



**Jefferson County
Public Shooting Range
Working Group
Report of Findings
July, 2014**



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Background

On October 22, 2013, County Open Space Director Tom Hoby briefed the Board of County Commissioners on staff's directive to research a possible outdoor public shooting range in Jefferson County. Staff presented the history of the search dating back 25 years in the County as well as information on existing indoor and outdoor, privately-run shooting range facilities in the Denver metropolitan area. Site evaluation criteria recently created by the Northern Front Range Shooting Partnership was also discussed as well as operational considerations and potential funding sources for a public shooting range. Staff was directed to further explore the feasibility of a public outdoor shooting range in Jefferson County.

On January 28, 2014, staff presented a feasibility analysis of public and private properties for a range in the County, all of which exhibited challenges. The formation of a working group was recommended to further explore possibilities and draw on external expertise in the realm of shooting sports for other aspects of the effort such as, operational considerations, financial structure and potential funding sources.

The 20-member Working Group, facilitated by Mark Loye, Director of Jefferson County Mediation Services included Planning & Zoning, Jeffco Sherriff's Office, Jeffco Open Space staff, the Open Space Advisory Committee, the City of Lakewood, Colorado Parks & Wildlife, the US Forest Service, PLAN Jeffco, and four interested citizens after a call for participation yielded over 70 interested members of the public.

The mission of this Working Group was to further evaluate feasibility of possible locations, define the scope of the proposed facility, provide information on operating and design considerations and funding strategies. From March through June of 2014, there were 13 Working Group/Subgroup meetings convened to discuss and develop this Report of Findings.

Subgroups were formed quickly so as to honor the time commitment to the Board of County Commissioners, and due to the many topics to cover for a complex effort. What follows is a summary of the findings, drawing on the expertise from many stakeholder organizations and citizens. The three subgroups of this effort included Site Exploration, Financial and Operations & Design.



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Site Exploration Subgroup Findings

This Subgroup began the development of site evaluation criteria by reviewing the work of the Northern Front Range Sport Shooting Partnership. The collaborative effort involves Boulder, Clear Creek, Gilpin and Larimer Counties as well as Colorado Parks & Wildlife and the U.S. Forest Service to develop a landscape-level, multi-jurisdictional strategy for Recreational Sport Shooting (RSS) across northern Colorado’s Front Range.

The Jefferson County effort identified both basic evaluation criteria and, “additional opportunities” and constraints for public and privately held properties across the County. Below are two charts denoting what the Subgroup felt were most important to consider in the search for a possible public outdoors shooting range site. Important to note that 6 acres was identified as the absolute minimum possible to accommodate 15 lanes of 50-yard pistol firing and 15 lanes of 200-yard rifle firing. The group agreed that if a property has more acreage, and is meeting all criteria, more offerings, such as trap and skeet, archery and other sports could also be accommodated.

Basic Evaluation Criteria Subject to Some Level of Flexibility & Site Conditions	
Minimum Acreage	6 acres (includes minimum 1000 sq. ft. building for restroom, classroom, etc.)
Minimum Dimensions (to accommodate maximum 30 lanes total for outdoor pistol and rifle)	200 yards x 40 yards (rifle) and 50 yards x 20 yards (pistol) (15 lanes each) (plus room for berming between lanes)
Distance from residential & non-residential development	Minimum ½ mile (or 2,640 linear feet)
Distance from recreational development (trails, campgrounds, recreation areas)	Minimum ¼ mile (or 1,320 linear feet)
Distance from communication towers	Site specific
Slope	20% or less
Site Access	Adjacent to County or State maintained road (within ½ mile)
Approximate Maximum Drive Time to Facility	30 Minute Drive Time from Intersections: C-470 & I-70, I-70/Hwy. 285 & Hwy. 6/93



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Additional Site Evaluation Criteria	
1	Wildfire Hazard
2	Wildlife/Natural Resource Impact
3	Proximity to bodies of water and/or wetlands
4	Land Entitlement/Zoning
5	Jeffco Open Space Restrictions, if applicable
6	City of Boulder/Boulder County Open Space Restrictions, if applicable
7	Sound impacts
8	Visual/Aesthetic Impacts
9	Aspect – Southern-facing is positive
10	Natural Backdrops
11	Quarries
12	Proximity to County and/or State maintained roads
13	Forbidden Firearms Discharge Area (Jefferson County Sheriff)

Facility Scope

There was considerable discussion among Working Group members on the scope of a proposed facility. The vast majority of the group agreed that a facility offering services to 90% of shooting sport types (essentially basic handgun and rifle), leaving more specialized pursuits such as Cowboy Action, Trap and Skeet, and other competitive activities to private sector providers is the best approach for this effort. Should the opportunity present itself such that more land than the minimum 6 acres becomes available, then a more robust facility could be developed.

On several occasions, the Working Group discussed the importance of not competing with privately run facilities, and that although these findings assume a minimum of 6 acres, based on dimensions and basic amenities, if opportunities present themselves, there is a spectrum of offerings in all shapes and sizes that becomes possible to pursue.

A safe and family-friendly facility for Jefferson County area residents was found to be the most desirable approach. Law enforcement offerings, with such different needs in terms of a controlled setting intended for training and practice, apart from recreational pursuit for the general public, were discussed by the Working Group as well, and a shared use facility could be explored with the right property.



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Minimum Requirements for Facility should include:

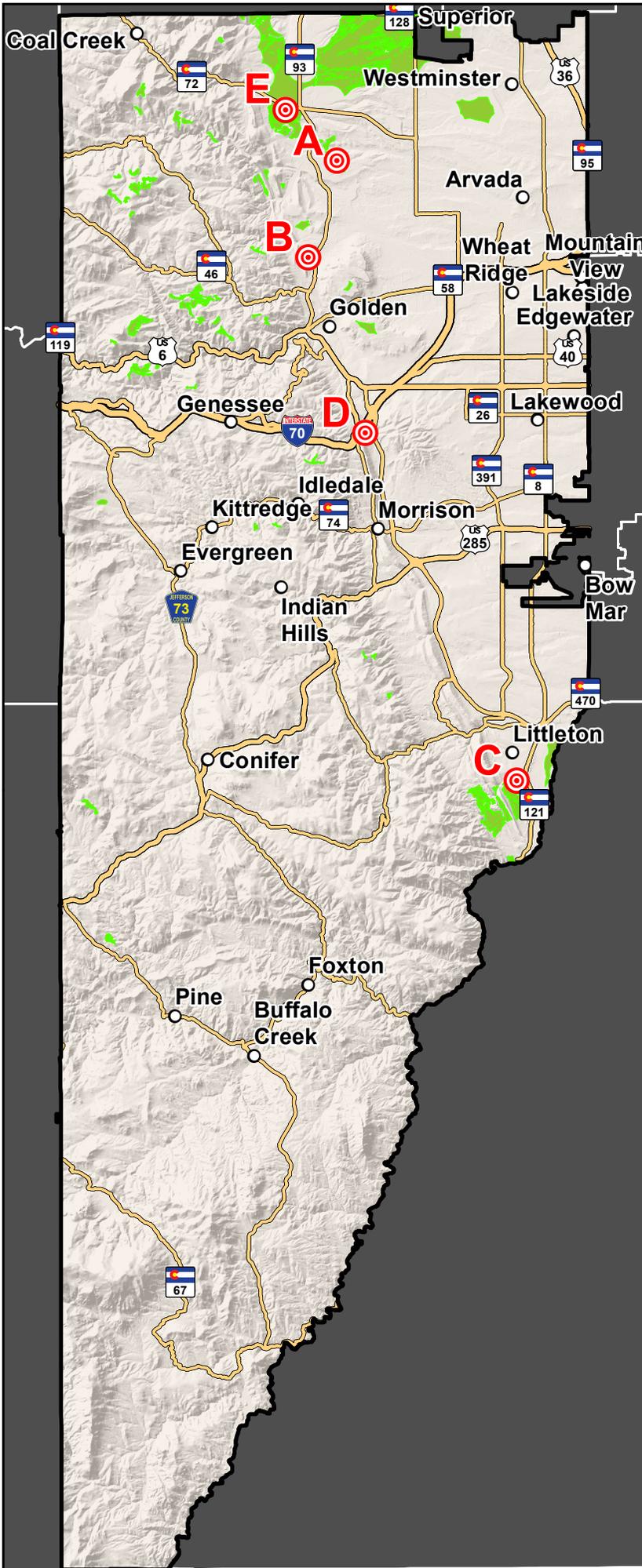
Outdoor Pistol	
Number of Lanes (Individual Stations)	10-15
Minimum Acreage	0.4 - 0.5 acres
Dimensions	50 yards long x 20 yards wide (plus room for "berming")
Outdoor Rifle	
Number of Lanes (Individual Stations)	10-15
Minimum Acreage	1.5 – 2.5 acres
Dimensions	200 yards long x 40 yards wide (plus room for "berming")
Parking, Restroom, Storage, etc.	
Additional Acreage	2 - 3 acres
"NICE TO HAVE" (IF POSSIBLE)	
Trap & Skeet	
Archery	

Potential Locations & Challenges

On Pages 6 is the *Jeffco Public Shooting Range Feasibility Analysis* map and Page 7 is the *Jeffco Public Shooting Range Feasibility Analysis of Possible Sites* that denotes details of potential sites identified by the Site Exploration Subgroup with County staff. These sites all pose significant challenges and it should be noted that some do not meet the evaluation criteria but the group felt were important to take note of as outlined in the attached spreadsheet.

In addition to the list of sites, there are also private properties across Jefferson County that appear to meet the basic evaluation criteria but would need further exploration. Given time constraints and the mandate of this being a broad and initial feasibility analysis, more research and due diligence is needed to determine whether private property owners have an interest in land conveyance for the development of an outdoor public shooting range.

JeffCo Public Shooting Range Feasibility Analysis



- Potential Site
- Preliminary Analysis Results
- Interstate Highway
- U.S. Highway
- State Highway
- County Highway
- Other Major Road



Disclaimer: This information/map is the property of the Jefferson County, Jefferson County, Colorado and is copyrighted material. Reproduction, manipulation or distribution of this product is prohibited without the prior written consent of Jefferson County staff. Jefferson County does not warrant the completeness, accuracy, or correctness of this product, its use for any purpose, and shall not be liable for damages of any kind arising from use of the product or for any errors or inaccuracies.



Jefferson County Public Shooting Range Feasibility Analysis of Possible Sites

Site Reference Name	Approximate Acreage (6 Acre Minimum)	Zoning/Land Use	Distance from Communication Towers	Minimum 1/2 Mile from Residential & Non-Residential Development	Minimum 1/4 Mile from Recreational Development (Trails, etc.)	Outside of Front Range Mt. Backdrop/Foreground Study Area	Lack of Significant Wildlife/Natural Resource Impacts	20% Slope or Less (on minimum of 6 acres)	Sound Impacts	Comments
A City of Arvada/ Pioneer Sand & Gravel Quarry	126 acres	Arvada Commercial-1	On-site							Jefferson Parkway alignment planned in this area, relocation of model airplane field needed; life of Pioneer Sand and Gravel quarry coming to close; On-going coordination with City of Arvada & Colorado Division of Reclamation, Mining & Safety.
B State Land Board/Jeffco Open Space/Jeffco General Fund	203 acres	Jeffco Planned Development (P-D) and Agricultural-2	0.5 Mile							Unclear on State Land Board interest in this use; JCOS land restrictions may apply; unclear on use of General Fund land for a public shooting range; possible re-route of Hwy. 93 planned in this area.
C Jeffco Open Space Hildebrand Ranch Park (south end)	34 acres	Jeffco Agricultural-1	1.6 Miles							Public access currently does not exist to this site. Would need easement from Lockheed Martin and U.S. Army Corps of Engineers. Need to further investigate impact of vibrations from shooting and sensitive lab testing at Lockheed facility. Nearby private shooting range exists (Skyline Hunting & Fishing Club) for use by Lockheed employees; existing prairie dog colony.
D Rooney Valley Law Enforcement Training Facility/ Hayden property	37 acres	Jeffco A-2/Lakewood R-1A	0.2 Miles							Expansion of the existing law enforcement range to include Thunder Valley Motocross Park (owned by City of Lakewood) and/or Hayden property on the east side of Rooney Road would need to involve the City of Lakewood and the Jeffco Sheriff's Office, among other agencies; unclear on the desire to expand the existing use, or the ability to do so given topographical constraints and proximity to I-70/C-470 interchange.
E Jeffco Open Space (Coal Creek Canyon Park formerly Lacy)/ Denver Water Board	617 acres	Arvada NC-COF (Commercial)	0.11 Miles							The Ranch Region Management Plan designates the Lacy property (part of Coal Creek Canyon Park) as a Natural Area Management Unit due to the richness of native grasses in the area. It is also contained within the multi-county Front Range Mountain Backdrop/Foreground Plan for visual preservation and natural resource values; unclear on willingness of the Denver Water Board to permit a public shooting range on their property & railroad location poses a challenge.

OTHER SITES CONSIDERED

Rocky Flats/Bluestone Quarry Site
 City of Boulder Open Space & Mountain Parks properties (Coal Creek Canyon area)
 Private land (Jefferson County) adjoining Golden Gate Canyon State Park in Gilpin County
 Bandimere Speedway land



Green = Meets Criteria



Yellow = Partially Meets Criteria



Red = Does Not Meet Criteria



Question = Needs More Research



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Quarries

According to the Colorado Division of Reclamation, Mining & Safety, there are 107 active or terminated mines and/or quarries in Jefferson County. Quarries are intriguing for their already disturbed area, with earthen backdrops as a result of the mineral extraction process. They also have existing vehicular access from County or State maintained roads. The challenges with exploring the use of quarries for a public shooting range center on the Reclamation Plans already in place for these sites, as mandated by the State of Colorado and the remediation required to make them safe for public access, among other challenges.

Partnership with U.S. Forest Service (USFS) – Pike National Forest

The U.S. Forest Service has been struggling with “dispersed shooting” areas for many years in our County. There have been many documented “near misses” where visitors to the forest have escaped whizzing bullets after stumbling upon shooters not aware of their surroundings (e.g., trails nearby, too close to roads, etc.). Informal shooting areas in the Pike National Forest create unsafe conditions for all involved and have resulted in illegal dumping of items such as old refrigerators, television sets, etc. that visitors use for target practice.

All of these factors have resulted in a draft USFS order proposing mass closure of the Buffalo Creek Recreation Area for dispersed shooting. However, if areas are to be closed, the USFS is committed to offering a safe and more controlled option for forest visitors. As previously mentioned, the Northern Front Range Sports Shooting Partnership, including the USFS as an active member, is committed to simultaneously finding suitable locations for people to enjoy sports shooting while making it as safe as possible for other visitors to the forest.

Jefferson County has the ability to partner with the USFS in the Pike National Forest to achieve this goal. More work is needed to further explore this win-win opportunity, recognizing that although the Pike is not in close proximity to the population, the use is already occurring there and other, closer locations in Jefferson County are proving to be challenging for the development of a public shooting range without major off-site impacts.



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Financial Subgroup Findings

Land Acquisition

The Subgroup determined that for land acquisition in Jefferson County of a 6 acre parcel, the cost could range from \$10,000 - \$123,000 per acre (\$60,000 - \$1 Million), based on location, existing entitlements, highest and best use appraisals, etc. Grants, land donations, leases and any combination of public/private/non-profit partnerships are all options for funding this acquisition. Below demonstrates a short list of grants available for development of a shooting range.

Grantor	Program	Types of Projects	Award Range	Match Funding Requirement	Deadline
Colorado Parks & Wildlife	Shooting Range Development Grant Program	Establish, improve or expand shooting ranges, including archery, across Colorado	Up to \$500,000 (statewide); average award \$50,000	Minimum 25% of Project Cost	February Annually
Colorado Parks & Wildlife (utilizing U.S. Fish & Wildlife Service funding)	Small Range Maintenance Grants/Hunter Education Shooting Range Small Grant Program	Improvements to public and private shooting range facilities that allow hunter education classes and public sight-in days	Up to \$5,000	Minimum 25% of Project Cost; Non-federal cash or in-kind services (donated labor and/or supplies and equipment use)	September Annually
Conservation Trust Fund (from Colorado Lottery proceeds)	Funds approved by Board of County Commissioners (BCC)	Acquisition, development, and maintenance or for capital improvements for recreational purposes on any public site.	BCC discretion	N/A	On-going
National Rifle Association (NRA) Foundation	NRA Range Grant	Promoting firearms and hunting safety, enhancing marksmanship skills	Up to \$5,000	N/A	October Annually
National Rifle Association (NRA) Foundation	NRA Public Range Fund	For cities, counties, states and federal agencies to build and/or improve public ranges	Up to \$25,000	50%, in-kind acceptable	On-going



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Development, Construction & User Fees

The Subgroup also discussed potential financial contributions in the form of corporate sponsorships, partnerships with organizations whose mission is aligned with this effort and the utilization of labor from partners such as local military personnel and/or local inmates for grading and construction work.

Operational Financial Considerations

The greater Working Group agreed that a facility should, at a minimum, include a full-time staff member trained as a Range Safety Officer. A compensation plan for this manager as well as other full and/or part-time staff members would need to be developed. Volunteers could also provide in-kind support for the operation of the facility, but should not be the sole presence at the facility. The group also identified insurance for a public range as an important need to be explored as well. Maintenance of the facility, including the critical lead management component of the operation, which can be a very costly aspect of the facility, even if a strong recycling/capture system is in place for lead, brass, etc. Please see Addendum A for more information on the importance of lead management as it relates to impact on flora and fauna. This was drafted by Jeffco Open Space Natural Resources staff.

The group researched a spectrum of shooting ranges from rustic developments on USFS lands to more developed, state-of-the-art indoor ranges in an attempt to demonstrate the range of cost for construction. Below are descriptions of area facilities for comparison purposes.

Pawnee Grasslands Shooting Range - This is a cooperative between the USFS and CPW for the construction of 100, 50, and 25 yard outdoor shooting ranges on the Pawnee Grasslands near Ft Collins. This range consists of 30 shooting positions on 100 yard, 50 yard, and 25 yard outdoor ranges. The cost for construction of this shooting range is \$170,000. This included all the dirt work and range excavation for the range and the associated parking area. These costs also included all necessary materials for shooting benches and other items necessary for range construction. This range is located in what would be classified as a rural setting in an area that has historically been used for dispersed shooting. Currently there is no charge to shoot at this facility. This is an unsupervised range.

South Park Shooting Range - This range is a cooperative between Park County and the CPW. This project consists of a five phase development plan. All estimates included here are for phase one which is the construction of 2, 100 yard and 2, 50 yard



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outdoor ranges. All ranges have at least 10 shooting positions for a total of 40 or more positions. The estimated costs for development of phase one of this facility is \$200,000. It should be noted that phase one only includes the construction of the ranges and the road leading into the range. Phase two of this project will include the covering of the shooting positions and the addition of shooting benches along with additional range construction. It should also be noted that this there was a major amount of in kind contribution from Park County Road and Bridge, the South Park Shooting Association, and numerous members of the local community. This range location is classified as rural in an area that has had historical shooting activities.

Currently there is no charge to shoot at this facility, but in the future a charge of less than \$10 a day will be assessed to pay for range maintenance and operations. This is an unsupervised range.

Colorado Clays Shooting Range - This is a private shooting facility that has traditionally been available to the public on a pay basis. The historical use of this facility has been shotgun sports. This information is for the recent addition of a 100 and 25 yard indoor shooting facility. The costs for the creation of this highly complex, indoor shooting range is \$850,000. This includes 10, 100 yard shooting lanes for rifle and 10, 25 yard shooting lanes for pistol. This range is located in a suburban environment on private land that has been operated as a shotgun range in the past. Currently it costs \$20 for one hour of range time. This is a supervised range.

Cheyenne Mountain Shooting Range - This is a cooperative between the US Army-Ft Carson, El Paso County, El Paso County Sheriff's Office, CPW, and the USFS. This range is located on Ft Carson south of Colorado Springs. The cost estimates outlined here are for the construction of 120 covered shooting positions on ranges varying from 5 - 300 yards. Ranges are available for rifle and pistol shooting. The estimated cost for phase one of this project is \$1.1 million. This estimate includes shooting benches, covered shooting positions, range buildings, parking, and other amenities found at a facility of this size. This range is located in a suburban/urban environment historically used for military training operations. Currently it cost \$10 or less for a day pass to shoot at this facility. This is a very large, supervised range.



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Operations & Design Subgroup Findings

General Considerations developed by this Subgroup included the following for a public shooting range facility in Jefferson County:

- Financially self-sustaining
- Focused on beginner, family and intermediate levels
- More advanced disciplines could be accommodated in periodic event competitions, but not at the expense of regular access by members of the public to shoot
- Mission of the facility should be focused on safety and skill-building for handgun/rifle use

This Subgroup's premise, and that adopted by the greater Working Group was centered on safety. Instilling "feeling" of safety in end users was found to be a paramount consideration this includes structures for registration, etc.)

Personnel should be paid (a Range Safety Officer as a minimum), and thereafter could include a combination of paid and volunteer workers. All, the Subgroup agreed, should be educated and trained in firearms use and have a strong knowledge of a variety of weapons.

The overall facility design should include designated lanes with built-in safety features to include features such as "blue sky" baffles that aid in directing projectiles downward, keeping them on-site as much as possible. The facility should employ Best Management Practices developed by the National Rifle Association and others for everything from lead management and brass recovery to registration at a structured entry point that incorporates safety procedures from when a visitor enters the parking lot to when they are on the range.

Training and education were found to be critically important to a well-run Jefferson County public shooting range. This should include accommodations for beginner shooters and could allow for a graduated training program whereby a track of sessions is developed, resulting in highly trained and knowledgeable gun users. The Subgroup also discussed the possibility of a classroom setting contained on the property where either the public visitors or law enforcement personnel could take advantage of a structured learning environment akin to Colorado Parks & Wildlife Hunter Safety Education Classes. NRA instructors could also take advantage of this type of accommodation.

Finally, future expansion possibilities were an important component of what this Subgroup discussed. Partnerships with not only law enforcement, but military as well, both of whom have great demands for outdoor shooting facilities in our area, should be explored. A shared use facility of some kind that could allow for youth engagement, event competitions and other such efforts could be developed.



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Summary

This Working Group's efforts have resulted in concepts that could be explored further, and those aspects of a public shooting range that should weigh heavily in the development of whatever site is chosen. As this endeavor was intended to be a very broad feasibility study and report on general considerations that should be taken into account, much more research should be conducted to delve deeper into options presented herein as events unfold. Broader community involvement in the process, apart from those agencies and individuals involved in this work needs to take place in the vetting of a location and the financial and operational aspects of a potential Jefferson County Public Shooting Range.



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ADDENDUM A



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Ecological Concerns Identified by Jeffco Open Space Natural Resource Staff

Lead

Lead contamination from shooting ranges is under increasing scrutiny as a point-source of lead pollution. Firearm ammunition is mainly composed of lead, with lead shot containing 97% and lead bullets containing 90% (Scheuhammer and Norris 1995). In the US alone, spent lead munitions exceeded three million Mg in the 20th century, with that figure increasing at a rate of nearly 60,000 Mg per year (Craig et al. 1999). The impacts of lead pollution from spent ammunition at outdoor shooting ranges encompasses many different ecological concerns to include soils, plants, waters (surface and groundwater), bioaccumulation in edaphic arthropods, and ingestion by terrestrial wildlife.

Lead pellets are subject to oxidation, carbonation, and hydration reactions when they come into contact with soil, ultimately transforming them into dissolved and particulate species (Jørgensen and Willems 1987). As a result of this weathering process and subsequent accumulation, heavily contaminated soils have been found at shooting ranges. Cao et al. (2003) have reported the contamination to be mostly concentrated in surface soils. However they also found that ranges with high organic matter content throughout the soil profile contained substantial amounts of lead in the subsurface soils as well.

Soils with low lead concentrations (15-30 mg Pb kg⁻¹) have been reported to only present as trace amounts in plants. However as lead concentrations increase, uptake by plants is increased (Turpeinen et al. 2000). Additionally, while higher concentrations of lead are reported in the roots, a considerable amount of lead is still transported to aboveground biomass. Should these range grasses be mowed with clippings left in place, it is possible for this lead to become more available to the soils and plants thus perpetuating the contamination (Cao et al. 2003).

Lead weathering has been found to also negatively impact surface waters. The mobile weathered remains of the bullets have been reported in contaminations of surface waters that greatly exceed USEPA drinking water standards (Stansley et al. 1992; Cao et al. 2003). Groundwater contamination can be a concern as well in areas where distance from topsoil to groundwater is very shallow (Hardison et al. 2003).

Soil arthropods constitute an essential part of ecosystems, characterized by significant species diversity, decomposition of organic matter, regulation of microbial activity, and nutrient cycling (van Straalen 1998; Cortet et al. 1999). Their generally sedentary lifestyle puts them in a position to be heavily impacted by soil contamination. Migliorini et al. (2004) studied the effects of heavy metal contamination on soil arthropod communities on shooting ranges and found a significant portion of lead to be bioavailable in the soil, which was readily bioaccumulated by the arthropods.



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Lead ingestion by wildlife is a serious concern for wildlife managers. Ma (1989) reported average concentrations of lead in kidney, liver, and bone tissues of small mammals to be greatly elevated in environments that had been polluted with lead pellets. Mortality of raptors has been associated with the ingestion of lead shot contained in their prey (Locke and Friend 1992). Stansley and Roscoe (1995) found elevated tissue lead concentrations in frogs inhabiting a shooting range.

Acoustics

Anthropogenic noise is quickly becoming an important environmental stressor of wildlife. Although impacts from noise cannot be generalized across taxonomic boundaries, consistent, negative wildlife responses have been reported and demonstrate wide-ranging impacts such as behavioral changes, physiological responses, and direct and indirect fitness costs (Francis and Barber 2013).

Acoustic avoidance is a commonly reported behavioral response by wildlife. Certain species of frogs have been reported to adjust the timing of their calls to use periods of silence (Schwartz 1991) and even decrease their calling rate in the face of human-induced noises (Sun and Narins 2005). Larkin (1978) found the flight paths of migratory birds to redirect away from noise sources. Geist (1971) reported changes in ungulate home ranges as a result of noise disturbances pushing them out of suitable habitat.

Many researchers have concluded that physiological impact from anthropogenic noise is most likely to be hearing loss, especially in young animals (Larkin et al. 1996). Developmentally normal juveniles could incur a permanent threshold shift resulting in hearing-impaired adults, which could in turn result in evolutionarily hearing-impaired genetics permeating the population (Larkin et al. 1996). Increased stress-levels as indicated by elevated heart rates are also a concern for wildlife subjected to repeated, intense noises. Additionally, noise has also been found to affect metabolic activity of several areas of the brain even under long-term habituation (Gonzalez-Lima et al. 1989).

The cumulative behavioral and physiological impacts can translate into fitness costs that affect the population level of a species. Impacts to acoustic communication have been receiving the greatest amount of attention. A variety of taxa have been studied and reported impacts include effects on mate attraction, decreased territory defense, increased predation, and reduced reproductive success (Read et al. 2013). For example, fitness in birds is negatively impacted by anthropogenic noise as a result of the acoustic masking of parent-offspring communication (Schroeder 2012).



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