IMPLICATIONS OF UNMANNED AIRCRAFT SYSTEMS AND SENSE OF PLACE: A CASE STUDY IN THE MONO BASIN

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ABSTRACT

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This paper contributes to an understanding of the social implications of using UAS in natural resource areas; specifically, the ways in which these tools impact human constructed sense of place. This paper draws on in-depth interviews and document analysis to (a) develop an understanding of place meanings held among Mono Basin stakeholders and (b) define the ways in which increased UAS presence may interact with these visions of place.

In short, this research shows that sense of place in this rural area is influential in the way that UAS are received by local stakeholders. The changing nature of place meanings in the Mono Basin caused tension for many of the participants in this study. Furthermore, the struggle to shape these dynamic place meanings is cause for conflict both between stakeholders and with the outside world. UAS may be incompatible with place meanings that many in the basin value such as wilderness, solitude, and separation from the global flows of capital. This research indicates that land managers should use thoughtful consideration and take measures to mitigate these negative consequences when introducing UAS as a management tool.

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1.1. INTRODUCTION

"And it's not even really that I feel like I'm being spied upon…it's that the air isn't clear anymore, somehow. It's just one more place for human presence". (Mono Basin Stakeholder)

Does an autonomous flying machine traveling through the air change the character of a place? In what ways, to what degree – and does it matter? In recent years there has been a proliferation of research devoted to exploring the potential of Unmanned Aircraft Systems (UAS) for collecting natural resource data. The human dimensions of this tool however, have not received proportional attention. While UAS may yet prove to be an efficient and reliable tool to accomplish some of the tasks needed to effectively manage land, they have already proven contentious in many contexts and it is important to consider how UAS interact with the objectives of natural resource areas. This paper draws on in-depth interviews and document analysis to contribute to an understanding of the social implications of using UAS in natural resource areas, specifically, the ways in which these tools impact human-constructed sense of place. Towards this goal, my research questions are as follows:

(1) What are the prevailing place meanings that Mono Basin stakeholders associate with the basin?

(2) In what ways in will increased UAS presence interact with these place meanings?

UAS in Natural Resource Management: Capacity, Cost, and Conflict

"*We no longer have a State Park Ranger full-time position here at Mono Lake. And the Forest Service also no longer has law enforcement out of the Mono Lake Ranger District. They also no longer have a Scenic Area Manager, they don't have a Scenic Area Field Patrol person anymore. We don't have a Mono Basin Visitor Center Manager. We don't have a Mono Basin Associate Visitor Center Manager; we do not have a Wildlife Biologist - and I say 'we' meaning the Forest Service. We do not have any Wilderness Rangers in the back country. We do not have an OHV permanent position. Those are like six or seven major positions that are now defunded. That really alarms me….There are just things that don't get done."* (California State Parks Employee)

Natural resource managers face budgetary challenges while simultaneously trying to address unprecedented ecological and social challenges. Funding cuts have left many agencies struggling to meet the minimum requirements of maintaining public access; needs such as the monitoring of ecological resources, the implementation of restoration projects, and the development of long-term management plans are increasingly either pushed aside or left to third-party entities (Watson, Segan, and Hockings 2014). This requires managers to seek tools and strategies to ease the burdens of strapped resources; the use of Unmanned Aircraft Systems (UAS) is emerging as a strategy that holds the

potential to offer natural resource managers a more cost-efficient and autonomous method to conduct a variety of monitoring tasks and other natural resource data collection (Marris 2013).

Several factors have made UAS an attractive option for land managers and scientists to collect the aerial data that is often needed for conservation. Under certain circumstances, UAS offer a less expensive, easily repeatable, and safer alternative to the traditional method of using manned aircraft (helicopters or small aircraft). Additionally, with minimal training UAS can be operated professionally by any person with a Remote Pilot's Certificate, giving land managers greater flexibility when organizing flights (Federal Aviation Administration 2017). These benefits have encouraged the exploration of a wide array of potential applications for ecological data collection. UAS have been used to collect forest inventory data (Paneque-Galvez et al. 2014), to detect land cover change (Koh and Wich 2012), and to count many different bird and mammal species both on land and in water (Linchant et al. 2015). These examples are used to indicate the breadth of utility but are far from an exhaustive review of research exploring the possibilities of UAS use for natural resource management and conservation.

The increase in applications for UAS indicates that in the future this technology may be a much more present and visible part of the landscape across our natural resource areas. However, little research has been done to understand how increased UAS presence across our natural resource areas will impact the people who live in or utilize these areas. This creates the potential for the further exacerbation of existing tensions between natural resource managers and local community members and other members of the invested

public. At minimum, this technology is likely to impact land users' experiences, and at worst could provoke protest or the implementation of local measures that would limit the use of UAS as a tool for land managers (Sandbrook 2016). Thus far Markowitz et al. (2017) is only empirical study done regarding public opinion of UAS in relation to conservation science. This study found that the public appeared to be more supportive of UAS for environmental protection than for other uses; however, it also found a relationship between political worldviews and support for UAS use which indicates the potential for polarization around this issue. To realize the potential of UAS in the science community, these issues must be addressed.

The research cited above has shown that there are a range of public concerns including issues of privacy, disruption of peaceful settings, and harm to the natural environment. Yet the concept of *place* – a perspective well-suited to approach such issues – remains unexplored regarding UAS. This research will address this gap in the literature by considering the ways in which sense of place is influenced by the presence of UAS.

In section 1.2 I begin with a review of literature to introduce the relationship between socio-cultural phenomena and natural resource management, specifically regarding *place*, a concept that is most often used by geographers to understand human-environment relations. I then provide overview of the study case, the Mono Basin, and methods used in this research in section 1.3. In section 1.4 I offer a brief overview of the historical contexts that inform place meanings in the Mono Basin. I then present the results of this study in section 1.5 with an analysis of place meanings in the study area as well as an analysis of stakeholder perceptions of UAS use. Informed by the preceding

sections, I discuss of the implications of this study both for land managers and researchers in section 1.6.

1.2: LITERATURE REVIEW

In this research, I use the concept of place as a tool to understand the complexities of people's relationships with natural resource areas. Understanding these relationships is especially important when trying to gauge the impact of a potentially inflammatory management tool, such as the introduction of UAS. The following literature review first situates this work in relation to the broader movement towards integrating social science into natural resource planning, then provides a brief introduction to the concept of place, and finally, explores how place meanings have been thought about in relation to natural resource management.

The management of natural resource areas is an inherently political process, a give and take of power relations as people continually negotiate appropriate land use to correspond with shifting cultural identities. Recognition of this has led to a shift in natural resource management over the past two decades toward ecosystem wide planning strategies that consider both ecological and socio-cultural systems (USDA 2015, Christensen et al 1996). Many land management agencies have shifted their planning processes to explicitly include social science; however, over the years these social assessments have mostly been carried out in what Williams and Stewart (1998) described two decades ago as a mechanist, reductionist, and commodity-oriented manner.

In the years since this transition there have been agency published reviews of social assessments to help guide land managers (USDA 2014). However, researchers are still pointing to a lack in development of nuanced social assessment techniques in natural

resource planning (Brown, Weber, and diBie 2014). Indeed, a review of a more recent USFS planning document reveals that national agencies still have not expanded beyond one way, reductionist techniques for carrying out social assessment (USDA 2015). Attempts to integrate social science have often been carried out using methods that only measure specific elements of the social landscapes such as demographics and financial impact reports. These approaches often neglect the nuanced ways in which people interact with and value the land, doing little to help and even sometimes exacerbating the issues that land managers are facing. As Williams and Patterson (1996) explained, "Methods of knowing that minimize or obscure important emotional or symbolic meanings of objects, events, or places, no matter how scientific they may be, are unlikely to be well received by those who sense the loss". Land management decisions that disregard the values and social boundaries of the stakeholders who are invested in the place jeopardize the integrity of both the ecological systems and surrounding communities. By considering not only livelihood and economics, but also the values, symbols, emotions, history, and identity that are intertwined in the landscape, natural resource management initiatives can include the needs of sociocultural systems as well as functional requirements of natural systems. This research finds place to be an intellectual tool well-suited to address some of these often-neglected aspects of human-environment interaction.

Other researchers have come to similar conclusions, resulting in a wide variety of place-based literature that has been developed to help natural resource managers better understand place in relation to natural resource areas (Amsden, Stedman, and Kruger

2010; Brehm, Eisenhauer, and Krannich 2004; Bricker 1998; Cantrill 1998; Eisenhauer, Blahna, and Krannich 2000; Williams and Roggenbuck 1989). While much of this literature has made valuable contributions, as Stedman (2003) points out, there has been a lack of coherence in attempts to bridge the gap between literature on place-theory and literature that can be applied by natural resource managers. Some of this disjunct comes from a lack of clarity surrounding terminology. This review, and the research that follows, will focus on contributions to the concept of place *meaning*, in contrast to place attachment or place satisfaction. I will first outline the conceptual framework for place meaning with emphasis on the dynamic process of place creation. I will then explore the work that has been done on place meaning in relation to natural resource politics and highlight some ways in which Natural Resources literature could draw more from place-theory to enrich understandings of natural resource politics.

What is Place?

Researchers are interested in place because it is often an explanatory variable in the emotional connection between people and their environment. Unlike some methods of social assessment, an analysis of sense of place considers factors beyond livelihood and economics; it also considers the values, symbols, emotions, history, and identity that people have woven into the landscape. This makes it useful for land managers who seek to better understand how decisions will impact stakeholders (Cantrill 1998; Cheng Kruger, and Daniels 2003; Davenport and Anderson 2005; Farnum et al. 2005; Jorgensen

and Stedman 2006; Mitchell et al. 1993; Williams and Carr 1993; Williams and Patterson 1996; Williams 1995; Williams and Stewart 1998; Yung, Freimund, and Belsky 2003).

Though potentially a useful tool, putting an exact definition on place can be confounding. The concept of place has a long and varied history and not all scholars have agreed on the variables that make up sense of place. One way that place is often conceptualized is in contrast to space. Space is an undifferentiated local. Though space may have defined boundaries and quantifiable features, it holds no meaning to the person encountering it. Place, on the other hand, is space imbued with meaning. How that meaning is developed has been viewed in different ways; generally, through some combination of individual personality traits, lived experiences, and sociocultural or shared meanings associated with the area (Stokowsi 2002). While some scholars have suggested that people can become attached to imagined places or can become attached to places without physically experiencing them (Kruger 2008), my research engages with a specific definition of place in which meaning is built through personal experience and repeated interactions with a space (Tuan 1974; Relph 1976). Sense of place is informed by the bio-physical and socially constructed features of the area. It is the ability of place to make sense of the interwoven nature of the physical world and human experience – to draw together the social, the natural, and the cultural – that makes it such a formidable concept (Sack 1992).

While physical features may be relatively easy to agree upon, because place is also formed from personal experience and cultural histories, a single place can hold as

many different place meanings as there are people interacting with it. Although some consensus is often found in place meanings, it is far from a given. Greider and Garkovich (1994) presented the idea of the social construction of nature to explain that multiple visions of a landscape, influenced by the cultural identity of the beholder, can be attributed to a single parcel of land. In turn, multiple visions of a landscape lead to a multitude of appropriate ways to interact with the landscape. In this way, place meanings are closely related to natural resource politics. Conceptualizing place as, in least in part, a socially constructed variable rather than being purely tied to physical features, is a useful tool for anticipating possible conflicts that could arise out of changes in land management.

To further complicate matters, place meanings are not static over time. Two scholars who have furthered understandings of the dynamic nature of place are Doreen Massey and David Harvey. These scholars have explored the ways in which place is influenced by larger processes in the world. An idea that is central to both of their work is the concept of time-space compression; in other words, the changes that have happened as technological advances and globalization have rendered the distances between people and places largely obsolete (Creswell 2015). Although some have proposed that time-space compression and the mobile flow of capital have a homogenizing effect that has rendered place irrelevant, these two scholars refute that idea. Massey (1994) understands place as a constantly evolving process. People, information, ideas, and goods all come together in a unique combination in different places. She presents the idea of power

geometry to explain the uneven way in which existing power structures influence the development of places; movement, ideas, and culture. They are all influenced by the social structures that they are imbedded in. However, she still contends that by allowing place meanings to be enhanced by outside influences a fluid sense of place can be attained.

Harvey largely views the effect of time-space compression on place in relation to the global flows of capital. He proposes that the fluidity of capital is in tension with the fixity of place (1996). Places compete to get a share of the highly mobile capital – encouraging tourists or companies to invest in their particular form of fixity (Kearns and Philo 1993). Harvey contends that place becomes even more important in this context. Focusing on place meanings becomes a way to push back against the anxieties that many people feel over the global flows of capital, information, and people. In other words, although place meanings are always in the process of evolving, they do so in steps. Places offer, at least temporarily, refuge from an ever changing and increasingly connected world. Harvey uses the phrase militant particularism to describe the authentic search for place as a form of resistance against the forces of global capitalism (1996).

Place Meanings and Natural Resource Politics

One feature of place that is especially relevant to natural resource management is the role that it plays in determining what is appropriate and inappropriate within an area (Cresswell 2015). Once a set of meanings and values have been assigned to a place,

certain behaviors, activities, and even objects may be deemed “out-of-place”. Breaking these (often) unspoken rules is an act of what Cresswell refers to as transgression (1996). Crossing these socio-cultural lines creates dissonance at best, and results in outright conflict at worst. Recognizing this, there has been an increasing amount of work done to integrate place meanings into understandings of natural resource politics.

While the need to understand complex and competing place meanings has been repeatedly called for (Williams and Carr 1993; Williams and Patterson 1996; Williams and Stewart 1998, Cerveny 2018), research focused on empirically documenting and integrating place meanings into natural resource planning is relatively rare. As Manzo (2003) explains, while there is ample literature that focuses on place attachment, it typically does not locate emotional relations to place in a larger socio-political context. Often, the literature focused on place meanings has done a better job of addressing these connections. Davenport and Anderson (2004) use an iterative research design to find that place meanings surrounding a popular river area in Arkansas can be categorized into four different groups: Sustenance, Identity, Tonic, and Nature. Depending on the place meaning that a stakeholder invests in, they may be negatively (or positively) impacted by different management decisions that change different elements of the landscape. These impacts have been shown to sometimes spark political action in defense of place meanings (Hurley and Walker 2004; Manzo 2003). Similarly, others have found that place can motivate individuals and groups to care for, protect, and defend particular places or types of settings (Eisenhauer and Kra 2000, Kil et al. 2014, Stedman 2002).

Stokowski (2002) found that place meanings specifically are mobilized to support or contest land management.

Some work has demonstrated how place meanings are often attached to larger political issues or ways of looking at the world. One way that this may manifest is through the use of place in the formation and maintenance of self and group identities (Twigger-Ross and Uzzell 1996). Kil et. al. (2015) explored the ways in which place meanings connect people to particular landscapes or ways of life. As Scannel and Gifford (2010) explain, place can be viewed as a "community process in which groups become attached to areas wherein they may practice, and thus preserve, their cultures" (2). Reflecting this, in their exploration of the discourse of place names in the Rocky Mountain Front, Yung, Freimund, and Belsky (2002) find that stakeholders hold an array of different contested place meanings that are connected to larger political struggles (2003).

However, place meanings are not only useful as a means of understanding differences. Cheng, Kruger, and Daniels (2002) present a compelling argument that place meanings can be used as a tool in collaboration between diverse stakeholders. They propose that although a diverse range of place meanings may exist, that commonalities in place meanings may provide a starting point for negotiations and planning. Research is showing that including place meanings into the discussion can facilitate two-way communication that oftentimes results in consensus regarding contentious land management issues (Cheng and Mattor 2010; Kruger 2008; Patriquin and Halpenny

2017). In some cases, public involvement programs based on place may provide a platform that allows individuals to share values, beliefs, and wisdoms that they would otherwise be reluctant to share (Brandenburg and Carroll 1995). Many place-based collaborative forest management groups have emerged since the mid-1990s (Mosely and Winkel 2014). In addition to using place meanings as a tool for collaboration, there has been a recent increase in research promoting the use of place meanings in the information gathering stages of planning. Many researchers are exploring the use of Public Participation GIS as a way to incorporate public opinions into management initiatives (Alessa et. al. 2008; Brown et. al. 2014; Cheng and Mattor 2010; Lowery and Morse 2013; Mclain et. al. 2013; McLain et. al. 2017).

In these ways, researchers are making useful developments to understanding how place meanings may be used to better incorporate the politics of place into natural resource management decisions. However, this field still has more to draw from place-theory literature. Largely missing from the place meaning and natural resource politics literature is discussion of how outside forces impact the development of place meanings. This research will draw from both of these traditions to enrich the value of place meanings to natural resource managers.

1.3 MATERIALS AND METHODS

Study Case

The Mono Basin

Geographically, this research centers on the communities and stakeholders surrounding Mono Lake, a massive hypersaline lake that stretches across the high desert of eastern California, nine by thirteen miles across. Mono Lake is situated at the interface of the arid "sagebrush sea" of the Great Basin and the wall of the 13,000-foot granite peaks that make up the central Sierra Nevada range. The lake sits prominently in the center of the Mono Basin – a sparsely populated watershed of roughly 700 square miles that contains less than 500 people. Though the basin is in California, the most accessible metropolitan area is Reno, Nevada, 140 miles to the north. This visually dramatic landscape has an equally dramatic human history and the efforts of many different people, holding many different values, continue to shape the politics of this place.

Despite its remote location, the Mono Basin sits at the intersection of recreation destinations that attract visitors in large numbers. The basin abuts the eastern boundary of Yosemite National Park, an international attraction that brings in millions of visitors each year (National Park Service 2018). Highway 395, the main corridor connecting Los Angeles to the mountain recreation of the eastern Sierra, dissects the basin and connects it to the popular ski town of Mammoth Lakes 30 miles to the south and Lake Tahoe

destinations roughly 100 miles to the north (Figure 1).

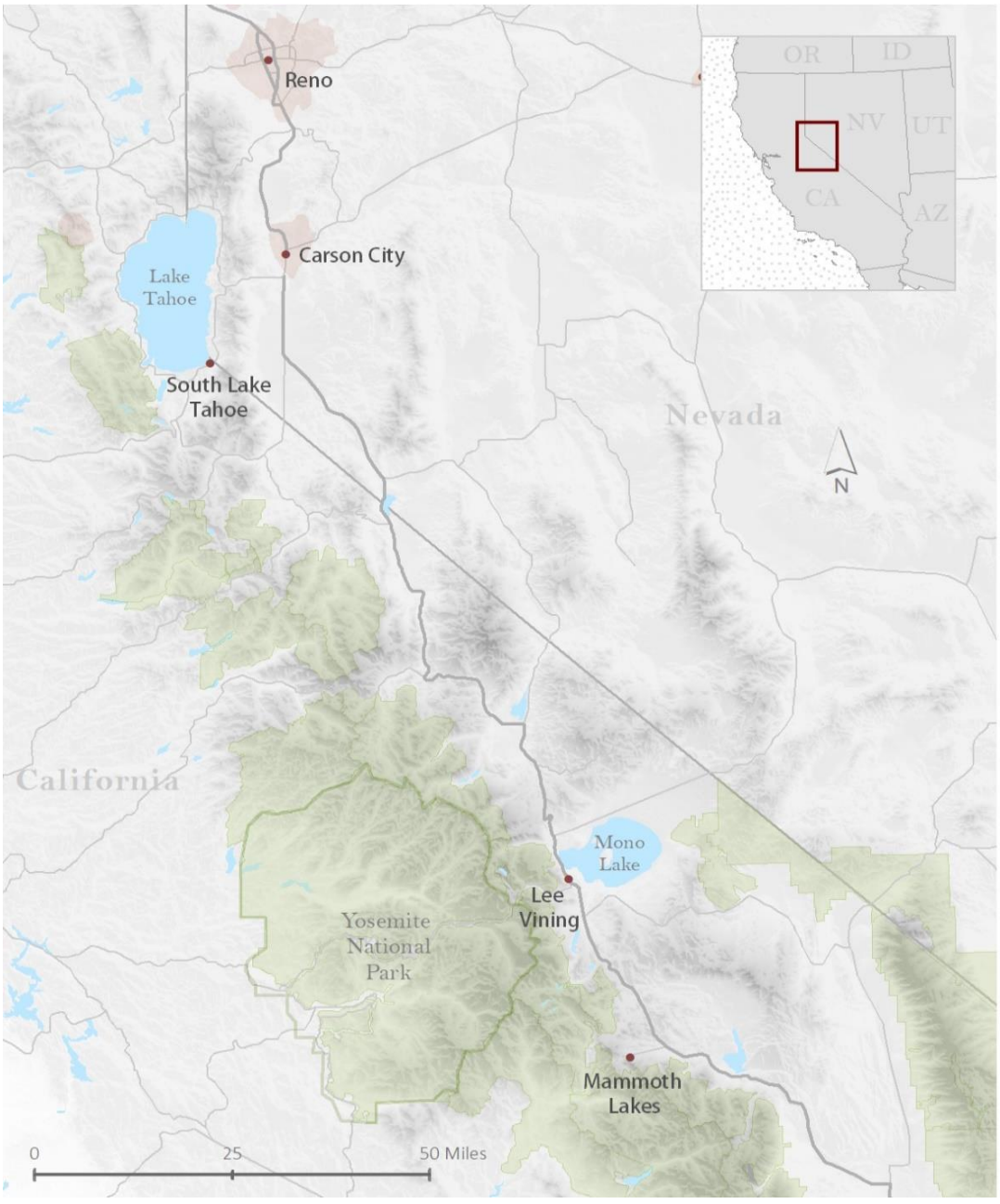

Figure 1. The Sierra Nevada mountains separate the Mono Basin from the large population centers of California; however, the basin remains connected to several popular outdoor recreation areas. Map by author, 2018. NAD 1927 State Plane CA III. Projection: Lambert Conformal Conic.

The Mono Basin shares its name with Mono County, which includes the population center of Mammoth Lakes (pop. 7,994) and the county seat of Bridgeport (pop. 575) (Census.gov 2018). Geologically, the watershed of the basin also includes the ski village of June Lake (pop. 589), but in this case the social boundaries of the Mono Basin do not align with the physical boundaries. According to the Mono Basin Community Plan, the Mono Basin community includes the towns of Lee Vining, Mono City, and the residences in the general vicinity outside these defined communities (2012). The focus of study was limited to those who were included in this definition of the Mono Basin community.

The stakeholders

Mono basin residents. According to the 2010 Census the Mono Basin community is made up of approximately 450 people with a median income of $45,500. Most of the population lives in either Lee Vining or in Mono City, a residential development located five miles north of Lee Vining. These towns are predominantly white (60%) though there is also a significant Hispanic community (33.7%). The Mono Lake Kudzedika tribe also remains in the area and makes up approximately 4.5% of the communities' population. The commercial core and center for economic activity is found along Highway 395 in the unincorporated town of Lee Vining. Over 57% of the communities' employment is tied to either the service or retail industries. Other economic activities include a brine shrimp fishery processing plant, a pumice mine, and various construction enterprises. Although

historically agriculture was a more visible part of the landscape, in 2010 only 4% of the community was employed in this sector.

The agencies and land ownership. The Mono Basin region is largely characterized by the vast amounts of publicly owned land managed by the Bureau of Land Management (BLM) and United States Forest Service (USFS) (Figure 2). The Los Angeles Department of Water Power (LADWP) also owns large parcels of land throughout the entire Mono Basin, much of which was leased for grazing in the past (Mono Basin Community Plan 2012). The waters of Mono Lake and all recessional lands not owned by the Federal government are owned and managed by California State Parks. In addition to the high percentage of public- or LADWP-owned land, the Mono Basin is also affected by the additional designation of the Mono Basin National Forest Scenic Area. Although there are private lands within this area, development is governed by the Private Land Development Guidelines in the Mono Basin National Forest Scenic Area Comprehensive Management Plan.

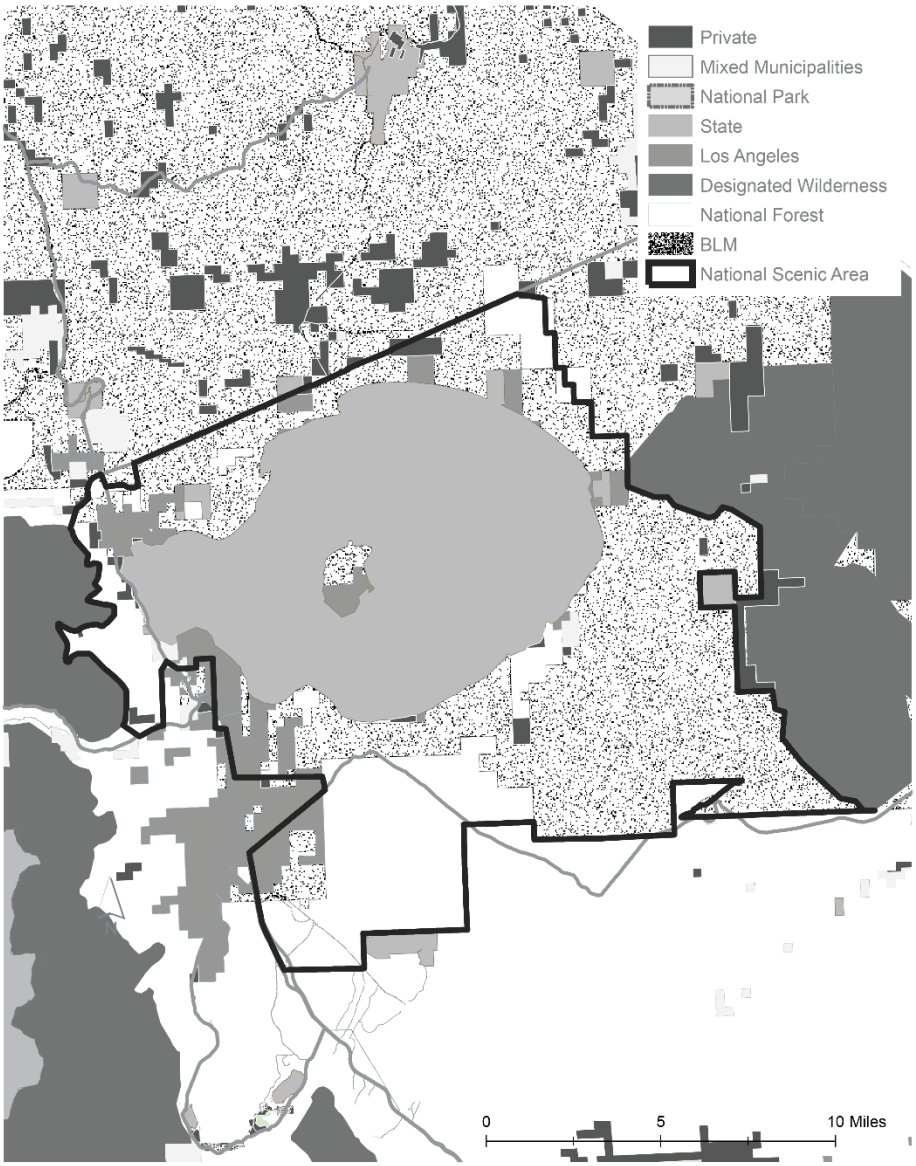

Figure 2. Land Ownership in the Mono Basin. Map by author, 2018. NAD 1927 State Plane CA III. Projection: Lambert Conformal Conic. Colors chosen from a color-blind safe template using Color Brewer 2.0.

The Mono Lake Committee. The Mono Lake Committee is a non-profit dedicated to "protecting and restoring the Mono Basin ecosystem, educating the public about Mono Lake and the impacts on the environment of excessive water use, and promoting cooperative solutions that protect Mono Lake and meet real water needs without transferring environmental problems to other areas" (Mono Lake Committee 2018). The Mono Lake Committee owns no land within the Basin, aside from a few parcels in the town of Lee Vining occupied by a Visitor's Center, the Mono Lake Committee offices, and housing for visiting researchers and seasonal employees. Despite this, they are influential in many land management decisions and have contributed ecologically and economically within the basin.

Method of Inquiry

Interviews

Participants. I selected initial participants based on their status in the Mono Basin community and/or their ability to influence natural resource management. This included a range of agency members and members of the invested public. I used a modified version of the snowball sampling method, described in Goodman 1961, to choose the participants. The initial sample was chosen based off participant observation conducted within the Mono Lake Committee and included Mono Lake Committee employees, Mono Lake Volunteers, and a State Park employee. At the conclusion of each interview I asked the participant to name important people in the community that should be included in the

research to provide a full range of perspectives. All names were recorded, and the number of times a particular individual was named determined the priority in which they were contacted for an interview.

In total, I interviewed twenty-eight participants (fourteen male and fourteen female). According to their primary role in the basin (occupation), seventeen were directly involved with natural resource management while eleven were not. Of those involved with natural resource management, four were agency members, six were Mono Lake Committee employees, two were scientists, and five were Mono Lake Volunteers. Of those who were not directly involved in natural resource management, five were business owners and six were employed either in primary education or the service industry. Eleven participants lived in Lee Vining, nine in Mono City, four at some other location in the Mono Basin, and four lived in the Basin seasonally while making their permanent residence elsewhere (Appendix A).

Interview structure. The interviews took place in a variety of locations including personal residences, agency offices, office space in the Mono Lake Committee, and at a local coffee shop. The in-depth interviews were semi-structured in format and ranged in time from twenty-three minutes to one hour and fifty-two minutes, with the average interview lasting one hour and twelve minutes. All interviews began with a discussion of the interviewees' personal experiences of living in the Mono Basin and values they associated with the Basin. A discussion of UAS followed in which I asked participants about their personal experiences with UAS, concerns about their use in the Basin, and

ideas for positive uses and regulation. Following the discussion, I offered participants a black and white map of the Mono Basin and asked them to color in the map according to their ideal UAS regulation. I asked participants to fill in the entirety of the map using crayons and colored pencils. Red was designated for areas where they would prefer absolutely no UAV use, yellow was designated for areas of conditional UAS use according to either temporal restrictions or special permitting to allow only certain uses, and green was designated for areas where unrestricted UAV use would be appropriate. Once the participants had colored in the map, I asked them to explain why they had chosen the designations.

This research was approved by the Humboldt State Institutional Review Board under IRB 16-264. In accordance with this document, all participants signed a consent form agreeing to be interviewed and recorded at the beginning of the interview.

Interview analysis and organization. I transcribed and coded the interviews to identify common themes. The themes were developed after an initial assessment of the interviews based on commonalities and then subdivided to account for the differing perspectives found within the respective themes. As others have proposed (Cheng et. Al 2003), sense of place can be used in natural resource management to establish common ground between diverse stakeholders and so the data was analyzed with this in mind. Common themes surrounding sense of place that emerged from the interviews are as follows:

1) Social Cohesion

2) Spiritual Connection
3) Preservation
4) Being outside
5) Being alone

Although the themes were categorized by broad similarities, within these themes there were at times stark differences in perspective. For example, while most interviewees were united by their desire to spend time doing outdoor activities, the types of activities that they pursued varied greatly. Subthemes such as “Hunting” and “Bird watching” were both included under the parent theme “Outdoor Activities.” While some might consider the nature of hunting and that of bird watching to be inherently distinct, I chose to focus on the points of consensus. In this instance, both activities require an appreciation for spending time outdoors in the Mono Basin.

I scanned interview maps into an electronic format and then digitized into shapefiles using Adobe Illustrator and Map Publisher (Appendix B). Each individual’s map was broken down into three categories of shapefiles reflecting the designation of appropriate UAV use (Inappropriate, Conditional, Appropriate). The maps were then composited according to category to show areas where consensus was found among participants. In general, participants had a difficult time assigning hard lines of land use designation on the maps and many of the designations were riddled with inconsistencies and conditional rulesets. The mapping exercise proved most useful in providing a point of discussion with the interviewees as they were forced to distill their conflicting feelings

over appropriate land use regulation and explain, spatially, their rationale for appropriate use of UAS.

Timeframe of study

Temporally, this research focuses on present day relations and sense of place in the basin, drawing upon recent history to inform an understanding of the current politics of place. All interviews were conducted from May 2016 through November 2017. A shortcoming of this work is that the historical review begins with Euro-American settlement in the basin, which begins only in the mid-1800s, and does not include the thousands of years of Native American presence, most recently the Kuzedika Paiute. Though Euro-American history in the Mono Basin didn't begin until 1852, the Kuzedika Paiute already had a long and rich relationship with the basin. The Kuzedika Paiute persist in the basin in modern time; however, the tribe is not federally recognized. Though attempted, I did not collect sufficient data to properly represent the Kuzedika Paiute perspective. The portrayals of place in the Mono Basin that are reflected here are missing this important component.

1.4: HISTORY OF PLACE IN THE MONO BASIN

As a result of litigations in the 1980s and 1990s over water diversions, Mono Lake and the surrounding land is currently owned and managed by a variety of different stakeholders including the US Forest Service, California State Parks, the City of Los Angeles, the Bureau of Land Management, and private landowners. While these landowners may have diverging land management goals they are legally mandated to work together to monitor and improve the Mono Lake ecosystem while simultaneously balancing the water needs of the people of Los Angeles and maintaining the tourist economy of the surrounding communities (Hart 1996). While the collaboration within the basin is impressive, there is a history of evolving and contested expectations for appropriate use of its natural resources. Throughout time, the Mono Basin has held many different place meanings for many different people. An exploration of the varied and nuanced relationships that people have had with the basin both in historical and present times is a critical step in understanding both the success and challenges that land managers are facing today. This chapter offers a brief exploration of the different relationships that people have had with this landscape. The history of these continually evolving place-based values frames an understanding of both contested and shared place meanings in the Mono Basin today.

My account of sense of place begins with the written records left by white settlers, and unfortunately lacks first hand perspectives from the Kuzedika Paiute who inhabited the area for thousands of years prior. The sandy, pumice filled soils of the Mono Basin

prevented the Kuzedika from engaging in the irrigation and agriculture that some of the neighboring Paiute groups to the south practiced. Instead their main source of sustenance came from the lake itself. As a terminal lake, Mono Lake's water was too salty and alkaline to support fisheries; however, what the lake had in abundance was "millions of indigenous flies, on which, and on their larvae and pupae, Indians are sustained and fattened" (Sacramento Daily Union 1859). In fact, these endemic alkali flies (*Ephydra hians*) were so central to their lifestyles that they referred to themselves as Kuzedika, meaning "fly larvae-eaters".

The Kuzedika had no fixed settlements and instead moved around the basin following food sources and according to season, reflecting an acute understanding of the spatiality and timing of natural cycles in the area. Though they stayed in the basin at most times throughout the year, the Kuzedika traveled into the mountains to trade with the Miwok of Yosemite Valley, bringing with them the fly pupae larvae, dried caterpillars, pine nuts, salt, pumice, and obsidian (Hart 1996).

A Supplier of Industry

While it is difficult to speculate on the place meanings held by the Kuzedika, there undoubtedly was a large shift in place-based values in the late 1850s as rumors of gold and silver brought white settlers to the Mono basin (Hart 1996).[1] [2] Though mining in

[1] Los Angeles Star 1858, California Digital Newspaper Collection.
[2] Daily Alta California 1859, California Digital Newspaper Collection.

the immediate vicinity of the lake was never particularly fruitful, mining towns on the outskirts of the basin such as Monoville, Dogtown, and Bodie began to draw great numbers; at its height, Bodie had a population of nearly 10,000 people. For the next fifty years, mining was the primary activity in the basin. These changes in population were reflected upon the landscape as satellite mining districts, a lumber industry, and agriculture began to develop to support the populations of those trying to strike it rich mining. The reckless free-for-all spirit that the mining communities engendered extended to people's relationships to wildlife. Settlers made use of the huge congregation of migratory birds that the lake drew in, freely shooting the red-necked phalaropes, which they called "Mono Lake Pigeons," and carrying out expeditions to Negit Island to collect California gull eggs from the nesting colonies, a pursuit that greatly reduced the populations (Hart 1996). However, their impact was not just in reduction of species. They also introduced species to facilitate their lifestyles. In order to make up for the fact that Mono Lake was fishless, the local streams were stocked with Lahontan Cutthroat Trout as well as the highly invasive German Brown Trout (Hart 1996).

Those reporting on Mono Lake during this period often described the lake itself to be "deserted" and "forsaken".[3] Mark Twain referred to it as a "solemn, silent, sail-less sea--this lonely tenant of the loneliest spot on earth...little graced with the picturesque" that was in "a lifeless, treeless, hideous desert" (Twain 1872). Though most appeared to find little value in the basin aside from its resources, at least one reporter revealed an

[3] Sacramento Union 1859, California Digital Newspaper Collection

appreciation for Mono Lake's lunar-like aesthetics, "it appears like a beautiful crescent, its horns curving delicately around you on the right and left. From the north it appears nearly circular, like the full moon, the islands in its waters strikingly representing the clouded spots on that planet".[3] In fact, some early explorers such as naturalist John Muir and geologist Israel Russell were quite taken by the unusual landscape and spent ample time exploring and documenting it. In 1890, when Congress was debating a bill to establish Yosemite National Park, there were calls to expand its boundaries to include the Mono Basin. Though this wasn't to be, it does highlight the interconnected nature of the two distinct places (Hart 1996).

A Place of Recreation, Sportsmanship, and Community

Place meaning continued to shift as the Mono Lake Highway (present day Tioga Pass), running from the Mono Basin to Yosemite National Park, was commissioned in 1911[4]. Its completion, along with improvements to what is now the Highway 395 corridor, opened up the basin to the increasingly popular world of motorized travel and began to shift the place meanings associated with the basin. A search through the California Digital Newspaper Collection reveals many clippings from Los Angeles and Sacramento newspapers from the first half of the century that report peoples' travels on circuits that included Mono Lake, Yosemite, Reno, and Lake Tahoe. One of the largest draws to the Mono Basin was its reputation as a "paradise for sportsman"[5]. Near the

[4] Sacramento Union 1911, California Digital Newspaper Collection
[5] Healdsburg Tribune 1927, California Digital Newspaper Collection

southern geological boundary of the basin, the town of June Lake became popular as a fishing resort, making use of the surplus of stocked fish in the freshwater lakes and tributary streams that lead into Mono Lake (Figure 3).

Figure 3. Anglers on Lower Rush Creek, one of Mono Lake's tributary streams, 1948. Photo courtesy of Mono Basin Clearinghouse.

Although Mono Lake's chemical composition prevented it from attracting fishermen, it was nearly a third less salty than it is today, making duck hunting, swimming, water skiing, and boating viable activities. Resorts including the Tioga Lodge (1918) and the Mono Inn (1922) were built near the lake's shore and promoted the lake's medicinal qualities and recreation opportunities. Mark Twain Days, a lively event that hosted a

variety of activities including motor boat races, swimming horse races, a fish fry, and a bathing beauty parade was held every year from 1928 to 1944. The hope that Mono Lake would support its own thriving tourist economy was reflected in news reports of the day, "undoubtedly Mono Lake will one day be developed into a great resort, both for those seeking health, and sport lovers"[6]. To this day, some Mono basin residents with long-time ties to the area harken back to the sense of community and free use of the land that was present in these days.

A Support for Urbanization

Prevailing place meanings changed once again in the 1930s when the Los Angeles Department of Water and Power began seeking water rights in the Mono Basin in order to divert the stream flow from Mono Lake's tributary streams into an extension of the Los Angeles Aqueduct. The aqueduct was already diverting water from 62 miles of the Owens River provoking much local resistance to the south; however, the burgeoning city in the arid California southwest was anxious to secure more water. The elevated position of the Mono Basin – several thousand feet higher than the rest of the aqueduct – would allow the project to also generate enough electricity to offset the energy used for the city's imports from the Colorado River (Ryan 2015).

The city developers had an easier time acquiring water rights in the Mono Basin than they had in the Owens Valley twenty years prior. Due to the pumice filled soils,

[6] Healdsburg Enterprise 1924, California Digital Newspaper Collection

prior attempts at large scale irrigation in the basin had little success leaving much of the stream water “undeveloped”. Those that were making use of their water rights were bought out or threatened with condemnation. The larger hurdle was the permitting process to convert the use-title of the water rights. Though some staff members of the California Water Resources Control expressed concern over the impacts that these diversions would have on the Mono Basin, both ecologically and on the local communities, California water policy made clear that the task of the agency was to ensure that water was put to beneficial use – domestic and municipal uses by state residents were considered the highest and best use possible (Ryan 2015). This reflects more broadly the national values of the time that promoted the development of the west and the control of nature for human use.

In 1940 the aqueduct was completed and water from four of the five tributary streams began traveling south towards Los Angeles instead of into Mono Lake. The result was the drying of the streambeds, loss of associated riparian habitat and wildlife species, and the lowering of water levels in Mono Lake. Without the inflow of the streams, Mono Lake dropped thirty vertical feet, which doubled its salinity and exposed miles of fine alkali sediment along the shoreline creating air quality issues with each passing wind storm. Within four decades, the landscape was drastically transformed.

A Place of Ecological Value and Environmental Activism

Reflective of the environmental movement, the ecological and aesthetic values of Mono Lake came to the forefront of place conceptions in the 1960s and 70s. In 1976, a group of college students carried out a research grant to perform an ecological inventory of Mono Lake. The inventory resulted in two major findings: first, that the lake was of great ecological significance and second, that if the lake level continued to drop that the entire ecosystem would soon be unable to support itself. By 1978 the Mono Lake Committee was formed with a headquarters in Lee Vining and its founders began campaigning across California to gain public support for the lake.

Public response to these initial efforts was mixed. According to one coordinator who assisted with some of the Mono Lake Committee's early campaigns in Los Angeles, many would write in or call in with complaints such as, "I can't water my lawn for a few birds and a salty lake we can't even swim, or boat, or fish in?" (Interviewee 1). The Mono Lake Committee helped to construct many of the place meanings that persist to this day by educating the public about the ecological value of this remote, high desert ecosystem and promoting it as an aesthetic wonder. Ultimately, the Mono Lake Committee was largely successful in gaining public support; however, despite public pressure the Los Angeles Department of Water and Power was unwilling to voluntarily rescind their water rights (Hart 1996).

A consolidation of political power and court cases brought on by a collaboration of environmental nonprofits were ultimately the key to reallocating water rights and restoring the ecological health of the Mono Basin. The Mono Lake Committee, the National Audubon Society, and CalTrout, a nonprofit organization whose mission is to protect and restore wild salmonid species and their waters throughout California, all began filing a series of lawsuits against the Los Angeles Department of Water and Power that would span two decades. A turning point in these cases came in 1983 when the California Supreme Court ruled in favor of the Audubon Society et al., which invoked the public trust doctrine as grounds to supersede the appropriative water rights system[7]. The court decided that the public trust doctrine could indeed be applied to navigable inland bodies of water such as Mono Lake and ruled that the state had the obligation to protect the ecological and recreation values for the good of the people. This decision marks the governmental recognition of ecological and aesthetic conceptions of place in the Mono Basin.

[7] National Audubon Society et al., Petitioners v. The Superior Court of Alpine County, Respondent; Department of Water and Power of the City of Los Angeles et al., Real Parties in Interest, 33 Cal.3d 419, No. 24368 (Supreme Court of California, 1983).

1.5: INTERVIEW RESULTS

Views of Place in the Mono Basin Today

The shifting historical, political, and ecological context of the basin has resulted in a tapestry of place meanings within the modern-day basin. Despite these differences, there are several place related themes that consistently emerged in interviews. This section identifies these points of consensus while also acknowledging the differences that exist among place meanings within the themes. Some elements of the themes overlap, but there are important distinctions between them.

A place of social cohesion and attachment to community

With a geographically bounded community of less than 500 residents it is perhaps unsurprising that most interviewees considered the "small town, community feel" of the Mono Basin to be an important element of their experience (Interviewee 1). While this description is often thought of as cliché, the conditions of a small town have influenced community dynamics and have important implications such as social cohesion, a recognition of other's values, and the production of social capital.

One aspect of social capital that is present in the Mono Basin and facilitated by living in a small town is reciprocity. As one interviewee described,

> Where else are you gonna get a bad snow storm and see kids out shoveling snow for the older people in town – like, just because. You don't see that very many

> places but in this town you see it. Somebody breaks an ankle – everyone in town makes them meals for the rest of the month. (Interviewee 3)

These types of stories came up frequently in the interviews as people talked about the help that they had received in times of need or the general support that living in the community provided. In the words of one long-time community member, "If there's a need…this community throws down like no other" (Interviewee 5). This culture of social support has been passed down from generation to generation as described by one long-time resident,

> I've probably got what, 20 or 30, kids that I've raised up through this community and I tell every single one of them to give back. You gotta give back to the – whatever community you're at. You gotta do something. Because people have helped you out. (Interviewee 4)

Most interviewees referenced this reciprocity in one form or another when asked to describe why they enjoy living in the Mono Basin. Alongside environmental attributes, the "sense that people care about each other" (Interviewee 15) was a leading contributor to the "awesome quality of life" (Interviewee 22) that many interviewees pointed towards when describing the basin. One interviewee suggested that quality of life was a leading factor in the recent increase of young couples settling in the basin,

> It's an amazing place to live. Quality of life here is awesome. You don't make a lot of money and things are expensive but being willing to make that sacrifice for quality of life – it's pretty powerful. (Interviewee 15)

Choosing quality of life in spite of economic and logistical challenges was a common theme among interviews.

While nearly all interviewees agreed that the social support provided by the community was a positive attribute of the Mono Basin, some felt that the social cohesion had changed in the decades following the arrival of the Mono Lake Committee. As one interviewee noted,

> [The atmosphere of the Mono Basin is] starting to change just because there's more entities that come in that are changing things, taking things away from people that – say you love driving dirt roads. Well there's an entity out there shutting roads down. (Interviewee 3)

The entity most often named was the Mono Lake Committee, which has had a complicated relationship with long-time residents of the basin. When the Committee first arrived and campaigned to establish the State Tufa Reserve and National Forest Scenic Area, some Mono Basin residents resented the influx of liberal perspectives and increase of environmental regulations. According to long-time community members, the arrival of this new, politically active group of people was met with distrust and social divisions were exacerbated by certain actions by the Committee. A description of a drawing displayed in the school bus barn in the 1980s highlights this distrust,

> It showed these two puppets – Smokey the Bear and a state parks ranger with a flat brimmed hat on – and they were controlled by these hands and above the hands it said, "Mono Lake Committee". And on the ground in front of them it showed this guy on the ground with a knife in his back and that said "Local". (Interviewee 11)

One Committee staff member recounted the difficulty of navigating those divisions when she first moved to the basin in the early 2000s, commenting that "it was frustrating at first because working at the Committee, you get labeled" (Interviewee 18). Most interviewees

agreed that tensions within the community were less than they were when the Committee was initially established in Lee Vining. Over the years, Committee staff members have volunteered with neutral community institutions such as the fire department or the local schools to better integrate into the community. Additionally, many long-time residents recognized positive contributions that the Committee has made to the basin. However, there remains some discontent surrounding the power relations and management within the basin. As one interviewee described, "there's some people whose hackles are raised by seeing these out-of-towners in their Subaru's taking over this town" (Interviewee 29).

It is important to note that despite these divisions, a sense of social cohesion is still present across the basin. As one long-time resident put it,

> [The community] is still there –and it doesn't matter if they're the Mono Lake Committee, Forest Service, any of those agencies. We're all watching after the kids and people. People in general. It's still a great place to live. The town still pulls together. (Interviewee 4)

Several interviewees made a point of stating that people in the basin were able to put differences of opinion on hold when it came to community interactions. One possible reason for this are the material conditions of living in a small community.

During interviews, community members often described one of the positive qualities of the Mono Basin as being that "you can get to know all your neighbors" (Interviewee 6). This was often attributed to the repeated, daily interactions that living a small, remote community necessitates as this interviewee stated,

> I just know folks – because you interact with them over and over and over – and you have to. Whether your car breaks down on the side of the road, or someone needs their driveway plowed, or your kids are all playing some sports game remotely and you're driving down together. (Interviewee 7)

Most commerce and housing in the Mono Basin is located in the town of Lee Vining which takes up an area of less than a square mile. This highly walkable area lends itself to interacting with others in the community on a regular basis.

It was also noted that at times this forced closeness could lead to uncomfortable situations as expressed by this community member,

> I still have to see [a person with whom there'd been a falling out] every day, I see him at the post office, our kids go to the same school – whereas in the city I'd never have to see that person again. (Interviewee 1)

Living in close proximity to one another entails frequent interactions that may contribute to the social cohesion that spans across social groups in the Mono Basin. Several interviewees mentioned that people in the community had learned to be civil even if they were not a part of the same social circles or disagreed politically, or as one interviewee described "I can still get along with someone in line at the market, even if we went head to head at a town meeting the night before" (Interviewee 15). When people spoke of disagreements within the community, they also pointed out that they still felt that people were willing to come together to find resolutions, as highlighted by one longtime resident's plea:

> I want to work more towards bridging this (animosity between groups). People need to work together towards solutions and not work against each other –and that's hard for me and that's always what's been hard for me growing up here,

> because I don't like that polarizing effect that this is having on people around here– it shouldn't be like that. We're a hugely small community and we need to be working together. (Interviewee 8)

This statement reflects a desire to overcome divisions despite strong differences of opinion and distrust regarding some aspects of land management in the basin. For many, the Mono Basin is a place of social cohesion and community support.

A place of spiritual connection

Many interviewees described the value of the basin as lying in ineffable qualities such as inspiration, or spiritual connection. Though interviewees often described the physical beauty of the Mono Basin landscape, this category provides a distinction between beauty for aesthetic or use-value and the sense of awe and inspiration drawn from the landscape which many interviewees described as deepening their connection to this place. This was evident both in the words that were chosen as well as the tone of voice used when relating the special qualities of the basin. As one interviewee described, her first introduction to Mono Lake was its "reputation as a magical place" (Interviewee 29). Some reported that the inspiration gained from the natural environment of the Mono Basin contributes to a feeling of spiritual connection:

> I was awestruck by being able to swim in the lake with thousands of shrimp swimming all around me, or the spectacular panoramic views that are just everywhere – the drama of the Eastern Sierra and Mono Basin, and the enchantment of it was just something that hooked me big time. It hooks me at many different levels. It connects with my soul. (Interviewee 14)

For others, the inspiration drawn from the Mono Basin strengthened their faith in formal religious institutions:

> I know that for 147 mornings (opening the restaurant) I saw some pretty amazing sunrises. For me the greatest attraction here is the outdoors, the world around you –everything – the seasons that are so amazing and succinct. Down south you just have climate – we have weather here. I have a strong Catholic faith that for me is made that much more evident... I go to other beautiful areas in the world, but I always want to come back. There's something in your soul that it just kind of snags. (Interviewee 6)

Connection with place and inspiration gained from the natural world was expressed by interviewees across the demographic spectrum. One lifelong resident expressed an awe of nature that has developed over years of hunting trips in the far reaches of the basin,

> I honestly hate sitting on a [fire]truck watching those fires go - because there's nothing we can do and it just kills me. Because I love that area out there—out in the trees. I've seen some of the biggest deer of my life out there, the ugliest deer of my life out there. And just, it's a really cool area and there's so much wildlife and habitat out there. (Interviewee 3)

Other interviewees described their experience sharing the inspiration of the Mono basin with tourists or other visitors, "People remember [with a sense of awe] – oh that osprey carrying the fish, or that cloud of brine shrimp coming out of the tufa. Face it – a lot of what we do it based on emotions – based on love" (Interviewee 11).

A place of preservation

Most respondents expressed a desire for the Mono Basin to be preserved; however, visions of what that meant differed. The two most common visions of preservation involved (1) preservation of nature and (2) preservation of culture.

In terms of preservation, many respondents maintain visions of place that align with the Mono Basin National Forest Scenic Area plan, the guiding land management

document in the basin. Written in 1989, the overall management goal of the plan is to "protect its geologic, ecologic, cultural, scenic, and other natural resources, while allowing recreational, scientific, and other activities consistent with this goal" (Mono Basin National Forest Scenic Area Comprehensive Management Plan, 1989). The emphasis on preserving the ecological and scenic values of the basin were often echoed in interviewees' responses.

There were various rationales provided for the need to preserve the ecological characteristics of the basin. Preserving these ecological and aesthetic values, some argued, helps to maintain the ecotourism economy, "tourists come here because they want to go check out Mono Lake or they want to go check out the canyons down Highway 395, not because there's a gold mine or a farming area" (Interviewee 11). Others related to the "Mono Lake Story", a narrative created by the Mono Lake Committee that emphasizes a David and Goliath success story of preservation of nature persevering over the development of Los Angeles. As one interviewee put it, "the success story of the area is really important in the face of a demoralizing world" (Interviewee 18). From this viewpoint, taking measures such as limited water diversions or the restoration of stream beds served as a symbolic value. Many saw the preservation of the natural world in the Mono Basin to be a priority because it provides a respite for wildlife and ecological systems in a world that otherwise prioritizes human civilization. This interviewee explained, "It's supposed to be for the birds; it's got a high level of protection" (Interviewee 12). This statement parallels a popular bumper sticker printed

and distributed by the Mono Lake Committee that reads, *Mono Lake: It's for the Birds*, which points to the osmosis of place meanings perpetuated by the Committee.

In other cases, the desire to preserve the land was linked to a desire to preserve culture. This was framed in terms being able to pass down land-based activities to younger generations, "I think we all have same goal in mind…just to take care of this land and to raise more kids –and to let them be able to hunt" (Interviewee 4). Others described their desire to preserve as being essential to maintain their livelihoods and historical legacies in the basin:

> We have zero desire to create any negative impact – we're not trying to damage anything. This is our heritage, this is my blood…This is my passion, but it's hard to do when people are calling you a villain just for existing. (Interviewee 8)

In this instance, Mono Lake Committee supporters from outside the community left comments on a Committee blog post about increased mortality of a bird species in the basin. The blog post, which detailed an increase in mortality of a bird species in the basin, did not directly implicate the business owner in these events. However, mainstream narratives surrounding environmentalism and resource extractive industries led the commenters to place blame on the business owner. The business owner felt, in turn, that the Mono Lake Committee had not done due diligence in representing her place in the landscape.

These different place meanings surrounding preservation have led to conflict in views of how best to manage and preserve the land. Most interviewees simultaneously recognized the value of tourism yet felt that the increase in visitation was a threat facing

the preservation of the basin. However, solutions and responsibility for the preservation of the basin was source of disagreement. Some felt that the Mono Lake Committee was bringing in increased visitation but not properly managing the people:

> For instance, the park, because it affects me, because its right by my house. I can't tell you how many times last year I had busloads of tourists in my yard or climbing around on the tufas around my house – which is technically illegal. But you're offering this place, you're serving it up, and you're charging for it, and then you're not managing it. It's this double standard. (Interviewee 8)

Others felt that the lack of funding and involvement of the Forest Service was to blame:

> I mean all the partners are willing and able and ready to jump in but there's kind of like there's sort like nobody home at the Forest Service… it's like being married and your wife's never around. Or husband, or your spouse is gone all the time and you have a working partnership and you've got to raise kids and take care of a house and one person's always gone. (Interviewee 23)

Through these examples consensus can be seen around certain place meanings while disagreement remains over certain aspects. All of the interviewees expressed interest in preserving their versions of place meanings and agreed on the outside threat of over-tourism.

A place to use the land and be outside

Nearly all respondents reported that the ability to easily access the outdoors and perform outdoor recreation was a major benefit of living in the area, though types of recreation differed. While the political perspectives and demographics associated with these different activities varied greatly, nearly all of those interviewed were united by their love of doing outdoor activities in the basin. As one interviewee framed it, "if you

like the outdoors and doing outdoor activities, I like to call it the perfect little corner of the world" (Interviewee 6). The activities mentioned during interviews included hiking, climbing, skiing, birding, using off road vehicles, hunting, and, on more than one occasion, just wandering around and exploring outside. The two following examples highlight the similarity in people's interests, despite the difference in execution. One interviewee enjoyed "kind of wandering around with binoculars and a guidebook on the shoreline" (Interviewee18), while another interviewee explained, "It's just like – 'oh, you see that hill over there? I'm gonna drive from here on a dirt road to that place' – but get lost in the meantime and find something new" (Interviewee 3). On a surface level, these activities are very different, yet the spirit of exploring the land in an unstructured manner was strikingly similar.

A place to be alone

While a most respondents were united by a desire to get outside, they were also similar in the quality of the experiences that they were seeking when in the outdoors. When asked about the special qualities of the Mono basin, nearly all interviewees commented in some form about the closeness to nature and wild that it provided as well as the "untouched" quality of the area. This was true both when people were pursuing outdoor activities as well as when they were describing their everyday routines. Often people described the Mono Basin in terms of its wide-open spaces such as this interviewee who explained,

> As you look out across the lake…. there are no buildings, there are no lights, there are no roads visible. There's just this open landscape that looks largely what it looked like probably hundreds or thousands of years ago. Or, you imagine it does. (Interviewee 23)

Often, interviewees described the Mono Basin in terms of what is was not. In many cases, this was framed in terms of lack of development in the basin and the feeling of being away from the busyness of city life. This interviewee described how the people who choose to live in the Mono Basin share these values,

> Most people here value the remoteness, value the lack of development. People that live here are outdoorsy, or they enjoy the peace and quiet – or you know, the feeling of not being so oppressed by a massive population and all that. (Interviewee 7)

Other times, the place meanings surrounding solitude were revealed in more tangible ways such as a desire for privacy or to not be in crowded in areas,

> One thing that pops to mind right away is the privacy…there's so many places in California – like Yosemite, I avoid Yosemite in the summer – it's so crowded, and some of these other popular places are getting like that too. But the benefit of here is that there's places where there's nobody. There're beautiful, rugged, incredible areas – even on the fourth of July, where you can be the only one on some big, beautiful mountain range. (Interviewee 29)

Often times, when trying to describe what made the Mono Basin special, the feeling of remoteness was described in contrast to larger metropolitan areas,

> I really can't handle being cooped up in one spot and having to be around a bunch of people all the time, like if I ever want to get away from people I just go out my backdoor and down the hill and I'm gone. (Interviewee 3)

The ability to get away from people was mentioned frequently, along with being able to get away from symbols of people, such as noise. This interviewee who described why he didn't recreate with off-road vehicles,

> I grew up around that lifestyle, but up here I like to play. I like the serene. I don't like loud noises, loud machines – I don't even like lawn mowers – it's the great things about living here – you wake up Saturday morning and most people don't have lawns. You hear birds chirping. (Interviewee 15)

Whether the reasons were ineffable feelings of being away from mass society or more tangible details such a noise, most interviewees expressed that this separation from society was an important aspect of their experience in the Mono Basin.

UAS in the Mono Basin

The Mono Basin was described by participants (above) as a place valued for quiet and solitude. Potentially a contentious and disruptive technology, UAS have the potential to interact with sense of place in the Mono Basin. One of the central goals of this research is to assess and analyze stakeholders' attitudes surrounding UAS use to better understand the interactions between sense of place and UAS. This relationship has direct implications for the potential introduction of this tool to the basin. In this section, I first explore the concerns expressed by Mono Basin Stakeholders. This is detailed in the subsection "UAS as Intruders". In addition to addressing concerns, I also describe the contexts in which UAS use was considered acceptable. The dominant factors that pave the way towards accepted UAS use are discussed in the subsection "UAS as a Tool". In

the final subsection, “Spatiality of UAS Use”, I draw on the previous two subsections to explore how those viewpoints are expressed spatially across the Mono Basin.

UAS as intruders

During interviews, Mono Basin stakeholders shared stories about UAS ranging from personal experiences to hypothetical situations. These accounts highlighted a variety concerns; however, a common theme among them was the underlying apprehension that UAS were felt as an intrusion. The concept of intrusion was drawn upon both to describe the UAS users as well as what the UAS itself represented. These perceived intrusions of place in the Mono Basin are central to understanding interviewees’ concerns over UAS use. This section explores the ways in which these perceived intrusions on place are is manifested in the specificities of stakeholders’ concerns.

Nearly all interviewees agreed that most recreational UAS users were under-prepared to operate these machines in a responsible manner. For many, the fact that UAS are so easily acquired that “anyone can get it on a whim and have it in two days on Amazon Prime” (Interviewee 22) was part of the problem. Many lamented that UAS users are not required to have training and also pointed to the lack of initiative UAS users take in learning about their surroundings. As one interviewee explained,

> People won’t take any time [to learn the rules], there are exceptions, but most people just come down here and let ‘em loose and people don’t take everything into consideration. I can see how much fun they are for people, but they need to learn what the impacts are and what the regulations are. (Interviewee 14)

The perception that UAS users lack knowledge of the impacts that UAS use could have on the Mono Basin came up often in interviews.

One common theme throughout the interviews was the belief that UAS are utilized largely by outsiders who do not have an intimate understanding or respect for the Mono Basin. The observation that "I have never seen a local person operate a recreational drone nor have I ever heard of a local person operating a recreational drone" (Interviewee 20) was shared across interviews. The distinction of who is using the UAS is important because the social cohesion that helps to mitigate some tensions among Mono Basin locals does not extend to those outside of these social networks. In general, interviewees displayed little trust that outsiders would make responsible choices. As one interviewee stated, "It's like any other item that you'd have to use responsibly, leaving it up to the general public is hard. John Q. Public is just not terribly savvy" (Interviewee7). This viewpoint was echoed across interviews, as displayed in the way this interviewee described her first reaction upon seeing a UAS:

> I think – "Oh, where's it going next? What's it going to do? It's going to harass an osprey, crash on a human". I think about that with visitors [without UAS] too, but with a UAS I think it's more pronounced. Maybe because as soon as they arrived the bad behavior followed immediately – "oh let's chase this flock of gulls". (Interviewee 18)

In many cases, this distrust was brought on by the belief that the person in control of the UAS would not make choices in the interest of the Mono Basin flora, fauna, and human community.

In nearly all interviews, UAS users were described as the “other” and it became apparent that many viewed the types of people who use UAS as having different values than those living in the Mono Basin. One recurring theme was the belief that many recreational UAS users primarily partook in the activity to “get something you can post on the internet” (Interviewee 2). As one interviewee described, UAS users are “people taking pictures of themselves – which is kind of this narcissistic vanity thing” (Interviewee 29). The idea of UAS users as having superficial reasons for recreating with UAS was presented in contrast to the more intimate connection with place held by local stakeholders. As one interviewee stated, “I tend to think of people with drones as not necessarily really being very sensitive to where they are as much as ‘oh this is really cool, I want to get some pictures’"(Interviewee 19).

Beyond perceiving a difference in values between UAS users and locals, many also shared the assumption that sharing UAS imagery on social media was the ends to most UAS users’ activities. This was closely tied to another concern. While many interviewees explicitly expressed that visitors were a necessary and welcome part of the Mono Basin, many also agreed there were only certain areas that visitors should be encouraged to go. The Mono Basin management plan encourages “focused recreation” within the basin, meaning that all visitor activities are directed to certain areas to minimize impact. While designed to lessen environmental degradation, the management plan also serves to give local stakeholders control over the way place is shaped in the basin and opportunities to escape interactions with visitors. Many residents of the basin

expressed anxiety over the changes that social media was bringing to the basin in terms of derailing focused recreation. When these boundaries are crossed a threat to place is felt, as described by this interviewee,

> With the internet and smart phones more and more people are finding more places that are out of the way, but those same people don't know what they're doing. They're learning more and more places to go but they're not learning more about how to be respectful – it's a bad combination. Drones go hand and hand with this problem. They have this technology that they didn't used to have but they don't have any – if there is an appropriate way to use them – they don't think about it at all. So, they have this ridiculous technology and they just have no idea how to appropriately use it. (Interviewee 16)

The intrusion that is felt when visitors overstep socially constructed boundaries is amplified by the use of a UAS. This is both due to the potential for UAS to further the exposure of "locals-only" spots as well as the degree to which the intrusion is felt when a visitor is recreating with a UAV rather than an activity that is more in line with the accepted land uses.

Another dimension of intrusion that was commonly expressed was the close association between UAS and the representation of technology and modern society. As one stakeholder explained, "It's an intrusion on wilderness. It's not natural. It's the same as a power tower – it's what it represents, and it's that it's in the air – now the sky is also being intruded on. It's a 'filling in'" (Interviewee 28). In other words, the very symbol of UAS indicated a break from the sense of place that many in the basin valued and triggered an association with the world that many in the Mono Basin were explicitly aiming to escape. Many of those interviewed expressed views such as these,

> It’s not even that I feel like I’m being spied upon. It’s just like hearing gunshots from far away – it’s there. The air isn’t clear somehow. It’s just one more place for human presence. (Interviewee 18)

The comparison of UAS and other mechanized recreation tools such off-road vehicles or guns was used by several interviewees. In these cases, UAS use was described as fundamentally changing the experience of being in a wilderness setting away from humans,

> When I go to wilderness – and I would extend that to a place like Mono Lake that isn’t technically Wilderness but it definitely has wilderness characteristics, you have an expectation that – [a UAS] is just not congruent – it’s just not compatible. I think because of the mechanization and the sound, and the impacts – it would be like – to me it would be like an OHV in the air. (Interviewee 15)

Another interviewee explained how these activities interfere,

> You don't allow use that basically destroys the intent of all other uses. Which I feel that drones do. They fall in the same classification in my mind as recreational shooting. When you have someone recreational shooting, they basically have created a zone of no fun for a number of miles around where they're doing their activity. It’s exceedingly loud, everyone knows what that sound means, and it induces fear, and its simply dangerous. (Interviewee 2)

It is perhaps unsurprising that community members who felt that other forms of motorized recreation interfere with place meanings would find the UAS bothersome. However, interviewees who did enjoy other forms of mechanized recreation also felt intruded upon by the new technology, as was illustrated by this off-road vehicle user,

> It's having somebody watch you when you're doing something— when you go down there to be by yourself. That's one of the reasons I hunt because you get to go out, nobody's around. You get to be just you and the animals. And it's relaxing. You go down there to relax, you know you have a rough day at work up here you

> go down to shoot your bow and then people are buzzing you with drones. (Interviewee 3)

This indicates, perhaps, that while noise is a component of the bundle of disturbance, it is not the only issue. As one interviewee simplified, "it just has to do with the feeling of solitude and feeling like that infringes on it" (Interviewee 18).

In some interviewees, the separation that UAS allow the user from being "in" a place was specifically named as a reason for their lack of desirability. Interviewees expressed dissatisfaction that UAS users could explore a place or claim to know it without being on the ground and putting in the effort to explore it. As this interviewee explained, "I understand it's 2017 and that's how people – how we – have chosen to recreate and use technology, but in my mind I think you should have to explore it on foot and kind of see things" (Interviewee 13). The fact that UAS could easily breach boundaries – physical and otherwise – with minimal effort on part of the UAS user was troubling. Others addressed this issue in terms of what was being missed by interacting with place from this heightened perspective. This interviewee explained her irritation with the trend toward using UAS,

> It pisses me off a little – and again, I think it's this removal from the land – even as scientists. It's rather rare for a field scientist to exist anymore. It's sort of me and geologists, that are out on the land. More and more it's done through remote studies and aerial imagery. I think you always learn more if you're out poking around on the ground. You could never get the extensive aspect over a bigger landscape [that UAS offer]. But, what do you miss by not doing it from the ground? So that's the little peeved part. What's the benefit of it being faster – again, if you're losing things. Understanding what – when you walk across these landscapes – really what's in between the sites, what's the nature of the sites on the ground. Understanding the bigger context – of the topography, of the forest structure – you just don't know until – it's like a friend. You don't know them until

> you sit face to face and know their habits – and what animals move through. You just really need a familiarity. (Interviewee 28)

In her view, something was inevitably lost by interacting with this world from this separated vantage point. She saw this as an unwise compromise, even for science, which is often thought of as a purely objective pursuit.

As illustrated by the examples provided thus far, both the UAS users and the effects of UAS use are perceived to be an intrusion of place in the Mono Basin. The specific grievances and ways in which these intrusions were felt varied across interviews; however, many concerns revolved around safety, privacy, and noise.

The primary safety concern expressed was that of interference with manned aircraft or fire and rescue efforts. Most interviewees were not fully familiar with the FAA regulations surrounding UAS and the small airport in the Mono Basin; however, they had a general idea of the potential for conflict. Several interviewees referred to their personal experiences with local wildfires,

> When we had our fire down here – it was a pretty big fire, a lot going on – shutting down traffic, keeping people out of the way. And they got buzzed a couple times by drones. We had to shut the whole thing down. (Interviewee 4)

The fear that UAS users would "put other people's lives in danger just so [they] can get a cool video of a fire" (Interviewee 3) was expressed several times across the interviews. Consistently, the described UAS user was always someone from outside the basin.

One concern with integrating UAS into the United States civilian sphere that is often mentioned in media is the invasion of privacy; the participants in the Mono Basin

similarly reflected this trend. One way that an invasion of privacy was described was by the ability for the UAS to "see" what would otherwise be more discrete. Most commonly, explicit concerns for privacy were centered around the presence of UAS over personal residences, with statements such as "I don't want people flying drones over my house" (Interviewee 19). For some, this desire to remain discrete extended across the basin at large,

> When I go paddle or row on Mono Lake, I'm attired in a way that I would choose not to be seen in public. I'm doing something that's for me – and it's not just on the lake it's anywhere. I don't want a drone picking up on me and my activity. No matter what I'm doing or who I'm with or anything else. (Interviewee 5)

However, in general the further out from individuals' homes, the concern for privacy became blurred for the concern over not being able to feel alone. In fact, some even corrected themselves as they worked through their feelings,

> It's an invasion of privacy. Or, it's not even – it's a public place, invasion of privacy isn't exactly what it is, it is an incompatible use. It's up there with if someone sort of drove in there with a motorcycle and spun out around us and revved up the motorcycle, you know it's just, it's loud, its obnoxious, it changes, it fundamentally changes the experience by having it there. (Interviewee 23)

The most prevalent concern, both in the number of interviewees who noted it and the time and vigor spent discussing it, was the noise that is created by UAS. This concern manifested in a variety of ways. Some complained that the noise interfered with their activities,

> They're loud! They're really loud. You're trying to be sneaky quiet, sneaking through the bushes crawling and then you get a, something that's gonna – shoot that'd scare off a dog, none the less a bird. (Interviewee 3)

At other times this concern was expressed in terms of visitor experience, “it's kind of ruining the experience for all the other people there at South Tufa because it’s this obnoxious noisy, thing buzzing around…potentially impacting hundreds of people” (Interviewee 29). Others focused on the negative impacts that noise could have on wildlife, such as this interviewee who recounted a personal experience of encountering a UAS in a nearby Wilderness area,

> It definitively affected me in a sad kind of way, and not so much for my experience, but more for the mergansers - and you know, for whatever creatures where up against that side wall that probably thought it was a predator. (Interviewee 20)

The concerns expressed by interviewees primarily were those of noise, safety, and privacy. In terms of priority among participants, far more attention was given to disturbance from noise rather than safety or privacy.

UAS as tools

Mono Basin stakeholders considered UAS to be useful tools under certain contexts. The two aspects of UAS use that were most frequently discussed when delineating acceptability were (1) the purpose of the UAS use and (2) the governance of the UAS use.

One of the factors that contributed to acceptance was having a justifiable reason for using the UAS. In general, interviewees were more inclined to express positive feelings about UAS use for practical reasons such as research, emergency response, and professional videography rather than recreation. While some interviewees espoused that

recreational UAS users have a right to enjoy their pastime, these affirmations were often followed with reservations when talking about use in the Mono Basin. However, many had amicable attitudes towards UAS when viewing it as a practical tool, citing their ability to be less disturbance and more effective than traditional methods of collecting similar information. As one interviewee explained,

> If you can provide information that's going to help preserve what you're studying, and there's no other way to get it, or no easy way, or an expensive way to get it, then it's a very good tool and it should be used. (Interviewee 27)

However, while many interviewees recognized the potential utility of UAS, the disturbance to pay-off balance was important. Many expressed interest in the potential for UAS research applications in the Mono Basin, yet they were also concerned that the boundary of usefulness would be pushed and urged to "not just expand research because we can" (Interviewee 26). Several interviewees echoed the sentiment that

> Each situation needs to be evaluated and kept in mind - what is the least impactful way to get the information you need? Is the drone better or worse way to get that information? And I know that drones in many cases may be more cost effective but for me personally the environmental values and protection of wildlife should be place higher than the economic considerations. (Interviewee 20)

This exemplifies how the desired ethics of UAS use align with each of the interviewees' view of place in the Mono Basin. If a tool is to be condoned it must be to further the existing conception of place in the Mono Basin, in this case, a place of natural preservation. This extension of the place-based values being applied toward UAS use could be seen across place meanings, such as this interviewee who acknowledged, "UAS

for research fits well with the idea of human and natural systems co-existing" (Interviewee 18).

The purpose in the UAS flight was so important that many acknowledged that their attitude towards seeing a UAS would change if they knew that it was for a practical purpose, saying, "I don't want to see them, but if I know it's for research and [operated by] people who are thinking about the impact it's different" (Interviewee 21). This example also highlights an important element of UAS use – the purpose of the use is also closely tied to the perception of the type of person using it and the likelihood that the UAS user is following regulations and aware of potential impacts.

The regulatory structure of UAS was discussed in all interviews. Most agreed that the current state of UAS governance in the Mono Basin was inadequate, but there were several different visions of how a better system would look. Some were in favor of creating a more comprehensive and congruent basin-wide UAS plan as a means of improving the management of UAS. This interviewee expresses a common frustration,

> Regulations in the Mono Basin are not adequate. The Forest Service should prohibit drones in the Scenic Area. Management of property along the lake is so complex that the visitors can't understand – it's not going to be effective. The visitors don't care and they're going to get it wrong even if they try. (Interviewee 18)

Indeed, the multitude of different land owners and governing agencies has led to tapestry of different UAS regulations in the Mono Basin that is not easily described or interpreted to visitors on the ground (Figure 4). Currently, recreational UAS use is prohibited over California State Park lands (including the over the lake) but allowed over Forest Service

and BLM lands. Many of the focused recreation areas cross these boundaries without clear distinction. In a land of open spaces and little to no personnel to enforce boundaries, anything less than landscape level management can be a challenge.

While most agreed that enforcement of any regulations would be difficult with the limited resources available, for many, permitted and regulated UAS use was the ideal. One interviewee explained that this factor made the difference in acceptability in his mind, “I mean, you could have appropriate research drone use over the entire basin if its permitted and planned for, but I wouldn’t extend that to [unregulated] recreational drone use in my mind” (Interviewee 23).

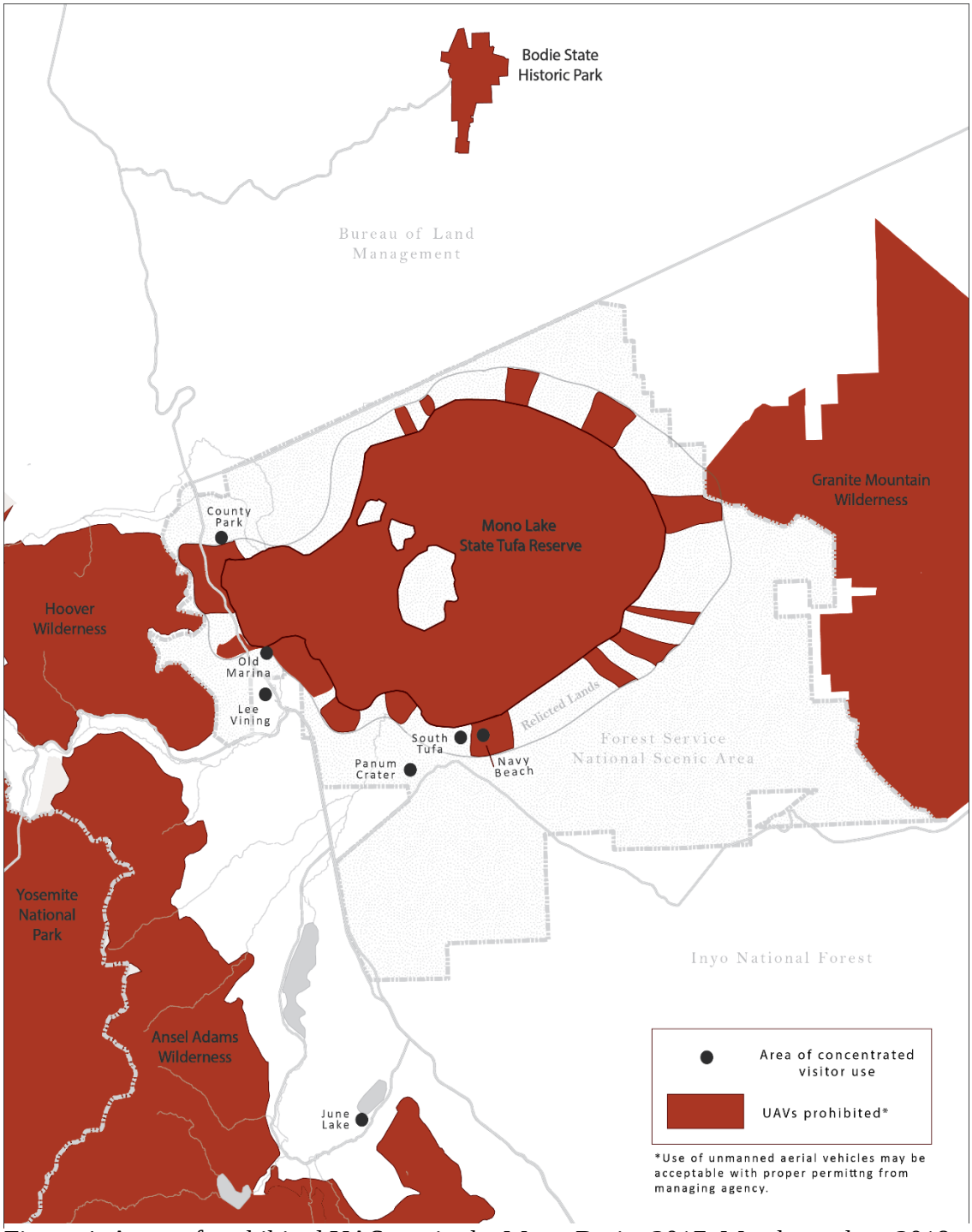

Figure 4. Areas of prohibited UAS use in the Mono Basin, 2017. Map by author, 2018. NAD 1927 State Plane CA III. Projection: Lambert Conformal Conic

Some interviewees drew on their experiences with the gun regulatory structure and explained the need for a similar process for UAS,

> That stuff if understandable because they already went through the processes and permits for the area and stuff like that. If you're permitted to do something, I'm okay with it. They've gone through the right steps to do it. We all have to go through the right steps for hunting. You can't go on private property or anything like that. There needs to be a set thing for [UAS users]. (Interviewee 3)

For many, a permitting system provided the reassurance that proper thought was being given to where, when, and how UAS were being used.

Not all interviewees thought that simply increasing regulations was the best approach, however. Some were hesitant that there were already too many regulations in place, and expressed sentiments such as, “There’s so many restrictions handed down from the government – they tell you what you can and cannot do in your dang bedroom” (Interviewee 6). Instead, they looked towards self-regulation. Oftentimes, interviewees were conflicted about the best way to encourage responsible UAS use and expressed that “you just hope people use their brain!” (Interviewee 6) while they remained doubtful of the effectiveness of that strategy. Others suggested self-enforcement by the community suggesting that, “if someone chooses to fly their drone in an inappropriate, unreasonable place or situation, then the wrist rocket is permissible to drop that thing” (Interviewee 5). However, more commonly interviewees saw education as an important component of the solution. While some felt that increasing regulations would do little to stop those who were intent on breaking the rules saying, “you can make all the rules and laws in the world, and you’re not going to prevent something from happening” (Interviewee 4), both

structured and unstructured education was presented as a possible solution. This interviewee suggested requiring formal classes for UAS users:

> The only way you can probably help it is more classes on it. Or have to take a class whenever you buy one that says: places you can fly, places you can't fly, things you should do, shouldn't do, stuff like that. It's the same thing as why us hunters have to go through a hunter's safety. (Interviewee 3)

Other interviewees likened the issues with UAS to broader land management issues in the Mono Basin and expressed desire for community enforced education. This interviewee explained,

> You've got to educate. Like earlier this summer when the Forest Service didn't open any of their campgrounds up there but there were still people up there camping on our land, crapping everywhere, I'm sorry, but destroying our land. But you've got to educate people and tell them, you know this is not right. You can't light a fire just because you want to. Educate. That's the only other way you can do it. Or, you shut everything down. Which I'm 100% against that too. So, and if you educate – I mean I feel I educated [the kids in the community] very good. They all learned. Take responsibility for yourself and don't screw things up for others. And they love the land. (Interviewee 4)

This statement indicates hope that education would allow UAS users to have the knowledge and desire to make better decisions. While most interviewees agreed that something needed to change in the current UAS management paradigm, they were equally uncertain about the hard steps needs to reach these goals.

Spatiality of UAV use

The previous two sections have explored both the concerns surrounding UAS use as well as the contexts in which UAS use would be considered acceptable. This section

will explore how those themes play out spatially. Using the borders of “No UAS use” zones that stakeholders colored in during interviews, points of agreement can be identified by the level of darkness (Figure 5). Although no two finished maps were the same, certain areas such as designated Wilderness, developed recreation areas, private residences, and the local airport stand out in a composite map. These areas of agreement are detailed below.

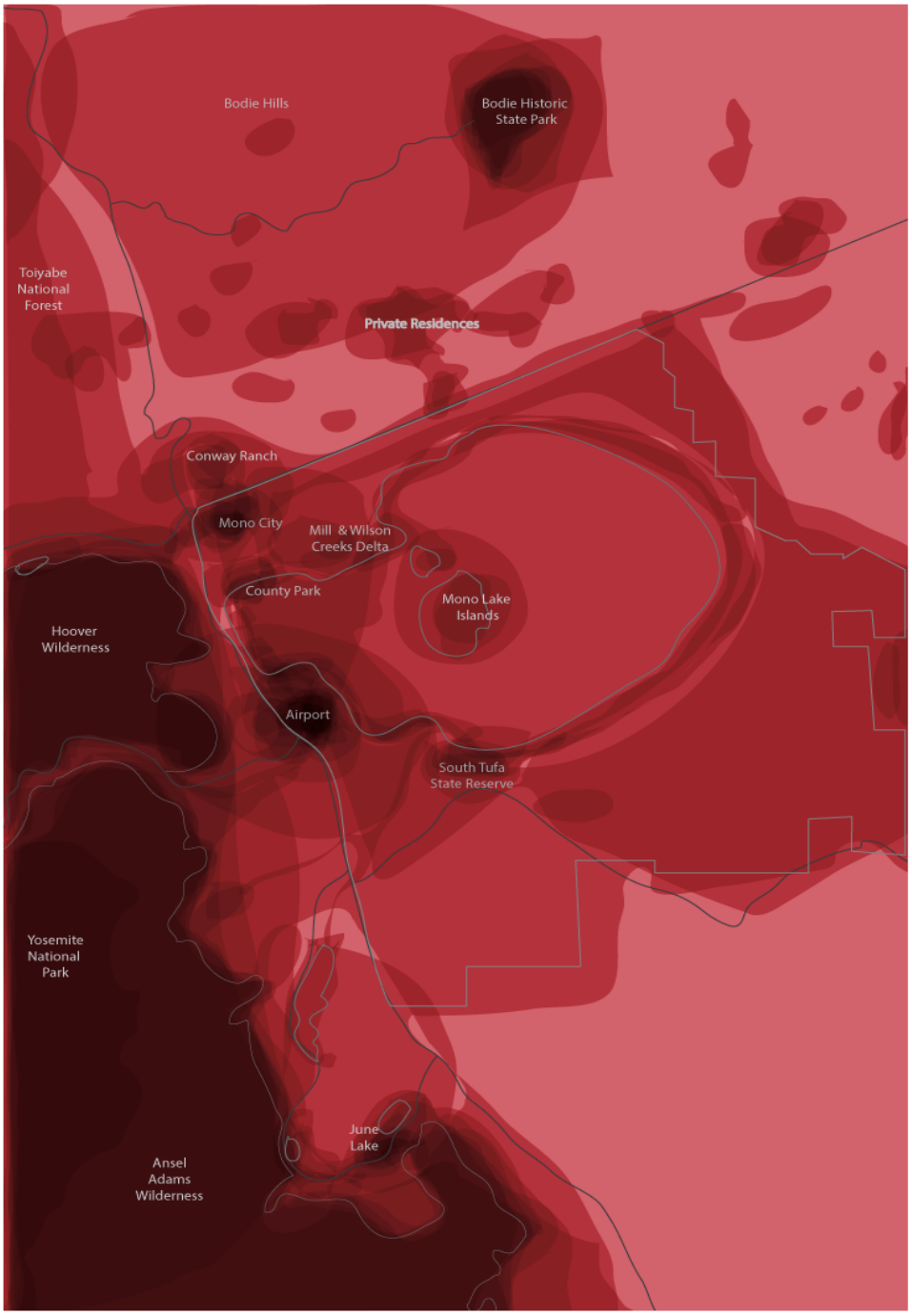

Figure 5. Composite map of all interview maps reflecting areas where interviewees indicated that UAS use would not be appropriate under any circumstance. Darker areas indicate more agreement among participants. Map by author, 2018. NAD 1927 State Plane CA III. Projection: Lambert Conformal Conic

The darkest area on the map (indicating the most agreement) is the local, untowered airport. Most interviewees did not feel the need for a drawn-out explanation of the boundary that they drew around the airport. In passing, many explained that it was already illegal and that is was an obvious safety hazard.

Another set of areas that were consistently marked as inappropriate for UAS use were designated Wilderness Areas and Bodie State Historic Park. As one interviewee stated, "[UAS] are motorized - there's not many places you can go to get away from motorized things and wilderness you can" (Interviewee 15). The idea of being able to utilize the Mono Basin to escape these symbols of mass society came up often in interviews and many times, when asked to delineate the boundaries of these wilderness characteristics participants defaulted to existing political lines.

After designated wilderness, developed recreation areas were most likely to be identified as inappropriate for UAS use. This interviewee explains how UAS will detract from what the experience of interacting with the Mono Bain,

> Concentrated recreation areas – places that are developed as areas for people to experience *this place*. Because I think that drone use in concentrated recreation areas really detracts from people's ability to be in a place with nature, because all of a sudden there's this huge thing whizzing around your head… they detract from what they're trying to experience. People should be able to go to those and expect to have a meaningful relationship with the place rather than with people's toys. (Interviewee 2)

This previous quote indicates a desire to preserve certain area's wilderness characteristics, not just for local stakeholders but also for the general public. However, as

shown in earlier sections people were not unaware of the conflict that increased visitation presented to these place meanings. This interviewee explains,

> It just comes down to we have more and more people that we're trying to cram into fewer and fewer wild spaces. And how to you balance that? And I think the bright line always needs to be drawn to preserve the ability for people to be able to get outside peacefully. When we lose that we lose a lot. We lose so much as a culture. (Interviewee 5)

As illustrated by this statement, place meanings associated with wilderness characteristics are already strained by the inclusion of more people. The inclusion of UAS and other mechanized tools exacerbates the stress that is put on these place meanings.

Though not it was not expressed consistently across the different communities in the basin, many interviewees thought that the land over private residences should be off-limits to UAS use. The community of Mono City is shown to be much darker than the town of Lee Vining, even though the number of interviewees who reside in each of the communities is approximately even. With a few exceptions who reasoned that "private land owners can do whatever they want", most interviewees' initial reaction was that they didn't want UAS use in their personal space or over their homes.

The composite maps of areas deemed appropriate for open UAS use (Figure 6) and conditional UAS use (Figure 7) showed less agreement than the composite map that detailed areas where UAS use was deemed inappropriate. The map of "Open UAS use" roughly mirrored the map of "Inappropriate for UAS use" map. In general, the area's most often deemed appropriate for UAS use were on land owned by the BLM and USFS that were not frequented often and outside of the Mono Basin National Scenic Area

designation. However, the magnitude of agreement was not as high as with areas considered inappropriate for UAS use. One reason for this is the inclusion of the "Conditional UAS use" category. Many interviewees chose conditional UAS use in place of open UAS use for areas that they didn't deem completely inappropriate for UAS. However, as evidenced in Figure 5, there was very little agreement among participants with the conditional UAS use category. This is reflective of both the range of possible conditions as well as the uncertainty that participants expressed during the exercise. Many participants noted that they had never thought in detail about how they would regulate UAS use and thus were actively forming and changing their opinions as they worked. Often, the participant changed designations to conditional in the middle of the task as they began to consider the reasons behind their rational. The most common conditions suggested by participants were: seasonality, the length and overall number of flights, permitting, and purpose of the UAS mission.

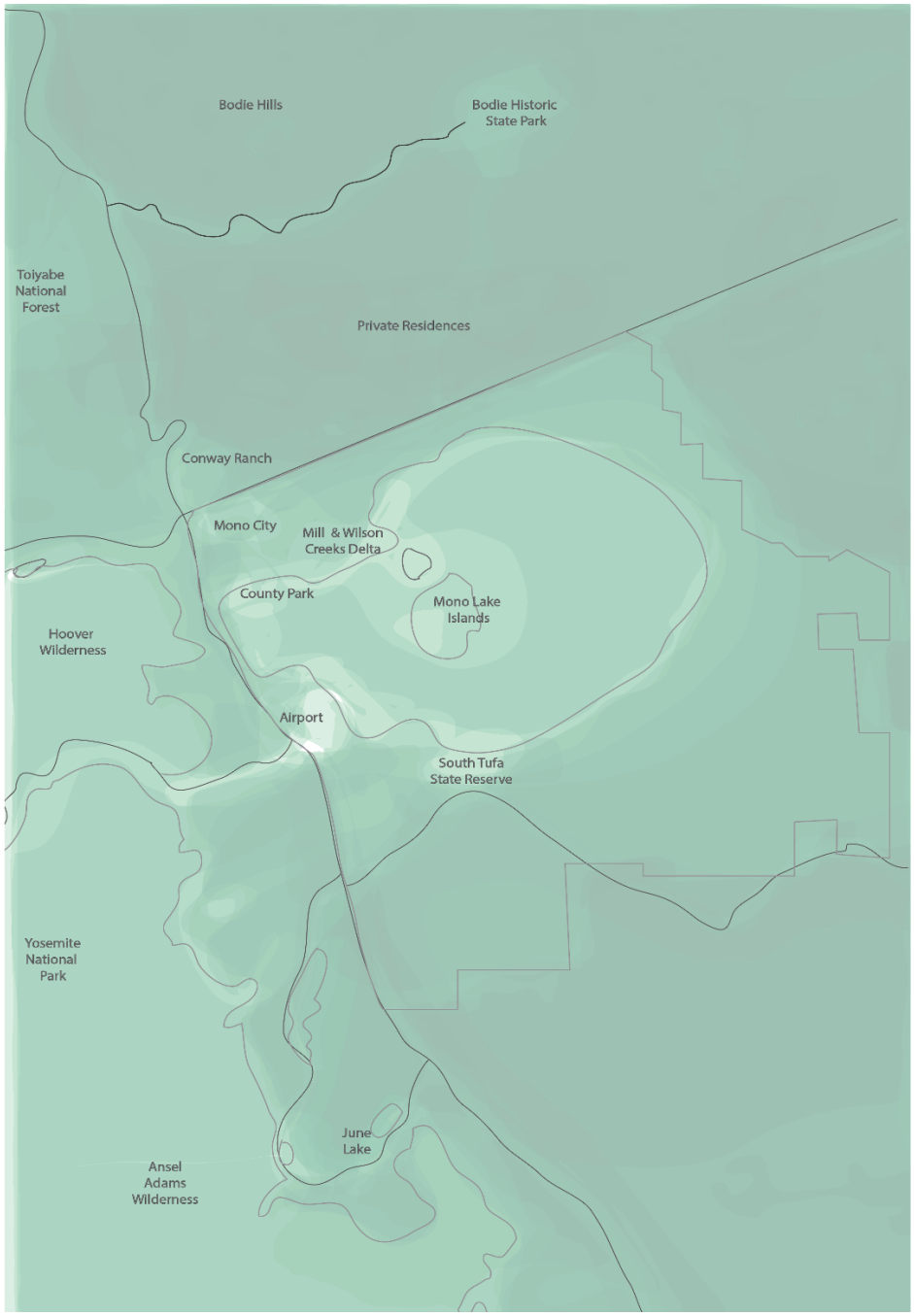

Figure 6. Composite map of all interview maps reflecting areas where interviewees indicated that open UAS use would be appropriate. Darker areas indicate more agreement among participants. Map by author, 2018. NAD 1927 State Plane CA III. Projection: Lambert Conformal Conic

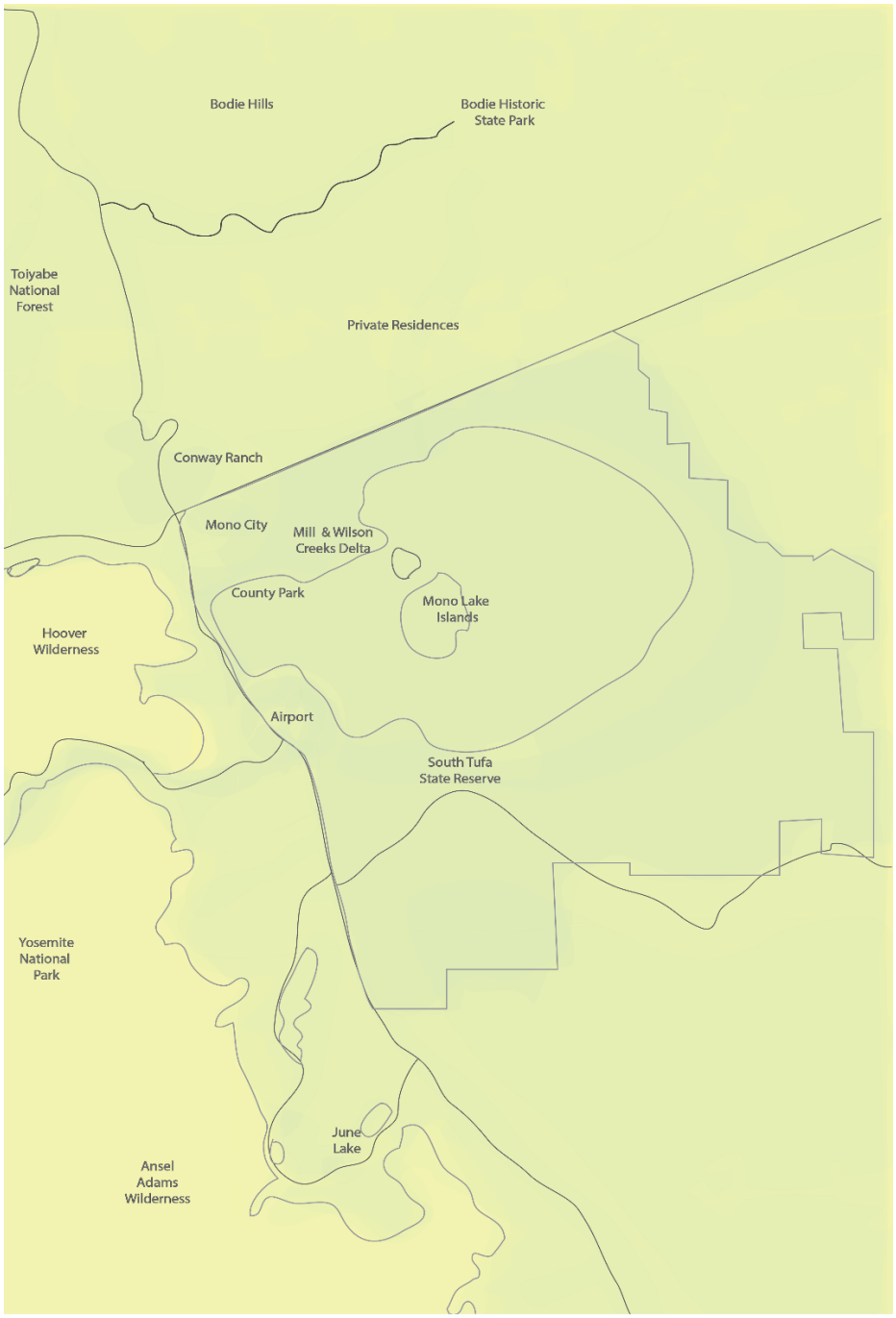

Figure 7. Composite map of all interview maps reflecting areas where interviewees indicated that conditional UAS use would be appropriate. Darker areas indicate more agreement among participants. Map by author, 2018. NAD 1927 State Plane CA III. Projection: Lambert Conformal Conic

1.6 DISCUSSION

What have we learned about UAS and sense of place? How does this relate to the introduction of UAS as a research tool in the Mono Basin? This research contributes to multiple aspects of these questions, adding to: (1) understandings of evolving place meanings in a rural, yet tourist-dependent area, (2) the impacts of UAS on place meanings, and (3) how place meanings can be useful for natural resource management.

Place Meanings in the Mono Basin

Before examining how UAS interact with sense of place in the Mono Basin, it is useful to pause and consider what we have learned about the evolving character of the place meanings in this area. As other researchers (Davenport and Anderson, 2004; Yung, Freimund, and Belsky 2002) have found, place meanings in the Mono Basin are not homogenous. There are points of conflict as well as points of consensus. However, what is especially interesting about this place is the tension that exists between agreed-upon place meanings of community, wilderness, and solitude, and the influx of visitors that many in the basin actively pursue as economic and conservation-based strategies.

Harvey (1996) has presented the idea that time-space compression and anxieties over the global flows of commodities, ideas, and people have resulted in place-based resistance. We can see this in the solidification of hyper-local place identification in the basin. Although place-meanings in the basin are far from uniform, there is consensus that the Mono Basin is – at least partially – defined by what it is not. The Mono Basin is not

the city. It is not “the rat race”. It is a place where people take care of each other for reasons beyond capital and where they value quality of life over income. Despite their differences and varying levels of interaction with outside markets, most interviewees described the Mono Basin as a refuge, at least symbolically, from what Harvey describes as the global flows of capitalism. For many stakeholders, the Mono Basin offers an “authentic” connection with place in contrast to the perceived homogenization of city life. This place-based commonality has direct implications for the way that UAS are received in this community.

However, despite this reactionary sense of place, there are attempts to draw in more visitors. One way of understanding this this is Harvey’s proposition that the drive to create solid places is based in part by a desire to compete for a share of this mobile capital (1996). The Mono Basin largely is sustained by a tourist-based economy. However, this research suggests that economic considerations are not the only driving factor in the desire to share place with visitors. Many interviewees expressed that the values that Mono Lake had to offer were a benefit to humanity at large and should be experienced by all. The interviews highlighted a disjunct felt between a desire to share certain place meanings with outsiders and inevitable deterioration of these place meanings that followed by their inclusion. The tension that exists between these two conflicting ideas shows how place meanings are unlikely to remain constant.

In this light, it is important to consider the dynamic nature of place. If accepting Doreen Massey’s understanding of place as a process (1994), we can recognize that place

meanings in the Mono Basin are in a state of constant development, influenced not only by the historical and physical framework upon which they are draped, but also by the interactions of the people within it, and by their relationships with the outside world. However, the findings of this research do not point to a seamless meshing of cultures and ideas on the landscape. Instead, it is useful to understand this process as a struggle, influenced by the power dynamics within the basin and the larger structures and processes that occur outside of the basin. Massey presents the idea of power geometry to explain how places are shaped unevenly. The dominant power structure (i.e., agencies and government) within the basin resides on the side of Western-Anglo ideas of ecological preservation, and indeed this is the place story that is prevailing. While most in the basin highly value its natural resources, those whose conception of place is also linked to cultural ties are is not being as actively represented and it is a source of contention. As an example, let us consider the local business owner who was upset by a Mono Lake Committee blog post that received negative attention (directed at her business) from blog followers outside of the basin. Her concerns were less about economic loss than of a misrepresentation of her place in the landscape. This example is especially interesting because it not only relates to the players who are shaping place meanings from within the basin, but it also points to the influence of outside forces in shaping place. In this instance, the negative comments received on the blog post were from people outside of the basin; however, they further solidified the idea of the Mono Basin as being a place of ecological preservation rather than a multigenerational home for people.

The question of who gets to shape place in the Mono Basin is especially relevant to this discussion. Is it the multi-generational locals? The environmental non-profits and federal agencies? Or the hundreds of thousands of visitors – carrying with them national narratives and ideas of place – who briefly spend time in the basin? This struggle over place creation can be seen in the disagreements over how to preserve the qualities deemed "special" in the basin.

Mono Basin Place Meanings and UAS

Place meanings can provide a valuable context to understand the politics that influence natural resource management. However, prior to this research, it has not been studied in relation to UAS. This research indicates that an understanding of place is integral to successful management of UAS in the Mono Basin. UAS, tools that observe the landscape from above, are inherently separate from the place that they are viewing. They view the landscape as space to be quantified or as an aesthetic to be shared rather than a place to be experienced. This is in conflict with the intimate sense of place that many stakeholders experience the Mono Basin.

At the same time, the media and knowledge produced by UAS are actively shaping the way place in the Mono Basin is viewed from the outside. Based on stakeholder interviews, people in the Mono basin are committed to maintaining a specific sense of place in the basin; the idea of place being shaped by those who are perceived to not even having "truly" experienced the place is especially offensive. The noise that

accompanies UAS also shapes place for those within it, taking away the peace and quiet and interactions with wildlife that many in the basin value. Finally, UAS hold a symbolic value which is in direct conflict with resistance to global flows and technology. This research indicates that the ways in which UAS influence place often conflict with the visions of place that Mono Basin residents enjoy and perpetuate and therefore, careful consideration should be taken when introducing them as a research tool.

Implications for UAS Management

Although UAS hold the potential to interact negatively with existing place meanings in the Mono Basin, there were also instances in which UAS were viewed favorably. It is in these instances that we should look for the ways in which to most smoothly integrate UAS with place-based appropriate uses in the Mono Basin. Though this study was not exhaustive, the research suggests that there are certain steps that managers should consider when integrating UAS as a tool. In the following section, I provide recommendations for management practices.

Improve communications and education

In this research, I show that stakeholder perceptions of where UAS should be used and how they should be regulated were highly conditional and not uniform. Most stakeholders had a difficult time pinpointing exact boundaries for UAS and frequently expressed the desire to consult with others over such designations in order to fairly consider all factors. While they did not have all the answers, it was important to

stakeholders that whoever was controlling the UAS did. This was reflected in the consistency that stakeholders viewed professional UAS use more favorably than recreational UAS use. Many explicitly stated that their opinion of a UAS encounter would change based on their knowledge of the use and a leading reason for this was that they did not trust recreational UAS users to make responsible decisions.

At this point professional UAS use in the Mono Basin is in its infancy and most of the participants interviewed had minimal, if any, direct encounters with a professionally controlled UAS. The positive perceptions of professional UAS use are therefore subject to change if land managers are not thoughtful in implementing these projects. Two major components should be addressed: (1) engaging stakeholders before the implementation of UAS mission and (2) providing ample communication while the UAS mission is in progress.

This first strategy involves actively engaging stakeholders while in the planning process of management decisions involving UAS. This could take place in the form of public presentations or town halls. Two-way communication about the proposed UAS mission would serve multiple purposes. One the one hand, it would allow agencies the chance to connect with the public and communicate the need for the UAS. On the other hand, it would allow stakeholders to communicate aspects of the mission that are likely to impact them personally. Others (Brandenburg and Carroll, 1995) have found public involvement programs to be useful in facilitating communication surrounding emotional ties such as place meanings, that would otherwise be overlooked.

The second strategy involves communicating with the public while the UAS mission is in progress. This research shows that perception of UAS encounters is often colored by knowledge of the purpose. Therefore, land managers should take measures to preemptively inform the public of the nature of the UAS mission in progress. This could be carried out in a variety of ways. Temporary informational signs could be put out in the vicinity of the UAS mission to connect with passersby who might unintentionally come across the UAS. Efforts to inform the stakeholders could also extend to outreach via social media or other news outlets that locals interact with. The underlying idea is that by reaching out to stakeholders before they actually encounter the UAS, land managers may be able to avoid negative associations with recreational UAS.

Improved permitting system and regulatory structure

The lack of a clear regulatory structure across the Mono Basin was an issue for many interviewees. Although no one clear path exists to address this issue, there are other legal precedents such as the regulatory framework that governs hunting that could be drawn upon in developing a plan. Some of these measures, such as requiring all UAS users to meet certain standards before owning and operating a UAS, may need to be enacted on a national scale. While others, such as clear boundaries and permitting systems would be enacted locally.

This research found that most interviewees were in favor of increasing the level of training required for UAS use. Although professional UAS use requires a FAA assigned UAS pilot’s license to legally operate, recreation UAS use has no such requirements. A

training course, similar to a hunter's safely course, to educate the UAS user on etiquette, regulations, and safety considerations would likely improve not only the actions of UAS users but also the perception of UAS users among stakeholders.

Another strategy that could be pulled from the hunting framework is permitted use. Although many of the agencies in the basin already require permits for professional use, extending this to recreational use as well could be beneficial. This would allow land managers to decide where and when the least impactful UAS use could be carried out. From a stakeholder standpoint, many expressed that knowing the UAS use was permitted would give them the ease of mind that everything had been taken into consideration.

Finally, many interviewees expressed concern over the lack of cohesion in the UAS management plans in the Mono Basin. There are many different land managers with, at times, conflicting management goals; most interviewees felt that the inconsistent regulations were a barrier to successful management. Due to the nature of UAS flight capabilities, UAS users are at times very distant from their machine and tradition methods of delineating boundaries such a signs or physical barriers are not useful. In this case, even if a UAS user were permitted and attempting to follow the rules, if the boundaries are not clear it is unlikely that they will succeed. This research indicates that UAS regulations may be best carried out at a landscape level. Clear rules would provide managers with an easier task of both communication and enforcement.

Careful consideration of UAS use

A final recommendation is that land managers should carefully consider whether UAS use is necessary for the application at hand. Although this research is limited in scope to stakeholders in the Mono Basin, the primary finding was that, in this place, UAS have a very profound and negatively perceived impact on the character of the place. It is likely that in other places where wilderness and solitude are highly valued that UAS will have similar impacts. Although there are certain cases in which UAS use will be the only feasible way to collect a data set, it is important for land managers to not only focus on what is being gained, but also at what is being lost. UAS are a potentially a useful addition to budget strapped natural resource managers; as we work towards integrating these tools into our management plans it is important that we consider not only the impact to wildlife, but also the impact to humans and the sense of place that connects them to their environment.

1.7 CONCLUSION

This was the first research project to study UAS and sense of place. The results of this study indicate its potential utility; however, they are also restricted by the limited scope of the study. There is a need to study how UAS interact with sense of place in other contexts. For example, the Mono Basin is a rural, tourism-dependent area and the stakeholders represent a mixture of liberal and conservative perspectives. Further research could pursue similar approaches but in different types of areas such as urban settings or rural towns that are still rooted in resource extractive industries. Geographic contexts aside, another limitation of this study was its focus on local stakeholders. Hundreds of thousands of visitors come to the Mono Basin each year and yet their perspective was left entirely out of this study. Finally, while the in-depth, qualitative, inductive methods used in this study are arguably necessary to understand place meanings, this research would be well-paired with more extensive quantitative methodologies.

In short, this research shows that sense of place in this rural area is influential in the way that UAS are received by local stakeholders. The changing nature of place meanings in the Mono Basin caused tension for many of the participants in this study. Furthermore, the struggle to shape these dynamic place meanings is cause for conflict both between stakeholders and with the outside world. UAS may be incompatible with the place meanings that many in the basin value such as wilderness, solitude, and separation from the global flows of capital. This research indicates that land managers

should use thoughtful consideration and take measures to mitigate these negative consequences when introducing UAS as a management tool.

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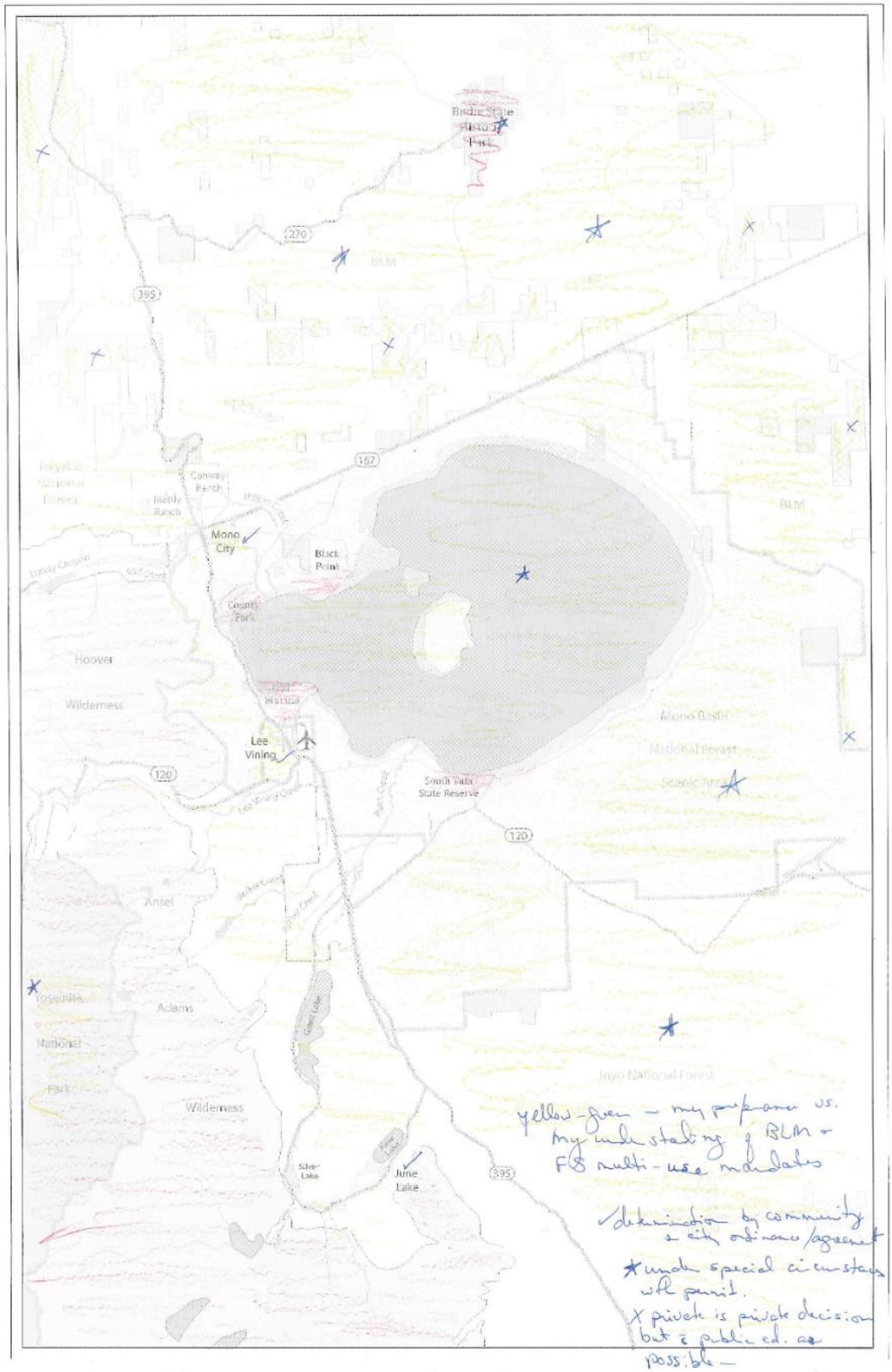
APPENDICES

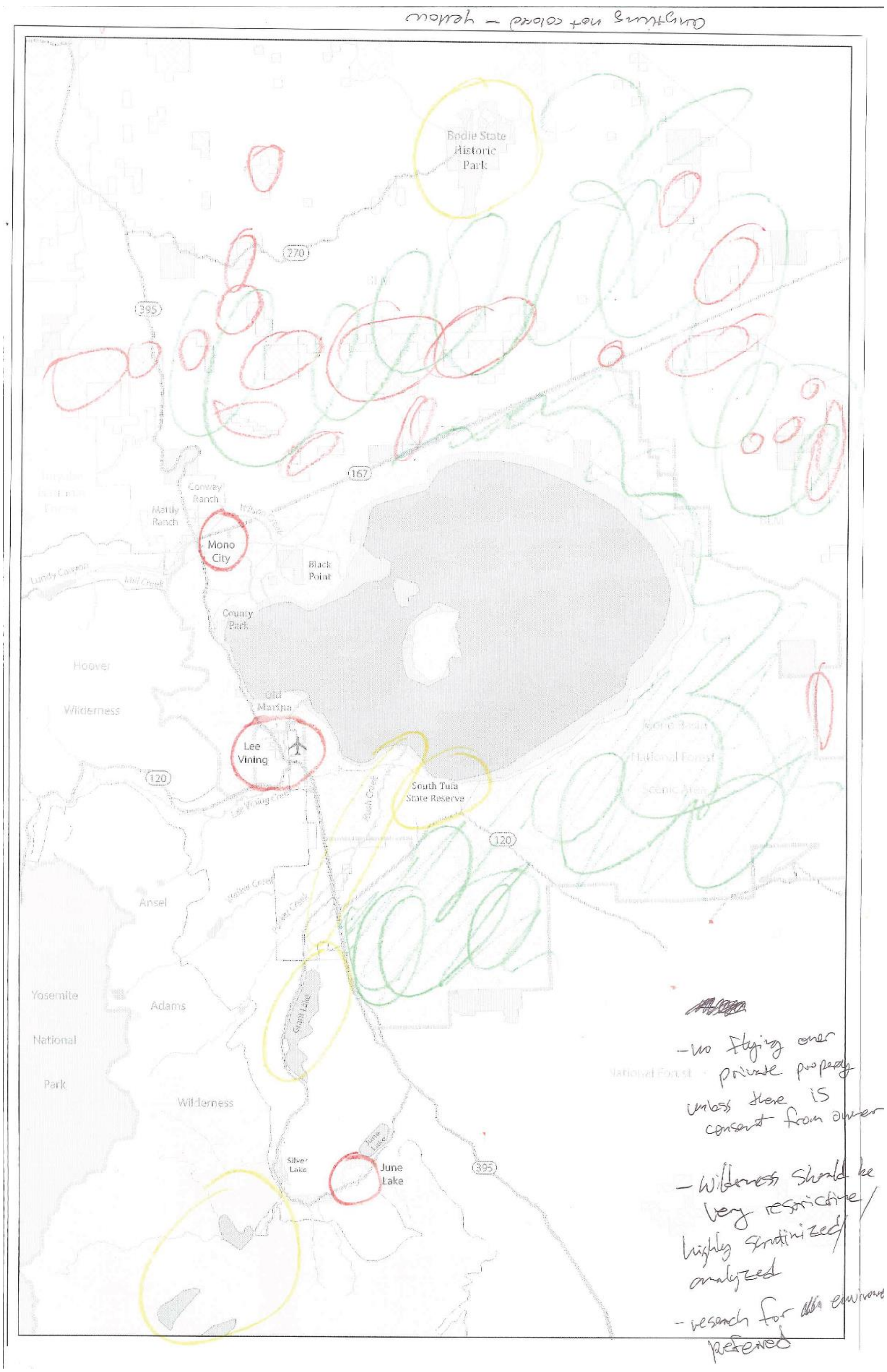
Appendix A. Characteristics of interview participants.

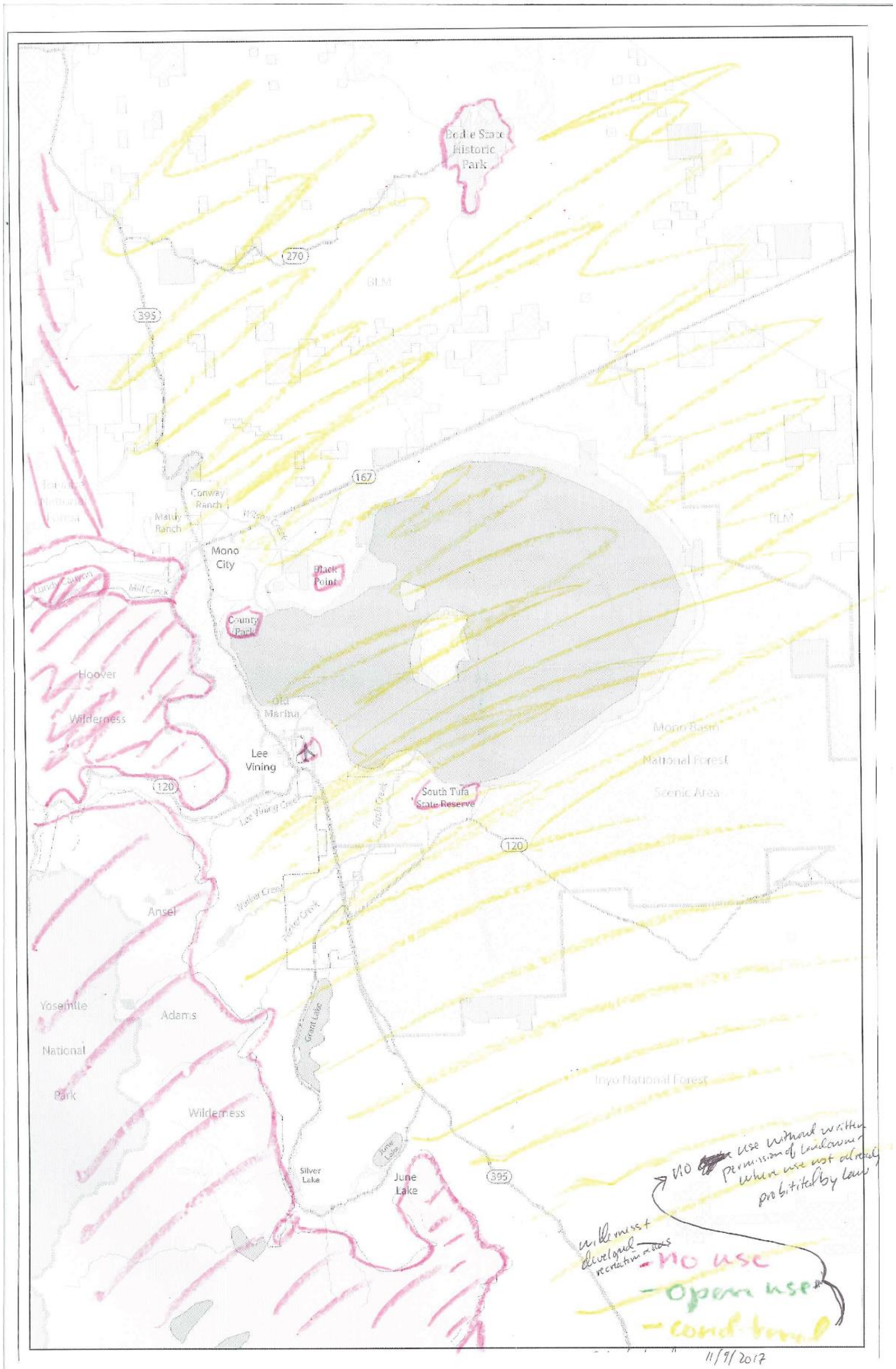
#	Primary Role	Current Residence	Years in Basin	Age Range	Gender
1	Active in community (Business)	Lee Vining	9	21 -35	male
2	Active in community (Business)	Lee Vining	19	36 - 55	male
3	Active in community (Business)	Lee Vining	24	21-35	male
4	Active in community (Business)	Lee Vining	47	56-75	male
5	Active in community (Business)	Lee Vining	40	36 -55	male
6	Active in community (Business)	Lee Vining	40	56 - 75	female
7	Active in community (Business)	Lee Vining	60	56 - 75	male
8	Active in community (Business)	Mono Basin (other)	34	21 - 35	female
9	Active in community (Education)	Lee Vining	3	36 -55	female
10	Active in community (Education)	Lee Vining	3	21 - 35	female
11	Active in community (Retired)	Mono City	30	56 - 75	male
12	Active in community (Retired)	Mono City	36	56 - 75	female
13	Agency	Mono City	9	21-35	female
14	Agency	Mono City	35	56 - 75	male
15	Agency	Mono City	9	21 - 35	male
16	Agency	Mono Basin other	33	21 - 35	male
17	Former MLC	Outside Mono Basin	40*	56 - 75	male
18	MLC	Mono City	14	21 - 35	female
19	MLC	Mono City	11	56 - 75	female
20	MLC	Mono City	15	36 - 55	female

#	Primary Role	Current Residence	Years in Basin	Age Range	Gender
21	MLC	Lee Vining	3	21 - 35	male
22	MLC	Lee Vining	3	21 - 35	female
23	MLC	Mono Basin (other)	20	36-55	male
24	Mono Lake Volunteer	Outside Mono Basin	30	56 - 75	female
25	Mono Lake Volunteer	Lee Vining (seasonal)	30	56 -75	male
26	Mono Lake Volunteer	Lee Vining (seasonal)	4	56 - 75	female
27	Mono Lake Volunteer	Lee Vining (seasonal)	4	56 - 75	male
28	Scientist	Mono City	25	56 - 75	female
29	Scientist	Mono Basin (other)	18	36 - 55	female

Appendix B. Maps colored during interviews depict the participant's preference for UAS regulation. Red indicates no UAS use under any condition. Green indicates that open UAS use is appropriate. Yellow indicates that UAS use may be appropriate under certain circumstances.


Bodie State Historic Park
270
BLM
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover
Wilderness
Lee Vining
120
South Tufa State Reserve
Mono Basin National Forest Scenic Area
Ansel
Adams
Wilderness
Silver Lake
June Lake
Jnyo National Forest
yellow-given — my purpose vs. my understating of BLM + FS multi-use mandates
✓determination by community + city ordinance/agreement
★under special circumstances with permit.
X private is private decision but ≥ public ed. as possible —


Anything not colored – yellow
Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
120
Ansel Adams Wilderness
Yosemite National Park
Grant Lake
National Forest
Silver Lake
June Lake
June Lake
395
– no flying over private property unless there is consent from owner
– Wilderness should be very restrictive/ highly scrutinized/ analyzed
– research for environ preferred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Black Point
County Park
Hoover Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Mono Basin National Forest Scenic Area
Ansel
Yosemite National Park
Adams Wilderness
Grant Lake
Silver Lake
June Lake
Inyo National Forest
no use without written permission of landowner when use not already prohibited by law
wilderness + developed recreation areas
- no use
- open use
- cond. trail
11/9/2017


RENO
Bodie State Historic Park
270
395
167
Conway Ranch
Mill Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Old Marina
Lee Vining
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South Tufa State Reserve
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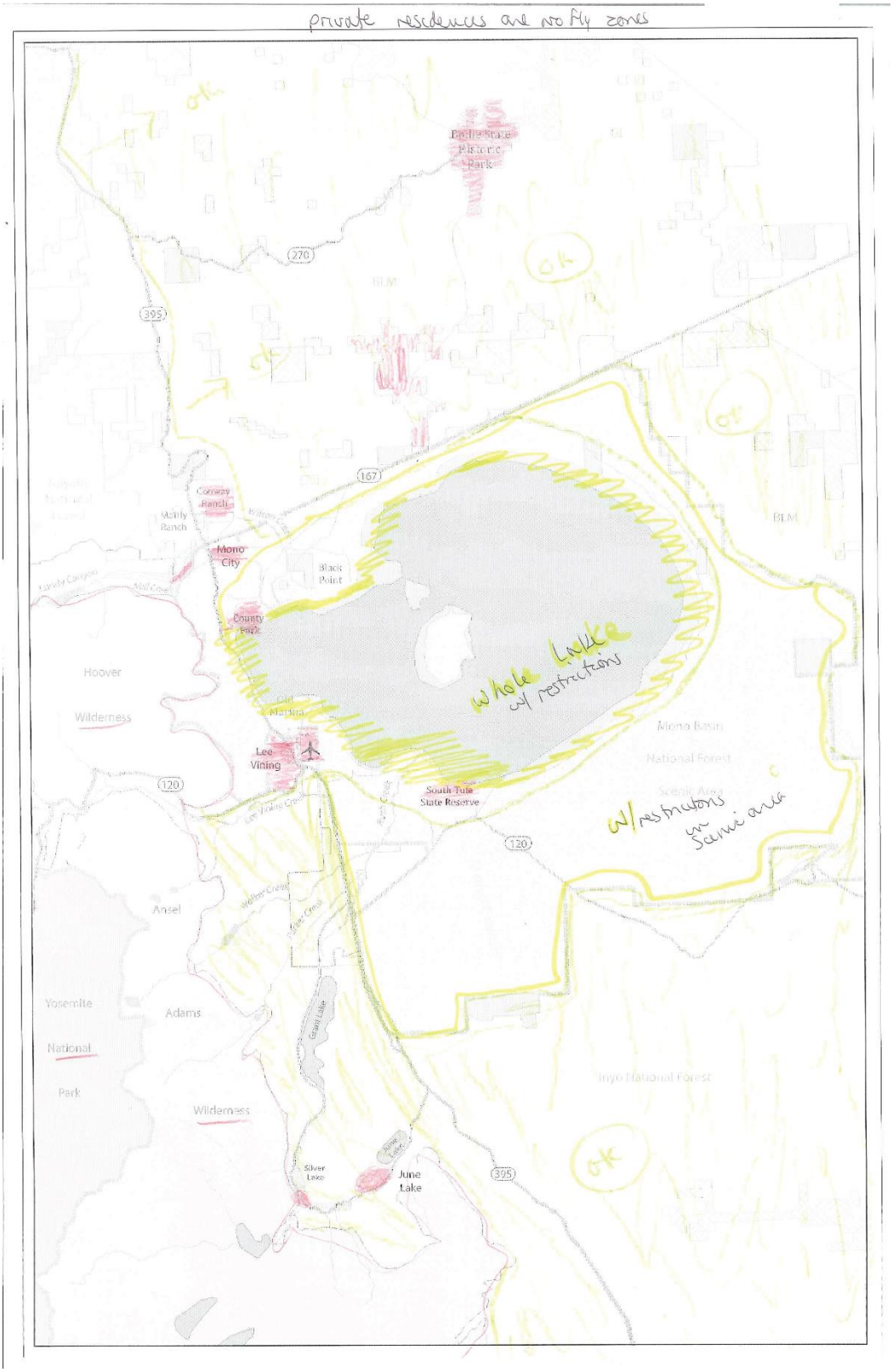
Inyo National Forest
Yosemite National Park
Adams
Wilderness
Silver Lake
June Lake
LOS ANGELES


private residences are no fly zones
ok
ok
ok
ok
Bodie State Historic Park
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Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Whole Lake
w/ restrictions
Hoover
Wilderness
Lee Vining
120
South Tufa State Reserve
Mono Basin
National Forest
Scenic Area
w/ restrictions in Scenic area
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June Lake
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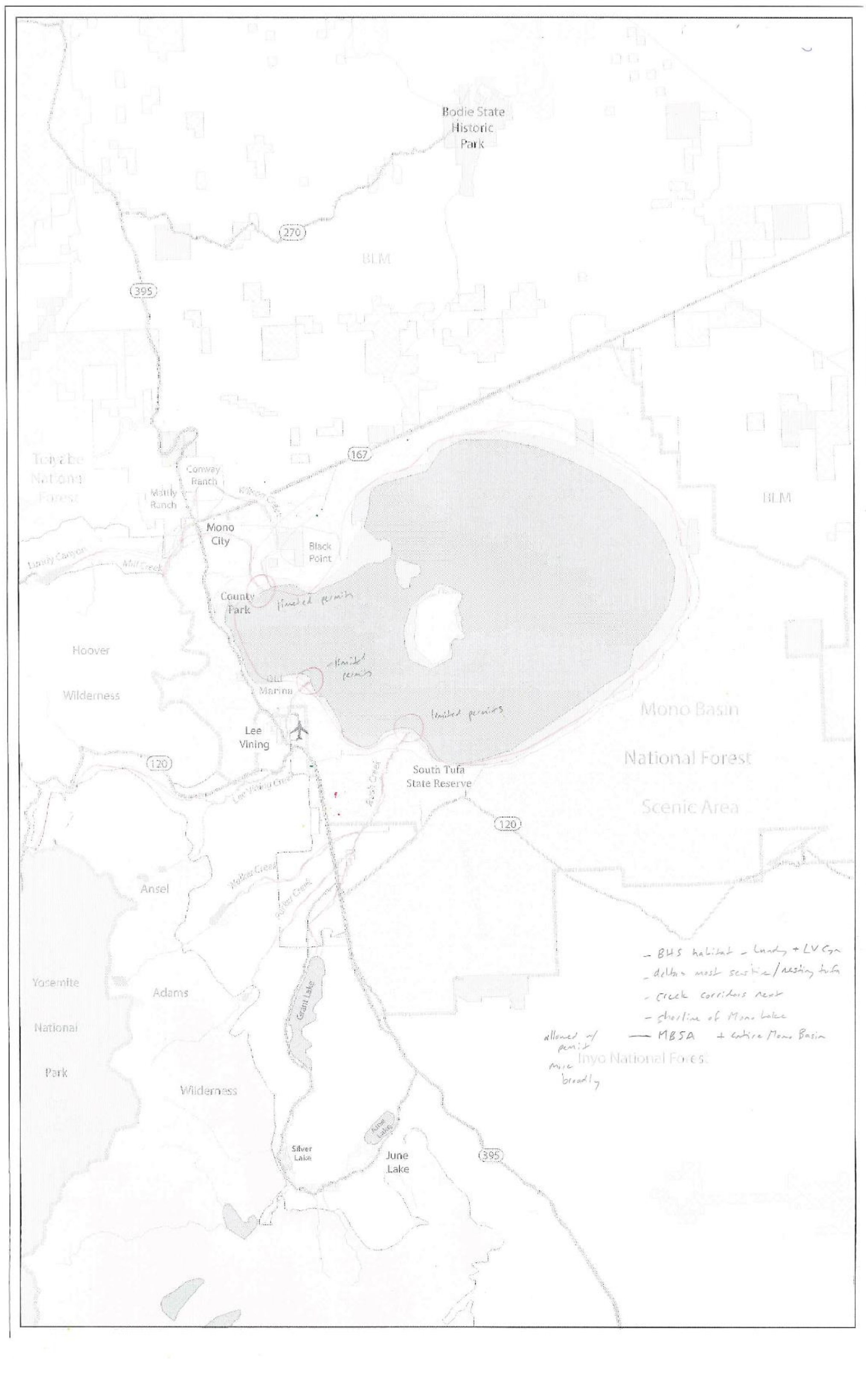

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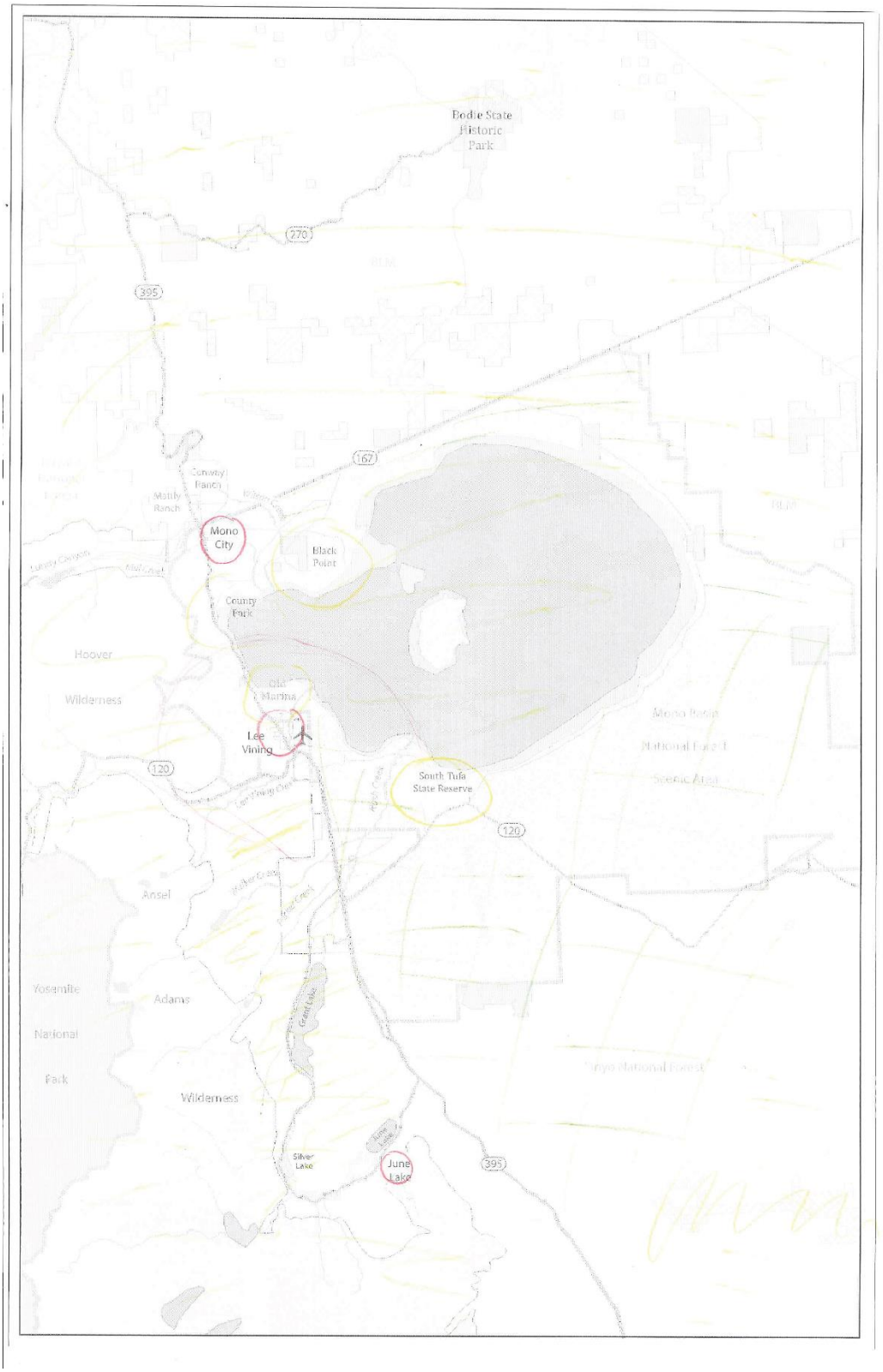
Conway Ranch
Mattly Ranch
Mono City
Black Point
BLM
Lundy Canyon
Mill Creek
County Park
limited permits
Hoover
Wilderness
limited permits
Old Marina
limited permits
Mono Basin
Lee Vining
National Forest
120
Lee Vining Creek
South Tufa State Reserve
Rush Creek
Scenic Area
120
Walker Creek
Parker Creek
Ansel
– BHS habitat – Lundy + LV Cyn
– deltas most sensitive/nesting tufa
– creek corridors next
– shoreline of Mono Lake
Yosemite
Adams
Grant Lake
National
allowed w/ permit more broadly
— MBSA + entire Mono Basin
Inyo National Forest
Park
Wilderness
June Lake
Silver Lake
June Lake
395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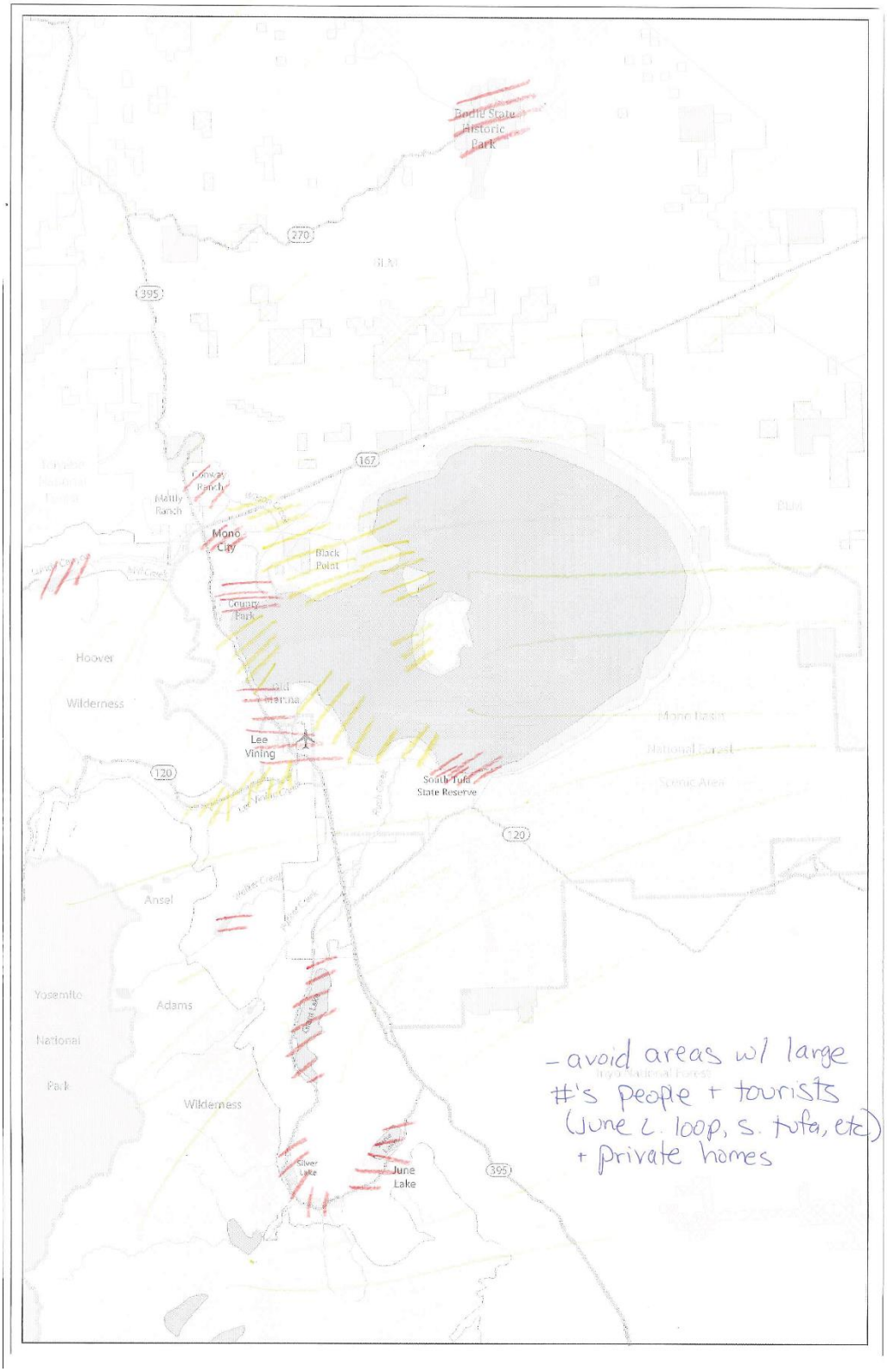
Mono Basin
National Forest
Scenic Area
Inyo National Forest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South Tufa State Reserve
20
Ansel
Yosemite
National
Park
Adams
Wilderness
Silver Lake
June Lake
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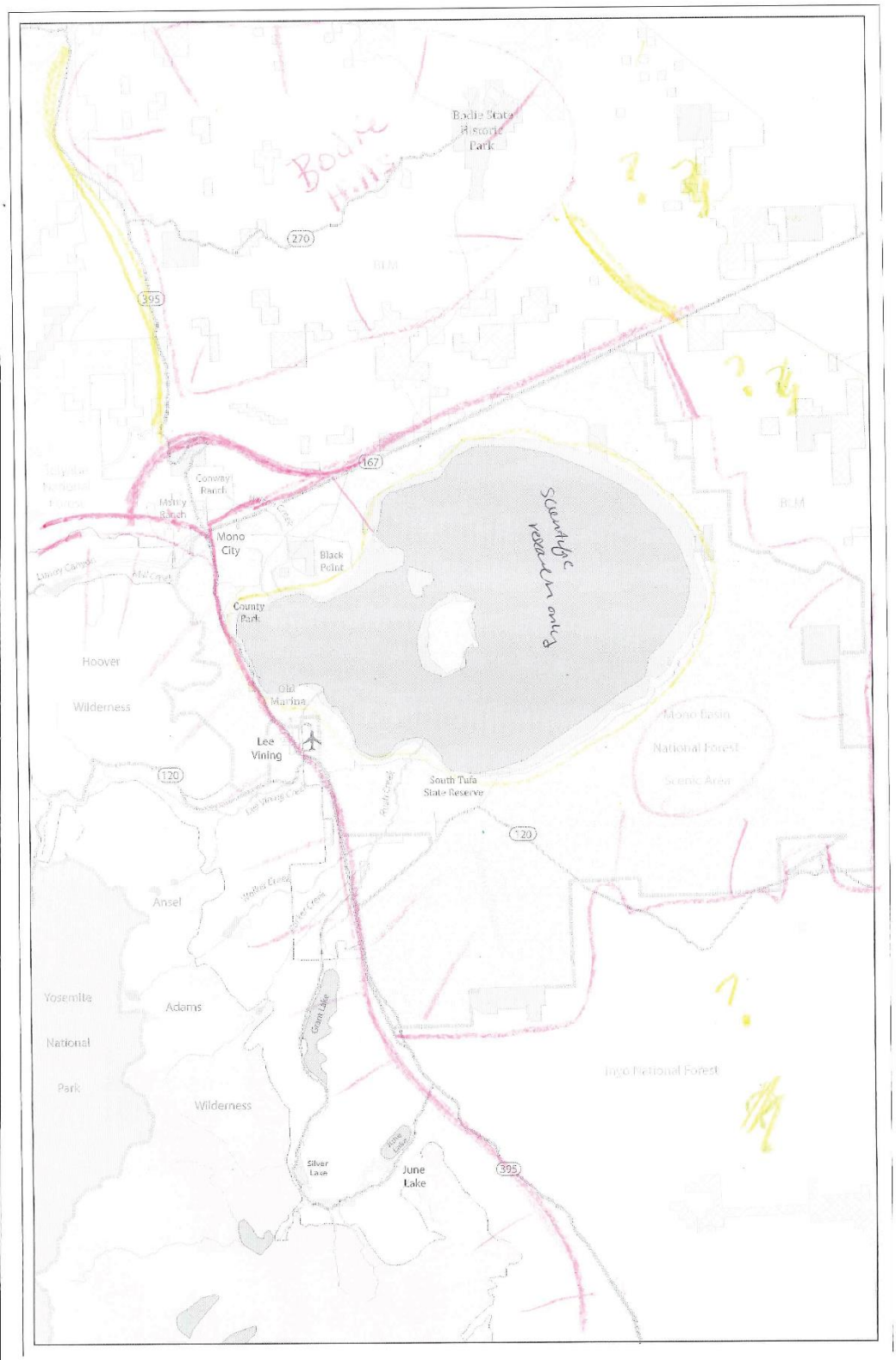
Mono Basin
National Forest
Scenic Area
- avoid areas w/ large #'s people + tourists (June L. loop, S. Tufa, etc) + private homes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South Tufa State Reserve
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Yosemite
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Scenic Area
BLM
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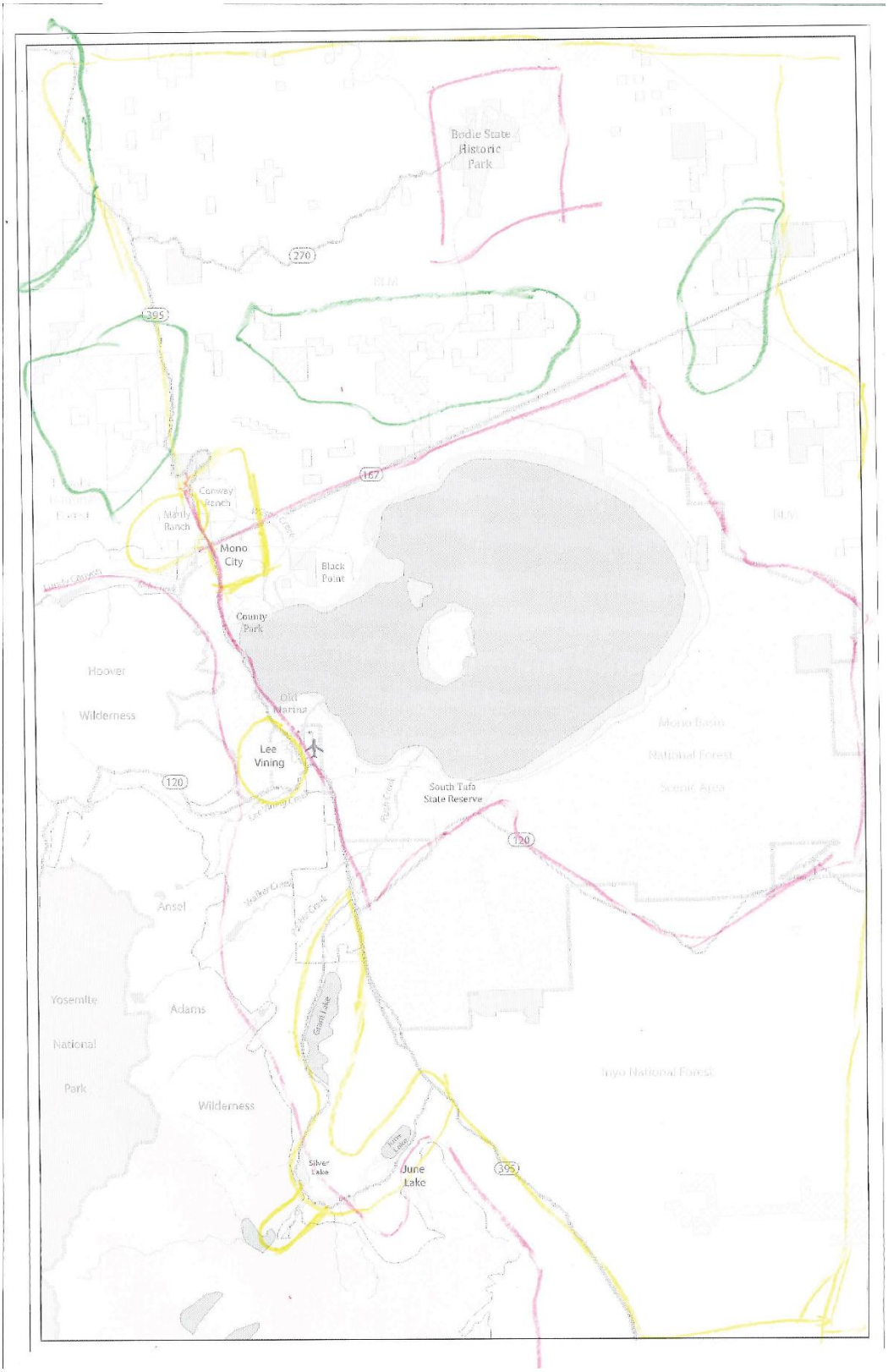
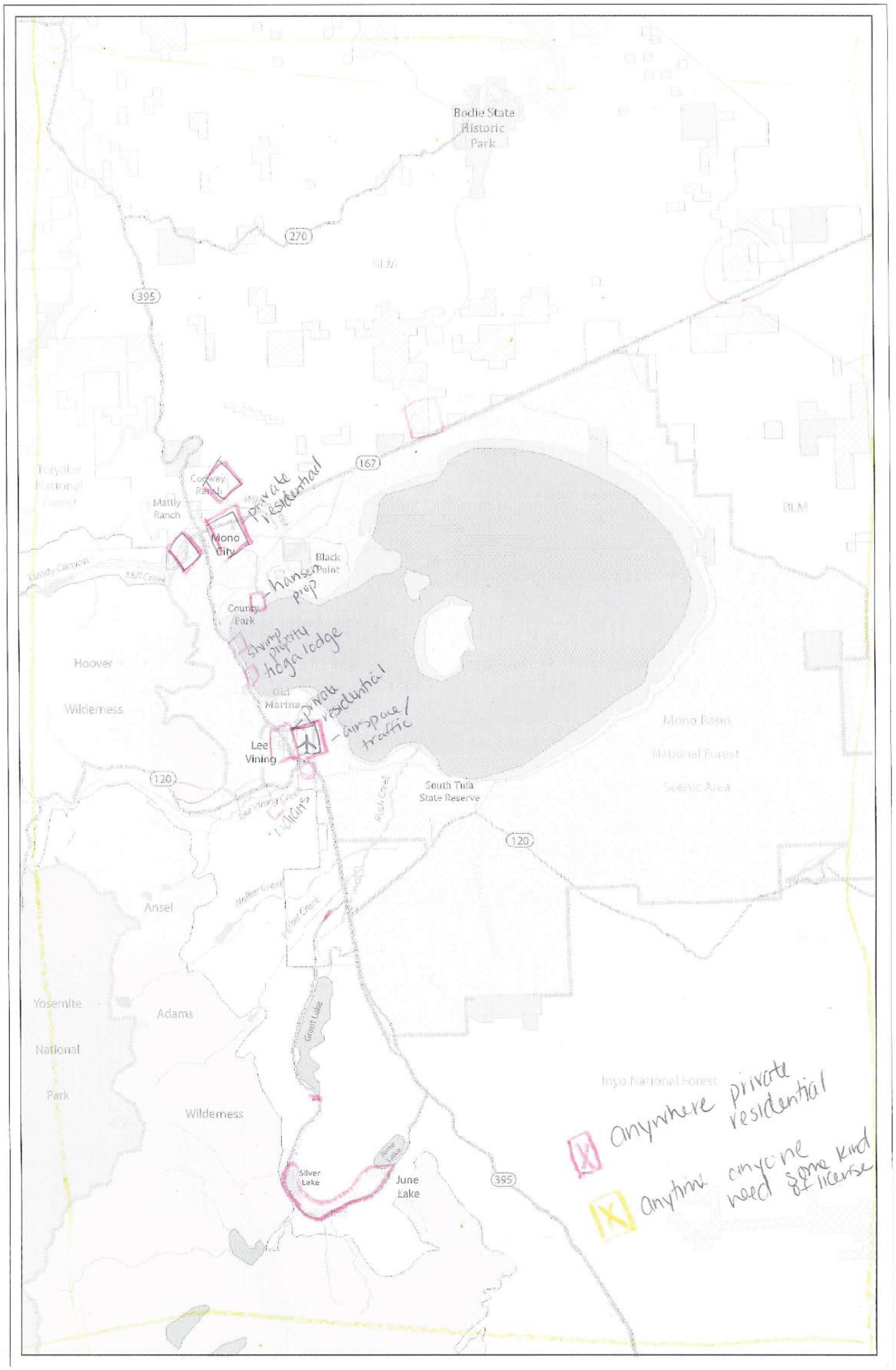
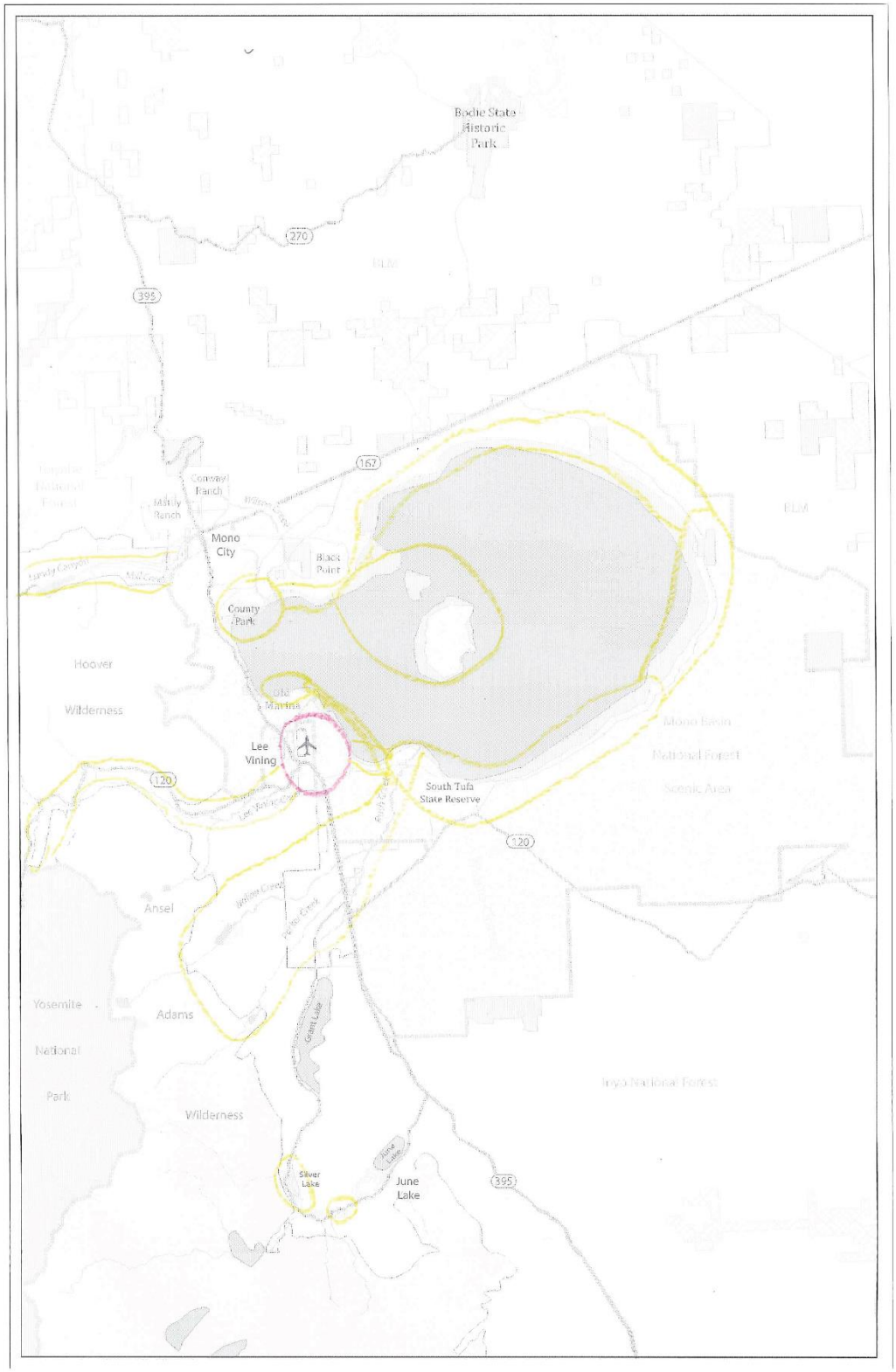
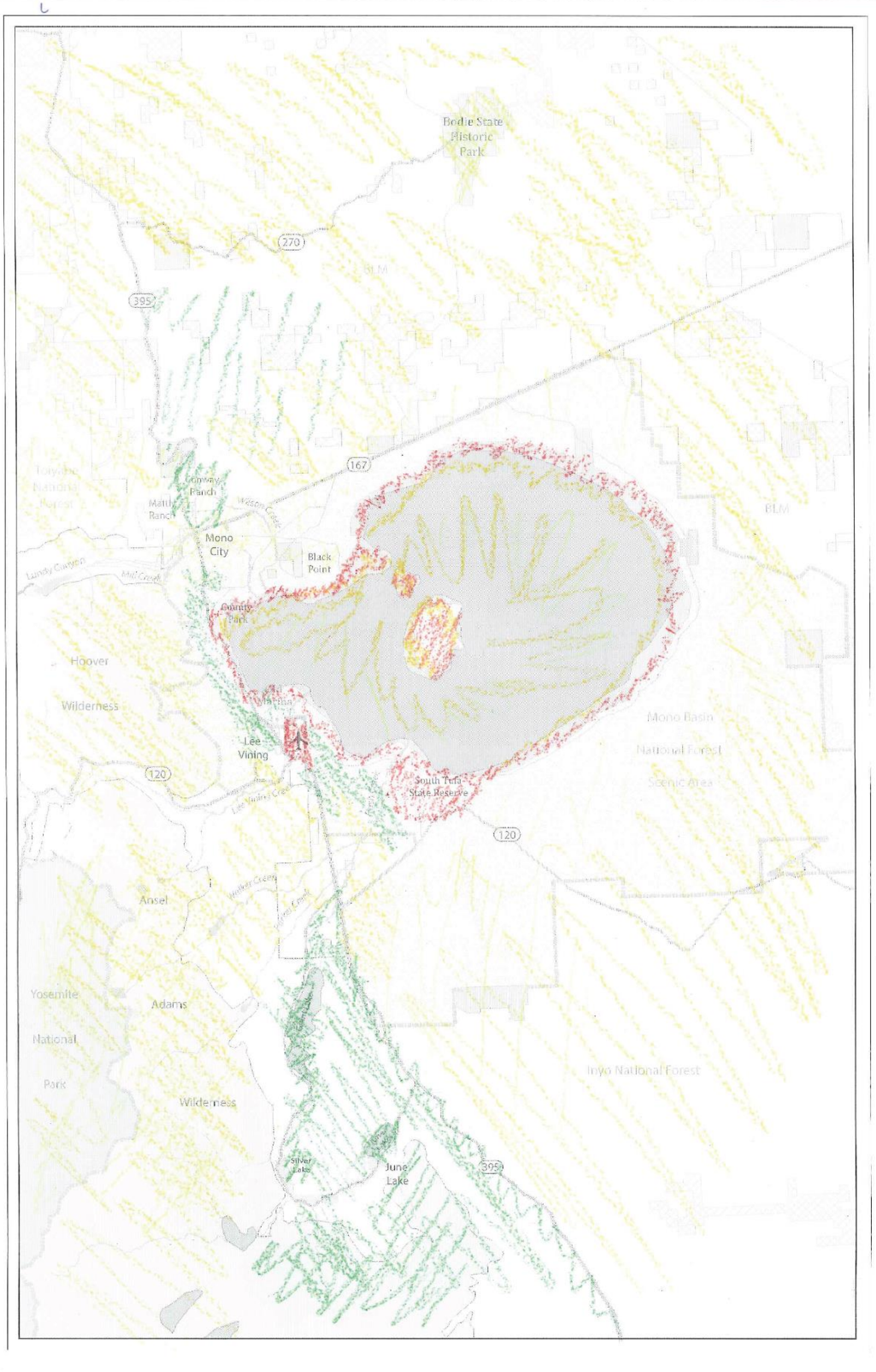
scientific research area

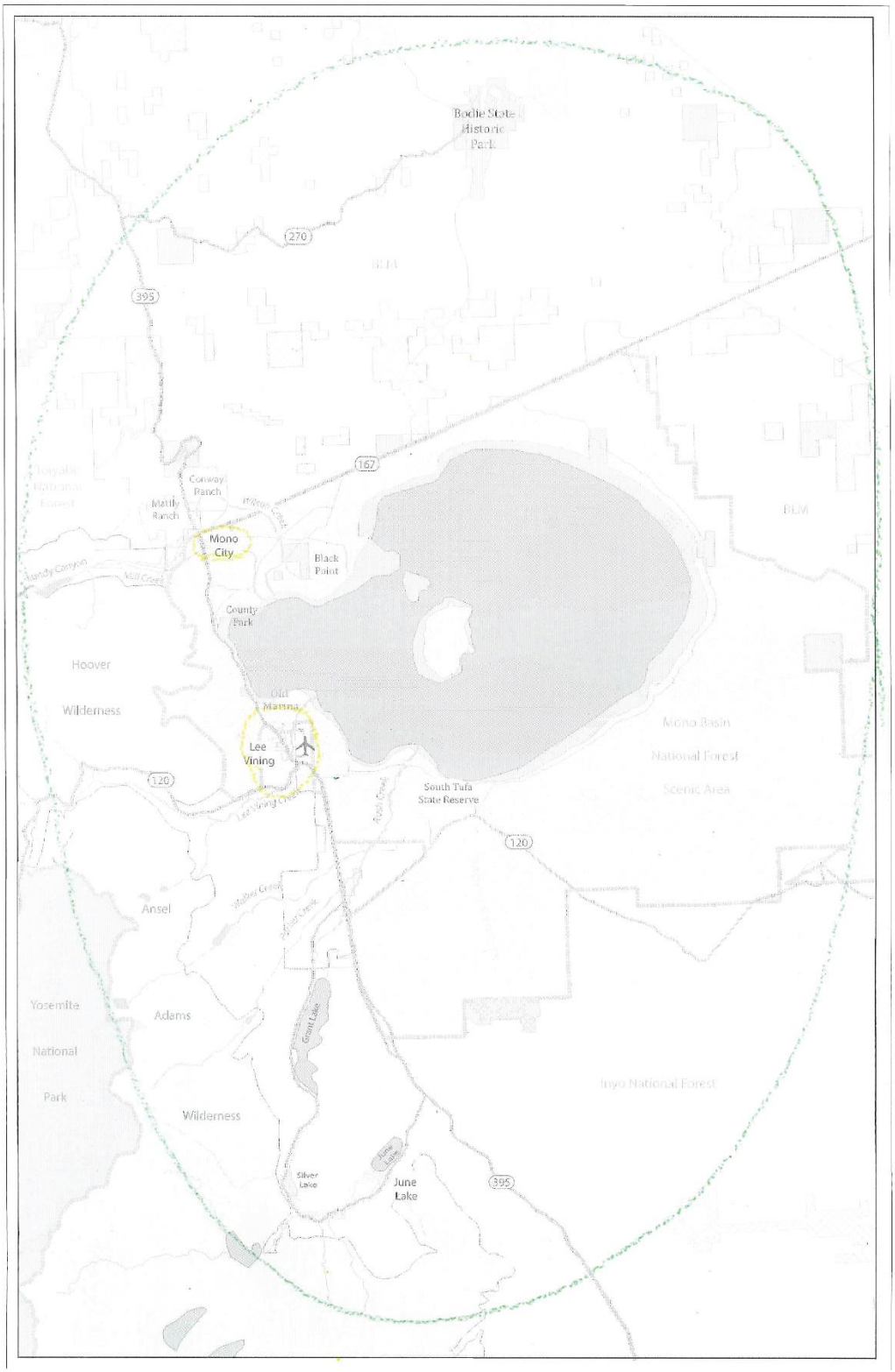

Bodie State Historic Park
270
395
167
Conway Ranch
Mahily Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Mono Basin National Forest Scenic Area
Ansel
Yosemite National Park
Adams Wilderness
Grant Lake
Inyo National Forest
Silver Lake
June Lake
395


Bodie State
Historic
Park
270
BLM
395
167
Conway
Ranch
Mattly
Ranch
Mono
City
Black
Point
Lundy Canyon
Mill Creek
County
Park
Hoover
Wilderness
Old
Marina
Lee
Vining
120
South Tufa
State Reserve
Mono Basin
National Forest
Scenic Area
Ansel
Adams
Wilderness
Yosemite
National
Park
Grant Lake
Silver
Lake
June
Lake
Inyo National Forest
private residential
hansen prop
tioga lodge
private residential
airspace/traffic
anywhere private residential
anything anyone need some kind of license


* ALL conditional for research * No Fly on private property/homes
Bodie State Historic Park
270
395
BLM
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
* conditional for research
County Park
Hoover
Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Mono Basin
National Forest
Scenic Area
Ansel
Adams
Yosemite
National
Park
Wilderness
Gull Lake
Silver Lake
June Lake
Inyo National Forest

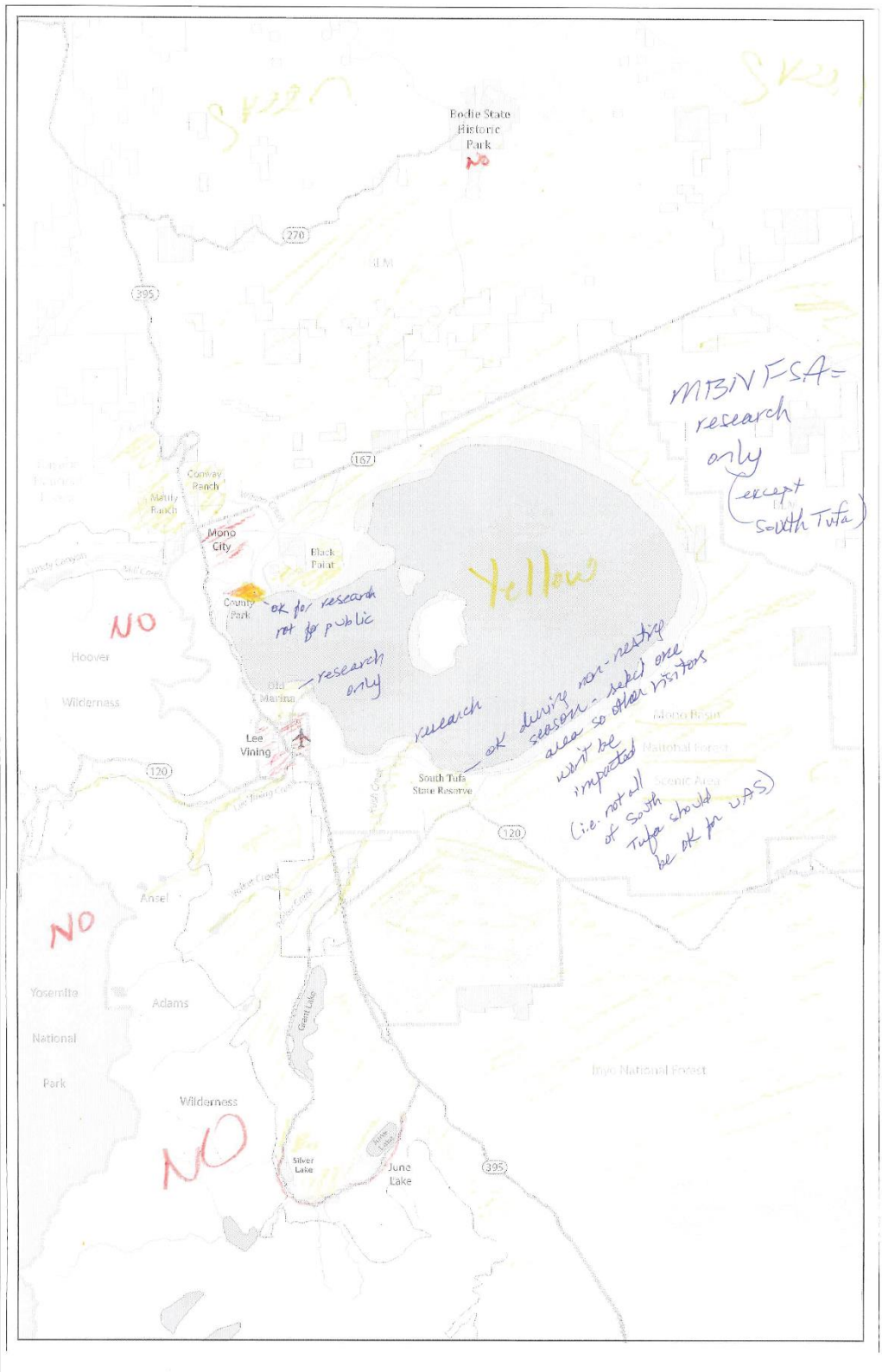

Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Lee Vining
120
South Tufa State Reserve
Ansel
Yosemite National Park
Adams Wilderness
Grant Lake
Silver Lake
June Lake
Mono Basin National Forest Scenic Area
Inyo National Forest
BLM

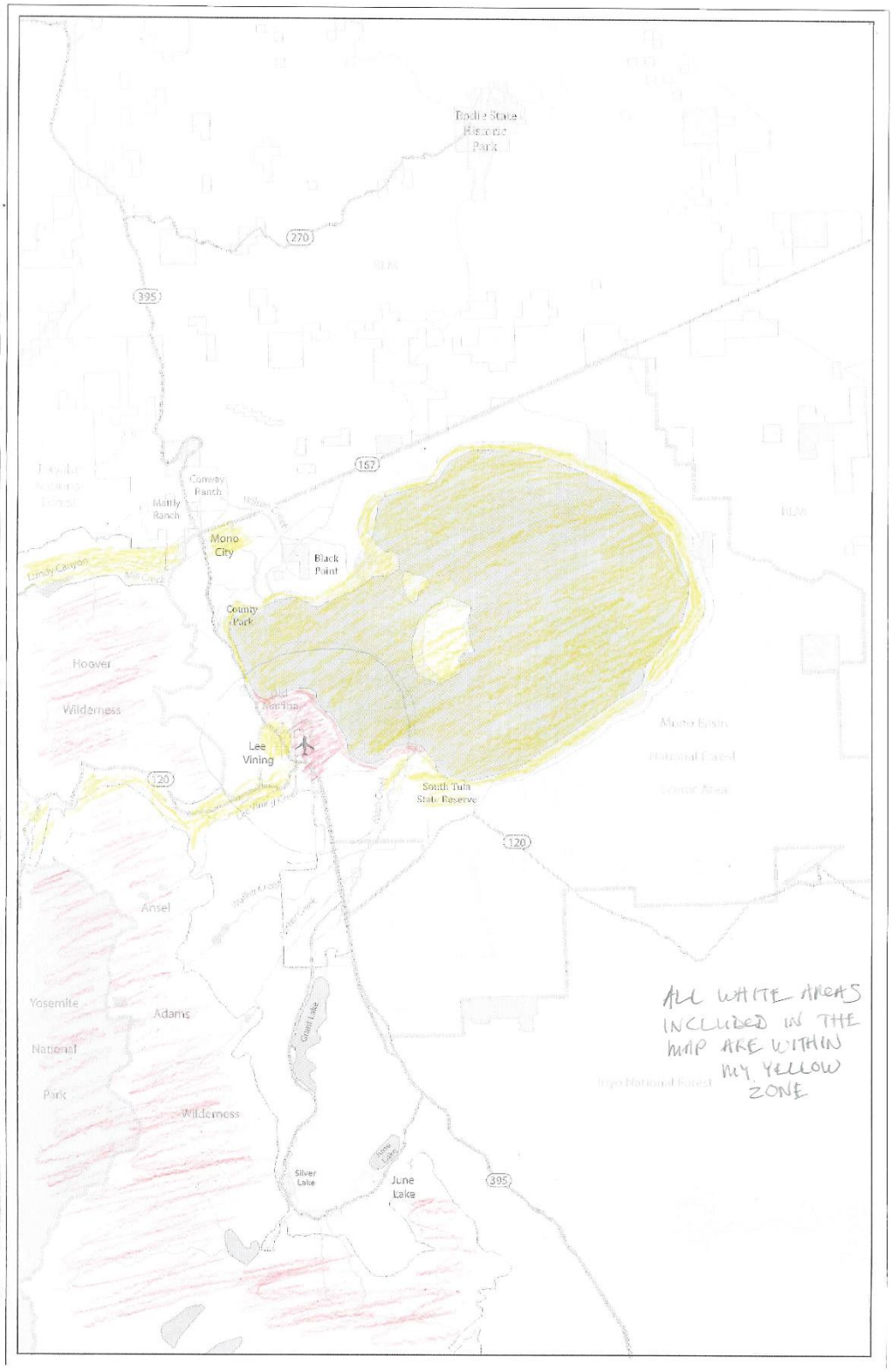

Bodie State Historic Park
270
BLM
395
167
Conway Ranch
Mattly Ranch
Wilson Creek
Mono City
Black Point
Lundy Canyon
Mill Creek
County Park
Hoover
Wilderness
Lee Vining
120
Mono Basin
National Forest
Scenic Area
South Tufa State Reserve
Ansel
Yosemite
National
Park
Adams
Wilderness
Inyo National Forest
Silver Lake
June Lake
395

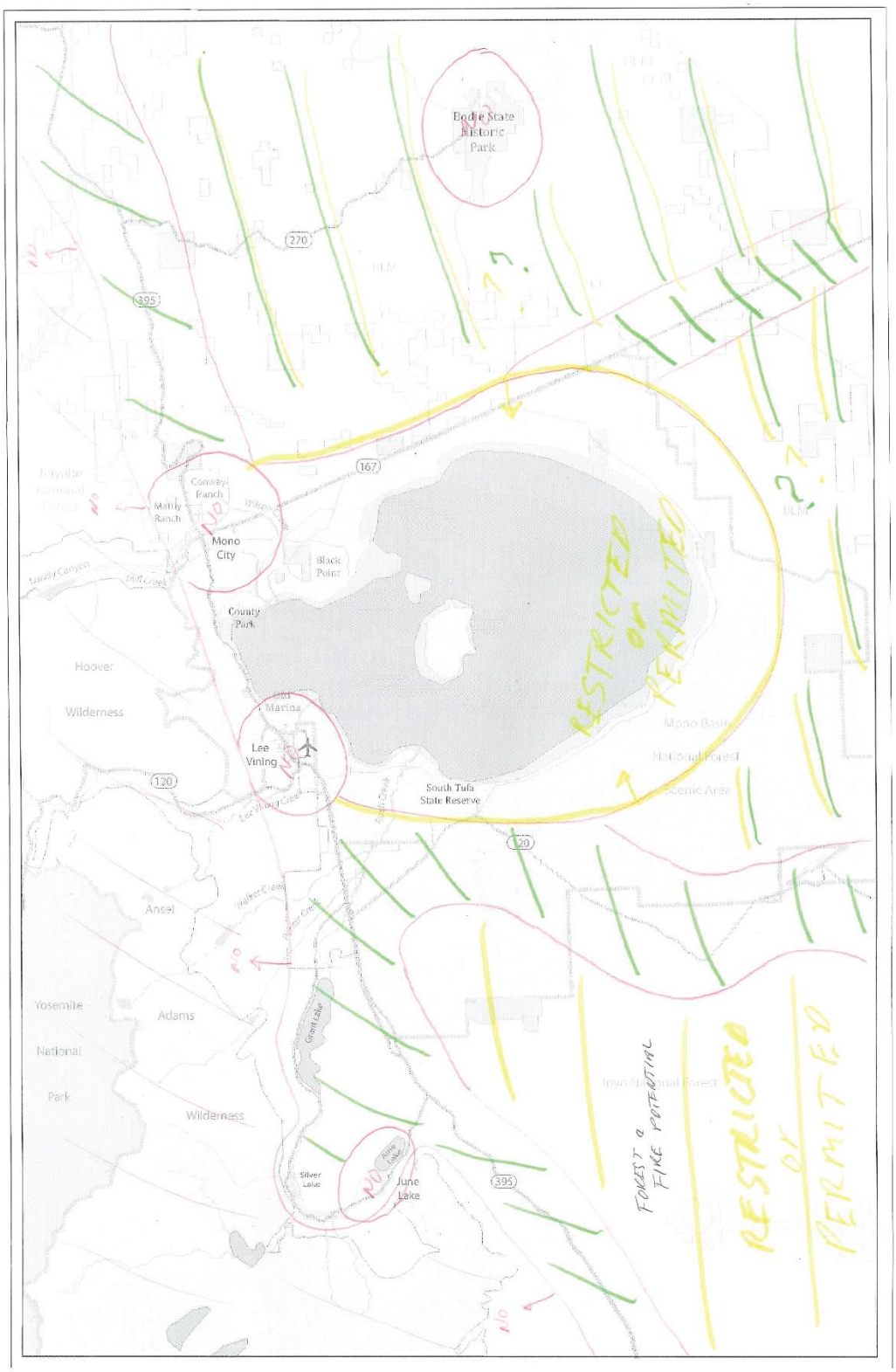

Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover
Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Mono Basin National Forest Scenic Area
BLM
Ansel
Yosemite
National Park
Adams
Wilderness
Grant Lake
Silver Lake
June Lake
Inyo National Forest

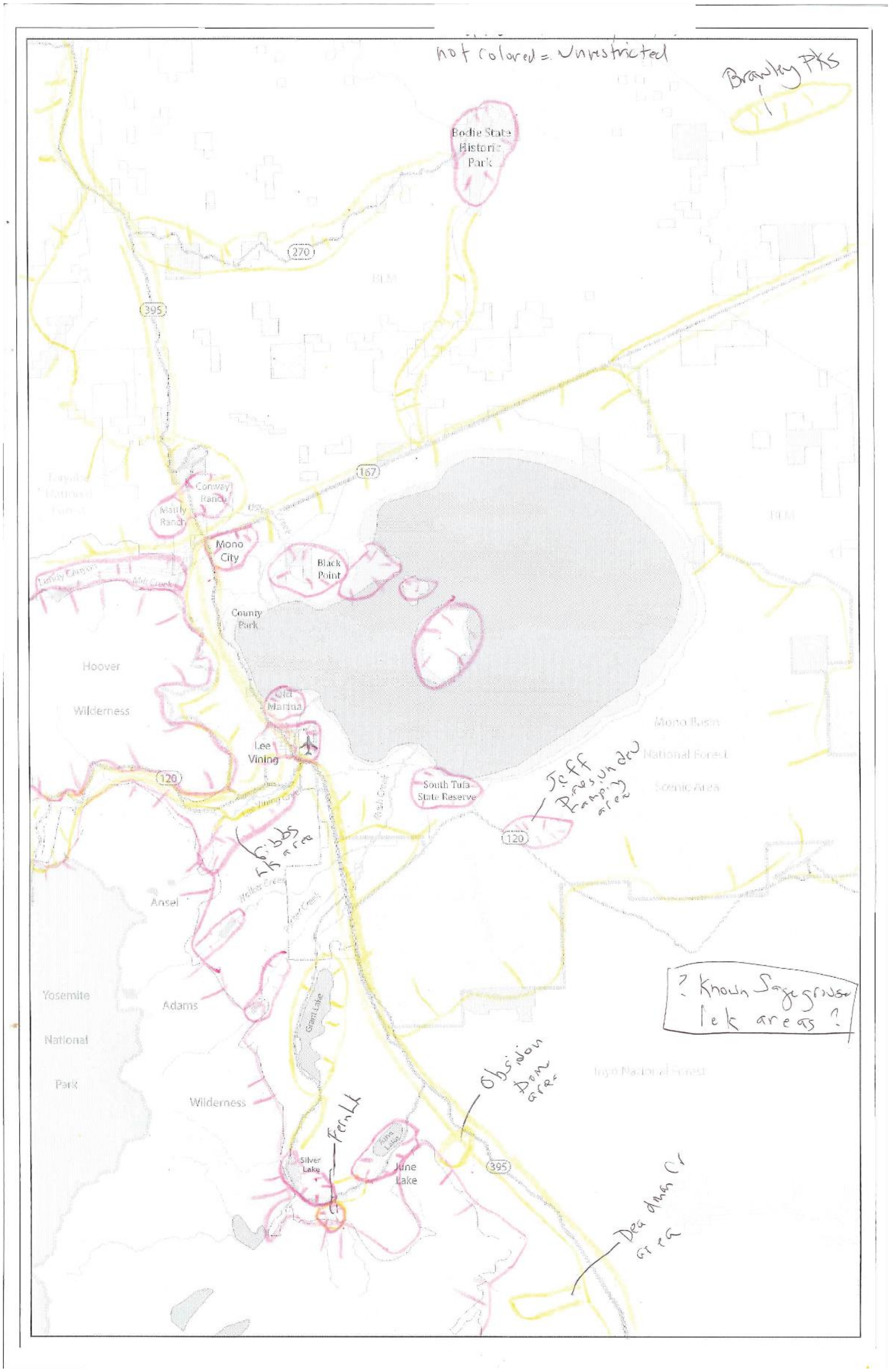

Bodie State
Historic
Park
270
BLM
395
167
Conway
Ranch
Mattly
Ranch
Mono
City
Black
Point
County
Park
Hoover
Wilderness
Old
Marina
Lee
Vining
120
South Tufa
State Reserve
Mono Basin
National Forest
Scenic Area
120
BLM
Ansel
Adams
Wilderness
Yosemite
National
Park
Grant Lake
Inyo National Forest
Silver
Lake
June
Lake
395


Bodie State Historic Park
270
395
BLM
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover
Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Mono Basin
National Forest
Scenic Area
Ansel
Yosemite
Adams
National
Park
Wilderness
Inyo National Forest
Silver Lake
June Lake
395

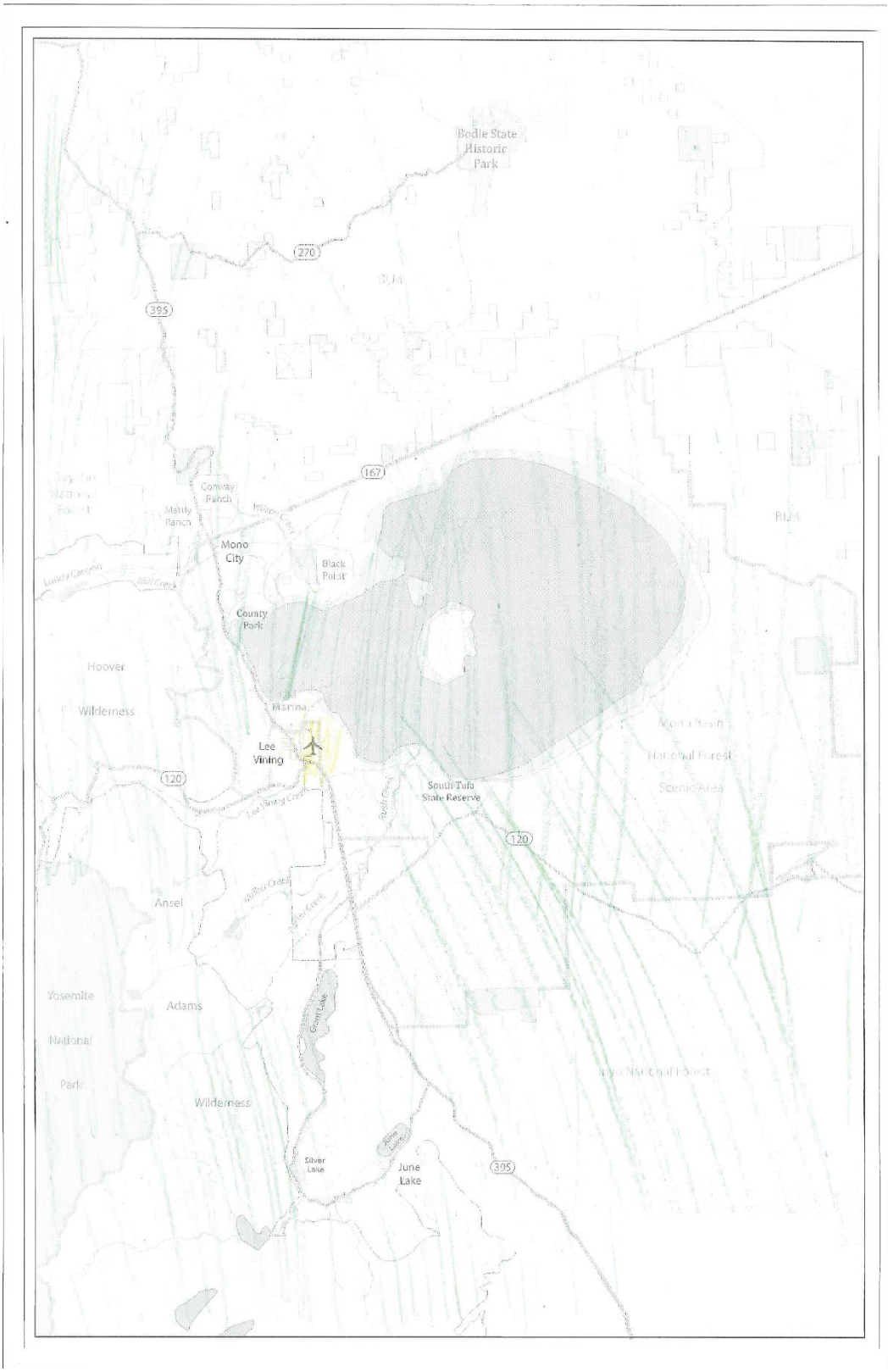

Bodie State Historic Park
NO
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
ok for research not for public
NO
Hoover
Wilderness
Old Marina
research only
Lee Vining
120
South Tufa State Reserve
research
ok during non-nesting season - select one area so other visitors won't be impacted (i.e. not all of South Tufa should be ok for UAS)
Yellow
MTBV FSA = research only (except South Tufa)
Ansel
NO
Yosemite
National
Park
Adams
Wilderness
NO
Grant Lake
Silver Lake
June Lake
Inyo National Forest
Mono Basin
National Forest
Scenic Area

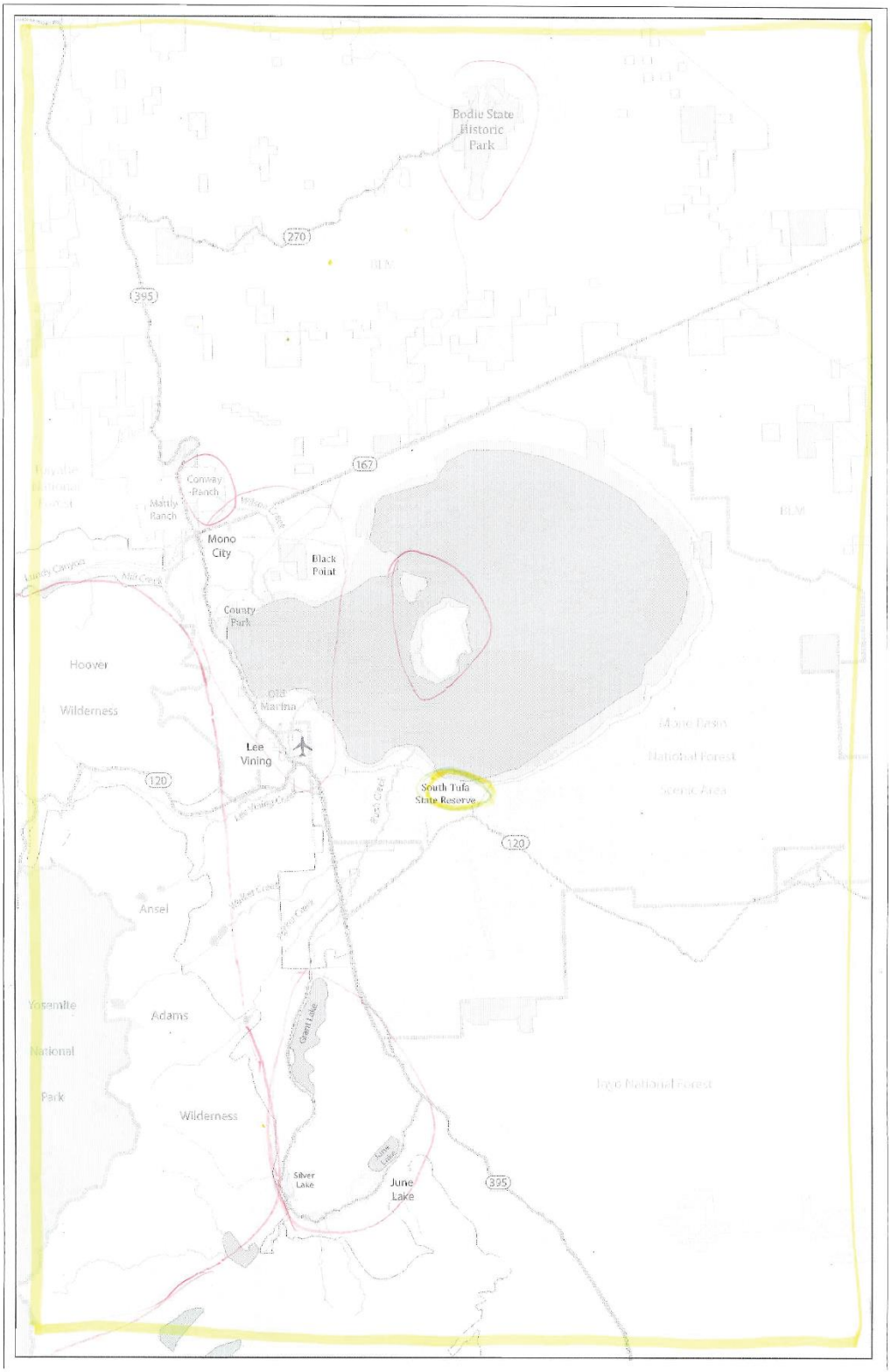

Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Ansel
Yosemite National Park
Adams Wilderness
Grant Lake
Silver Lake
June Lake
ALL WHITE AREAS INCLUDED IN THE MAP ARE WITHIN MY YELLOW ZONE

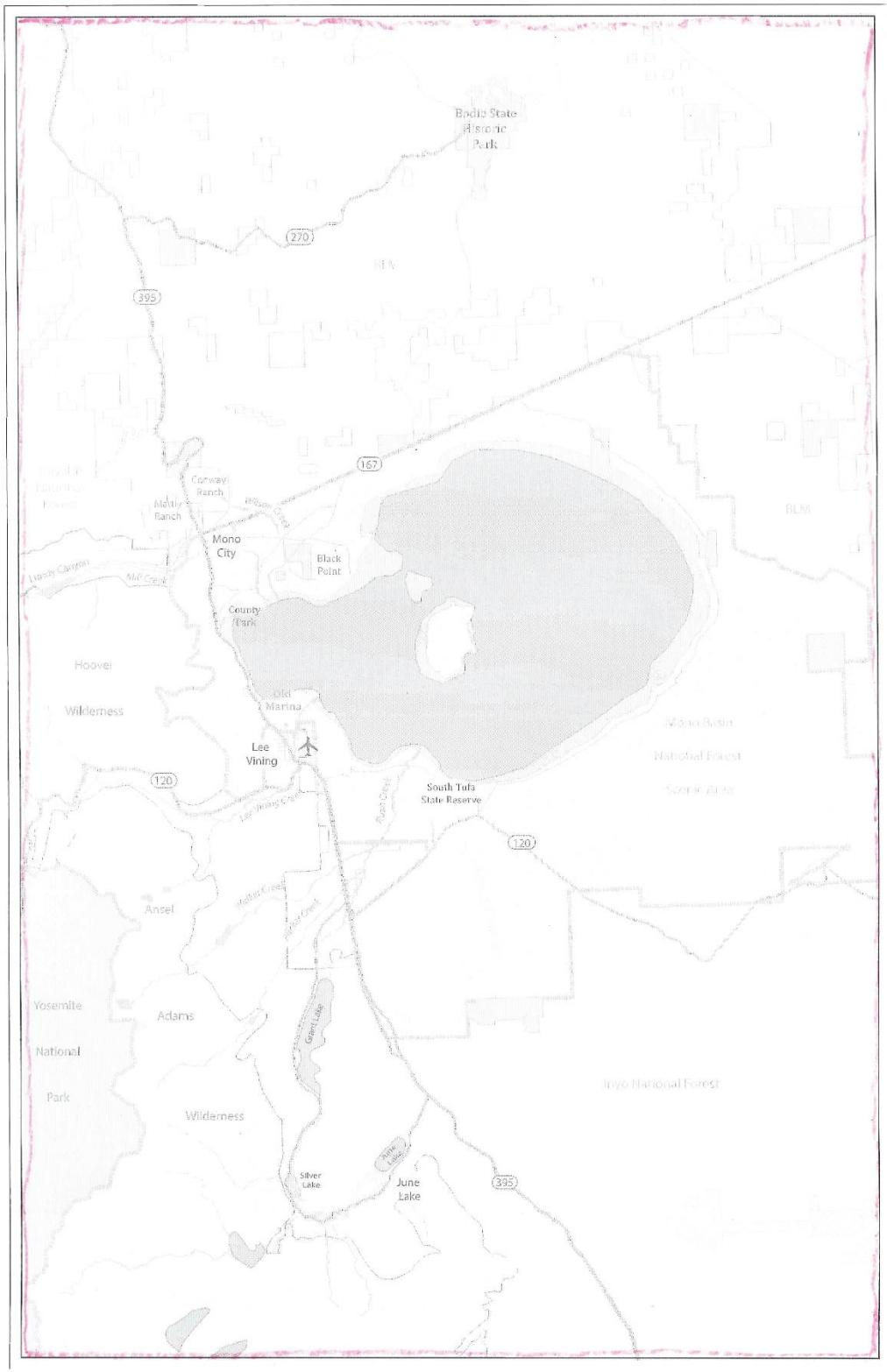

Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
20
Ansel
Yosemite National Park
Adams Wilderness
Grant Lake
Silver Lake
June Lake
395
RESTRICTED or PERMITTED
FOREST & FIRE POTENTIAL
RESTRICTED or PERMITTED



not colored = Unrestricted
Brawley Pks
Bodie State Historic Park
270
BLM
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover
Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Jeff Parsons under camping area
Mono Basin National Forest Scenic Area
Gibbs Lk area
Ansel
Yosemite
National
Park
Adams
Wilderness
? Known Sage grouse lek areas ?
Obsidian Dom area
Inyo National Forest
Fern Lk
Silver Lake
June Lake
Deadman Cr area


Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Marina
Lee Vining
120
South Tufa State Reserve
Ansel
Yosemite National Park
Adams Wilderness
Silver Lake
June Lake
BLM
Inyo National Forest


Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Lundy Canyon
Mill Creek
Hoover Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Ansel
Adams
Yosemite National Park
Wilderness
Silver Lake
June Lake
395
Mono Basin
National Forest
Scenic Area
Inyo National Forest


Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Old Marina
Lee Vining
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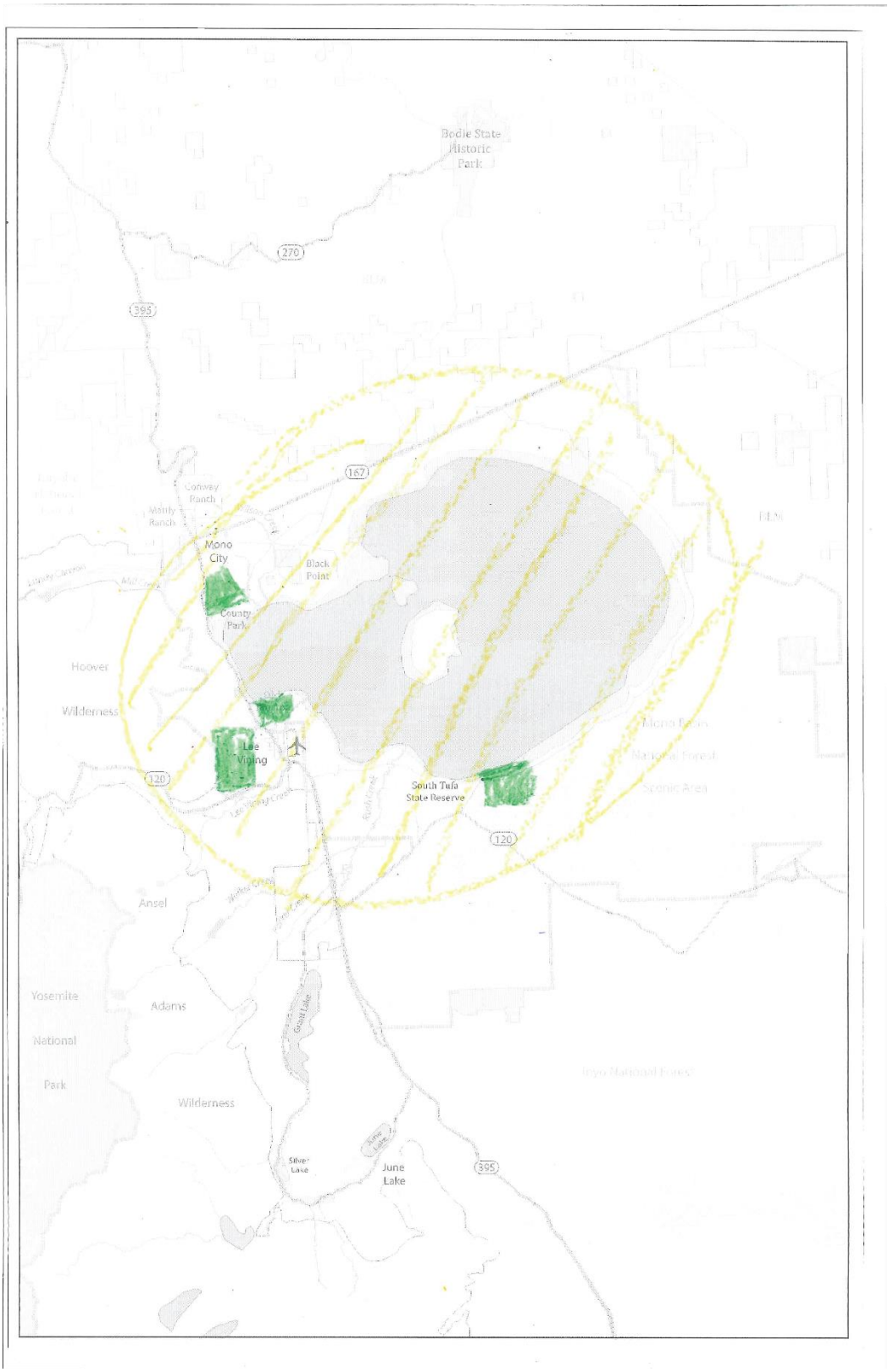
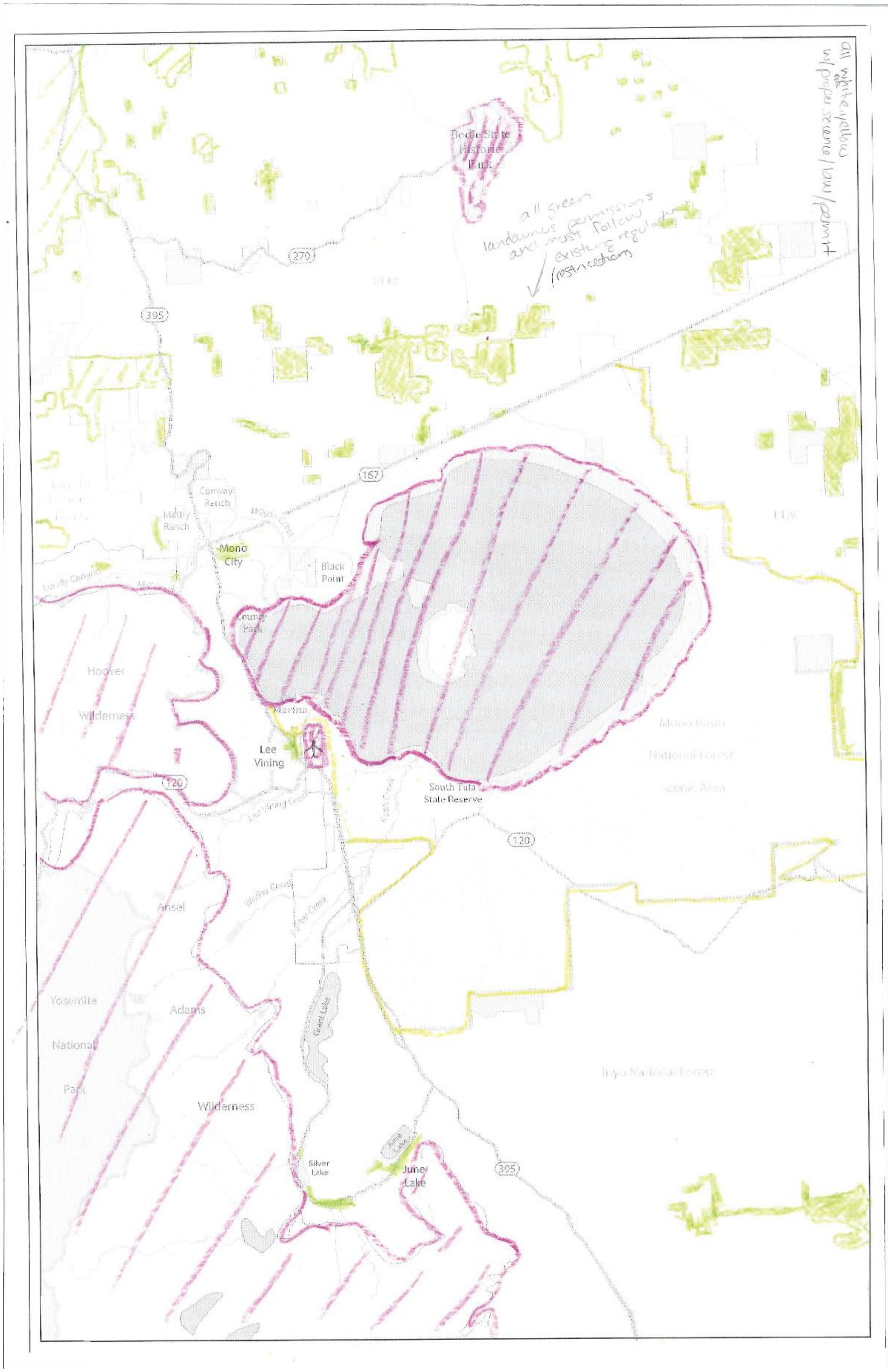
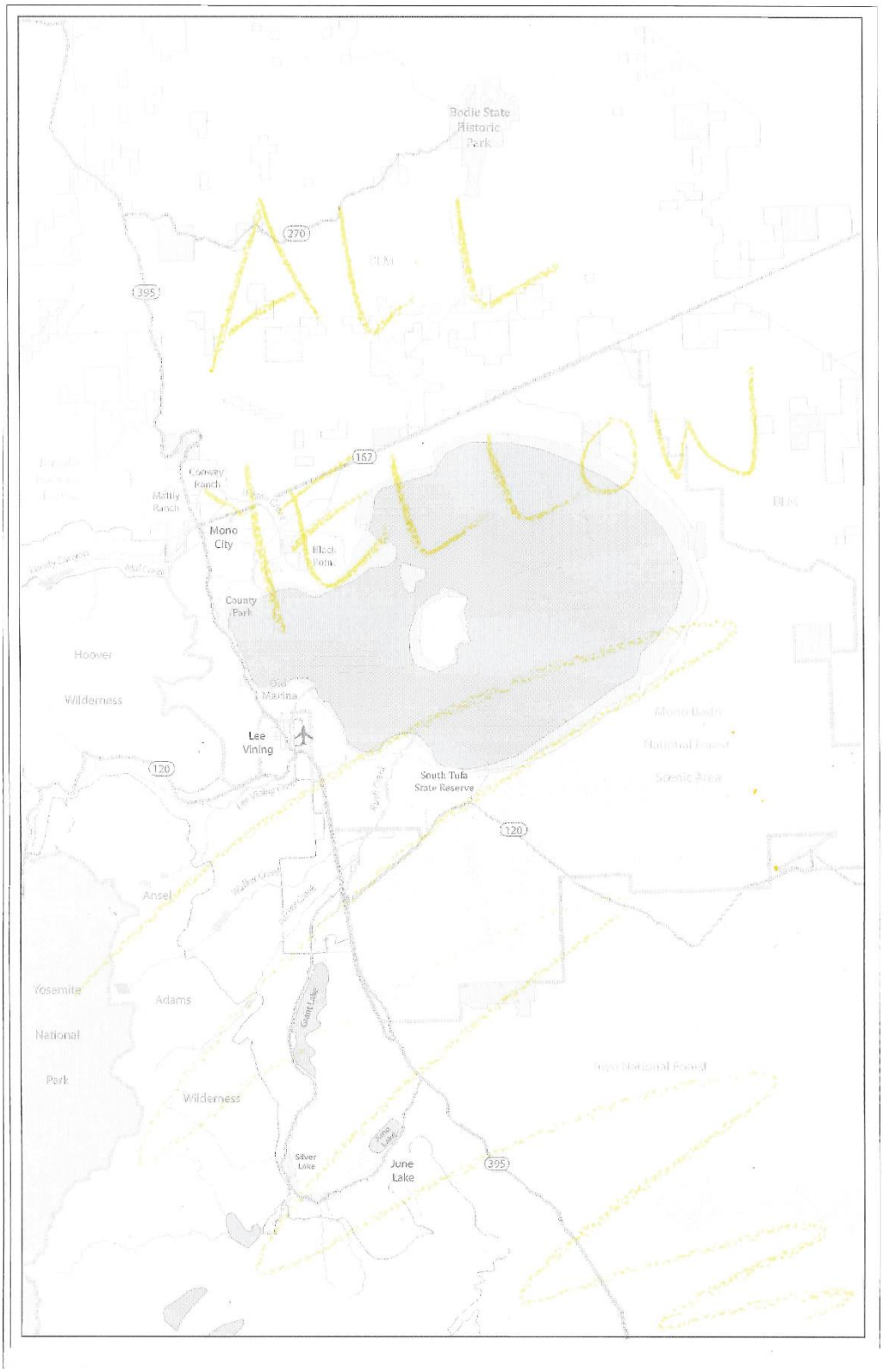
South Tufa State Reserve
Hoover Wilderness
Ansel
Yosemite National Park
Adams Wilderness
Silver Lake
June Lake
Inyo National Forest
BLM


Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover Wilderness
Lee Vining
120
South Tufa State Reserve
Ansel
Yosemite National Park
Adams Wilderness
Silver Lake
June Lake
395


Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover
Wilderness
Marina
Lee Vining
120
South Tufa State Reserve
Mono Basin
National Forest
Scenic Area
120
Ansel
Adams
Wilderness
Yosemite
National
Park
Grant Lake
Silver Lake
June Lake
395
Inyo National Forest


ALL
YELLOW
Bodie State Historic Park
270
395
167
Conway Ranch
Mattly Ranch
Mono City
Black Point
County Park
Hoover
Wilderness
Old Marina
Lee Vining
120
South Tufa State Reserve
Ansel
Yosemite
National
Park
Adams
Wilderness
Silver Lake
June Lake
Mono Basin
National Forest
Scenic Area
Inyo National Forest