

September 6, 2023

Mr. Donald B. Mooney  
Law Office of Donald B. Mooney  
417 Mace Blvd, Ste J-334  
Davis, CA 95618

**Subject: Comments on the Initial Study and Mitigated Negative Declaration for the High Plains Shooting Sports Center Project (Zone Amendment 13-007)**

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Dear Mr. Mooney:

This letter contains my comments on the Initial Study and Mitigated Negative Declaration (“IS/MND”) prepared by the County of Shasta (“County”) for the High Plains Shooting Sports Center Project (“Project”). Patrick Jones (“Applicant”) proposes construction and operation of an outdoor gun range complex and gun club, including long-rifle firing lines and handgun bays with berms to serve as backstops, clay target trap and skeet shooting ranges, a 4,975-square-foot primary clubhouse with a 3,272-square-foot attached covered patio area, a 1,025-square-foot attached caretaker’s residence, and a 699-square-foot law enforcement clubhouse with a 270-square-foot attached covered patio.

I am an environmental biologist with 30 years of professional experience in wildlife biology and natural resources management. I have served as a biological resources expert for over 200 projects in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues; preparation and peer review of environmental compliance documents prepared pursuant to the California Environmental Quality Act (“CEQA”) and the National Environmental Policy Act (“NEPA”); and preparation of written comments that address deficiencies with CEQA and NEPA documents. My work has included written and oral testimony for the California Energy Commission, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A copy of my current curriculum vitae is attached hereto.

The comments herein are based on my review of the environmental documents prepared for the Project, a review of scientific literature pertaining to biological resources known to occur in the Project area, and the knowledge and experience I have acquired during my 30-year career in the field of natural resources management.

## **PROJECT DESCRIPTION ISSUES**

### **Grading and Excavation**

Construction of the Project would require mass grading and excavation for utilities, parking areas and driveways, the on-site wastewater treatment system, stormwater drainages and culverts, bullet backstop mounds, and building footings.<sup>1</sup> However, the IS/MND does not provide a grading plan, nor does it identify the grading limits and estimated cut and fill quantities. This precludes the ability to assess the direct and indirect impacts that grading and excavation could have on sensitive biological resources (e.g., wetlands).

### **Interior Access Roads or Trails**

The Project includes 500-, 600-, and 1,000-yard bullet backstop berms for long-range target shooting. Access to these backstops would be required to inspect and maintain targets, and to collect bullets and bullet fragments from the berms. However, the site plan for the Project does not depict any roads or pedestrian trails to the 500- and 600-yard backstop berms. Roads or trails to the berms would increase impacts to the site's annual grassland community and they could have direct and indirect impacts on the site's wetlands.

The Environmental Management Plan that was prepared for the Project states that all walkways and shooting pads would be handicap and wheelchair accessible.<sup>2</sup> Presumably this means that the Project would contain trails composed of asphalt, crushed rock, or other hard material to connect the parking lots to the shooting pads. However, trails for handicapped and wheelchair users are not described in the IS/MND, nor are they depicted on the Site Plan.

The IS/MND's failure to describe and depict all interior access roads and trails precludes a thorough understanding of the Project's environmental impacts and the ability to validate the IS/MND's determination that the Project would not have any significant impacts on wetlands or other sensitive biological resources.

### **Night Lighting**

The Applicant's consultant, Wildland Resource Managers ("WRM"), prepared a Biological Review for the Project in January 2016. In June 2017, WRM provided an addendum to the Biological Review to address the Shasta County Planning Department's request for additional information. The addendum states:

“Due to the nature of the project's human functions, there will be no nighttime activities at the site. Therefore, the only time a light would be on is in the case of the motion sensitive light being activated. Consequently, the time duration of lighting will be minimal and therefore may be considered to have a less than

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<sup>1</sup> IS/MND, p. 8.

<sup>2</sup> Environmental Management Plan, p. 3.

significant impact to wildlife both on and adjacent to the project area. No mitigation should be required.”<sup>3</sup>

This statement conflicts with the project description in the IS/MND, which states: “[l]arge shooting sports events would be held intermittently and may include RV overnight dry camping in a designated parking area.”<sup>4</sup> Overnight camping would introduce additional sources of light pollution that were not analyzed in the IS/MND.

### **Infrastructure for Large Events**

The Project would include large events that would attract up to 500 people.<sup>5</sup> The IS/MND fails to describe the additional facilities that would be required (e.g., portable toilets, bleachers) to support large events, where additional facilities would be located, and the measures that would be taken to keep people out of the site’s wetland areas. This is important because human activity in (or near) wetlands can cause negative impacts through trampling (which causes soil compaction, burial of seeds and cysts, or direct mortality of plants and animals), or by introducing (or facilitating spread of) seeds of invasive plants attached to shoes and clothing.<sup>6</sup>

### **Existing Road**

The IS/MND states: “[a]n existing road crosses through vernal complexes identified on the site. However, the project applicant does not intend to increase the use of this road in any fashion.”<sup>7</sup> This statement appears unrealistic and is not substantiated by information in the IS/MND. The IS/MND provides no information on current use of the existing road, nor does it describe how the road would be used after the Project is constructed. However, it appears that the existing road is currently used to support the site’s use as a winter pasture for livestock.<sup>8</sup> Based on the Site Plan, it appears that after the Project is constructed the road would be used on a daily basis to access the rifle range in the southeast corner of Project site, and to provide access from the rifle range to the 500-yard backstop and law enforcement range (among other potential uses of the road).

### **Rifle Range Firing Positions**

The IS/MND states: “[f]iring positions for the 300-, 500- and 600- would be located within a vernal swale on the southeast portion of the project site. These firing positions would cause some disturbance to the vernal swale.”<sup>9</sup> The IS/MND fails to describe the type, extent, and source of disturbance to the vernal swale (labeled “VS-1” in the Wetland Delineation). This issue is

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<sup>3</sup> WRM. 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information. p. 3.

<sup>4</sup> IS/MND, p. 1.

<sup>5</sup> *Ibid.*

<sup>6</sup> United States Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. p. I-24.

<sup>7</sup> IS/MND, p. 11.

<sup>8</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. p. 1.

<sup>9</sup> IS/MND, p. 11.

compounded by the Site Plan, which does not depict the disturbance footprint associated with the 300-, 500- and 600-yard firing positions.

According to the Environmental Management Plan, all walkways and shooting pads would be handicap and wheelchair accessible.<sup>10</sup> Vernal swales at the Project site contain saturated soils during the wet season.<sup>11</sup> Therefore, it appears fill material would need to be added to VS-1 to accommodate shooters in wheelchairs (and potentially to keep other shooters from getting wet).

## ENVIRONMENTAL SETTING

### Sensitive Natural Communities

One of the significance thresholds adopted in the IS/MND is whether the Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife (“CDFW”) or U.S. Fish and Wildlife Service (“USFWS”).<sup>12</sup>

CDFW and its partners, including the California Native Plant Society, classify vegetation types according to the state standards embodied in the Survey of California Vegetation, which comply with the National Vegetation Classification Standard (“NVCS”).<sup>13</sup> NVCS is a hierarchical classification scheme, with the most granular level being the Association, followed by the Alliance. Identifying presence of a Sensitive Natural Community may require classification down to the association level because some associations are considered sensitive, even though the alliances in which they nest are not.

The Project site contains 14.7 acres of blue oak (*Quercus douglasii*) and gray pine (*Pinus sabiniana*) woodlands. WRM did not use the state standards to classify these woodlands; however, based on the description provided in the Biological Review,<sup>14</sup> the woodlands may qualify as a Sensitive Natural Community.<sup>15</sup>

### Special-Status Species

The IS/MND fails to analyze impacts to numerous special-status species that may occur at the Project site. WRM’s Biological Review states the following regarding the annual grassland habitat at the Project site: “[b]ird species common to the area include ... short-eared owl ... northern harrier.”<sup>16</sup> In addition, the Biological Review lists the ringtail cat as a “common species typical of the woodlands” at the Project site.<sup>17</sup>

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<sup>10</sup> Environmental Management Plan, p. 3.

<sup>11</sup> WRM. 2017 (revised). High Plains Shooting Center Project: Wetland Delineation.

<sup>12</sup> IS/MND, p. 9.

<sup>13</sup> California Department of Fish and Wildlife. 2023. VegCAMP [website]. Available at: <<https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities>>.

<sup>14</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. p. 6.

<sup>15</sup> See California Department of Fish and Wildlife. 2023 June 1. California Sensitive Natural Communities. Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline>>.

<sup>16</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. p. 7.

<sup>17</sup> *Ibid.*

The short-eared owl and northern harrier are California Species of Special Concern. Habitat loss and degradation are primary threats to both species.<sup>18</sup> The ringtail is a Fully Protected species under California Fish and Game Code. This means it may not be taken or possessed at any time and no licenses or permits may be issued for take (except for scientific research). Although the Biological Review indicates the short-eared owl, northern harrier, and ringtail could occur at the Project site, the IS/MND provides no analysis of, or mitigation for, impacts to these three species.

The eBird database provides data on birds detected at various “hotspots.” A hotspot is defined as a “public birding location where checklists are aggregated and you can view data summaries.”<sup>19</sup> The Leopard Dr.—Millville Plains Hotspot is located approximately 400 feet from the Project site, and thus, it is a reliable source of data on avian species that are likely to occur at the Project site. Table 1 identifies the special-status species that have been detected at the Leopard Dr.—Millville Plains Hotspot.<sup>20</sup>

**Table 1.** Special-status species detected at the Leopard Dr.—Millville Plains Hotspot.

| <u>Species</u>    | <u>Status</u>                     | <u>Addressed in Project documents</u> |
|-------------------|-----------------------------------|---------------------------------------|
| Cackling goose    | CDFW Watch List                   | <b>No</b>                             |
| Northern harrier  | CA Species of Special Concern     | <b>No</b>                             |
| Ferruginous hawk  | CDFW Watch List                   | <b>No</b>                             |
| Prairie falcon    | CDFW Watch List                   | <b>No</b>                             |
| Merlin            | CDFW Watch List                   | <b>No</b>                             |
| Loggerhead shrike | CA Species of Special Concern     | <b>No</b>                             |
| Bald eagle        | State Endangered, Fully Protected | Discounted in WRM response to Mooney  |
| Golden eagle      | CDFW Watch List, Fully Protected  | Discounted in WRM response to Mooney  |
| Burrowing owl     | CA Species of Special Concern     | Discounted in WRM response to Mooney  |

Of the 10 special-status species that have been detected at the Leopard Dr.—Millville Plains Hotspot, none were addressed in the IS/MND, and only four of the species were subsequently addressed by WRM in its response to the comment letter submitted by the Law Office of Donald Mooney (“Mooney”).

<sup>18</sup> Shuford WD, Gardali T (editors). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

<sup>19</sup> eBird. 2021. eBird Glossary. Available at: <<https://support.ebird.org/en/support/solutions/articles/48000948655-ebird-glossary#anchorF>>.

<sup>20</sup> See <<https://ebird.org/hotspot/L654961>>.

WRM's response to the Mooney letter states: "[b]urrowing owls are not found within the northern Sacramento Valley."<sup>21</sup> WRM's response is inconsistent with the range map published by the California Department of Fish and Wildlife.<sup>22</sup> Moreover, presence of burrowing owls at the Leopard Dr.—Millville Plains Hotspot, at other locations on Leopard Drive, and at Millville Plains Road west of the Project site, clearly demonstrates that burrowing owls could occur at the Project site.<sup>23</sup>

WRM's response to Mooney's letter further states: "the range of the [grasshopper sparrow] does not extend into Shasta County."<sup>24</sup> WRM's response is inconsistent with the range map published by the California Department of Fish and Wildlife.<sup>25</sup> The detection of grasshopper sparrows along Millville Plains Road, approximately 1.75 miles west of the Project site, and at several locations along Parkville Road, approximately 2.75 to 4.15 miles southwest of the Project site,<sup>26</sup> provides strong evidence that grasshopper sparrows could occur at the Project site.

### **Wildlife Corridors**

The IS/MND states there is "no observed wildlife migratory pattern which would span the project site,"<sup>27</sup> and the Biological Review suggests that the only potential wildlife corridor at the Project site is the oak woodland along Bear Creek.<sup>28</sup> This information is incorrect.

Vernal pool landscapes provide vital links to birds that migrate through the California portion of the Pacific Flyway corridor.<sup>29</sup> In addition, they provide critically important wintering habitat to numerous waterfowl and shorebird species (over 60 percent of the Pacific Flyway waterfowl population winters in the Central Valley).<sup>30</sup>

When flooded, vernal pools are relatively shallow, resulting in optimal foraging depths for a variety of waterfowl and shorebirds. In addition, the relatively short hydroperiod of vernal pools

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<sup>21</sup> WRM. 2023 July 20. Wildland Resource Managers' response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney. p. 5.

<sup>22</sup> Shuford WD, Gardali T (editors). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

<sup>23</sup> eBird. 2023. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available at: <<https://ebird.org/home>>.

<sup>24</sup> WRM. 2023 July 20. Wildland Resource Managers' response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney. p. 5.

<sup>25</sup> Shuford WD, Gardali T (editors). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

<sup>26</sup> eBird. 2023. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available at: <<https://ebird.org/home>>.

<sup>27</sup> IS/MND, p. 12.

<sup>28</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. p. 6.

<sup>29</sup> Silveira JG. 1998. Avian Uses of Vernal Pools and Implications for Conservation Practice. In: Witham CW, Bauder ET, Belk D, Ferren WR Jr, Ornduff R (editors). Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference. California Native Plant Society, Sacramento, CA. p. 92-106.

<sup>30</sup> *Ibid.*

results in abundant wetland invertebrate fauna during spring, when birds require protein-rich resources to meet the energy demands of spring migration.<sup>31</sup>

Scientific literature has demonstrated that vernal pools are critical to waterbird survival and recruitment.<sup>32</sup> Migratory birds must travel long distances between breeding and wintering areas. These long-distance flights consume a lot of energy. Vernal pools provide critical food resources that enable migrating birds to nearly double their body mass in a relatively short period.<sup>33</sup>

Grasslands associated with vernal pool landscapes also provide critical foraging habitat for birds. For example, during spring hyperphagia, cackling and Ross' geese spend considerable time grazing on protein rich plants in herbaceous habitats adjacent to vernal pools, while terrestrial gleaning shorebirds (e.g., curlews, plovers, and godwits) feed on beetles, spiders, and bees. These protein rich resources enable the birds to build nutrient reserves sufficient to reach their northern breeding grounds in good condition. As a result, vernal pools and the associated grasslands are of strategic importance to migratory birds, including special-status species (e.g., sandhill crane, cackling goose, mountain plover, long-billed curlew).

## PROJECT IMPACTS

### Vernal Pool Crustaceans

The Biological Review determined that the vernal swales at the Project site are suitable habitat for the federally-listed vernal pool fairy shrimp and vernal pool tadpole shrimp.<sup>34</sup> The Biological Review states: “[a]s the vernal pools and swales are suitable habitat for the fairy and tadpole shrimp it is recommended that these features be avoided by the project design. Failure to do so **may result in a taking** of a shrimp species due to modification of their habitat.”<sup>35</sup> Although the IS/MND indicates the firing positions for the 300-, 500- and 600-yard targets would impact a large vernal swale (VS-1), it provides no analysis of impacts to the vernal pool fairy shrimp and vernal pool tadpole shrimp. As a result, impacts to these species remain potentially significant.

### Western Spadefoot Toad

The Project site provides potential habitat for the western spadefoot toad, a California Species of Special Concern.<sup>36</sup> The IS/MND acknowledges that roads and various construction activities associated with the Project could impact the western spadefoot; however, it determined those impacts would be less-than-significant because: (a) road and vehicular access to the site is limited and would not be located in a majority of the habitat that Western spadefoot toad could occupy;” and (b) “the primary clubhouse with the attached caretaker’s residence and nearby generator shed are all located over 600-feet away from vernal swales or pools which would serve

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<sup>31</sup> *Ibid.*

<sup>32</sup> *Ibid.*

<sup>33</sup> *Ibid.*

<sup>34</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. p. 8.

<sup>35</sup> *Ibid.* [emphasis added].

<sup>36</sup> IS/MND, p. 10.

as Western spadefoot toad habitat.”<sup>37</sup> The IS/MND’s analysis is flawed because it fails to consider Project impacts to terrestrial habitat for the western spadefoot.

Although western spadefoots breed in temporary pools and drainages, they spend most of the year below ground in terrestrial burrows.<sup>38</sup> Western spadefoot movements to and from breeding sites have been documented via radio telemetry at distances up to 860 feet from breeding sites within one season.<sup>39</sup> Other estimates are that distances of 1,207 feet from suitable aquatic breeding habitat can provide protection for western spadefoot toads.<sup>40</sup> As a result, the Project’s 50-foot buffers around potential breeding sites would not be sufficient to prevent potentially significant impacts to the western spadefoot.

The Project involves application of lime and fertilizer to soils at the site.<sup>41</sup> This could significantly impact western spadefoots in two ways. First, liming materials have very limited movement into the soil without incorporation. Therefore, application of lime (and perhaps fertilizer) would presumably involve soil tillage, which would likely cause direct mortality of toads in burrows. Second, amphibians are particularly sensitive to chemicals due to their permeable skin. Liming materials and fertilizers may be toxic to spadefoots, reduce their survival and mass, and increase the frequency of abnormalities.<sup>42</sup> These effects can have a significant impact on population recruitment and persistence.

## Eagles

WRM’s response to Mooney’s letter addresses potential impacts to bald and golden eagle nest sites. WRM’s response focuses on two issues: (1) the possibility that eagle nests occur at the Project site (or immediate vicinity); and (2) the buffer size needed to minimize impacts to eagle nest sites.

First, WRM’s response states:

“The Bear Creek drainage does contain suitable nesting habitat for large raptors which have been seen in the area by WRM staff. Nests have been asserted to be in the immediate proximity of the property without corroborating empirical data. WRM staff have looked for such nests using industry standard survey techniques and did not locate any.”<sup>43</sup>

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<sup>37</sup> *Ibid*, p. 11.

<sup>38</sup> Thomson RC, Wright AN, Shaffer HB. 2016. California Amphibian and Reptile Species of Special Concern. California Department of Fish and Wildlife. University of California Press, Oakland, California. pp. 130 to 135.

<sup>39</sup> Baumberger K. 2013. Uncovering a fossorial species: Home range and habitat preference of the western spadefoot, *Spea hammondi* (Anura: Pelobatidae), in Orange County protected areas (MS Thesis, California State University, Fullerton).

<sup>40</sup> Semlitsch RD, Brodie JR. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. *Conservation Biology* 17(5):1219-1228.

<sup>41</sup> Environmental Management Plan. Available at: <<https://www.shastacounty.gov/planning/page/ceqa-documents-and-notices-non-eir-documents>>.

<sup>42</sup> Egea-Serrano A, Relyea RA, Tejedo M, Torralva M. 2012. Understanding of the impact of chemicals on amphibians: a meta-analytic review. *Ecol Evol.* 2(7):1382-1397.

<sup>43</sup> WRM. 2023 July 20. Wildland Resource Managers’ response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney. p. 15.



WRM's assertion that it implemented "industry standard survey techniques" is not supported by evidence. The U.S. Fish and Wildlife Service has established the standards (protocols) for eagle nest surveys.<sup>44</sup> The golden eagle survey protocol entails surveys within a 2-mile radius of the project's boundaries.<sup>45</sup> The protocol states:

"A nesting territory or inventoried habitat should be designated as unoccupied by Golden Eagles ONLY after at least 2 complete aerial surveys in a single breeding season. In circumstances where ground observation occurs, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory is unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods should be at least 30 days apart for inventory, and at least 30 days apart for monitoring of known territories ... The first inventory and monitoring surveys should be conducted during courtship when the adults are mobile and conspicuous."<sup>46</sup>

The bald eagle survey protocol states the following regarding searches for new nests:

"In the case of small projects, consider habitats up to one-quarter to one-half mile (conservative) from proposed activity ... Initial bald eagle nest searches should be conducted when eagles are most likely to be found at nest sites and as early in the breeding season as possible to avoid missing activity prior to any potential nesting failures. In northern California, this initial survey window extends from late February through March; however, adult eagles may be found in nest groves or even perched in nest trees at any time of the year. Because CDFG recommends three separate visits to *known* bald eagle nests in the state to document occupancy, successful hatching, and to count the number of young (see Section 3.3), three surveys during similar time periods are recommended to search for new nests in project areas ... After an initial survey (late February through March), additional surveys should be conducted in mid-nesting season (late April through May) and late in the season (early June to early July)."<sup>47</sup>

Contrary to these survey protocols, WRM conducted only one survey (in May), several months after the courtship phase of both the golden eagle (December to January) and bald eagle (January to March). The survey did not encompass all potential nest sites within two miles of the Project site for golden eagles, or within one-half mile of the Project site for bald eagles. Instead the survey was limited to the Project site and "as far as WRM was able to visually inspect from

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<sup>44</sup> Pagel JE, Whittington DM, Allen GT. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. *See also* U.S. Fish and Wildlife Service. n.d. Updated Eagle Nest Survey Protocol. Available at: <<https://www.fws.gov/sites/default/files/documents/eagle-nest-survey-guidance-updated-protocol.pdf>>. *See also* Jackman RE, Jenkins JM. 2004. Protocol for evaluating bald eagle habitat and populations in California. US Fish and Wildlife Service, Sacramento. Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83707>>.

<sup>45</sup> U.S. Fish and Wildlife Service. n.d. Updated Eagle Nest Survey Protocol. Available at: <<https://www.fws.gov/sites/default/files/documents/eagle-nest-survey-guidance-updated-protocol.pdf>>.

<sup>46</sup> Pagel JE, Whittington DM, Allen GT. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. pp. 11 and 12.

<sup>47</sup> Jackman RE, Jenkins JM. 2004. Protocol for evaluating bald eagle habitat and populations in California. US Fish and Wildlife Service, Sacramento. pp. 5 and 8.

within the property boundary.”<sup>48</sup> Because WRM’s survey did not adhere to the eagle survey protocols, the survey results do not provide substantial evidence that no eagle nests (or territories) would be impacted by the Project.

Bald eagle nests are usually located within one mile of key foraging areas.<sup>49</sup> Bear Creek may be a key foraging area for bald eagles because it supports a diverse assemblage of fish species, including anadromous fish, resident native fish, and introduced fish.<sup>50</sup> The fact that an adult bald eagle “was seen soaring off-site to the east and southeast of the project area” during WRM’s breeding season survey provides additional evidence that a bald eagle nest may be located near the Project site.<sup>51</sup>

Second, WRM’s response focuses on the buffer size needed to minimize impacts to eagles. The response states:

“The USFWS National Bald Eagle Management Guidelines separate buffer recommendations into different categories according to disturbance type ... A shooting range would appear to best fit into “Category H” which covers activities that produce extremely loud noises and includes ‘larger fireworks.’ The recommendation of the guidelines is to avoid such activities within 1/2 mile of an active nest unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area (National Bald Eagle Management Guidelines, 2007).”<sup>52</sup>

Although the USFWS recommends a ½-mile buffer around bald eagle nests, it has determined that a two-mile buffer is required to protect golden eagle nest sites from recreational shooting activities.<sup>53</sup> Irrespective of this major omission, WRM’s response acknowledges that eagle nests within ½ mile of the Project site could be negatively impacted by the Project. This is important because WRM did not survey all area within ½ mile of the Project site to determine presence of eagle nests, nor does Mitigation Measure IV.a.1 require nest surveys within ½ mile of the Project site prior to initiation of construction activities. As a result, the IS/MND’s determination that impacts to eagle nests would be less-than-significant is not supported by substantial evidence.

## **Impacts from Noise**

The noise analysis in the IS/MND has several fatal flaws. First, the IS/MND fails to provide data on ambient noise levels at the Project site. This is a significant flaw because the impact that

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<sup>48</sup> WRM. 2023 July 20. Wildland Resource Managers’ response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney. p. 15.

<sup>49</sup> Jackman RE, Jenkins JM. 2004. Protocol for evaluating bald eagle habitat and populations in California. US Fish and Wildlife Service, Sacramento. p. 2.

<sup>50</sup> Western Shasta Resource Conservation District. 2006. Bear Creek Watershed Management Strategy. p. 9.

<sup>51</sup> WRM. 2023 July 20. Wildland Resource Managers’ response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney. p. 14.

<sup>52</sup> *Ibid*, pp. 15 and 16.

<sup>53</sup> U.S. Fish and Wildlife Service. 2021 May. Recommended Buffer Zones for Ground-based Human Activities around Nesting Sites of Golden Eagles in California and Nevada. Available at: <[https://www.fws.gov/sites/default/files/documents/USFWS-California-Great-Basin-golden-eagle-nest-buffer-recommendations-May2021\\_0.pdf](https://www.fws.gov/sites/default/files/documents/USFWS-California-Great-Basin-golden-eagle-nest-buffer-recommendations-May2021_0.pdf)>.

Project noise will have on wildlife depends on how much the Project would increase noise levels above ambient levels.<sup>54</sup> For example, in a rural area where the ambient noise level is minimal,<sup>55</sup> new sources of anthropogenic noise can begin having deleterious effects when they increase overall noise by just 5 to 10 decibels (dB).<sup>56</sup>

Second, the IS/MND's use of the hourly average noise level ( $L_{eq}$ ) to assess significance of the Project's impacts on wildlife (and human receptors) is misleading and inappropriate. The effects of noise on wildlife depend on the nature of the noise stimulus. Whereas  $L_{eq}$  may be an appropriate metric for measuring the effects of chronic and frequent noise (which interferes with animals' abilities to detect important sounds), it is not an appropriate metric for measuring the effects of impulsive and unpredictable noise (which is perceived as a threat, causing animals to flee or abandon habitat entirely).<sup>57</sup> This is especially true for very brief (<1 second in duration) noise events, such as impulsive noise from guns.<sup>58</sup> The problem with using  $L_{eq}$  for very brief noise events is that the significance of those events gets obscured by the average. For example, the acoustic disturbance of a shotgun blast lasts 3 to 5 milliseconds.<sup>59</sup> Therefore, if the shotgun is fired 120 times per hour,<sup>60</sup> 99.98% of the measurements used to calculate the  $L_{eq}$  were derived from ambient noise conditions, while only 0.02% of the measurements were derived from the shotgun noise. As a result, gunfire at a rate of 120 rounds per hour has almost no effect on the  $L_{eq}$ , no matter how loud the gunfire.

Third, the analysis in the IS/MND is based on the assumption that noise generated by the Project would consist of either: (a) 240 rounds per hour from a .22 rifle; (b) 120 rounds per hour from a 9mm handgun; (c) 120 rounds per hour from a 4570 rifle; or (d) 120 rounds per hour from a 12-gauge shotgun.<sup>61</sup> This equates to four rounds per minute from the .22 rifle, or two rounds per minute from the 9mm handgun, 4570 rifle, or 12-gauge shotgun. This rate of fire appears unreasonably low for both target practice and organized shooting events. Furthermore, because there would be overlap of the acoustic footprints from the various shooting locations (e.g., receptor #1 would be exposed to noise from both the skeet field and law enforcement range), the IS/MND's impact analysis must account for the possibility that multiple people would be actively shooting at a given time.

Finally, the analysis in the IS/MND is based on a noise study that focused on noise impacts to residential homes within the general vicinity of the Project area and not on the impacts of noise

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<sup>54</sup> Dooling RJ, Popper AN. 2007. The effects of highway noise on birds. Sacramento, CA: California Department of Transportation. 74 pp.

<sup>55</sup> RCH Group. 2017 Mar. Noise Technical Report: High Plains Shooting Sports Center. p. 7.

<sup>56</sup> Dooling RJ, Popper AN. 2007. The effects of highway noise on birds. Sacramento, CA: California Department of Transportation. 74 pp.

<sup>57</sup> Francis CD, JR Barber. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11:305-313. *See also pages 4 and 5 of review provided in WRM.* 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information.

<sup>58</sup> Pater LL, Grubb TG, Delaney DK. 2009. Recommendations for improved assessment of noise impacts on wildlife. *The Journal of Wildlife Management* 73(5):788-795.

<sup>59</sup> *See* <[https://www.montana.edu/rmaher/publications/maher\\_aac\\_0406.pdf](https://www.montana.edu/rmaher/publications/maher_aac_0406.pdf)>.

<sup>60</sup> *See* RCH Group. 2017 Mar. Noise Technical Report: High Plains Shooting Sports Center. Footnote to Table 11.

<sup>61</sup> *Ibid.* Footnotes to Tables 7 through 11.

on wildlife.<sup>62</sup> This renders the study deficient for two reasons. First, because the noise study was designed solely to assess impacts to humans (as reflected in use of the A-scale, only),<sup>63</sup> it cannot be applied to animal species that have substantially different audiograms.<sup>64</sup> Second, the noise study only provided estimates of noise levels at sensitive human receptors (residences) located north, northeast, and south of the Project site.<sup>65</sup> However, unlike the sensitive human receptors, wildlife is likely to occur throughout the entire Project area. Thus, even if it was appropriate to apply the conclusions of the noise study to wildlife, those conclusions would only apply to wildlife located in the vicinity of the sensitive human receptors—not wildlife located east or west of the site, or wildlife located closer to the site than the closest human receptor.

### Noise Impacts on Bats

The IS/MND states the following with respect to noise impacts on bats:

“Generally, noise impacts on bat species can be linked to reduced foraging activity. However, the project will not be in operation during foraging hours with noise sources during that time being limited to those produced by a single-care taker’s residence and intermittent overnight RV camping on the far west side of the property. These noise sources are proposed to be located roughly a half-mile away from the nearest roosting site and adjacent foraging areas ... impacts to wildlife from noise are considered to be less-than-significant.”<sup>66</sup>

Bats spend over half their lives at roosts. Roosts provide sites for mating, hibernation, and rearing young; they promote social interactions and the digestion of food; and they offer protection from adverse weather and predators.<sup>67</sup> Because bat species require roosts with specific traits, the availability of roosts is the limiting factor in the size and distribution of most bat populations.<sup>68</sup> The trees at the Project site possess characteristics (e.g., cavities and defoliating bark) that make them suitable for roosting bats.<sup>69</sup>

Although noise generated by the Project may be minimal at night when bats are foraging, the Project would cause a substantial increase in ambient noise levels during the day when bats are roosting. The IS/MND fails to analyze how this substantial increase in ambient noise levels would affect roosting bats. According to the U.S. Forest Service:

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<sup>62</sup> WRM. 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information. p. 3.

<sup>63</sup> RCH Group. 2017 Mar. Noise Technical Report: High Plains Shooting Sports Center. pp. 5 and 6.

<sup>64</sup> Francis CD, JR Barber. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11:305-313. *See also* Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. *Ornithological Monographs* 74:6-22. *See also* Pater LL, TG Grubb, DK Delany. 2009. Recommendations for Improved Assessment of Noise Impacts on Wildlife. *Journal of Wildlife Management* 73(5):788-795.

<sup>65</sup> RCH Group. 2017 Mar. Noise Technical Report: High Plains Shooting Sports Center. Figure 3 and Tables 7 through 11.

<sup>66</sup> IS/MND, p. 10.

<sup>67</sup> Kunz TH. 1982. Roosting Ecology of Bats. In: Kunz TH (ed.) *Ecology of Bats*. Springer, Boston, MA. pp. 1-55.

<sup>68</sup> *Ibid.* *See also* Western Bat Working Group. 2017. Western Bat Species [online species accounts]. Available at: <<http://wbwg.org/western-bat-species/>>.

<sup>69</sup> IS/MND, p. 11.

“Although some bats sometimes persist in using a roost site despite disturbance from humans, many bat species abandon their roosts after minimal disturbance. In addition to talking loudly, certain noises occur at frequencies that are especially disturbing to bats and these include whispering, Velcro, and rustling nylon material. For hibernating bats, repeat disturbance can cause mortality. In hibernaculum, activities such as whispering, talking, equipment banging and other disturbances such as lights and flashbulbs will arouse hibernating bats. Arousal from hibernation increases use of stored energy reserves. Bats only have enough fat stored to go into and out of torpor a few times each winter. Repeat disturbance causes bats to use all their fat stores. Once fat stores are depleted, bats can go into torpor but are unable to come out of torpor and die as a result.”<sup>70</sup>

### Noise Impacts on Birds

CDFW and several other parties commented on the IS/MND’s failure to provide adequate analysis of impacts to nesting birds due to noise generated by the Project. In its response to the County, WRM stated:

“The grassland nesting birds discussed earlier in this report that might nest on the project area all have a high tolerance to human activity and associated noise. It is reasonable to assume that if they choose to nest within the project area, they will be conditioned to the ambient noise levels when choosing to nest, like the well documented bald eagle nest near Turtle Bay and Highway 44 in Redding and the Osprey nest near the old Simpson paper mill on Deschutes Road in Anderson.”<sup>71</sup>

These statements are not supported by evidence and conflict with scientific literature. Furthermore, the fact that a bald eagle and osprey nested close to human activity is not evidence that grassland birds would be unaffected by human activity because neither species is a grassland bird, nor did WRM provide evidence that either nesting attempt was successful.

In their study on impacts of oil well drilling and operating noise on the abundance and productivity of grassland songbirds, Rosa and Koper (2022) found that drilling noise negatively impacted three of the four focal species, and that acute oil drilling noise had a greater negative impact on breeding migratory birds when compared to chronic oil well noise.<sup>72</sup> The majority of the noise generated by the Project would be gunfire, which is a type of “acute” or “impulsive” noise. As reported by Rosa and Koper (2022):

“Acute or erratic sounds may be perceived by wildlife as immediate threats, and may also be difficult to adapt to if sounds are unpredictable (Blickley, Blackwood, et al., 2012; Francis & Barber, 2013). In contrast, continuous noise may mask vocalizations or important environmental cues, such as approaching

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<sup>70</sup> U.S. Forest Service. n.d. Bat Roost Etiquette. Available at: <[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd899352.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd899352.pdf)>.

<sup>71</sup> WRM. 2023 July 20. Wildland Resource Managers’ response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney. p. 20.

<sup>72</sup> Rosa P, Koper N. 2022. Impacts of oil well drilling and operating noise on abundance and productivity of grassland songbirds. *Journal of Applied Ecology* 59(2):574-584.

predators, but is less likely to distract individuals from critical tasks such as foraging and caring for young (Leek et al., 1991; Wright et al., 2007).<sup>73</sup>

The argument that “if [grassland birds] choose to nest within the project area, they will be conditioned to the ambient noise levels” is inconsistent with scientific literature pertaining to the effects of acute noise, and it ignores the fact that even species that appear to habituate to anthropogenic sources of noise and disturbance are susceptible to adverse impacts.<sup>74</sup> Francis and Barber (2013) reported: “we have shown how behavioral modifications among individuals confronted with noise – even those individuals that outwardly appear to habituate – can lead to decreased fitness.”<sup>75</sup>

### Significance of Noise Impacts on Wildlife

The IS/MND provides the following conclusion regarding the Project’s noise impacts:

“Based on the project design, operational hours as well as conclusions in the Response to Additional Information which found that the earthen berms and incorporation of noise barriers as part of Mitigation Measure XIII.a.1 would significantly reduce noise from gun firing, impacts to wildlife from noise are considered to be less-than-significant.”<sup>76</sup>

The IS/MND’s conclusion is not supported by substantial evidence. In its Response to Additional Information, WRM stated “some noise reduction mitigation will be needed to reduce off-site noise from the pistol and rifle ranges and the clay sports shooting area.”<sup>77</sup> In addition, WRM repeated RCH’s recommendation that “barriers should probably be located immediately behind the shooters, so the noise is attenuated at the shooter location.”<sup>78</sup> Mitigation Measure XVIII.a.1 does not require installation of a noise barrier at the pistol ranges. In addition, Mitigation Measure XVIII.a.1 does not require installation of a noise barrier behind (west of) the shooters at the clay sports shooting area. Instead, it requires a noise barrier “as close as possible to the northern two firing locations ... to obstruct line of sight from those firing locations to the residences to the north and northwest.”<sup>79</sup> Moreover, WRM merely *assumed* implementation of RCH’s recommendations would reduce noise impacts on wildlife to less-than-significant levels.<sup>80</sup> WRM acknowledged RCH’s noise study (and associated recommendations) did not address impacts to wildlife. This invalidates WRM’s ability to cite the noise study as justification for the assumption that implementing RCH’s recommendations would reduce

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<sup>73</sup> *Ibid.*

<sup>74</sup> See pages 4 and 5 of review provided in WRM. 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information.

<sup>75</sup> Francis CD, Barber JR. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11:305-313.

<sup>76</sup> IS/MND, p. 11.

<sup>77</sup> WRM. 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information. p. 6.

<sup>78</sup> *Ibid.*

<sup>79</sup> IS/MND, p. 22.

<sup>80</sup> WRM. 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information. p. 6. “*If these barriers are placed where recommended, we may assume that noise impacts to wildlife will be reduced to less than significant.*”

impacts on wildlife to less-than-significant levels. Furthermore, just because noise barriers “significantly reduce noise from gun firing” does not mean Project noise levels would automatically be less-than-significant under CEQA.

## **Impacts to Wetlands**

### Direct Impacts

The Project site contains approximately 11.75-acres of vernal swales, 0.428 acres of vernal pools, and 2.221 acres of intermittent and ephemeral streams. According to the IS/MND: “the project footprint has been designed to avoid alteration of every identified wetland area.”<sup>81</sup> This statement is inconsistent with the Site Plan,<sup>82</sup> which depicts the following:

- a) Vernal swale (“VS”) number 12 would be directly impacted by the all-weather (gravel) access road, joint utility trench, and perimeter fence.
- b) Ephemeral stream (“ES”) number 1 would be directly impacted by the all-weather (gravel) access road, parking stalls, and potentially two pedestrian bridges.
- c) VS-1 would be directly impacted by the path (or road) to the sporting clay stations. One of the stations is located on the edge of the swale.
- d) Firing positions for the 300-, 500- and 600-yard targets would be located within VS-1. The IS/MND states: “[t]hese firing positions would cause some disturbance to the vernal swale.”<sup>83</sup>
- e) VS-21 would be directly impacted by the trap field shooting stations and was omitted from the Site Plan.<sup>84</sup>
- f) It appears VS-22 could be impacted by the joint utility trench and potentially the skeet field; however, this feature was omitted from the Site Plan.<sup>85</sup>
- g) Several wetlands would be impacted by activities on the “trail to remain.”

I have marked the Site Plan to identify wetland features that would be directly impacted by the Project (Attachment 1, below).

### Indirect Impacts

The Biological Review highlights the importance of buffers in minimizing impacts to normal hydrological functions of the Project site’s wetland features:

“There are no sensitive species resources in the upland annual grassland features of the project area. However, build-out in these areas needs to be carefully designed to ensure that there are no impacts to the vernal features. This may include setbacks of varying distances from the edges of the vernal features. These

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<sup>81</sup> IS/MND, p. 11.

<sup>82</sup> *Ibid*, Exhibit A2.

<sup>83</sup> *Ibid*, p. 11.

<sup>84</sup> See U.S. Army Corps of Engineers. 2017 Jun 16. Preliminary Jurisdictional Determination. Figure 4.

<sup>85</sup> *Ibid*.

setback buffers will be dependent on the percent slope of where the impacts would be. Generally speaking, the lesser the percent slope, the smaller the setback area would need to be. It is recommended that the project design be reviewed by a competent wildlife biologist and hydrologist to assist in the design phase to protect the vernal features.”<sup>86</sup>

The Project includes 50-foot buffers around all wetland features. The IS/MND fails to substantiate the adequacy of this buffer distance in preventing significant indirect impacts to the site’s wetlands, nor is there evidence that a biologist and hydrologist formulated the 50-foot buffer based on site-specific factors. Nevertheless, the Site Plan depicts numerous locations where a Project feature would be constructed within a 50-foot buffer (*see Attachment 1*). Therefore, if the biologist and hydrologist determined a 50-foot buffer is needed to prevent significant indirect impacts to wetlands, many of the wetlands would be subject to significant indirect impacts.

Most of the highly valued functions of wetlands depend on their hydrological and ecological connectivity to nearby areas.<sup>87</sup> The USFWS provided the following analysis of impacts to listed vernal pool crustaceans:

Habitat indirectly affected includes all habitat supported by destroyed upland areas and swales, and all habitat otherwise damaged by loss of watershed, human intrusion, introduced species, and pollution caused by the project (see Effects of the Proposed Action below). Where the reach of these effects cannot be determined definitively, **all habitat within 250 feet of proposed development may be considered to be indirectly affected**. If any habitat within a vernal pool complex is destroyed, then all remaining habitat within the complex may potentially be indirectly affected. If any part of a vernal pool is destroyed, then the entire pool is directly affected.<sup>88</sup>

The Project includes numerous activities that are inconsistent with the maintenance of vernal pools (and swales).<sup>89</sup> These activities include, but are not limited to: (a) alteration of existing topography;<sup>90</sup> (b) the construction of structures, roads, and trails; (c) removal and alteration of existing native vegetation;<sup>91</sup> and, (d) installation of storm water drains.<sup>92</sup> Many of those activities would occur within 250 feet of wetlands. Based on the USFWS’s analysis, those wetlands would be indirectly affected by the Project.

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<sup>86</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. p. 8.

<sup>87</sup> Technical Advisory Team. 2012. Memorandum No. 3: Landscape Framework for Wetlands and Other Aquatic Areas. Technical memorandum to the Policy Development Team for the California Wetland and Riparian Area Protection Policy. p. 1.

<sup>88</sup> U.S. Fish and Wildlife Service. 1996 Feb 28. Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California. Letter to A. Champ, U.S. Army Corps of Engineers. p. 3.

<sup>89</sup> *Ibid*, pp. 4 and 5.

<sup>90</sup> IS/MND, p. 19: “Grading will be needed for this project.”

<sup>91</sup> In addition to vegetation that would be removed during Project construction, the Project involves planting trees (which can alter evapotranspiration of wetlands) and closely mowing grass in shot-fall zones.

<sup>92</sup> Environmental Management Plan, pp. 8, 10, and 11.



## Impacts to Hydrology

Impacts to hydrology are a major threat to vernal pool communities.<sup>93</sup> For example, stormwater drains, or the coverage of land surfaces with concrete, asphalt, or irrigated lawns, can alter the duration, volume discharge, and frequency of surface flows through increased flooding and runoff.<sup>94</sup>

The Project includes installation of stormwater drains and culverts, asphalt parking areas, and other features that would alter the site's hydrology. The IS/MND claims these Project features would not substantially alter the existing drainage pattern of the site or area.<sup>95</sup> However, the IS/MND provides no evidence (e.g., hydrologic model) to support that claim.

The Project includes numerous bullet backstop berms that would be up to 20 feet in height with a 1.5:1 slope on one side and a 2:1 slope on the other.<sup>96</sup> These backstop berms will be comprised of compacted earth and a core material of rocks and/or cement.<sup>97</sup> The IS/MND states that the bullet backstop berms would be designed to ensure runoff is directed away from wetlands.<sup>98</sup> However, this statement is not substantiated by evidence and is inconsistent with the Site Plan:

- 1) The berm associated with the 50-yard handgun backstop would direct runoff to wetlands VS-1 and ES-4, which are located immediately adjacent to the proposed berm.
- 2) The berm associated with the law enforcement range would be constructed within the buffer for VS-20 and would direct runoff towards that feature.
- 3) The berm associated with the 500-yard backstop would be constructed within the buffers for VP-7 and VS-8 and would direct runoff towards those features.

## Change in Disturbance Regime

WRM's response to CDFW's comment letter discusses the benefits cattle grazing can have on vernal pool ecosystems. These benefits include control of competing grasses and invasive plants, nutrient input (from manure), and hoofprints that increase the structural diversity of fairy shrimp habitat.<sup>99</sup> Because properly managed grazing has beneficial effects on vernal pool ecosystems, the removal of cattle grazing from historically grazed grasslands can have negative effects on vernal pools by dramatically decreasing the inundation period allowing invasion by nonnative plant species.<sup>100</sup>

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<sup>93</sup> United States Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. p. I-20 and -21.

<sup>94</sup> *Ibid.*

<sup>95</sup> IS/MND, p. 19.

<sup>96</sup> *Ibid*, p. 6.

<sup>97</sup> Environmental Management Plan, pp. 4 through 7.

<sup>98</sup> IS/MND, p.11.

<sup>99</sup> WRM. 2023 Apr 6. Response to comments submitted by CDFW. Letter submitted to D. Schlegel, Shasta County Department of Resource Management Planning Division. p. 5.

<sup>100</sup> United States Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. p. I-20.

The IS/MND acknowledges the firing positions for the 300-, 500- and 600-yard targets would be located within a large vernal swale, and that those firing positions would cause disturbance to the vernal swale. The IS/MND then dismisses the significance of this disturbance by comparing it to cattle grazing under baseline conditions.<sup>101</sup> This is not a valid comparison because humans do not leave hoofprints, eat invasive plants, or deposit cow manure in vernal pools. Indeed, whereas properly managed grazing can have positive impacts on vernal pool ecosystems, disturbance by humans is overwhelmingly negative and is considered a major threat to vernal pool species.<sup>102</sup>

### Impacts from Mitigation

Mitigation Measure XIII.a.1 requires installation of noise barriers at two locations: (a) as close as possible to the northern two firing locations for the clay sports shooting area; and (b) as close as possible to all rifle firing locations along the southern property boundary. At a minimum, installation of a noise barrier behind the rifle firing positions along the southern property boundary would cause additional impacts to VS-1. These potentially significant impacts have not been disclosed, analyzed, or mitigated.

### **Water Quality**

The IS/MND provides the following analysis of impacts to water quality:

“the project also proposes sporting clay target (skeet and trap) shooting which would cause target debris and ammunition shotfall to land in areas with wetlands or hydrologic soils connected to the identified wetlands ... Bullets can consist of a variety of metals including lead, brass, copper, zinc, steel, plastics, rubber and nylon coating. Soluble heavy metals could enter runoff ... the project applicant will be prohibiting the use of lead ammunition anywhere on the project site. This factor, incorporated into the project by the applicant and as a condition of approval would ensure that water resources are not impacted by lead from development of the project ... Grading will be needed for this project. A grading permit will be required. The provisions of the permit will address erosion and siltation containment on- and off-site.”<sup>103</sup>

Clay targets that “land in areas with wetlands” would alter (cover) the substrate of those wetlands, which could have a significant impact on the viability of seeds and cysts of sensitive plants and animals. In addition, the IS/MND fails to describe how clay targets and debris would be collected from wetlands without causing damage to those wetlands (e.g., through soil compaction and trampling of plants and animals).

Although prohibiting lead ammunition would reduce the potential for water resources to be impacted by lead, other types of heavy metals used in ammunition are soluble. The IS/MND provides no analysis of how those metals would affect water quality of the site’s wetlands and associated organisms. For example, solid copper or copper alloy (90-95% copper and 5-10%

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<sup>101</sup> IS/MND, p. 11.

<sup>102</sup> United States Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. Chapter I.

<sup>103</sup> IS/MND, p. 19.

zinc) bullets are common alternatives to lead. Copper is toxic to gill-breathing organisms (e.g., amphibian larvae, vernal pool branchiopods), and zinc is known to be toxic to fish.<sup>104</sup>

In addition to introducing soluble heavy metals that may affect water quality, the Project includes the application of liming materials to maintain neutral pH levels in soils.<sup>105</sup> There are various types of liming materials. The IS/MND does not identify the liming material(s) that would be used at the Project site, nor does it discuss how the liming material could affect water quality of the site's wetlands. Wetlands exposed to lime have experienced shifts in plant composition, fish mortality, and decline of zooplankton.<sup>106</sup> These effects could have significant impacts on special-status plants and animals associated with the site's wetlands.

Erosion and siltation can have significant impacts on vernal pool ecosystems.<sup>107</sup> A forthcoming grading permit that would address erosion and siltation containment on- and off-site does not constitute mitigation under CEQA, especially in absence of performance standards for erosion control and siltation containment. This issue is exacerbated by the IS/MND's failure to provide a grading plan for the Project.

The IS/MND incorporates Mitigation Measure X.a.1 to address potential impacts associated with non-lead bullets. The mitigation measure states:

“In order to ensure that water quality is not significantly impacted by concentrations of metals and materials from bullets and other debris, the applicant shall prepare and submit a Water Quality Control Plan as described in the Environmental Manager Plan prepared for the project. The Water Quality Control Plan and shall [*sic*] provide for and minimize impacts on water quality and shall include the following [5 items listed].”<sup>108</sup>

Preparation of a Water Quality Control Plan of unknown quality and content does not qualify as mitigation under CEQA, especially in absence of enforceable performance standards for the mitigation. The Environmental Management Plan submitted by the Applicant does not rectify this issue because it does not identify the water quality parameters that would be measured aside from pH (water quality is determined by numerous parameters beyond pH).<sup>109</sup>

According to the IS/MND:

“Original measurements will be used as a baseline to track and monitor water quality and soil pH and would inform the need for management actions over the

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<sup>104</sup> National Research Council. 1974. Amphibians: Guidelines for the breeding, care and management of laboratory animals. Available at: <<https://nap.nationalacademies.org/catalog/661/amphibians-guidelines-for-the-breeding-care-and-management-of-laboratory>>.

<sup>105</sup> Environmental Management Plan, p. 12.

<sup>106</sup> NY Department of Environmental Conservation. 1990. Final Generic Environmental Impact Statement on the New York State Department of Environmental Conservation Program of Liming Selected Acidified Waters. pp. 84 to 89.

Available at: <[https://www.dec.ny.gov/docs/wildlife\\_pdf/limingeis6.pdf](https://www.dec.ny.gov/docs/wildlife_pdf/limingeis6.pdf)>.

<sup>107</sup> United States Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. Chapter I.

<sup>108</sup> IS/MND, p. 20.

<sup>109</sup> See <<https://atlas-scientific.com/blog/water-quality-parameters/>>.

life of the project. If, as determined by the Director of Resource Management, annual assessments indicate pH conditions are present or persist at levels which could result in adverse conditions, additional testing, as frequently as quarterly, shall be required to determine potential sources of water quality degradation and to show that onsite corrective actions or mitigation efforts outlined in the Environmental Management Plan or other necessary methods are effective at reducing pH levels at and from the project.”<sup>110</sup>

A fundamental problem with this condition is that it fails to identify the “original measurements” that will be used to track water quality. This precludes the public from being able to assess the adequacy of those measurements in identifying water quality impacts resulting from the Project.

The IS/MND states that the Director of Resource Management would determine whether pH conditions are present or persist at levels which could result in adverse conditions.<sup>111</sup> There is no justification for deferring this determination to the Director of Resource Management (with unknown expertise in water quality and the ecology of wetland organisms). Given baseline data, a qualified hydrologist or wetland scientist would be capable of establishing quantifiable thresholds for acceptable pH levels (and other water quality parameters). Because Mitigation Measure X.a.1 consists of deferred mitigation without performance standards, the Project’s impacts on water quality (and associated wetland organisms) remain potentially significant.

### **Movement Corridors and Nursery Sites**

According to the IS/MND:

“The project is not expected to interfere with any wildlife species, nor impede the use of native wildlife nursery sites. There are no wildlife nurseries present in the vicinity of the project area and no observed wildlife migratory pattern which would span the project site or surrounding area.”<sup>112</sup>

The IS/MND’s analysis is not supported by evidence. As discussed previously, vernal pool landscapes provide critically important habitat for migratory birds, especially waterfowl and shorebirds that depend on intact vernal pools as refueling stations.<sup>113</sup> Even if one were to assume the Project would not physically alter any of the site’s wetland features, human disturbance (e.g., gunshot) associated with the Project would interrupt essential feeding, resting, and reproductive behaviors, and would most likely result in functional loss of waterbird habitat at the Project site and adjacent areas.<sup>114</sup> This impact would be significant not only to migratory birds, but also to special-status plant and animal species because waterfowl and shorebirds play an important role

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<sup>110</sup> IS/MND, p. 20.

<sup>111</sup> *Ibid*, p. 20.

<sup>112</sup> *Ibid*, p. 12.

<sup>113</sup> Silveira JG. 1998. Avian Uses of Vernal Pools and Implications for Conservation Practice. In: Witham CW, Bauder ET, Belk D, Ferren WR Jr, Ornduff R (editors). Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference. California Native Plant Society, Sacramento, CA. p. 92-106.

<sup>114</sup> Functional habitat loss occurs when anthropogenic disturbance causes an animal to avoid otherwise suitable habitat.

in the transport and dispersal of plant propagules and branchiopod (e.g., fairy shrimp) cysts among vernal pool complexes.<sup>115</sup>

Areas of Conservation Emphasis (“ACE”) is a CDFW effort to gather spatial data on wildlife, vegetation, and habitats from across the state, and then synthesize this information into thematic maps to help inform decisions on the conservation of biodiversity, habitat connectivity, and climate change resiliency. The “Terrestrial Connectivity” dataset is one of the four key components of ACE, and it assigns a rank (range 1 to 5) to all lands within the state based on the land’s conservation importance to connectivity.<sup>116</sup> The Project site has an ACE terrestrial connectivity rank of 4.<sup>117</sup> ACE Rank 4 areas are defined as *Conservation Planning Linkages*. These linkages represent the best connections between core natural areas.<sup>118</sup>

The statement that “[t]here are no wildlife nurseries present in the vicinity of the project area” is not supported by evidence because no surveys were conducted to identify potential nurseries. At a minimum, the IS/MND acknowledges that the trees at the Project site could function as nursery sites for bats, and that the site’s wetlands could function as nursery sites for the western spadefoot toad.<sup>119</sup>

## Oaks

The Project involves the removal of seven oak trees.<sup>120</sup> The IS/MND states: “the removal of 7 trees at the outer edge/grassland area of a 17-acre oak woodland and foothill pine area would amount to roughly 2% of tree canopy loss in that area and would be considered a less-than-significant impact on the blue oak woodland habitat and riparian habitat.”<sup>121</sup>

Oak woodlands have the richest wildlife species abundance of any habitat in California, with over 330 species of birds, mammals, reptiles, and amphibians depending on them at some stage in their life cycle.<sup>122</sup> Urbanization and agricultural development have eliminated approximately

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<sup>115</sup> Silveira JG. 1998. Avian Uses of Vernal Pools and Implications for Conservation Practice. In: Witham CW, Bauder ET, Belk D, Ferren WR Jr, Ornduff R (editors). *Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference*. California Native Plant Society, Sacramento, CA. p. 92-106. *See also* Figuerola J, A Green. 2002. Dispersal of aquatic organisms by waterbirds: a review of past research and priorities for future studies. *Freshwater Biology* 47:483–494. *See also* Figuerola J, A Green, T Michot. 2005. Invertebrate eggs can fly: evidence of waterfowl mediated gene-flow in aquatic invertebrates. *American Naturalist* 165:274–280. *See also* U.S. Fish and Wildlife Service. 2007. Vernal pool fairy shrimp (*Branchinecta lynchi*), 5-year review: summary and evaluation. Sacramento Fish and Wildlife Office, Sacramento, CA, p. 5.

<sup>116</sup> California Department of Fish and Wildlife. 2019. ACE Dataset Fact Sheet: Terrestrial Connectivity (DS2734). Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=150835&inline>>.

<sup>117</sup> Gogol-Prokurat M. 2019 [revision]. Terrestrial Connectivity - ACE [ds2734]. Biogeographic Information and Observation System (BIOS). Calif. Dept. of Fish and Wildlife. Available at: <<http://bios.dfg.ca.gov>>. (Accessed 22 Jul 2023).

<sup>118</sup> California Department of Fish and Wildlife. 2019. ACE Dataset Fact Sheet: Terrestrial Connectivity (DS2734). Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=150835&inline>>.

<sup>119</sup> IS/MND, p. 11.

<sup>120</sup> *Ibid.*

<sup>121</sup> *Ibid.*

<sup>122</sup> California Partners in Flight. 2002. Version 2.0. The oak woodland bird conservation plan: a strategy for protecting and managing oak woodland habitats and associated birds in California (S. Zack, lead author). Point Reyes Bird Observatory, Stinson Beach, CA. 127 pp.

one-third of California's oak woodlands.<sup>123</sup> Of the oak woodlands that remain, only 40% are protected (e.g., in parks). However, even those that are protected from development are susceptible to numerous threats. In many cases, existing oak woodlands are not regenerating naturally (i.e., young trees are not establishing to replace older trees as they senesce and die).<sup>124</sup> In addition, *Phytophthora ramorum*, the pathogen responsible for the plant disease known as Sudden Oak Death, started attacking California oaks in 1985 and became a full-scale epidemic by 1999. Thus, oak woodlands continue to be threatened, even at sites that are protected from development.

The fact that the Project would remove only 2% of the tree canopy in the oak woodland does not automatically render the Project's impacts less-than-significant. As reported by the Applicant's consultant and his co-authors: "[t]he difficulty with the crown canopy issues is that not all canopy may be equal in terms of contribution to the ecological value of the stand."<sup>125</sup> Mature oak trees with well-developed crowns and that are more than 15 feet from other trees tend to be healthier and more vigorous than trees in dense stands<sup>126</sup> (such as the stand that occurs along the eastern edge of the Project site). Mature trees in open stands also produce the most acorn crop, provide the greatest shading, and have the most nesting and denning opportunities.<sup>127</sup> Based on Google Earth imagery and the Site Plan, the oak trees that would be removed for the Project possess these characteristics, and thus, they may provide unique ecological values. Loss of these unique ecological values would be a significant impact. At a minimum, the Project would contribute to the incremental loss of blue oak woodlands, which have experienced a significant decline throughout the state.<sup>128</sup> For these reasons, the Project's impacts on oak trees remain potentially significant.

### Impacts to Grassland Habitat

WRM's response to Mooney states: "[t]he project footprint constitutes 11.74 acres or 7% of the 151.78 acres within the project area (Butler 2023, see Table 1 on the following page). Thus, less than 8% of the grassland habitat on the project area will be impacted."<sup>129</sup> WRM's calculation is incorrect because the Project site contains only 133.06 acres of grassland (not 151.78 acres),<sup>130</sup> and Table 1 does not include the caretaker's residence, law enforcement clubhouse, covered patio areas, rifle shooting areas, or handgun bays.<sup>131</sup>

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<sup>123</sup> *Ibid.*

<sup>124</sup> McCreary DD. 2009 (Rev). Regenerating Rangeland Oaks in California. University of California, Sierra Foothill Research and Extension Center. Available at: <<https://anrcatalog.ucanr.edu/pdf/21601e.pdf>>. See also Ritter LV. 1988. Blue Oak Woodland. In: Mayer KE, Laudenslayer WF (eds). 1988. A Guide to Wildlife Habitats of California. State of California, Resources Agency, Department of Fish and Game, Sacramento, CA.

<sup>125</sup> McDonald P, Lehmann F, Kerns S. 2016 Oct. Assessment of Proposed Blue Oak Mitigation Measures Necessary to Meet CEQA and Shasta County Requirements for the Tierra Robles Sub-Division Project.

<sup>126</sup> *Ibid.*

<sup>127</sup> *Ibid.*

<sup>128</sup> Dwomoh FK, Brown JF, Tollerud HJ, Auch RF. 2021. Hotter drought escalates tree cover declines in blue oak woodlands of California. *Frontiers in Climate* 67(3):689945.

<sup>129</sup> WRM. 2023 Apr 6. Response to comments submitted by CDFW. Letter submitted to D. Schlegel, Shasta County Department of Resource Management Planning Division. p. 2.

<sup>130</sup> WRM. 2016. High Plains Shooting Center Project: Biological Review. Figure 3.

<sup>131</sup> Environmental Management Plan, p. 3 states: "[a]ll handgun bays will have a crushed rock base for water drainage and fire safety."

More importantly, the response fails to consider the functional loss of habitat due to gunfire and other human disturbance. WRM (2017) states: “[h]uman disturbance noise (construction, vehicles, shooting, vocalization, etc.) associated with the project operation will be confined to daylight hours ... During this time, it may be expected that wildlife, where possible, will seek to **avoid the project area** and escape to areas less impacted by the site's activities.”<sup>132</sup>

## MITIGATION ISSUES

### Mitigation Measure IV.a.1 (Nesting Birds)

The IS/MND incorporates Mitigation Measure IV.a.1 to minimize Project impacts on nesting birds. Whereas Mitigation Measure IV.a.1 would promote compliance with the Migratory Bird Treaty Act and California Fish and Game Code Section 3503, it would not prevent significant impacts to special-status birds because the primary threat to special-status birds that could occur at the Project site is habitat loss and degradation—not loss of an active nest.<sup>133</sup> The IS/MND does not incorporate mitigation for the direct and functional loss of habitat from the Project site.<sup>134</sup> As a result, the Project’s impacts on special-status birds remain significant. Impacts on the burrowing owl and grasshopper sparrow would be especially significant because the Project site coincides with the edge of those species’ range. Populations at the geographic margins of a species’ range are important for the long-term survival and evolution of the species, and they may be critical to the species’ ability to adapt to long-term environmental perturbations, such as global climate change.<sup>135</sup>

### Mitigation Measure IV.a.2 (Bats)

Mitigation Measure IV.a.2.b states:

“Trees with features potentially suitable for bat roosting should be clearly marked prior to removal and humane evictions must be conducted by or under the supervision of a biologist with specific experience conducting exclusions. Humane exclusions could consist of a two-day tree removal process whereby the

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<sup>132</sup> WRM. 2017 June. High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information. p. 5. [emphasis added].

<sup>133</sup> See Shuford WD, Gardali T (editors). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

<sup>134</sup> Functional habitat loss occurs when anthropogenic disturbance causes an animal to avoid otherwise suitable habitat.

<sup>135</sup> Channell R. 2004. The Conservation Value of Peripheral Populations: the Supporting Science. In: Hooper TD, editor. Proceedings of the Species at Risk 2004 Pathways to Recovery Conference, Victoria, B.C. Species at Risk 2004 Pathways to Recovery Conference Organizing Committee, Victoria, B.C. p. 1-17. See also Fraser DF. 2000. Species at the Edge: The Case for Listing of “Peripheral” Species. In: Darling LM, editor. Proceedings of a Conference on the Biology and Management of Species and Habitats at Risk, Kamloops, B.C., 15 - 19 Feb., 1999. Volume One. B.C. Ministry of Environment, Lands and Parks, Victoria, B.C. and University College of the Cariboo, Kamloops, B.C. p. 49-53.

non-habitat trees and brush are removed along with certain tree limbs on the first day and the remainder of the tree on the second day.”<sup>136</sup>

This proposed two-day tree removal technique would not be effective for trees containing flightless pups. It also would not prevent significant impacts to hibernating bats because the metabolic cost of waking bats from hibernation (e.g., due to tree removal) can be very high and enough to reduce their energy supply to the point where survival is not possible.<sup>137</sup>


### **The IS/MND Fails to Incorporate Mitigation Recommended by CDFW and WRM**

CDFW expressed concern that inappropriately designed or placed fencing may create serious hazards and/or barriers for wildlife, and consequently, it strongly encouraged the Applicant to install fencing to alleviate potential hazards to wildlife. In response, WRM provided an illustration of a wildlife-friendly fence that would work for the Project.<sup>138</sup> The Project does not incorporate the wildlife-friendly fence recommended by WRM, but instead, incorporates a fence with one strand of barbed wire on top,<sup>139</sup> which poses a hazard to birds and other wildlife species.<sup>140</sup>

CDFW’s comment letter included recommended mitigation to reduce the potential for wildlife to become entrapped in trenches, excavations, and open pipes. In addition, CDFW recommended use of native vegetation in the Project’s landscaping. Although WRM concurred with these recommendations,<sup>141</sup> they were not incorporated as mitigation measures in the IS/MND.

This concludes my comments on the IS/MND.

Sincerely,



Scott Cashen, M.S.  
Senior Biologist

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<sup>136</sup> IS/MND, p. 12.

<sup>137</sup> HT Harvey & Associates. 2004. California Bat Mitigation Techniques, Solutions, and Effectiveness. Prepared for the California Department of Transportation Office of Biological Studies and Technical Assistance, Sacramento, CA. *See also* Thomas DW. 1995. Hibernating Bats Are Sensitive to Nontactile Human Disturbance. *Journal of Mammalogy* 76(3):940-946.

<sup>138</sup> WRM. 2023 Apr 6. Response to comments submitted by CDFW. Letter submitted to D. Schlegel, Shasta County Department of Resource Management Planning Division. p. 4.

<sup>139</sup> IS/MND, Exhibit A2 (NW ¼ Site Plan View).

<sup>140</sup> Allen GT. 1990. A review of Bird Deaths on Barbed-Wire Fences. *Wilson Bulletin*. 102:553-58.

<sup>141</sup> WRM. 2023 Apr 6. Response to comments submitted by CDFW. Letter submitted to D. Schlegel, Shasta County Department of Resource Management Planning Division. p. 6.



**Attachment 1:** Site Plan marked to depict wetlands that would be directly or indirectly impacted by Project features. Solid red circles and arrows depict direct impacts. Dashed circles depict indirect impacts (areas where Project features are located within a 50-foot buffer). Blue circle depicts location of VS-21, which was omitted from the Site Plan. Blue arrow depicts approximate location of VS-22, which also was omitted from the Site Plan.



