fills the background of many government-to-government interactions between the United States and tribes. The U.S. is willing to concede some level of mitigation; pushing the boundaries back, moving the proposed site, placing a few cautionary signs, etc. Very seldom is the outright cancellation of the project considered, regardless of how egregious its implications are to the Indigenous community (Ibid.). The system set

Figure 4: Dominguez-Escalante National Monument Dedication



The Dominguez-Escalante area in Western Colorado is the ancestral home of the Ute Indian Tribe. Pictured left to right are Ute tribal elder Clifford Duncan, Secretary Salazar and Ute Tribe member Betsy Chapoose. The designation of the monument was only achieved after an extensive process of tribal consultation. Source: Department of Interior.

by the NHPA and NEPA, even at its best, puts Indigenous people at a structural disadvantage, an issue for which practitioners need have a heightened awareness.

As much as the relative looseness of Section 106 creates a window for negligence, its inherent flexibility is still an asset in many respects. Tribes are so far-encompassing and issues of cultural property loss so varied that it is necessary for policy to adapt to the situation at hand – a more strictly regulated NHPA is not the best answer in and of itself (Troyer, personal communication 2017). That said, there are also pieces of US-Tribal legislation that adhere to a far stricter timetable and set of requirements. Of these, the most prominent is the Native American Grave Protection and Repatriation Act (NAGPRA).¹⁶

Passed in 1990, the act sets high standards for the re-interment of disturbed Indigenous remains. This includes objects in museum, university, and federal collections, as well as more recently identified sites discovered through various development projects, erosion, or illegal excavation. The legislation mandates that these remains

¹⁶ “Native American Graves Protection and Repatriation Act of 1990 (NAGPRA). NAGPRA provides a process for museums and Federal agencies to return certain Native American cultural items -- human remains, funerary objects, sacred objects, or objects of cultural patrimony -- to lineal descendants, and culturally affiliated Indian tribes” (Hanschu, 10).

be repatriated promptly and with diligence to the tribes to whom they belong. In most cases, the specific tribe is unclear and, in accordance with NAGPRA, all tribes with some historic claim to the region *must* be consulted. Unlike Section 106 proceedings, non-response is taken seriously – contact with tribes is required by a certain date and U.S. compliance is tightly enforced.

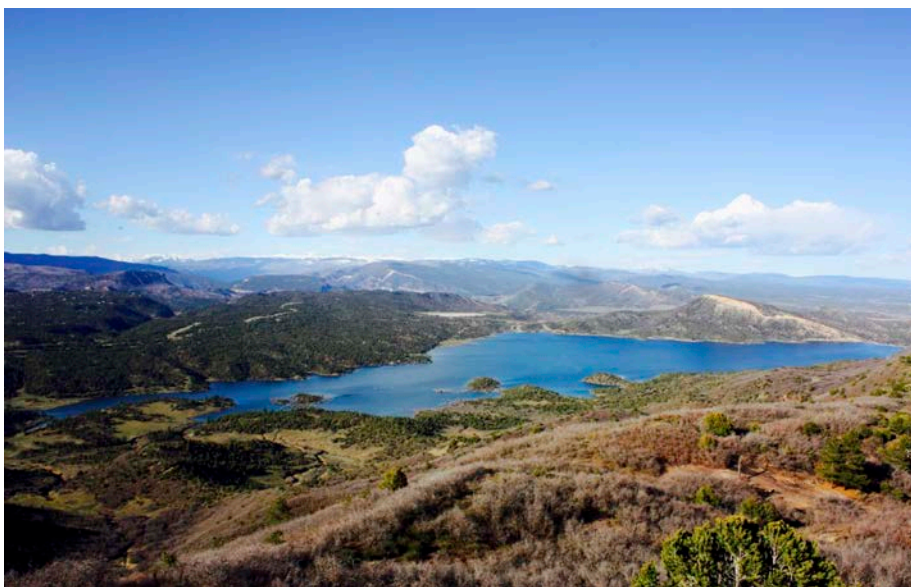
The exhaustive nature of the legislation speaks to the essential nature of remains and burial sites in Indigenous societies, as well as the extent to which those sites have been systematically desecrated. Indigenous peoples adhere to a non-linear perspective on the passage of life and heritage. Ancestors who have passed away live on in the present through the interrelatedness of land, the cycling of nature, and the continuous habitation of ancestral territory (Sun Dance, personal communication 2017). “The spirits are still there...,” recounts a tribal member, “It is very sensitive” (Lake Nighthorse, personal communication 2017). Uprooting burial sites severs those ties, not only between native peoples and those who came before, but to the land itself. Anna Cordova, in her Master’s Thesis, speaks to the connection between the rootedness of ancestors in traditional territories and contemporary Indigenous communities:

“Native scholar Vine Deloria (1973, p. 275) noted that there are ‘places... of unquestionable, inherent sacredness on this earth, sites that are holy in and of themselves’... Kelley and Francis (1994, p.1) note that they [these landscapes] are ‘a material anchor for those stories and thereby store them as a physical link between people of the present and their past’” (Cordova, 9).

The robbery of ancestral remains is a destruction of memory, as well as living heritage, and resembles a form of cultural genocide.

NAGPRA provides tribes the legal backing with which to maintain and fight to restore those ties to ancestral lands. Indeed, the legislation has heralded great success. When NAGPRA is triggered, both U.S. and tribal entities take those proceedings very seriously and

Figure 5: Lake Nighthorse Reservoir



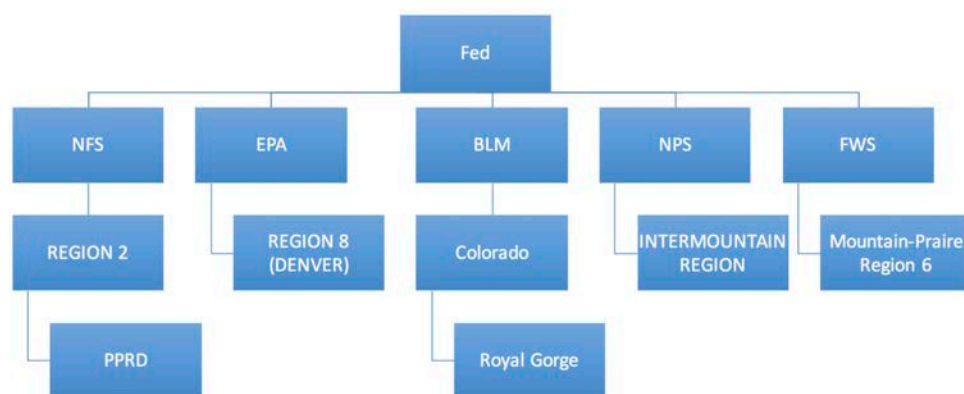
Lake Nighthorse from afar – it’s scenic beauty belies its artificial origin and the controversy surrounding the flooding of the valley, which is home to ancestral remains and artifacts. Securing water availability for nearby communities, the reservoir is increasingly being utilized by the city of Durango (recreation), with ancestral interests taking a noticeable backseat. Source: Melissa Youssef.

with deference to tribal interests. To a degree, the heavy-handedness of NAGPRA has brought attention to other areas of Indigenous cultural property loss and given tribes the leverage to be more demanding and forthright with their concerns in all phases of consultation. The successful re-interment of remains has also created the opportunity to expand the relationship of trust between agency and tribal partners (House, Jr.; Krall; Jim Pitts, personal communication 2017).

According to Krall, NAGPRA proceedings done right build “cache” within the tribal and federal communities. Rio Grande National Forest and the San Luis Valley – which has seen eleven reburials since 2008 – is taken as a regional model for tribal collaboration. The relationship has developed sufficiently to where, now, people “can talk about anything in meetings,” e-mail has become an informal, yet productive means of communication, and issues totally unrelated to the topic remains often get brought up and, subsequently, resolved in NAGPRA round-table discussions (Krall, personal communication 2017).

For instance, an Indigenous partner may mention “We need crane feathers.” Krall, through her role as the Heritage Program Manager for Rio Grande National Forest, can cross-reference the claim, open streamlined

Figure 6: Federal Agency Hierarchy



So much of cultural resource management is bound in an intense set of overlapping jurisdictions, ranging from local, state, and federal levels of government. This visual aid provides a basis to better understand the chain-of-command. In short, the NPS, USFS, BLM, FWS all have the same level of authority, just within their separate jurisdictions. To varying degrees and depending on the larger political context, agencies are at times able to exert leverage on each other. Divisions of power within agencies are much more extensive. Source: Nathan Goodman.

communication with other federal agencies, and permit the retrieval of crane feathers in timely fashion. House, Jr., in our meeting, illuminated that there are still upwards of 800 known remains that have yet to be reinterred in Colorado. While it is arduous and time-intensive work, NAGPRA both rectifies centuries of colonial injustice and provides a window to expand the scope and depth of Interagency-Tribal relations (House, Jr., personal communication 2017).

It is important to note, again, and reemphasize the multi-lateral nature of cultural resource management. Federal legislation (NHPA, NEPA, NAGPRA, and – more tangentially – the American Indian Religious Freedom Act¹⁷) instates state and regional level offices (THPO, SHPO, Region 2 of the USFS or Region 8 of the EPA) of various jurisdictions (USFS, NPS, BLM, USFWS, state and local governments) to correspond and consult with members of sovereign nations. Ernest House, Jr., the Director of the Colorado Commission of Indian Affairs (CCIA)¹⁸ and Susan Johnson, Regional Tribal Relations Program Manager for USFS Rocky Mountain Region, speak highly of the work completed at various levels of government.

Additionally, different levels of government adhere

to distinctly different guidelines regarding consultation. Notably, state-level consultation with tribes is significantly less regulated, where “Unlike the federal government, individual States and their agencies are not required by federal law to consult with Tribes” (Hansch, 8). That said, regarding areas of policy overlap, “State-Tribal Consultation is not only good practice, but also consultation leads to increased mutual respect, and more effective program planning and implementation”. The CCIA, by virtue of its jurisdiction, is only required to consult with the

Southern Ute and Ute Mountain Ute Tribes. Ernest House, Jr., however, loudly asserts his office’s commitment to consult with the full-suite of forty-eight tribes that have historic claim to ancestral lands in the state. Additionally, Colorado is unique in setting a precedent for state agencies to form government-government relations with tribes through “Tribal Consultation Agreements” (TCA’s). More specifically, the “Colorado Department of Health Care Policy and Financing (HCPF)” and “Colorado Department of Public Health and Environment (CDPHE)”, signed agreements in 2011 to collaborate on state-level “health care related issues” (Ibid.).

Whether it be Colorado setting a procedural precedent for inter-tribal NAGPRA re-interment ceremonies (House, Jr., personal communication 2017) or tribally led organizations successfully lobbying to place provisions for increased responsiveness to tribes in the 2008 Farm Bill (Johnson, personal communication 2017), proactive efforts from a wide range of actors yield hope that consultation practices have the potential to improve. Best methods, such as the work outlined in the San Luis Valley Intertribal and Interagency NAGPRA Working Group MOU will be discussed in a later section.

¹⁷ “In 1978, Congress enacted the AIRFA, recognizing American Indian religious freedom and requiring “federal agencies to learn about, and avoid unnecessary interference with, traditional Indian religious practices.” However, Rep. Morris K. Udall (D-Ariz.), who cosponsored the bill, stated that AIRFA did not create any legal rights. AIRFA instead “depends on Federal administrative good will for its implementation.” (Hooker, 137).

¹⁸ “In 1976, the Colorado General Assembly created the Colorado Commission of Indian Affairs (CCIA) within the Office of the Lieutenant Governor. The Lieutenant Governor serves in the statutory role as chair of the CCIA. The CCIA was designed to be the official liaison between the two Ute Indian Tribes located in Colorado (the Ute Mountain Ute and Southern Ute Indian Tribes) and the State of Colorado” (Hansch, 4).

Focusing on Pikes Peak

Most of what has been discussed so far focuses on U.S. federal and state level attention to issues of cultural resource management – none of it has had anything particular to do with the Pikes Peak Region. This begs the question, what are the cultural and historical features that make Pikes Peak unique? For one, until recently it has been a region bustling with migratory activity. More than thirty tribes – including various Ute bands, Kiowa, Cheyenne, Apache, Arapahoe, Lakota, and so many more – conceive of this region as part of their ancestral home (Cordova, personal communication 2017).

Indeed, “Colorado’s first human residents arrived more than 12,000 years ago” (Veblen 2004, 35-6). Specifically speaking, “the Mouache band of the Ute Indians defended the South Park area as their territory for hunting... as early as 500 to 1000 years ago. At the time of Euro-American settlement in the area of the present-day Front Range, the Utes occupied most of western and northern Colorado” (Ibid.). Their Wickiup structures – “housing... consist[ing] of a cone of branches supporting each other or supported by a living tree” – have been dated as recently as the early 20th century in parts of Colorado, well after the Utes forced removal from the region (Curtis Martin, personal communication 2017).

From “plains to peak,” the features of Pikes Peak (ancestrally known as *tava*, translated as “Sun Mountain”) were a boon to seasonal migration, with people travelling up the slopes for the summer months and returning to the grasslands of eastern Colorado in winter. Sightings of Indigenous people in the region have occurred since original surveys performed by western pioneers in the 19th century. That said, General William Jackson Palmer – Colorado Springs’ oft celebrated founder – noted, with a patronizing air, that by the mid-1890’s Indigenous people began to disappear and he missed the sight of his “wild neighbors” (Palmer 1896, 13). Indeed, that absence has been felt ever since – the only official reservations in Colorado are for the *Southern Ute* and *Ute Mountain Ute* tribes, which are six- and seven- hours away from Colorado Springs by car, respectively.

From a policy perspective, the final straw for free-roaming Indigenous peoples of Colorado came

with the ‘Ute Removal Act’ of 1880 (Cordova, personal communication 2017). It was primarily a response to the “Meeker Massacre,” an event in which, Nathaniel Meeker – a Bureau of Indian Affairs representative and founder of Greeley – was kidnapped and killed by a local Ute band. Very soon after, the U.S. government sought to push all Ute peoples out of the state as a form of retribution. Chief Ouray of the Uncomphagre Utes – who himself was not affiliated with any of the involved parties – negotiated to instead create a reservation in the southern part of the state (later split into two reservations following political conflict) and a second in northeastern Utah, where the bands residing around Grand Junction (including those most proximal to the massacre site) were relocated and formed into the entity now known as the *Ouray & Ute Indian Tribe*. The systematic removal of Indigenous people from the state, let alone the Pikes Peak Region, has enabled Colorado Springs residents to adopt an attitude of apathy towards local Indigenous affairs.

For these reasons, despite resounding historic ties to Pikes Peak, federally recognized tribal governments have an extraordinarily tenuous grasp over important cultural sites in the area. A critical impasse is created where a lack of time, resources, and energy often prohibits access to cultural resources or the ability to sufficiently participate in politics surrounding ancestral lands (Cordova, personal communication 2017). The situation is even more dire for tribes living across state lines, many of whom exist in increasingly difficult economic circumstances. It is critical to note, however, that while there are no reservations near Colorado Springs proper, there is a large urbanized Indigenous community in the greater Colorado Front Range, with representation from tribes all over the nation (Ibid.).

Periodic requests are made to forage for traditional plants in Pike National Forest and city parks (Ibid.). Otherwise, Indigenous advocacy groups are more inclined towards providing social services, such as campaigns within local schools or the activities of the Denver Indian Center (Rick Waters, personal communication 2017), which focuses on issues ranging from alcohol & drug abuse, to “Honoring Fatherhood” and youth support. A regional organization based in Colorado Springs “One Nation Walking Together” provides aid to support the

economic and infrastructural development on reservations in the Western U.S. (Jessica Wohlrob, personal communication 2017).

Seeing how any study of Indigenous habitation in Colorado Springs takes on a regional dimension, questions of cultural resource management must be approached from a similarly broad perspective. Honing down our focus, particular attention will be paid to a case study concerning the expanding recreational complex of “Lake Nighthorse” near Durango, CO and a corresponding Bureau of Reclamation (BoR) consultation taking place August 3rd-4th, 2017. Next, the cultural resources of Colorado Springs and Pikes Peak will be more closely examined, looking at comments from the city archeologist, forest service representatives, and *Southern Ute* and *Ute Mountain Ute* members. Third, and finally, local controversies around *Ute Prayer Trees* will be explored along with a discussion on the construction of knowledge and keeping Indigenous sovereignty in perspective.

Lake Nighthorse and Pikes Peak most resemble each other as rapidly expanding and highly trafficked recreation areas with a long-history of Indigenous habitation. A key difference, however, is that Lake Nighthorse is an invented feature. Originally authorized as part of the Animas-La Plata Project (1968) to provide Indigenous groups in the region their federally-reserved water rights (Rogers 2009), the controversial reservoir was completed in 2011 and was named after Ben Nighthorse Cambell, former U.S. Senator and member of the North Cheyenne Indian Tribe. Controversy arose mostly over the fact the project flooded a centuries- and millennia- old ancestral valley – home to any number of different tribes – and treasured artifacts and remains held sacred by descendants are lost now, and desecrated at the bottom of an artificial lake.

Also known as ‘Dead Water’ (Garrett Briggs, personal

Figure 7: Lake Nighthorse Opening for Recreation



Lake Nighthorse is planned to open its doors to local recreation in the near future. Preceding the launch of the forthcoming city park/recreation area and the construction of infrastructure to facilitate new traffic demands – this “overflow parking” development is the topic of 8/3/17 consultation. Source: Durango TV.

Figure 8: Lake Nighthorse Boat Ramp



The city of Durango opened Lake Nighthorse to recreation on April 1, 2018. To protect historic Native American artifacts, visitors are not allowed to go more than 25 feet up from the reservoir’s high-water mark. Additionally, there is fencing around particularly sensitive areas. Still, no matter the mitigation taken place, it simply cannot compensate for the harm already rendered to the Indigenous cultural landscape. Source: Durango Herald.

communication 2017), travelling in or consuming water that contains remains is impermissible as it disrespects the resting ground of ancestors. That said, even given this existing injury, the topic of consultation was the city of Durango’s plans to build overflow parking for the recently designated ‘Lake Nighthorse Recreation Area.’ Shifting hands from federal, to state, and finally local management, the area, in what was once the site of extensive Indigenous

settlement, is now a man-made reservoir soon accessible to recreational boaters, paddlers, and jet-ski enthusiasts (Lake Nighthorse, personal communication 2017). While any consultation involving Lake Nighthorse cannot be divorced from its albatross-like origins, meetings observed in August 3rd, 2017 in Durango (administered by the Bureau of Reclamation) were triggered by the high volume of archeological sites in close proximity to the proposed over-flow parking area (Ibid.). Consultation, in this case, gives tribal governments the opportunity to voice dissent or propose mitigation strategies for the parking lot and, as will be seen, provides an outlet for long-held grievances.

Taken in a vacuum, the meetings were comprehensive and set a high bar for consultation decorum. An inclusive panel of representatives from around Colorado, New Mexico, and Utah convened for two days as guests of the BoR and the city of Durango. Discussion was moderated by a mediator who pushed for the satisfaction of both the U.S. government and the Indigenous members' interests. All of the engineering plans were purely speculative (awaiting consultation feedback), all questions were answered before and during an extensive site visit, and the entire project was re-flagged to suit the specific needs of tribal representatives to visualize the various types of work areas and the impact they will have on the landscape.

From a more detached point-of-view, it would appear that this perceptively Indigenous-centered consultation would be a model for those discussed in this report. There is, indeed, a lot that has been done right. However, even consultation "done right" does not sufficiently meet the needs of Indigenous audiences, as it often ignores larger and more prevailing histories of injustice. Consultation cannot be seen from a strictly-linear, western perspective. The context of past lived-experience – cultural memory and trauma – is just as important as anything happening in the present. There is no perfect outcome and it is impossible to redact centuries of colonial violence, but recognition is at least better than erasure.

While the presentation is nice and the tone is generally kind, the consultation taking place at Lake Nighthorse is still, ultimately, a formality. It is a small piece of what is a significantly larger managerial proposition, and getting the tribes "on the side" of the

project is one of the last few administrative kinks to work out. The harm has already been done. The over-flow parking will be built, it is just a question of how and when. The project coming to fruition is inevitable, and the hum of jet-skis can already be heard in the distance.

Lake Nighthorse mirrors this pattern of irreverence. No matter what the tribal representatives say or how hard they push back, there is no way to effectively stop the encroachment of U.S. government and recreation interests onto their ancestral territory. Ricardo Ortiz, representative for Pueblo of San Felipe, very poignantly said, "we will talk about it tomorrow, and the answer will still be no" (Ibid.). Somewhat surprisingly, the atmosphere in the room remains amicable, as Ricardo transitions into a joke about scaring off looters – suggesting that the city build a statue of him with a bow and arrow in the center of the lot. This type of self-satire serves as both a relief, as well a window into underlying sources of tension.

There is an acceptance that consultation can do relatively little to match the full demands of tribes (most often, stopping the project completely), so they acquiesce and leverage their legal rights to achieve the maximal amount of mitigation (avoiding high-volume archeological sites, special signage, sensitivity instructions for workers, etc). Beyond this concession, the inevitability of acquiescence in tribal consultation is particularly heartbreaking. Still, many figures, especially senior tribal representatives, are especially vocal regarding the nature of consultation. Recall, here, Betsy Chapoose's comments (made in the wake of these discussions) that "consultation is about making non-Indians feel better." The U.S. government gives tribes a mostly ceremonial voice in management decisions, to assuage the guilt of the colonial class while still allowing them to pursue (relatively) unfettered capital projects—sometimes, consultation turns into just "checking a box."

Take the Dakota Access Pipeline (DAPL) – among the most visceral examples of federal impositions on Indigenous land in recent memory – heavy machinery continued to roll over ancestral graves despite fervent opposition and protest. Under no uncertain terms would any mitigation of the pipeline be considered permissible; its very existence, for environmental,

Figure 9: Thanksgiving Day Action at Standing Rock



Protesters march on Turtle Island, a site which holds significant burial grounds and has been annexed by DAPL construction. The action took place on Thanksgiving of 2016 (11/24/16). Militarized police are visible on the high ground and behind them (slightly obscured) are high-beams that shine on the camp 24/7 and riot vehicles armed with tear gas. Source: Nathan Goodman

Figure 10: Bridge Blockage at Standing Rock



Bridge blockade taking place outside the Standing Rock main camp in Cannonball, North Dakota on 11/20/2016. Police shot water cannons in sub-freezing temperatures, launched tear gas, and fired rubber bullets at protesters. Rockies fellow Nathan Goodman – a participant – had to receive medical attention for mild hypothermia. The protest, generally, is a visceral pronouncement of Indigenous peoples' determination to defend their cultural and natural resources. Source: Nathan Goodman.

cultural, and spiritual reasons, was entirely incompatible with Indigenous peoples' sense of self and community. Ultimately, the interests of capital and the inertia of development took precedence over averting the spiritual death and physical endangerment of sovereign nations. They were cast-off as negligible and unavoidable consequences, thrown away and forgotten. Rather than being a unique outcome, DAPL stood out for being a more overt iteration of the ongoing conquest of Indigenous peoples' land and culture – the typical pageantry around consultation was disregarded, though the end result is mostly the same.

Even where tribes are denied a full seat at the table, they refuse to be silenced. Standing Rock provides a great example of protest, but so too do the Lake Nighthorse proceedings display persistence and virility. The attitude of Indigenous representatives demonstrates their unwillingness to accept the expectation of being a vulnerable and bedraggled people that deserve an honorary place on a museum shelf. Tim Martinez of the Pueblo of San Ildefonso remarked, "I expect respect, trust, and discipline... we have claims because of migration and worship" (Ibid.). During consultation, tribal members are incredibly outspoken about areas where they have some say in decision-making.

In the case of Lake Nighthorse, some of the fought-after concessions included clearly marking the perimeter of the parking project and expressing concern about the project's proximity to cultural objects, effect on access to wild foraging, and the sustainability of a walking path along easily eroded areas (Ibid.). Indigenous peoples, when given the opportunity, exercise an intrepid will towards civic participation. In the end, takeaways from the Lake Nighthorse are more hopeful than futile – the energies and engagement of tribal representatives set a positive model for the role they will hopefully hold in a more efficacious public lands co-management regime.

Colorado Springs: Local Levels of Cultural Resource Management

Understanding regional levels of policy-making enables a more integrated and comprehensive study of local resource management. First and foremost, recognizing the scope of actors is a critical yet exhaustive

task. Starting with municipal government, Matt Mayberry is Colorado Springs' "Cultural Services Manager" (and Director of the Pioneer's Museum) and oversees the collection, administration, and public dissemination of cultural resources and heritage sites. Beneath him is Anna Cordova, the Colorado Springs City Archeologist – the presence of the position alone is particularly significant, given it is rare for a city to have their own archeological office. Overlap exists between archeological claims on city-administered lands and those of other agencies, most notably El Paso County's Planning Division and the local branch of the USFS, members of which include: the Pikes Peak District Ranger (Oscar Martinez), Pikes Peak National Forest Planner (Jon Dow), Pikes Peak Forest District Archeologist (Julie Bell), and Pikes Peak Ranger District Resource Staff (Jeff Hovermale).

In addition to the typical duties of maintaining a multiple-use forest, the Pike Peak Ranger District (PPRD) functions as a corollary to the *Pikes Peak Highway* – a city owned and operated pay-per-use resource on USFS land that maintains a paved road and contracts private food and souvenir vendors to service Summit House visitors (Brent Botts, personal communication 2017). This reveals a yet another component to the regional cultural resource management matrix – it is a network of various government offices that does work and interfaces with the private sector and research institutions.

Anna Cordova frequently conducts field work with student teams from UCCS (her alma matter), amongst whose faculty there is a significant presence of scholars engaged in the study of Indigenous affairs (Linda Watts, personal communication 2017). Added to this are networks of local, amateur, "hobbyist" archeologists (organized primarily by the Pikes Peak Chapter of the Colorado Archeological Society - or the PPC of the CAS),

who maintain keen interest in finds all over Colorado. Civic participation in studying local history is typically welcomed, though at times the energies of amateur archeologists become somewhat misdirected. Preservation of sites often entails keeping groups such as these at bay to dissuade unwanted attention and foot traffic. Additionally, a lack of awareness regarding the cultural history of ancestral objects and dwellings – which encompass the berth of traditional knowledge and memory – opens the door to accidental abuses of cultural property. Known local sites range from fire pits and ancestral campgrounds at Garden of the Gods to high-density sites around Jimmy Camp Creek and Corral Bluffs.

Private organizations in Colorado Springs engaged in Indigenous cultural affairs include the Colorado Springs Indian Council (CSIC) and "One Nation Walking Together." The former is largely defunct, with reported issues ranging from a relative degree of disorganization to the co-opting of leadership by non-Indigenous members of the Colorado Springs community (Cordova, personal communication 2017). The latter is a non-profit group that, while based in Colorado Springs, operates regionally to provide support services and infrastructural aid to

Figure 11: Anna Cordova Conducting Fieldwork



Anna Cordova looks at a piece of glass among scattered artifacts in a drainage area near a city park on Thursday, April 6, 2017. Her role allows the city to conduct more thorough archeological surveys and engage more comprehensively in tribal consultation. She is the first archaeologist for the City of Colorado Springs. Source: The Colorado Springs Gazette.

bring economic relief to struggling reservations (Wohlrob, personal communication 2017). They conduct an annual pow wow fundraiser which, in some respects, functions as an organizing event for the Indigenous community, but mostly is a vehicle to market *Indian wares* (selling digestible trinkets from the perceived pan-Indigenous culture) and move money from the hands of non-Indigenous tourists to the organization.

It is a type of cultural exchange that is becoming more and more common; akin to tourism, *selling culture* (mostly tours and crafts) becomes a profit-making venture. There is nothing inherently wrong with this type of arrangement – communities such as the Hopi Nation and Taos Pueblo have successfully implemented this strategy and used it to provide critical services to the community. That said, it only begs the question of when and where the sale of cultural property starts becoming inappropriate. The simple answer is that it should be decided by Indigenous communities who hold ancestral claims to that knowledge. When analyzed more concretely, however, the question becomes more problematic. Who among Indigenous communities has the right to determine the appropriateness of knowledge being disseminated to larger, non-Indigenous audiences? Who holds the power and supremacy over traditional knowledge to determine what is acceptable to share, along with when and where? Questions of this nature have recently been brought to the fore in Colorado Springs, with a particular management conundrum centered around “*Ute Prayer Trees*.”

Introduced to the greater Colorado Springs community in the 1980’s and 90’s by the Pikes Peak Historical Society (PPHS, based out of Florissant, Colorado and pioneered by Celinda Kaelin), *Ute Prayer Trees* have become a regular feature in the popular mythos of the region (PPHS communications). Commonly identified by strips of scarred bark, bends in the trunk, and limbs pointing in the direction of Pikes Peak, Prayer Tree “tours” are frequently conducted in public areas, especially in recent years. Of particular note are the tours held in Fox Run Park (Black Forest) by the charismatic and controversial John Anderson.

Former local sheriff turned cultural historian, Anderson has become the popular face of the Prayer Tree

Figure 12: Culturally Modified Tree



An example of a bent tree in the Cheyenne Mountain area that, like many others in the Pikes Peak Region, has been classified a “Ute Prayer Tree.” According to prayer tree advocates, the trunk was manipulated at various stages of its development to conform to a distorted shape they believe has spiritual significance. That claim is disputed, by official representatives of the three Ute Tribes and local foresters. Source: Action Matrix.

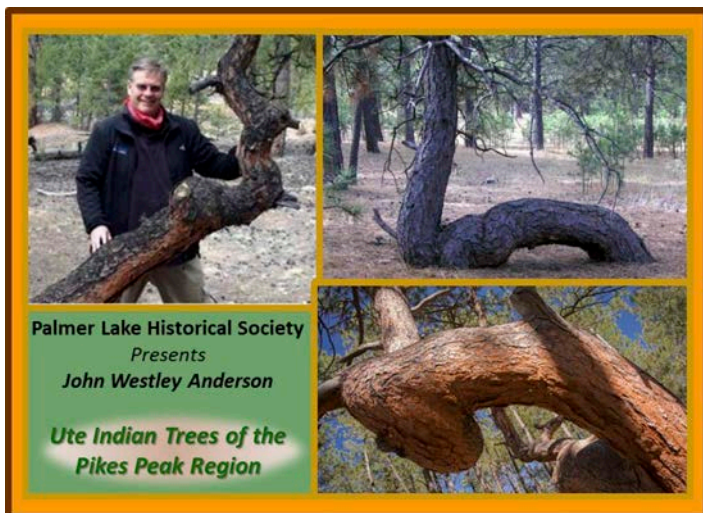
movement. According to distributed materials from his office (Anderson & Associates), the Utes “believed Prayer Trees lifted their prayers up the tree towards their Creator, where their prayers were intermingled with the prayers of their tribal ancestors who had previously prayed around the tree...when the winds [would blow], they felt the pine needles released their prayers, which would be carried across the land for the next 800 years.”

Quite rapidly, Anderson’s tour operations have escalated into a fully-fledged business, with speaking engagements and seminars held across the state. In addition to performing private and public consultations at a rate of up to \$250 per hour (Anderson & Associates, 2017), he is working on publishing his second coffee table book. In a particularly controversial event, he acquired an El Paso County contract to catalogue “prayer trees” using funds from an account related to the county’s Federal Emergency Management Agency (FEMA) budget—an illicit maneuver, given that Anderson is not a licensed

archaeologist and thus an unqualified recipient of public funds (Celinda Kaelin, personal communication 2017).

The civic virtue of educating citizens about prayer trees is limited because, for the most part, Ute Prayer Trees have become a marketable commodity, a means of selling the knowledge of Indigenous peoples to a mainstream, colonial audience. This is problematic because the sale of traditional practices to non-Indigenous people has the potential to reveal “taboo” knowledge and cheapen ancestral teachings by presenting over-simplified histories. Additionally, it puts this knowledge in the hands of people who are unaware of its larger cultural context, and are therefore more liable to manipulate and distort what they learn. All these issues frame the foremost concern in this particular case: the historical claims made by proponents of Ute Prayer Trees are disputed by foresters, professional archaeologists, and—most importantly—official representatives of all three Ute tribes (Atencio, personal communication 2017).

Figure 13: John Anderson Promotional Material



An advertisement for one of Anderson’s many speaking engagements. He also has a book for sale and conducts private consultations for up to \$250 per hour. Source: Palmer Lake Historical Society.

Cassandra Atencio (née Naranjo), the acting NAGRPA coordinator for the Southern Ute Tribe, very quickly dismissed “prayer trees” when asked about them. “We are a mountain people,” she says, “we would never do this to trees” (Ibid.). While there are some examples of legitimate *culturally modified* trees (such as peeled-bark trees, where a layer of the tree is eaten), official representatives of

the Ute Mountain Ute, Southern Ute, and Ute & Ouray Indian Tribes have insisted that bent-prayer trees should not be attributed to their people. The trees do not appear in recorded oral histories or their ethnographic record. Aside from the sheer impracticality of a migratory people meticulously pampering and styling trees they see only a few times a year, there’s no hard-evidence supporting an anthropogenic basis for the bends in the trees. Local foresters have taken coring samples of the trees (with the permission of Terry Knight, Sr., THPO and Ute Mountain Ute member) and discovered that they were only 60 to 70 years old—having grown well after Ute peoples had been pushed out of the region (Cordova, personal communication 2017).

Figure 14: Cassandra Atencio



Cassandra Atencio (née Naranjo), giving a formal farewell to her father (Alden Naranjo) during his retirement party. Cassandra has taken over the NAGRPA position vacated by Alden and is the acting cultural liaison for the Southern Ute Tribe. A critical contact at all stages of research, she is responsible for the invitation to attend the annual Sun Dance. Source: Southern Ute Drum.

There are plenty of legitimate scientific explanations for why the trees are bent in such a way (like snowpack changes or genetic tendencies). There is no reason to jump to such an unlikely and controversial explanation. Support for the CMT thesis is found amongst individual tribal members (often with dubious claims to leadership),

who leverage their claims against the stated position of tribal governments. The almost-blind faith attached to these “rogue Indians” draws attention to a critical double-standard that Indigenous peoples often face – one tribal member is taken for representing not only their tribe, but are misidentified as representing the whole sum of the pan-Indian community. Taking the word of official tribal representatives is essential as those representatives are in those positions due to their knowledge of their tribe’s history and traditions. They are also less likely to abuse and fabricate knowledge in such a way that is harmful to the rest of the community (Ibid.). Unfortunately, this perspective is lost on many Colorado Springs residents.

Having assembled a few symbolic “Ute representatives,” Anderson uses his Indigenous cohorts as a shield to ward off criticism from official tribal leadership. Indeed, for an otherwise well-intentioned non-Indigenous person, it can be difficult to decide which Indigenous voice to listen to. The fear that Indigenous government officials do not accurately represent their people’s cultural history is entirely valid. That said, this concern fails to account for the idiosyncrasies of the relationship between the mainstream American culture and sovereign tribal nations.

According to intergovernmental treaties between the United States and tribal entities, Americans are required to respect the sovereignty and self-determination of Indigenous peoples within their territory.¹⁹ Felix S. Cohen, a legal scholar specializing in Indigenous law, once wrote; “Perhaps the most basic principle of all Indian law, supported by a host of decisions, is that those powers which are lawfully vested in an Indian tribe are not, in general, delegated powers granted by express acts of Congress, but rather inherent powers of a limited sovereignty which has never been extinguished” (Referenced by Hanschu 2014, 6).

That said, the respect of tribal sovereignty called for by legal principles is often disregarded by the American government and moneyed interests. The already

abhorrent track-record of the U.S. breaking treaties gives all the more reason for individuals to recognize their role in the strata of U.S.-Indigenous relations and give total deference to tribal governments on social and cultural issues. In keeping with the theme, it is not the place of the Colorado Springs community to decide which Indian knows more about their culture. There is, however, a responsibility (let alone a legal mandate) to respect the role of a self-determining government and to help maintain Indigenous control over traditional knowledge—non-Indigenous voices claiming wisdom should be quiet by comparison.

This conclusion leads to another set of questions, most notably when and where are Indigenous perspectives truly integrated into the policy process? On a federal and state level, there are officials like Susan Johnson (Regional Tribal Relations Program Manager, USFS Rocky Mountain Region) and Ernest House, Jr. (Executive Director of the CCIA) who hold key leadership positions, though very seldom do tribal members occupy high-ranking U.S. government posts if that office has not been expressly created to handle tribal affairs. Looking at the local level, however, Anna Cordova is quite the rarity. Seldom seen are Indigenous archeologists, as the methodology and ideological slant of the discipline is inherently at odds with Indigenous worldviews (analyzing heritage as relics as opposed to the cultural history of a living people).

Even genuinely well-intended government agencies and archeologists employ an approach to intergovernmental-tribal relations that is dominated by western ideas. “The current American landscape represents the historical legacy of one worldview superimposed on another, the colonial overlaying the indigenous” (Kimmerer 2001, 36). This is epitomized by the wording of an EIS document cataloging cultural resources for the “Upper Monument Creek Landscape Restoration Area;” “The cultural resource surveys... have resulted in the identification and recordation of sixty-two archaeological sites. The sites are predominately

¹⁹ “The source of tribal sovereignty is American Indian peoples, who mutually consent to self-government by their Tribes since powers of government flow from the consent of the governed; thus, tribal sovereignty refers to the inherent right of tribal peoples to govern themselves. The Institute for the Development of Indian Law defines sovereignty as the supreme power from which all specific political powers are derived. Sovereignty for Native peoples has existed since time immemorial, pre-dating the U.S. Constitution, but has been recognized by Article 1, Section 8 of the U.S. Constitution and confirmed through treaties, statutes, executive orders, and Supreme Court decisions, Tribes have been recognized in federal law as distinct, independent, political communities with the power to govern their own members and territories” (Hansch 2014, 5).

historic resources (n = 52), with a small representation of prehistoric sites (n = 10). In addition, twenty-eight isolated finds were recorded. Again, the majority of which are historic (n = 22), compared with prehistoric resources (n = 6). Of the total sites recorded, eight are considered officially eligible for listing on the NRHP, while seven are recommended as ‘needs data officially’ (Dow, 165). The language is precise, yet formulaic – the numbers are devoid of cultural content, the ancestral resources described are unrecognizable from a traditional perspective.

There is simply a deficit of Indigenous voices, reflecting a long-held colonial assumption in which it is incumbent upon tribal members and leadership to adapt to the language and methodology of the western ruling-paradigm. This same mindset is what enables issues like Ute prayer trees – which, as objects, appear to hold little-to-no import to Ute communities – to take time and attention away from more salient issues of cultural resource management and the protection of legitimate ancestral sites. Whether or not we like to hear it, non-Indigenous people hold the decision calculus on which issues of Indigenous cultural resource management will be brought to the forefront, or those that will spend forever loitering in policy purgatory. Indigenous voices and perspectives are the only checks that can keep our agencies and officials accountable. The question then becomes, how do we draw those voices more closely into the policy process? Looking at centuries of U.S.-tribal misconduct, it may seem an impossible task, though in small-steps progress can (and already has) been made. The remaining parts of the report investigate the path that lies ahead for Colorado Springs and the Pikes Peak Region.

Exploring a “Bicognizant Worldview”

The term “Bicognizant Worldview” is used frequently by Angie Krall, Heritage Program Manager for Rio Grande National Forest (Krall is incidentally a graduate of Colorado College Class of ’92). Typically, interviews ended with the stock question, “Who else should I be talking to, and where can I find models for consultation done right?” Invariably, Krall was brought up as a person of interest. The San Luis Valley, on first glance, is an unassuming and somewhat surprising place to find national-trendsetting

innovation to cultural resource management practices. Closer examination, however, reveals how the SLV is exactly the kind of space in which those types of advances are most likely to emerge.

First and foremost, there is a long-history of Indigenous settlement in the region, with a particular-history based in the hispano-mestizo communities of the 19th century (Davidson 2015). Pueblos in Northern New Mexico are a relatively short-drive away, and the region has not seen a significant enough explosion in urban density, in-migration, or industry to substantively change more long-held community dynamics.

The local climate is such that personal histories with policymakers and USFS officials can, at times, range into the decades – the problem of attrition within the federal offices is less an issue here than it is elsewhere. As such, it is possible to form intergovernmental and inter-agency relationships based on genuine trust and camaraderie as opposed to mutual convenience. Additionally, the San Luis Valley does not experience significant stress from development and does not boast an overwhelming-load of lucrative natural resources. In short, the land is held at a relative low-value, water is scarce, and many families have maintained continuous settlement in the region for the last five-hundred years.

It all starts with listening, but not in the same way that U.S. societal precepts would make us think. It is entering a space where our traditional ways of assessing value no longer serve us. Meaningful consultation cannot be achieved by a government briefing, reading guides, or attending meetings – though all of the above certainly help. It is easy to forget, oftentimes, that non-Indigenous

Figure 15: Angie Krall



Pictured is Angie Krall, the Heritage Program Manager for Rio Grande National Forest and is a catalyst for intergovernmental collaboration on issues of cultural resource management in the San Luis Valley. She provides a model for many of the best practices proposed in the report. Source: Rio Grande Headwaters Land Trust.

agency officials and researchers have their own culture, too, and that culture is inherently at odds with the object of consultation. Participants in a collaborative study between members of the Leach Lake Band of Ojibwe (LLBO) and Chippewa National Forest agency officials reflect on the experience:

“When the Forest Service would propose an activity...our role was to use our connections to help guide them. We would tell them which spaces are someone’s sugaring area, hunting area, or blueberry gathering area if it’s something we use, then it should be protected. It’s that simple... A lot of it comes from the heart, just living on the land and knowing what needs to be protected” (Bussey 2016, 101).

The same divide can be captured by the way one organism relates to another; “A tribal member will look at a turtle and see it for what it is. That’s my brother. A white man scientist will go pick it up, turn it over, pull its leg, poke its eye, touch its teeth... I wouldn’t want to be treated that way” (Ibid.). Perhaps performing consultation correctly requires as great an epistemic leap as being able to conceive a turtle’s pain as one’s own.

When members of the Southern Ute Tribe were sought for interviews, the manner of response varied significantly from what is, otherwise, the norm. There was no interest in scheduling a specific time and day – I was not about to find a sweet three-hour timeframe in which all of my questions could be answered. The request was made, rather, just to “hang out” for a while. My surprise at the Sun Dance reflects fundamental differences between Indigenous and western worldviews.

The esoteric and academicized framing of research does very little for tribes. For one, knowledge conveyed through writing over an illusory web-interface loses its weight and abandons the rich texture and meaning of oral histories (Basso 1996). Additionally, there is an active incentive to limit the transmission of knowledge outside the community, both for fear the knowledge may be abused, but also out of indifference to the stated goal of the research being conducted. What does it matter to a tribal elder if they are quoted in a journal they have never read, the results of which will never impact their life or lifestyle? The exercise of aiding research is often perceived as pointless, self-defeating and a waste of time.

Language, too, takes on a distinctly different character in this context. “In the native tradition, the spoken word is recognized as powerful because it is conveyed with the breath of life... Indeed, words have the capacity to reveal the world view at their roots” (Kimmerer 2000, 8). The way we use words transforms our reality and while, in English, “the forest is a natural resource,” many Native American languages do not have a linguistic equivalent, and “the meaning of ‘forest’ is closer to the meaning of ‘home’” (Ibid.). Agency officials and foresters who fail to recognize the concept of “forest” as home, fail to appreciate the nuances of Indigenous cultural attachment.

What is called for is the broader acceptance of Traditional Ecological Knowledge (TEK), framed by Berkes as “...a cumulative body of knowledge, practice, and belief... handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Bussey, 98). The relationship between fire and forest management highlights this divide:

“The policy of fire suppression in Western society arises from the myth that nature can be controlled. Ironically, trying to control nature through fire suppression has led to greater unpredictability. The indigenous world-view emphasizes the dual nature, creative and destructive, of all forces... The role of humans is not to control nature, but to maintain a balance between these opposing forces” (Kimmerer 2001, 38).

Even an ethic as time-honored as *Leave No Trace* becomes problematic when examined from an Indigenous worldview. Only half-jokingly, a tribal member once told Angie Krall; “If my ancestors practiced LNT, you’d be out of a job”. The “traces” ancestors left behind are critical pieces of cultural memory. Moving forward, agency officials need to let go of some of the hubris that cloaks western ideals of nature and conservation.

Such understanding functions *a priori* to the mechanical rigors of consultation, providing the foundation upon which to build a relationship. In similar fashion, introductions in an Indigenous setting hold real weight (Sun Dance, personal communication 2017). For meaningful conversation to take place, you cannot just know someone’s name. You have to know their last name,

Figure 16: Sun Dance Flyer



An invitation to the 2017 Southern Ute Sun Dance. Informal research was conducted on site for the full-scope of ceremony. That said, the focus of participation mostly geared towards building relationships, as opposed to “data recovery.” The latter is an out-dated mode of research that alienates tribal partners and performatively reasserts colonial hegemony. Source: Southern Ute Tribe.

where they are from, where their parents are from, what they do, and why they are here. Officials who hide behind emails and dismiss interpersonal rapport are effectively negating the aims of consultation. It follows the logic, “If you don’t know me, how can you listen to what I am saying?”

I was granted the invitation to camp with the Naranjo family of the Southern Ute tribe and attend their Sun Dance, less to advance my research, and more so we could get to know each other before the research even began. Anxiously sitting with pen-and-paper in hand – the same over eager attitude reflected in many formalized consultations – would make things uneasy. Instead, I made myself useful; helped with chores, cleaned, let myself be

teased by elderly Ute women, and eventually, by and by, I came to be accepted enough that my presence wasn’t questioned. I was a guest and a friend of the family, a “new cousin.” Community forms the bonds of family, and the most meaningful cross-cultural work takes place when that relationship of “family” is extended across national borders. To be with a group in spirit, and not just towards the purpose of collecting data, is the essence of ethnography and part of what makes the discipline distinct from policy research.

While camping with a family for five days is beyond the reasonable scope of almost any intergovernmental proceedings, the imperative remains; make consultation more holistic and break-away from the tone set by bureaucratic malaise. Here is where Rio Grande National Forest provides a useful model. Established in 2008, Krall and other parties in the San Luis Valley spearheaded an intertribal and intergovernmental *Memorandum of Understanding* based, primarily, around synergizing efforts to collaborate on NAGPRA (Krall, personal communication 2017). Boasting multi-lateral participation from four federal natural resource agencies (NPS, USFS, BLM, & USFWS) and many of the tribes with claims to ancestral lands, the compact establishes general rules of practice that are uniquely suited to the needs and interests of the region. In addition, it establishes general guidelines for contacting tribes, conducting consultations, and performing annual meetings with all signees present.

The latter feature is particularly significant, as it enhances transparency and brings all the agencies into the same room at once. Seldom would the USFS and FWS meet with the same tribe at the same time despite the many overlapping interests and concerns. By merging meetings, it cuts back on redundancy and reduces the cost incurred by both the tribes and the U.S. government to attend said meetings. Additionally, if a particular agency is struggling with a limited budget in a given year, agreements exist in which other agencies can help shoulder the financial burden.

Contrast this arrangement to the Pikes Peak Region, where if the USFS sometimes cannot afford to administer stipends for tribes to attend an important consultation, the infrastructure does not exist to borrow funds from

other departments and the consultation will likely fall short – a lack of resources sometimes makes the process of ‘checking a box’ unavoidable. The central take-away is that these strategies are adaptive and sensitive to diverging cultural considerations, setting the stage for “meaningful consultation” to take place.

Returning to strategies applicable to Pikes Peak, it would be a mistake and oversimplification to “copy and paste” the Rio Grande National Forest MOU into the Colorado Springs geopolitical landscape. For one, the focus on inter-agency cooperation would yield less results, as most of the public lands in the region are under the purview of the USFS, Colorado Springs Parks and Recreation, and State Parks – regional considerations call for a different type of cross-jurisdictional working relationship. Added to that is the lack of proximity to any nearby reservations or established Indigenous communities.

The extent of cultural displacement is two-fold; beyond the relative ignorance of Colorado Springs residents to the regions ancestral past, few Utes or members of other historic tribes really know much about the significance of these ancestral lands either (Sun Dance, personal communication 2017). Pikes Peak and Garden of the Gods were (and still are) significant landmarks – the middle path between the plains and the peaks – yet they have begun to fall out of the Ute cultural conscience in a manner similar to all of the many other places in the United States where Indigenous peoples have been systematically pushed out.

Talking about Pikes Peak amongst Southern Utes was often met with some measure of surprise, with responses ranging from “It’s a big mountain” (Ibid.) to “I never knew we lived there until I was nearly thirty, and I have never visited” (Edward Box, III, personal communication 2017). Some efforts are made to embark on a kind ‘pilgrimage’ to ancestral grounds along the peak, though these are few-and-far between. Jeff Hovermale, who manages the USFS side of Pikes Peak Highway and the adjoining recreation area, remarks that he at most receives one or two closure requests per year, if even that. Additionally, in the last fifteen years only a single tribe has submitted any requests at all (Jeff Hovermale, personal communication 2017). The

Pikes Peak Resource Staff Manager stressed that, if tribes want to visit or need additional resources or road closures, they simply though have to ask. That said, his approach is based from a well-intentioned, yet unmistakably western-centered perspective.

Tribes should not be placed at fault for failing to “reach-out”, as most lack the material and economic resources to comfortably subsist on their own territory, let alone make the financial investment to travel several hours, take time off work, and participate in site-specific ceremonies for which they never had the opportunity to receive adequate education or training. Added to that is the predicament in which many Indigenous peoples – acting according to the traditional practice – don’t like to “ask for access” (Atencio, personal communication 2017) and, instead, will just come unannounced. Hovermale, thus, does not have an accurate measure with which to gauge Indigenous interest or usage of the mountain. In these respects, the cultural resource management puzzle of the Pikes Peak Region is something of a catch-22, with neither side having a real way forward or a way out.

Looking to how the SLV NAGPRA Working Group reimagined the relationship of U.S. officials to tribes in the San Luis Valley, a similar conceptual approach could be adopted by Pike National Forest. Talking with Jon Dow (Pike National Forest Planner) and Anna Cordova (City of Colorado Springs Archeologist), there are a few particular areas in which to focus: creating a collaborative framework through which to coordinate USFS and city management operations, engaging more comprehensively with the urbanized Indigenous community of the Colorado Front Range, creating more easily-accessible educational opportunities for displaced ancestral peoples (with a particular focus on youth education), and taking an active role in negotiating the forthcoming adjustments to the Pike National Forest Plan.

To elaborate, it is best to start with the final item. Jon Dow, as the (then) acting Pike National Forest Planner, was responsible for putting into motion procedural rules for the conduct and management of the forest. These duties are included, but were not limited to: preparing EIS’s, designating the process through which improvements and maintenance projects are negotiated, and determining the

decision calculus through which these projects are given priority (Dow, personal communication 2017). Every few decades, a new “Forest Plan” is put into effect which sets the standards and operational arrangements for the forest and its management. The current Forest Plan, written in 1984, is heavily-commodity based, focused primarily on building relationships with the ski and timber industries and employing fire mitigation strategies (Ibid.). Few guidelines are set for navigating issues of cultural resource management.

In stark contrast is the 2012 U.S. Department of Agriculture (USDA) Forest Service Planning Rule. Setting a new and decisive trajectory, the Planning Rule “directs officials... to request information about native knowledge, land ethics, culture, and sacred and culturally significant sites as part of the tribal participation and consultation process in land management planning” (Bussey 2016, 98). Pike National Forest is set to begin the process of scoping their new plan in the near future, the breadth of which will be quite far-reaching (Dow, personal communication 2017). We find ourselves at a critical political moment, where, through substantial public pressure, media attention, and outreach, we can hope to integrate a more comprehensive set of guidelines for consultation and intergovernmental relations with tribal bodies.

Giving cultural resource management a more prominent place in the new forest rule creates the political window in which to craft an MOU with the City of Colorado Springs, who themselves are in the beginning stages of crafting their first cultural resource management (CRM) plan (Matt Mayberry, personal communication 2017). The city has made efforts, as of late, to become more proactive – as opposed to reactive – in how they handle cultural resources. Similar to the state, there is less formality attached to the city’s role in performing consultation, yet the city has demonstrated the ability to correctly identify Indigenous remains from a washout and reinter those remains according to NAGPRA protocol in Spring 2016. Mayberry highlights how federal agencies often move too fast conducting cultural resource inventories – the city is making efforts to hold itself to a higher standard (Ibid.). Steadily, institutional change is taking place. Summer of 2017, for instance, saw the Colorado Springs City Council vote into effect a city code

prohibiting the collection of archeological remains on city land. It doesn’t seem like much, but it lays the framework for more promising reforms in the future.

Mayberry is careful not to rush along the process, recognizing a long set of pre-cursors to building a successful cultural resource management plan. The timeline is dependent on fulfilling a compulsory public comments period and, subsequently, will await feedback from the COS Parks and Rec advisory board (Ibid.). Additionally, before launching into comprehensive inter-agency agreements, Mayberry is keen to avoid any expected pitfalls – the struggle of determining designated duties and “who does what, when, and where.” Looking ahead optimistically, however, components of the proposed MOU could include: cracking down on lapses in pre- and post-planning consultations for Environmental Impact Statements; designating procedures for joint-meetings between city officials, the USFS, and tribal representations; joint-allocation of funds for tribal-programming and outreach; the designation of public facilities and infrastructure as meeting places for Indigenous groups and complementary housing during cultural pilgrimages; and bureaucratic leeway that would give more space for “creative mitigation” in consultation proceedings.

Used commonly enough that it has almost become a catchphrase, “creative mitigation” is the idea of proposing non-traditional and innovative co-management solutions at the consultation table (Dow, personal communication 2017). A few steps beyond just limiting damage to ancestral sites or negotiating signage, creative mitigation strives to provide Indigenous communities with the tools and resources so they can better connect and build upon their relationship to the ancestral past. Integrating tribal education into mitigation proposals, one must walk a fine line. It is critical that City, State, and Federal officials do not get into the role of “teaching Native American’s about their own history” (Mayberry, personal communication 2017). Rather, it is imperative to engage in a more open-dialogue with tribes and to allow Indigenous representatives to form a consensus on how to best utilize U.S. government resources towards their pedagogical aims.

As a hypothetical, take the case of proposed trail maintenance that would require bringing in heavy machinery and disturbing ground in the proximity to ancestral fire-pits. After pushing to limit construction to crews using non-mechanized tools (which may or may not be successful), there is a recognition amongst Indigenous groups that, project in question aside, the area has already been dramatically impacted. The Indigenous worldview is not additive in the same way as western culture – their view of land is more holistic, and weighing the difference between a stretch of territory in which 30% of the land has been disturbed as opposed to 50% is more or less insignificant. Things have already changed past the point of return, and small victories are typically more symbolic than they are material.

Figure 17: Ute Culture Camp, 1977



In August 1997, Clifford Duncan and Besty Chapoose of the Northern Ute Tribe and Kenny Front of the Southern Ute Indian Tribe participated in a Ute Culture Camp at Trappers Lake deep in White River National Forest. It represents a type of cultural transmission that provides educational services to tribal members that reconnects them with ancestral territory. The same type of effort, its argued, should be at the heart of “creative mitigation.”

Source: Durango Herald, courtesy of Andrew Gulliford.

Cassandra Atencio offered her perspective on “cultural resources.” Sometime in the previous year she was preparing a ceremonial board for a newborn according to traditional practices. She found a suitable piece of wood and began stripping bark and shaping the wood by hand.

In a moment of epiphany, she realized that the small wood chips falling at her feet were a part of her cultural heritage – they are just as much “artifacts” as the completed board (Atencio, personal communication 2017).

The Utes have a respect for the natural passage of time, and ancestral objects are viewed in remarkably similar light, regardless of whether they can be recognizably identified or if they have long since broken-down, decomposed, and had their constituent parts recycled by the processes of nature (burial sites are the one notable exception). When trees are artificially cleared and the horizon broken, the link to those ancestral wood chips has already been (at least partially) obstructed and clearing more space just adds salt to a wound that already burns. The damage has been done. It is for this same reason that tribes do not rise up in joy at the prospect of, for instance, deconstructing a wickiup, cataloguing every constituent twig, and recreating the shelter in a fenced-off, temperature controlled museum exhibit. It maintains the appearance of culture, without any of the content – celebrating heritage, while dismissing a living people.

Moving past symbolic victories, there are steps that can be taken to give Indigenous partners concrete and measurable gains. Taking the same example, perhaps it would help to add a prominently-featured informational kiosk at the entrance to the park, written with the approval of tribal members, that explains the history of ancestral habitation in the region and provides instructions on how to best respect that cultural memory. Another institutional response could include waiving entrance fees for registered tribal members, creating part-time employment opportunities, and providing structured educational and recreation outlets for tribal youth. Programs such as these require more oversight and funding than simply placing a “warning sign” on the broad side of a tree trunk, yet deliver meaningful gains for tribes that expand – rather than memorialize – their place along ancestral lands.

Using technology has at times been suggested as a tool to bridge gaps in cross-cultural communication and collaboration. Most notably, *Human Ecology Mapping* and *Participatory Geographic Information Systems* (PGIS)²⁰

²⁰ “PGIS provides a framework for assembling and integrating such knowledge by providing a common map-based mechanism for the involvement of traditional knowledge holders in the description of and decision-making about processes related to space. PGIS avoids expert decision-making that can later be challenged simply for not being able to incorporate good understanding of local knowledge about local history and relationships with places” (McBride, 3).

are based on the idea of using visual reference points to code cultural-meaning onto landscapes, which can then be implemented and put into consideration during consultation and public lands management planning. According to McBride, “PGIS acts counter to the approach of command and control of environmental management issues by including traditional knowledge holders in the planning process, with the goals of including their perspectives on the problem and promoting shared knowledge, understanding, and trust between all parties to avoid conflict and/or facilitate conflict resolution” (McBride, 3).

Testing the viability of PGIS systems, Jon Dow collaborated with Joe Vieira (BLM Rocky Mountain District, Browns Canyon National Monument Project Manager & Planning and Environmental Coordinator) to use similar such techniques to map uses for Brown’s Canyon National Monument – itself a complex, multi-lateral government management area with a history of Indigenous habitation (Dow, personal communication 2017). The groundwork is taxing: fielding extensive public surveys, open forums, and focus groups – all of which require more time, labor, and resources than established consultation protocol.

While it is a step in the right direction to use more accessible mediums to communicate with tribes, mapping locations of interest goes against many tenants of Indigenous communities’ worldviews. To identify and name features on a map is to diminish the intangibles of cultural history that cannot be written down or photographed (Basso 1996). On top of that, there is a fear that by revealing places of cultural interest to non-Indigenous communities (especially by putting a pin on a map) there will inevitably be increased traffic to those areas. Indigenous people’s primacy over traditional knowledge and cultural practice will, to a degree, be usurped (Troyer; Yaquinto, personal communication 2017). Techniques such as PGIS demand a total transference of knowledge to function correctly, which is a rather onerous burden to place on native communities. The technology has its applications, although it needs to be used within the context of other ethnographic considerations.

Often discussions of environmental policy focus chiefly on the role of government, especially within the sphere of tribal relations. That said, the private sector already plays a critical role in the cultural resource management theatre and opportunities for innovation within these sectors are extensive and, frankly, rather exciting to explore. Interviews conducted with Jessica Yaquinto of “Living Heritage Anthropology” (a CRM Ethnography Firm based out of Cortez, Colorado – a city in the center of the Four Corners region, adjacent to the *Ute Mountain Ute* reservation) reveal the extent to which her firm (and others like it) are contracted by both U.S. government archeologists and tribes to conduct field interviews and write ethnographic reports (Yaquinto, personal communication 2017). Stepping in after consultation has formally started, CRM firms conduct what Yaquinto calls “little c” consultation – the gritty work of performing comprehensive, ethnographic fieldwork. Indeed, much of the groundwork behind what is reported in an EIS stems from work rendered by these offices. For-profit ventures, they deliver professional and (ideally) unbiased reports on cultural landscapes, with a focus on creating a usable set of recommendations for agency partners.

Some cultural resource management firms can function as a highly valuable “middle-man” between U.S. government offices and Indigenous communities. In her own words, Yaquinto sees herself as a cultural broker more than anything else; “I learn and I translate and I mediate.” Whereas, for instance, a USFS archeologist may turn over three-times in ten years, the CRM firm is able to maintain a longitudinal relationship with Indigenous working partners. Outside the scope of the new Forest Planning Rule or intergovernmental MOU’s, CRM firms follow the ethics requirements and education opportunities set forth by national organizations like the America Cultural Resources Association (ACRA), amongst others to hold themselves and their colleagues to a higher investigative standard (Ibid.). Through measures such as these, CRM firms can, to a degree, hold USFS and BLM offices more accountable to uphold their duties under the NHPA and Section 106 (for instance, more strictly enforcing pre- and post- planning consultation meetings).

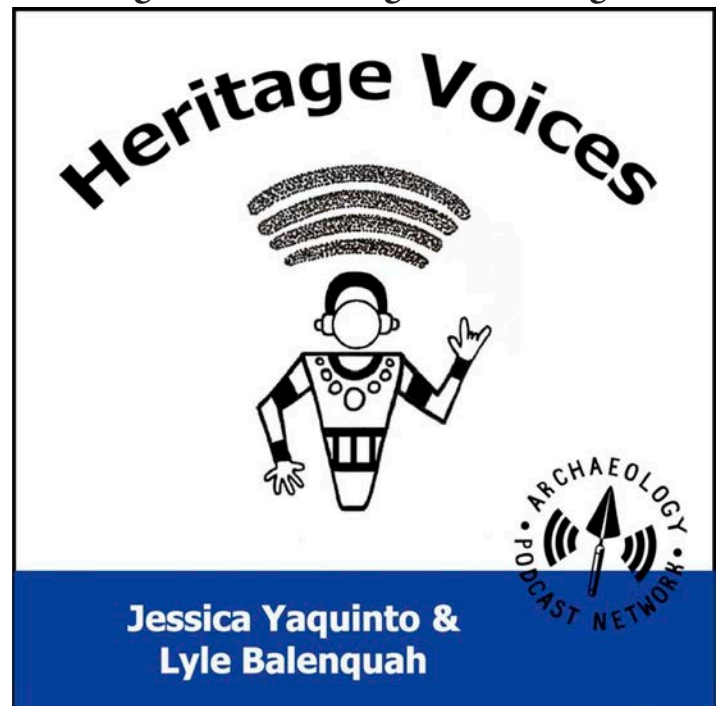
Perhaps most significantly, government offices are

overworked, overwhelmed, and simply do not have the time and personnel to conduct comprehensive consultations in one-hundred percent of cases (Ibid.). In addition, federal agencies often do not know how much they are missing of the larger context – a job for which more experienced and regionally-established firms are aptly-prepared. By relying more heavily on highly-vetted CRM firms to shield the burden of fieldwork and “little c” consultation, fully incorporating tribes into policy procedure becomes a less impossible proposition. There are some services which are required to be performed by official U.S. government representatives, such as making first contact with Indigenous nations – a process that has to abide by standard codes for conducting government-government relations (Ibid.).

However, taking a step back from the nuts and bolts of consultation – and really anything having to do directly with government – Yaquinto also produces “Heritage Voices,” a podcast that explains the process of cultural resource management and highlights issues of Indigenous advocacy. Co-hosted by Lyle Balenquah (Hopi Archeologist), episodes consist of interviews with various U.S. government officials, archeologists, and Indigenous rights activists (some of which have also been interviewed as part of this report, namely Anna Cordova and Dr. Holly Norton). After the first few episodes, the scope was narrowed even further, only taking on visitors from the Native American community. It is an interesting experiment in positionality where Yaquinto (a Jewish woman trained in archeology) puts her agency in the background and, instead, uses her position of influence to leverage the voices of Indigenous community members. In other words, it is a re-centering of the narrative away from the historically oppressive structures of anthropology that performatively emboldens and lends credibility to Indigenous perspectives on U.S.-Tribal politics.

While most of the other best-methods practices described here exclusively engage the government and auxiliary offices, Heritage Voices is distinct because it seeks, as part of its audience, the otherwise-uneducated public. It posits a more holistic view of policy, one that includes the public as active members and participants. The argument is such that if the public becomes educated on these issues and learn to approach cultural resource

Figure 18: Heritage Voices Logo



Jessica Yaquinto and Hopi archaeologist, ethnographer, and educator, Lyle Balenquah, host the Heritage Voices podcast. The goal of the project is to provide a platform for indigenous voices in anthropology, CRM, heritage, and land management discussions. It is a critical piece in decentering the narrative on cultural resources that, more-often-than-not, is dominated by non-Indigenous archeologists that see “history” and “heritage” as firmly grounded in the past – neglecting to fully consider traditional peoples that still, very clearly, are living in the present. Source: Living Heritage Anthropology; Heritage Voices.

management from an Indigenous-centered perspective, they can exert pressure on public officials to positively impact conditions specific to consultation policy.

Additionally, there are structures within policy that allow for recourse against negligent proceedings. According to the *Citizen’s Guide to Section 106*, “A vigilant public helps ensure federal agencies comply fully with Section 106. In response to requests, the ACHP can investigate questionable actions and advise agencies to take corrective action. As a last resort, preservation groups or individuals can litigate in order to enforce Section 106” (Citizen’s Guide to Section 106, 20). Similarly, NEPA regulations require agencies to “make diligent efforts to involve the public in preparing and implementing their NEPA procedures” and “provide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents” (NEPA and NHPA, 14). In a sense, projects like “Heritage Voices” provide the educational resources and the outreach to enable civic participants – many of whom are non-Indigenous – to become better advocates for judicious cultural resource management.

On a broader level, this work can be seen a way to subvert and refocus notions of ‘white savior-ism’ that, when left unchecked, help escalate controversies like the Ute prayer trees debacle in Colorado Springs. Genuine interest in other cultures is certainly critical in engendering collaboration and the effective administration of policy, though the obsession with “Ute Prayer Trees” indicates a particular level of presumption amongst members of the non-Indigenous community. It is imperative that we reject the albeit well-intentioned voice (heard at a meeting of the Pikes Peak Chapter of the CAS) who says: “We know more about their (Ute) history than they do, so how will they ever know anything unless they listen to us?” (PPC of CAS site visit, personal communication 2017).

Heritage Voices is just a single component of what must become a multi-pronged effort to not only mobilize the public around Indigenous affairs, but to also ground those movements according to Indigenous worldviews. To Yaquinto, her work is part of a larger push to reimagine the practice of archeology more along the lines of “Community-based participatory research” (CBPR). A radical departure from the classical mindset, the approach is based in training community-members to participate, collectively, in cataloguing their own cultural history (Yaquinto, personal communication 2017). It enables the communities in question to shape the research along the way and maintain intellectual property rights. “Returning research to the community” becomes an anthem asserting the legitimization of Indigenous-centered geography, both in academic circles and in the hearts and minds of people (where it matters most).

Generally, this report calls for a dramatic reimagining of tribal relations around a marbled federalist framework that incorporates multi-lateral, inter-governmental collaboration alongside liberal components of broad-spectrum industry support and grassroots mobilization. That said, the machinations of society often fail to create the “ideal set of circumstances” and the current list of recommendations may be unrealistic. What separates this research from the bulk of policy work, however, is its

focus on the intangible elements of bringing together two-entirely separate worldviews in a collaborative setting. As such, to enable any concrete change in policy, much work has to be done in the stages of reimagining attitudes and coming to terms with how other cultures formulate relationships and concepts of heritage. Attacking the obsolete institutions of consultation from every possible angle is imperative, as making small gains on one front – even if the only thing that changes is the way people see themselves – lays the groundwork to catalyze reforms on a larger-scale.

A Realistic Future for Comanagement

Scanning through the literature of policy topics ranging from wildlife conservation to fire mitigation and toxic waste disposal, “co-management” is an oft-cited, hot button phrase that is just as powerful as it is elusive. Consultation is a start, but co-management as a principle encompasses the inclusion of Indigenous partners (along with various other stakeholder parties) in all stages of development and decision-making - creating a community of mutually-efficacious civic partners. New Zealand (Ainge Roy, 2017) and Hawai’i²¹ (Cordova, personal communication 2017) – as places with an extensive sense of Indigenous cultural identity – have rather wide-sweeping regulations and provisions for consultation which create an environment more comparable to co-management *in vivo*. Perhaps it is unreasonable to bring up these case studies as suitable comparisons, given extreme differences in circumstance there is likely very little of substance that can be transplanted directly. A more useful model – and one much closer to home – examines the designation of the *Sand Creek Massacre National Monument*.

Reflecting a tortured era in Colorado’s history, the National Monument serves as both a commemoration to the suffering experienced by the Cheyenne and Arapaho tribes and as a reminder of the atrocities we, as a military state, are capable of committing both within and outside our borders (Kelman 2013). Given the highly sensitive nature of the place as well as the monument’s mission, Indigenous incorporation was not only sought, but outright demanded. Beyond acting in just an

²¹ “Although the State of Hawai’i has gone further than most to attempt to include the Hawaiian voice in legal procedures, it fails when colonialism surfaces in the final decision-making processes. When Western science is in opposition to indigenous worldviews, the non-indigenous planners are able to assert their colonialist power over the colonized through rhetoric and superior social and economic sway” (Cordova, 54).

advisement capacity – making suggestions on signage, monument placement, etc. – Indigenous authorities are actively engaged in the ongoing management of the site. Colloquially, it is said that an NPS employee will not even change a light-bulb without first submitting a request to an Indigenous partner (Norton, personal communication 2017). While maintaining a monopoly on lighting fixtures may be somewhat extreme, it reflects a system one would hope could be implemented in other areas of prominent cultural and historic significance – Pikes Peak and Garden of the Gods offer interesting co-management propositions.

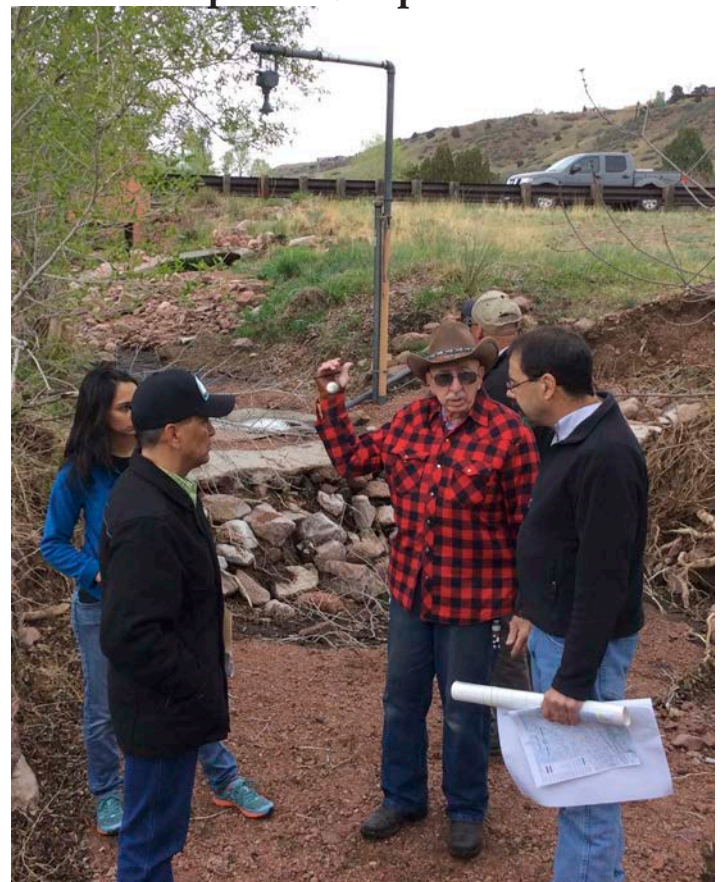
It is impossible to mention “National Monuments” and “co-management” without, in that same breath, bringing to attention the ongoing Bears Ears controversy. Designed as a partial co-management arrangement, the monument placed representatives of five tribes on a permanent *advisory council*, or *Commission* (Yaquinto, personal communication 2017). Even without any inherent decision-making power, Bears Ears set a historic national precedent that gave hope to other Indigenous communities trying to play a bigger role in public lands management. Ryan Zinke and the Department of the Interior’s (DOI’s) efforts to open public lands to business interests and fossil fuel production threatens to reverse that precedent. The shrinking of Bears Ears National Monument is about more than just southern Utah – it sends a symbolic message that the federal government (or, at the very least, this administration) does not care about tribal members’ stake in ancestral lands and feels no obligation to respect tribal sovereignty.

Per an earlier article in the Fall 2017 State of the Rockies Bulletin (“National Monuments in the Era of Post-Truth Politics,” by former Student Fellow Jonah Seifer), there is enough legal recourse available to tribes and conservation groups that it appears unlikely the DOI’s plans to modify Bears Ears will actually yield permanent, substantive changes to its management design. Still, it is essential to consider the ripple effect of policy, both positively and negatively. Just as much as Bears Ears’ undoing could break the back of progressive cultural resource management, the successful defense of Bears Ears could spark an advocacy campaign that makes co-management agreements more commonplace across the nation. For this reason and so many more, public

engagement in advocating for Bears Ears is critical – it would be a shame to remain idle and let this crucial moment slip away.

Engaging in ‘meaningful consultation’ is difficult as it demands extensive resources (time, labor, and money) and requires the synergistic cooperation of oftentimes competing government bodies. A traditional worldview has to be at the forefront of engaging traditional cultural sites – it is not history to put on a mantle, but a living culture integrated with its ancestral past. In other words, an arrowhead is meaningless absent the surrounding soil, vegetation, and view along the horizon. A site-specific valuation of knowledge and cultural objects need be recognized (Sun Dance, personal communication 2017). Many US government agencies are working effectively to expand the reach of cultural site management to Indigenous peoples. More effective consultation can be the gateway to an expanded set of government services reaching tribes.

Figure 19: Local Consultation for Camp Creek Improvements



Consultation involves extensive site visits and meetings between tribal representatives, local government, and agency officials. Pictured here is a consultation taking place in Colorado Springs. Source: City of Colorado Springs.

Forthcoming revisions to the BLM Royal Gorge Field Office 'Eastern Colorado Resource Management Plan' and 'Pike National Forest Plan' offer a rare opportunity to systematically integrate a more comprehensive set of standards for tribal consultation. 'Creative mitigation' does not always mean leaving places of previous habitation untouched. Rather, it means arriving at opportunities to reconnect the ancestral past with the present – creating a bridge between Indigenous peoples on the reservation and in the urbanized community to utilize forests and public lands for traditional and educational purposes. Young tribal members – a generation apart from the boarding school era – are “thirsty for culture” (Krall, personal communication 2017). Minimizing sites to “pieces of heritage” defies all Indigenous senses of meaning and place—the Ute people, though displaced, are not dead, and their ancestors exist in the present just as much as the past.

Colorado Springs residents' idea that Indigenous cultural resources—real or not—can be circumscribed by their property or contained by public lands is, from an Indigenous perspective, highly disrespectful. That said, “Indian rage and white guilt” are not the starting points from which we can begin to move forward. Krall recalls Rumi when she says, “beyond right and wrong, there is a field”, and that's where consultation happens. She finishes with a smile, and quotes First Nation member and singer Buffy Sainte-Marie; “White Guilt is like rubbing bison dung on your face, instead dry it out and make a fire with it.” Far aside from promoting the multiple-use of forests, the principal role of USFS officials in cultural resource management and consultation is – most simply – to become vehicles for reconnecting to the ancestral landscape (Krall, personal communication 2017).

There is no good solution. Indigenous peoples have been dislocated and their ancestral land marred by colonial settlement and extractive resources. There is no means of offering complete 'restorative justice.' By creating a more robust infrastructure for tribal consultations, we achieve a more tangible goal of producing a bridge for tribal communities pushed to the fringe to connect with ancestral lands and engage in meaningful co-management with U.S., State of Colorado, and local agencies. There is a Ute saying, “When forever comes, we will be here” (Site visit to the Southern Ute

Museum in Ignacio, Colorado). Engaging in efficient Tribal consultation and co-management strategies will help turn that statement from prophecy into a reality.

Doing Ethnography: A Brief Meta-Analysis

With any project, the question inevitably arises; “*Why are we here, and what's the point?*”

Unpacking that statement, we arrive at a series of other questions, most notably: “Who are we writing this for, and will it help or hurt?” I was reminded of this question during a meeting with Alden Naranjo, a Southern Ute elder and former NAGPRA representative, who has also worked in local law enforcement and is currently a leader in the Native American Church (Alden Naranjo, 2017). It was at his family's invitation that I attended the Southern Ute Sun Dance (July 7th-10th, 2017). Those days consisted less of standard interview questions, and more time just “hanging out,” doing chores, getting teased, and – for many periods – sitting in silence. I came as a researcher, but was received as a guest and friend, and was treated as any other friend would be. Removed from the auspice of “conducting research” in a proper sense, I left the Sun Dance with a new sense of community, though having accomplished very little in terms of concrete analysis. The meeting with Alden was my opportunity to put on the research hat again, and that's what I did. I asked questions and received answers; the typical spiel.

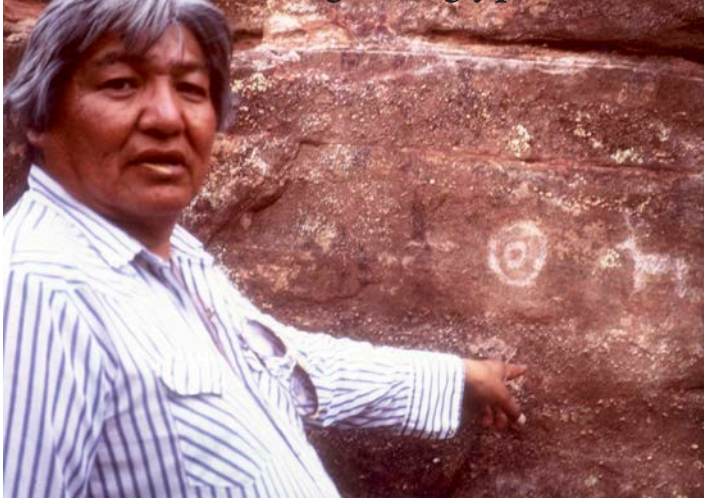
Reaching for my notepad during a short lull in conversation, Alden started to break away from the topic. To the best of my ability, this is what he said:

“Students, researchers – they come here and stay for three days, three weeks, maybe three months. They're nice and helpful, but then they leave. They write their book. It has their name on it. They got what they are looking for and then they are done. What do we get? Nothing. Another researcher comes, and they always leave the same way.”

By no means an attack, I took Alden's comments at first as a warning; “My research,” I told myself, “was going to be different.” In some ways it is different, but in many respects it's not. My research, no matter how well-intentioned, cannot escape the reality that it is the summation of “extracted” knowledge that is, at its most basic level, self-serving. Performatively speaking, even

the label “My research” conveys a sense of ownership – an appropriation of the knowledge I have taken from elsewhere and, specifically in reference to Indigenous communities, an implicit continuation of generations-long held colonial attitudes.

**Figure 20: Alden Naranjo (S. Ute)
Examining Petroglyphs**



Alden Naranjo (at the time, the acting NAGPRA representative and cultural liaison for the Southern Ute Tribe) examines a petroglyph at a Colorado Springs archeological site. During consultation, he explains some of the significance of the petroglyphs to government officials – their presence likely constitutes increased level of protection for the area, possibly even grounds to shut down a part of the project completely. Source: City of Colorado Springs.

That is the task of ethnography, is it not? To write down and record that which is not yours. Yes, but I would also like to argue there is a way of doing ethnography “right”. This post-script is a start (and a possibly dangerous one, given how easily that can fall into indulgent, self-apologetic banter). In her graduate thesis, Cordova argues how “investigations should not be conducted until scholars ask who is ultimately benefitting from research into indigenous lives. This needs to be done in order to protect indigenous people from those who would exploit their knowledge” (Cordova 2016, 8; Referencing Coombes 2006 & Katz 1992). The logic is echoed by Michael Foucault, often noted for the saying “Knowledge precedes power.” The knowledge I have extracted from a variety of stakeholders, policymakers, and Indigenous communities has given me the power to shape the narrative that will, soon, be presented to a larger audience. Through their willingness to be interviewed, I have been granted a fleeting – and perhaps somewhat unfair – power over their voice.

The question I am left with, and the question I would

like to leave you with as the reader, is how can we take that knowledge and use it (in possibly contradictory fashion) to give subjects of ethnographic study – the Ute tribes, along with the whole host of Indigenous peoples who have called the Pikes Peak Region home – the power and agency to take back control of their narratives and stories. It is a call to action, of sorts, to remind yourself and everyone you know that Indigenous communities cannot be spoken for – not by stuffy archeologists, not by John Anderson, not by anyone. They speak for themselves.

Hopefully this report can serve as a vehicle to help force the issue of improving tribal consultation and cultural resource management on the policy agenda. Indigenous people have always had a voice and they have never stopped using it – we only need open our institutions, free our minds, and un-clog our ears of colonial wax so we can finally listen.

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Appendix I: Catalogue of Interviews

6/10: Visit to “One Nation Walking Together” Pow wow

6/12: Nat Miullo [phone]
– NEPA Lead Reviewer

6/13: Jessica Wohlrob
– Americorp intern for “One Nation”

6/14: Celinda Kaelin
– Florissant Resident, Former President of Pikes Peak Historical Society

6/16: Scott Clow [phone]
– Environmental Program Director for Ute Mountain Ute Tribe

6/19: EV Justice w/ Corbin Darling, Jean Belille, and Michael Wenstrom
– Region 8 EPA EV Justice Program Director with associates

6/20: John Anderson
– Former Sheriff, Local Prayer Tree ‘Expert’

6/20: Curtis Martin/PPAC Talk
– Archeologist, Lead Investigator of the Colorado Wickiup Project

6/21: Anna Cordova
– Colorado Springs City Archeologist

6/22: Brent Botts
– [Former] Pikes District Ranger

6/26: Jon Dow
– [Former] Pike Nat. Forest Planner

6/27: Amanda Sanchez [phone]
– PSICC Forest Archeologist

6/27: Callie Videtich [phone]
– Region 8 EPA TAP (Tribal Assistance Program) Director

6/29: Linda Watts
– [Former] UCCS Professor of Anthropology

7/6: Jim Pitts
– USFS Salida District Ranger

7/6: Joe Vieira
– RM District National Mon. Program Manager & Environmental/Planning Coordinator

7/7: Michael Kunkel
– Founder and Advocate, Friends of Browns Canyon Nat. Monument

7/7-10: Southern Ute Sun Dance
Cassandra Atencio (S. Ute. NAGPRA), Stephen Sachs (“Indigenous Policy” Editor)

7/11: Alden Naranjo
– [Former] S. Ute NAGPRA Representative

7/11 Edward Box III
– S. Ute Cultural Director

7/11 Garrett Briggs
– S. Ute NAGPRA Apprentice

7/12: John Smiens [phone]
– BLM Royal Gorge Plan Coordinator

7/13: Michael Troyer [phone]
– BLM Royal Gorge Field Office Archeologist

7/21: Holly Norton/Todd McMann
– History Colorado, State Archeologist/Deputy SHPO

7/21: Susan Johnson
– USFS Region 2 Tribal Affairs Program Manager

7/24: Angie Krall [phone]
– Rio Grande Nat. Forest Heritage Program Manager

7/24: Jeff Hovermale [phone]
– Pikes Peak Resource Staff

7/25: Ernest House Jr. (Ute Mountain Ute member)
– Director, Colorado Commission of Indian Affairs

7/27: Nat Miullo [phone]
– NEPA Lead Reviewer

7/27: Rick Water (DIC) [phone]
– Denver Indian Center, runs ‘Honoring Fatherhood’ program

8/2: Angie Krall
– Rio Grande Nat. Forest Heritage Program Manager

8/2: Jessica Yaquinto
– Living Heritage (CRM Firm), Heritage Voices (Podcast)

8/3: BoR Lake Nighthorse meeting
– Kristen Bowen (BoR), Betsy Chapoose (N. Ute, NAGPRA), Nikki Shurack (Ute Mountain Ute, Assistant NAGPRA)

8/8: Matt Mayberry [phone]
– Colorado Springs Cultural Services Manager

Appendix II: Brief History of Tribal Sovereignty

Courtesy of the Colorado Commission of Indian Affairs, "State-Tribal Consultation Guide: An Introduction for Colorado State Agencies to Conducting Formal Consultations with Federally Recognized American Indian Tribes"

The following brief summary provides an overview of the history of various levels of federal support for tribal sovereignty and government-to-government relationships in the United States.

Colonial Era (1533–1775)

During this period, European countries entered into treaties with Tribes, who were afforded a similar status as colonial governments. Treaties sought to end hostilities, establish the boundaries of Indian lands, and regulate trade. **U.S. Federal Era (1776–1823):** The national government of the new United States continued treaty-making with Tribes in this period. Unilateral laws of the new nation also began to regulate and restrict interactions between Tribes and States, especially concerning trade and land transactions (e.g., Trade and Non-Intercourse Act of 1790). Article I, Section 8 of the U.S. Constitution gave power to the Congress to “regulate Commerce with . . . the Indian Tribes.”

Removal Era (1823–1871)

The beginning of this period is characterized by U.S. Supreme Chief Justice John Marshall’s opinions, which set the precedent that Tribes are “domestic dependent nations.” Federal law continued to maintain that only the federal government, not the states, had authority over Tribes. A major federal law was the Indian Removal Act of 1830, which provided for agreed-upon or even forced removal of many Tribes primarily to western lands on which Indian reservations were created. The end of this period is marked by the Appropriations Act of 1871, which ended U.S. treaty-making with Tribes.

Assimilation Era (1871–1934)

This period is characterized by federal laws and policies aimed to break up tribes and integrate Indian peoples into mainstream American society. The General Allotment/Dawes Act of 1887, which divided reservation lands into individual parcels, encouraged independent land holding and agriculture. “Surplus” lands were sold to non-Indians. The Indian Citizenship Act of 1924 conferred citizenship on Indian people who had not already gained that status through service in the armed forces, assimilation, or other methods.

Reorganization Era (1934–1953)

In 1934, the Wheeler-Howard/Indian Reorganization Act sought to restore some vestiges of tribal sovereignty lost during the Assimilation Era. Tribes were encouraged to establish formal governments and constitutions.

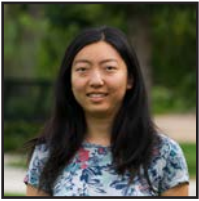
Termination Era (1953–1968)

House Concurrent Resolution 108 reversed federal policy reorganizing and recognizing tribal governments and abolished federal relations with more than 50 Tribal governments. This period also is characterized by federally funded programs designed to move Indian individuals from reservations to major cities.

Self-Determination Era (1968–Present)

Stirring of Indian consciousness following the Termination Era led to a dramatic increase in advocacy once again for tribal sovereignty. In 1972, President Nixon announced an official policy of Tribal self-determination. In 1975, Congress passed the Indian Self-Determination Act. Today, the United States officially recognizes 566 separate American Indian and Alaska Native tribes.

2017-2018 State of the Rockies Report Contributors



Wileen Genz is a 2017-2018 State of the Rockies Fellow. Born and raised in New York City, she came to Colorado College with limited outdoor experience from family road trips, but an unlimited interest in addressing environmental issues in urban areas. Currently majoring in Environmental Science with a Chemistry concentration and minoring in French, Wileen will graduate from Colorado College in May of 2019.



Nathan Goodman is a 2017-2018 State of the Rockies Fellow from Albuquerque, New Mexico. Majoring in Southwest Studies and minoring in Latin American Studies, Nate will graduate from Colorado College in 2019. Nate is most interested in exploring how interlocking webs of landscapes, identity, and society change and reshape each other over time. In his spare time, Nate enjoys playing outside, practicing Zen meditation, and writing poetry.



Alex Harros is a 2017-2018 State of the Rockies Fellow. Growing up in Los Angeles, California, Alex found solace in the forests and wilderness areas of Central California's Eastern Sierra Mountains. Alex and his business partner also took 2nd place in the 2018 Big Idea Competition where they pitched Raw Sauce, a sustainable fermented hot sauce. Alex will graduate from Colorado College in 2018 with a degree in Environmental Science.



Hannah Rider is a Student Fellow for the 2017-18 State of the Rockies Project. From Carmel Valley, California, she developed an appreciation for the outdoors growing up in the coastal mountains of Big Sur, California, which has influenced her academic interest in environmental issues. She will graduate in 2018 with an Environmental Policy degree and a minor in Philosophy.



Jonah Seifer is the Project Specialist for the 2017-18 State of the Rockies Project. Jonah was also a Student Fellow from 2015 to 2016 and researched mechanisms by which Native American tribes can assume regulatory authority over water quality, thereby enhancing tribal sovereignty and catalyzing water infrastructure development. Following his fellowship, he worked as the State of the Rockies Program Coordinator in 2016-17. Jonah grew up in Newton, Massachusetts and graduated from Colorado College with a degree in Environmental Physics. Jonah's interest in environmental science was cultivated by years spent skiing and hiking in Vermont, as well as a semester spent exploring Indigenous water management and justice in New Zealand.



Matt Valido is a 2017-2018 State of the Rockies Fellow originally from Cincinnati, Ohio. Matt is majoring in Environmental Science with a Chemistry concentration and will graduate in May of 2018. His academic interests include studying land and natural resource management, the impacts of climate change in the West, snow science, and atmospheric science. Matt's recreational hobbies include backcountry skiing, fly fishing, and exploring local breweries and restaurants.



Stephen G. Weaver is an award-winning photographer with over 30 years experience making images of the natural world and serves as technical director for the Colorado College geology department. Educated as a geologist, Steve combines his scientific knowledge with his photographic abilities to produce stunning images that illustrate the structure and composition of the earth and its natural systems. As an undergraduate geology student, he first visited the Rocky Mountains where he fell in love with the mountain environment and the grand landscapes of the West. Steve currently photographs throughout North America with a major emphasis on mountain and desert environments. His use of a 3x5 large format view camera allows him to capture images with amazing clarity and depth.



COLORADO COLLEGE

State of the Rockies Project

Project Mission:

The State of the Rockies Project engages students, faculty, conservation experts, and stakeholders to address critical environmental and natural resource issues through interdisciplinary research in the Rockies and the American West.

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