

**Nationwide Aerial Application of Fire Retardant
on National Forest System Land Biological
Assessment for Fish and Wildlife Service
Species**

**Addendum For Assessment of Effects Associated
with Aerial Retardant Operations at Airtanker
Bases**

30 June 2022

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This addendum to the November 2021 Nationwide Aerial Application of Fire Retardant on National Forest System Lands - Biological Assessment for Fish and Wildlife Service Species (hereafter referred to as the 2021 Biological Assessment) supplements the analysis for the effects to threatened and endangered species found at or near permanent airtanker bases where retardant is loaded onto airtankers to be delivered on National Forest System lands. Activities directly involving aerial retardant at airtanker bases are considered in this supplement because they are a connected action related to the proposed action. Storage, loading, and management of aerial retardant at airtanker bases would not proceed unless the proposed action occurs (50 CFR 1508.25 (a)(1)(ii)), and those actions are interdependent parts of a larger action and depend on the larger action for justification (50 CFR 1508.25 (a)(1)(iii)). The connected action is confined to activities directly involving aerially delivered retardants (storage, mixing, loading, management, and cleanup) and does not include general aircraft operations because aircraft are used for a variety of firefighting purposes not related to the proposed action.

There are approximately ninety-eight permanent airtanker bases available to load retardant onto airtankers for fires on National Forest Service lands. These bases are operated by the Forest Service, Bureau of Land Management, Bureaus of Indian Affairs, individual states, or their contractors. The bases vary in the type of airtankers serviced and the available infrastructure. The bases also load aircraft with retardant for delivery to fires on non-National Forest System lands.

The information in this addendum supplements that found in the 2021 Biological Assessment, and does not affect nor change the analysis, conclusions, and determinations made in that document unless noted. This addendum follows the same organization and species groupings used in the 2021 Biological Assessment. Section numbering, headings, and table numbers below correspond to the appropriate sections and species groupings in the 2021 Biological Assessment. The text in this supplement indicates, where needed, whether it replaces or is in addition to text in the corresponding section of the 2021 Biological Assessment. Discussions for each species adhere to the format in the 2021 Biological Assessment.

4 Project Description

4.3.3.3 Retardant Delivery

On page 15, under the *Aircraft* heading, remove the paragraph that begins with: “Retardant is normally stored and mixed at an airtanker base...”.

Insert the following section on page 16 before the *Operational Considerations* section.

Tanker Bases

Retardant is stored, mixed, and loaded either at airtanker bases or at mobile retardant bases established at or near an incident site. The location of mobile retardant bases is not possible to determine, because by definition they are placed at varying locations based on need. Retardant is mixed and used on site at mobile bases. Water sources are typically municipal water supplies or a large lake or reservoir. Mobile retardant bases are required to have a site spill containment plan, secondary containment systems, and set up at least 300 feet from any waterway if water is present. It also requires compliance with the [Guide to Preventing Aquatic Invasive Species Transport by Wildland Fire Operations, PMS 444](#). Impacts associated with mobile bases is covered by the assessments in the 2021 Biological Assessment because they are used on-site and therefore would have potential to impact species already discussed on the affected National Forest System lands.

There are permanent airtanker bases throughout the United States, as displayed in Figures 4a and 4b. Most bases are in the west, where the majority of retardant is used, although there are bases in the

Midwest and southeast as well. Figure 4a displays bases that are restricted to smaller aircraft, typically Single Engine Airtankers (SEATs). Figure 4b displays bases that can accommodate airtankers of various sizes, including SEATs. Some of the bases shown in Figure 4b can also accommodate very large airtankers.

Permanent airtanker bases are located on five to ten acres of land at existing airports and airfields. The base infrastructure includes the aircraft ramp, retardant loading pits, mixing and pumping areas, storage tanks, areas where retardant deliveries are received and concentrates are stored, and areas where loaded airtankers are staged for dispatch. Most of the base footprint are concrete or asphalt surfaces. There may be areas of vegetation, usually mowed grass, interspersed among those areas. The available water source, either municipal or well water, is used to mix the concentrate retardant, which may be either liquid or dry.

Each permanent airtanker base has procedures in place to limit the potential for environmental or human health exposure, including:

- Most airtanker bases are surrounded by perimeter fencing that prevents people and larger wildlife from entering the area and incurring risk from aircraft or direct exposure to retardant chemicals.
- Systems for spill containment at all locations where retardant is stored and handled (as described above) to keep retardant from entering waterways or moving into vegetated areas.
- Systems for dust abatement for dry concentrates that limit the amount of particulate matter in the air to protect human health as required by Occupational Safety and Health Administration regulations. These systems also reduce the potential for drift of dry concentrate in the wind.
- Systems for containment of wash-down water including use of a sand/oil separators, city sewers, evaporation ponds, or holding tanks. Many bases (Appendix H) first pass wash-down water through a sand/oil separator, although some do not. Wash-down water discharged into a city sewer system is processed through a wastewater treatment plant. Wash-down water in holding tanks, and the solid matter left in evaporation ponds, are removed by a contracted company and transported to an appropriate disposal facility.
- The Environmental Protection Agency, Toxics Release Inventory Program (Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA)) requires annual reporting of the amount of ammonia (in pounds) processed through or spilled at bases that meet the reporting criteria (with more than 10 full time equivalent employees and more than 25,000 pounds of ammonia or approximately 1 million gallons of retardant processed through the facility annually).

In addition to the airtanker base facilities, bases also identify jettison areas. A jettison area is where airtankers can release their load in case of emergency, or prior to landing if the retardant load is cancelled after take-off. The latter occurs for airtankers such as DC-10s or single engine airtankers, that cannot land loaded, or for tankers that would exceed their maximum landing weight without releasing all or part of the load. Identified jettison areas may be on the airport grounds (usually near the runway), or may be some distance from the airport.

The height of an aircraft when jettisoning a load depends on several factors including the reason for the jettison and the requirements of the specific jettison area. If a jettison is due to a mechanical failure or an emergency, drop height is generally between 500 to 1,500 feet above ground/vegetation level. Jettisons to reduce weight for landing, including for a cancelled request, are often used as training exercises. When that occurs, drop heights are as follows:

- 60 feet or more above ground/vegetation level for single engine airtankers,
- 150 to 200 feet above ground/vegetation level for large airtankers, and
- 300 to 500 feet above ground/vegetation level for very large airtankers.

Several airtanker bases (Boise, Fresno, Prescott, and Winslow) require drops on jettison areas to be at higher altitude (Appendix H). When retardant is dropped at a high enough altitude it dissipates and evaporates prior to reaching the ground, spreading over a large area at undetectable levels. In general, a drop 1,000 feet above ground/vegetation level would completely dissipate. Above 500 feet above ground level the majority of jettison loads would dissipate.

The Forest Service requires that each airtanker base document the frequency of jettisons and the amount of each load jettisoned. However, that information has not been a part of standard required reporting, and therefore records have not been retained over multiple years. Therefore, the information is unavailable to summarize here. In addition, airtanker bases operated by other agencies do not have the same reporting requirements. Appendix H displays jettison frequency and amount based on the available information. Specific information was available for some bases, while others provided only anecdotal information about past use.

5 Effects Analysis

5.4.4.1 Direct Effects

At the bottom of page 44, insert the following:

The Fish and Wildlife Service requested additional information regarding aircraft flight height and noise levels. Airtankers generally do not travel below 1,500 feet above ground level unless they are dropping retardant, taking off or landing. Very large airtankers fly at an altitude of 10,500 to 12,500 feet above ground level while enroute to jettison areas or drop locations.

Airtankers are required to meet the Federal Aviation Administration Advisory Circular AC no: 36-1H Change 1 2012) for noise levels for U. S. Certification. The noise standards require planes to operate between 89 to 106 decibels (depending on flight phase, number of engines, aircraft weight). For some of the large airtankers the worst case scenario is 88.7 decibels, with others operating between 94 and 98 decibels. Aircraft at 100 decibels can be heard approximately 53 feet away.

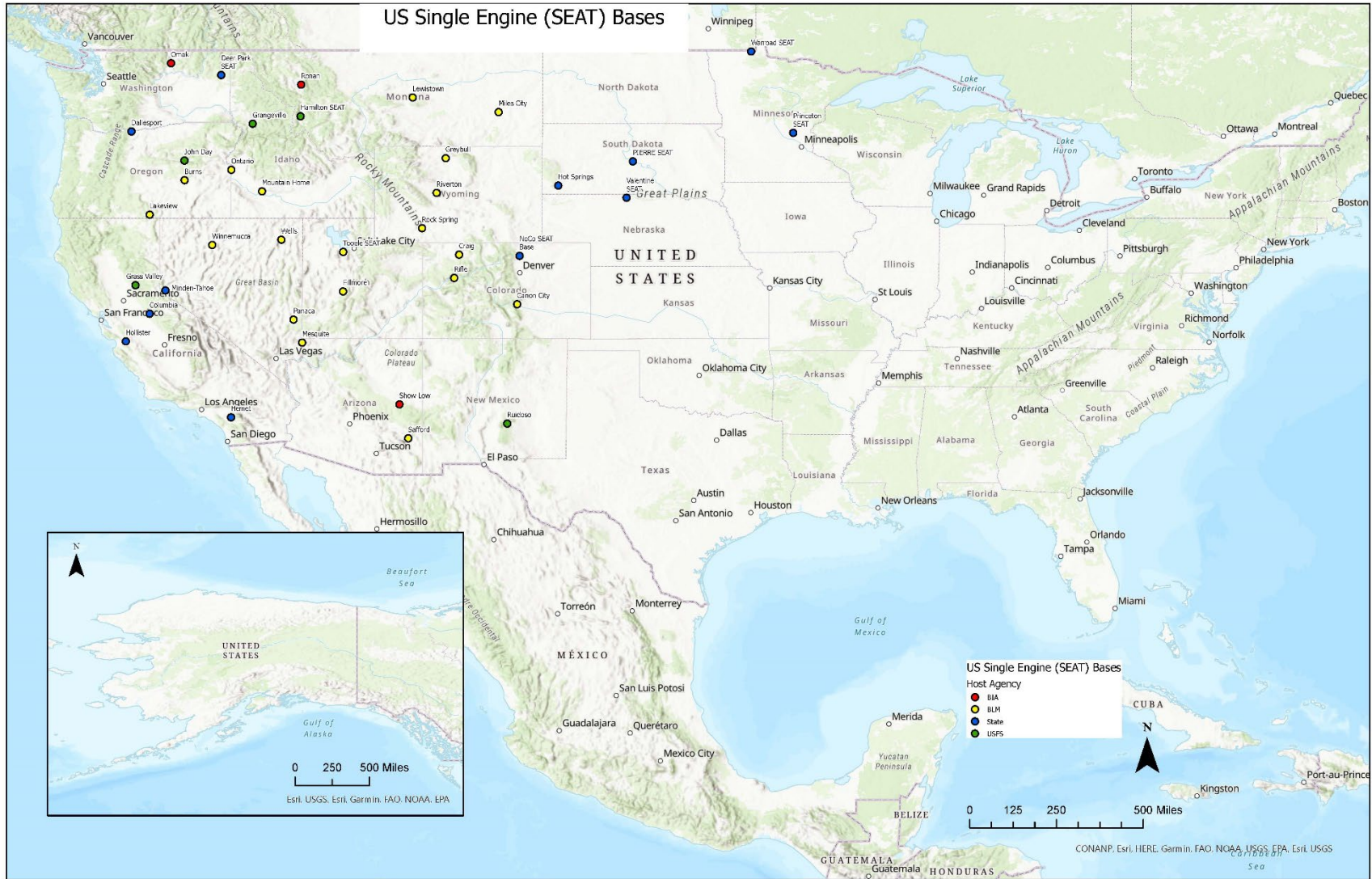


Figure 4a: Single Engine Airtanker Bases in the United States by host agency

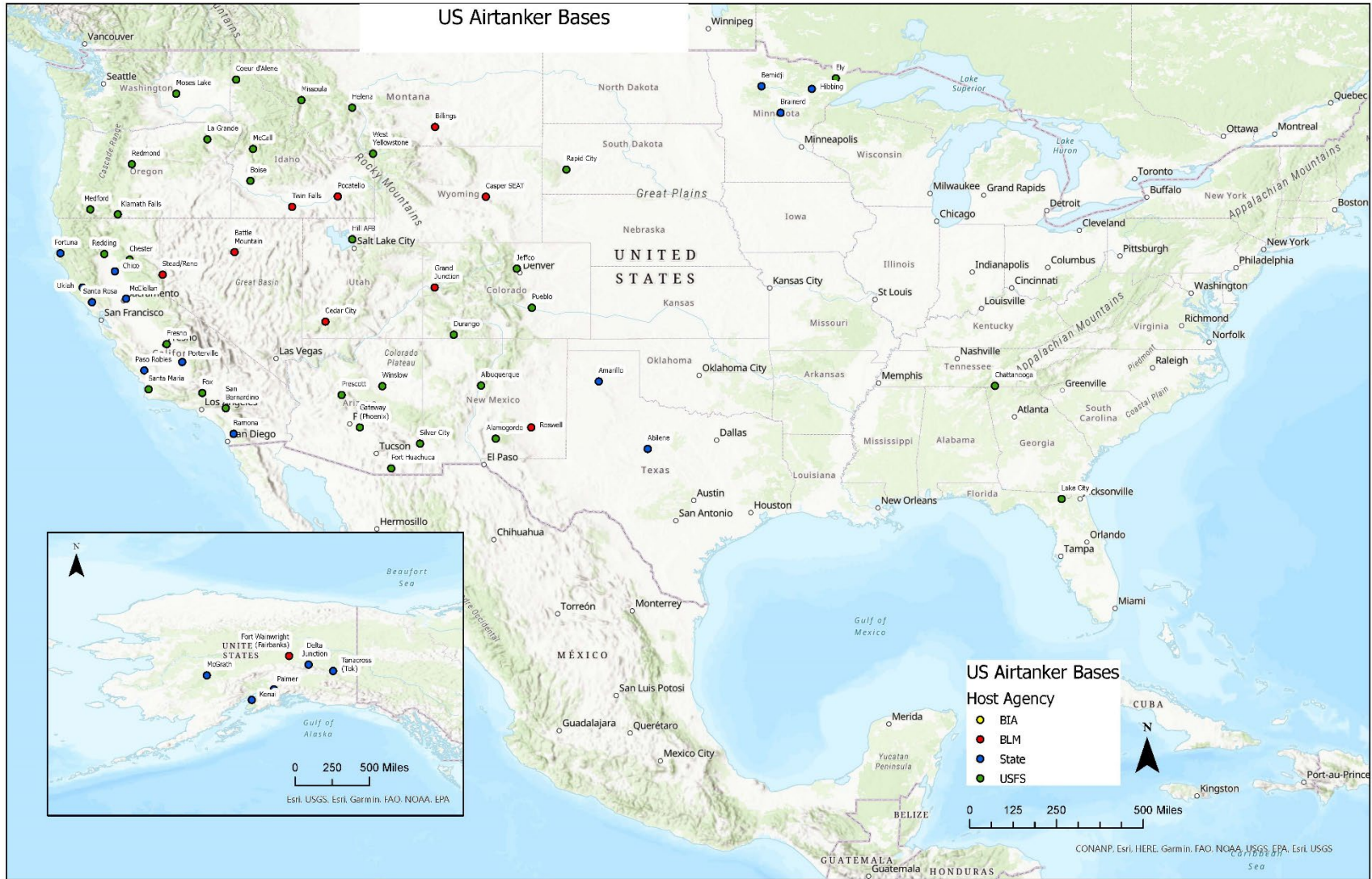


Figure 4b: Airtanker Bases in the United States by host agency

The following section should be inserted after section 5.6 of the 2021 Biological Assessment. This section addresses only those species not already addressed in the 2021 Biological Assessment, with the exception of five species that were reconsidered in this analysis. This analysis addresses species that are found on or near airtanker bases or jettison areas. Refer to the following section for additional explanation.

5.7 Species Occurring on or Near Airtanker Bases or Jettison Areas

5.7.1 Introduction

There are ninety-eight permanent airtanker bases currently in use across the United States (Figures 4a and 4b) where airtankers bound for National Forest Service lands may originate. These bases are hosted by various federal agencies (Bureau of Land Management, Bureau of Indian Affairs, Forest Service) or state agencies. Appendix H provides information for each of the bases. Appendix I displays aerial photos of a sample of the airtanker bases and their jettison areas.

5.7.2 Effects Analysis Process

To determine which species to might potentially be affected by aerial retardant operations at airtanker bases and their identified jettison areas, the latitude and longitude of the bases and jettison areas were mapped and buffered by 1 ½ miles. These polygons were uploaded into the Information for Planning and Consultation (iPaC) system, resulting in a list of 146 species and 18 designated critical habitats (Appendix J). That list was compared to species included in the original Biological Assessment (United States Department of Agriculture Forest Service 2021). One hundred-one of the species and 13 of the designated critical habitats identified as associated with airtanker bases and jettison areas have been analyzed in the 2021 Biological Assessment for effects due to aerially delivered retardant. Any additional effects due to airtanker base and jettison area operations for these species are discussed here. For the majority of those species, the effects disclosed for retardant delivery are greater than those for base operations or jettison areas, so determinations did not change. The remaining 45 species and five designated critical habitats occur at or near 34 bases and 18 jettison areas and are described in greater detail in this document. Appendix J lists all of the species identified as occurring on or near airtanker bases or jettison areas, and summarizes the final determinations from the 2021 Biological Assessment and this addendum.

5.7.3 Effects Common to All Species Occurring on or Near Airtanker Bases or Jettison Areas

The effects of retardant used in airtanker base and jettison area operations are the same as those described in the 2021 Biological Assessment. The effects of aerial retardants on terrestrial and aquatic wildlife and plant species include toxicity (both acute and sublethal), changes to habitat, contamination of prey/forage, disturbance, phytotoxicity, and increased competition from non-native invasive plant species. The main differences between aerial delivery of retardant and operations at airtanker bases are the probability of retardant entering habitats or directly affecting species, and the frequency, duration and timing of operations.

Airtanker base operations are seasonal and correspond to the fire season where the bases are found (refer to section 4.3.3.6 of the 2021 Biological Assessment). Because of the spill containment and dust abatement controls in place at the bases, there is very low probability of retardant entering habitat of any threatened or endangered species. A minor amount could wash into vegetation adjacent to the pits/tarmac, however wash-down water management as described in Section 4.3.3.3 under the heading “Tanker Bases” would minimize the likelihood of that occurring. At airtanker bases using evaporation ponds to manage wash-down water there is a higher probability of mobile species encountering retardant than at bases using municipal wastewater systems or holding tanks. When wash-down water enters an evaporation pond it is very dilute compared to the retardant concentration dropped from aircraft during firefighting operations. As the water

evaporates the residual retardant may become more concentrated, however retardant exposed to weather has been shown to become less toxic over time (H. Puglis, personnel communication 2019).

Because operations at airtanker bases occur for the length of the fire season in that area, disturbance to species near the airtanker bases is expected to be recurring and of overall longer duration than for drops of aerially delivered retardant on a fire. Airtanker bases nearly all occur at existing airfields or airports where there are other aircraft and associated activities occurring. The disturbance associated with aerial retardant operations, including aircraft arriving and departing, is in addition to those other activities, although the relative contribution of airtanker operations varies among bases. It is likely that species in the vicinity have become accustomed to the existing disturbance level.

Effects from use of jettison areas are similar to those already described for aerial retardant drops associated with firefighting (refer to sections 5.4.4, 5.5.3, and 5.6.3 in the 2021 Biological Assessment), with the exception that retardant drops on some jettison areas may occur repeatedly in the same area over time, including multiple drops during a single fire season. Potential effects associated with individual jettison areas depend on the frequency of use, and the relation to species occurrences and/or potential habitat at each area.

Of 98 permanent bases, 18 have identified jettison areas on the airport grounds. These are generally parallel to runways, in vegetation that is maintained (mowed) regularly and is adjacent to areas with high levels of existing disturbance due to aircraft activity. For those reasons, these areas provide little if any habitat, and it is therefore unlikely that threatened or endangered species would use the areas with the possible exception of plant species growing within the airport perimeter, or species occupying vernal pool habitat within the airport perimeter. Loads jettisoned within airport perimeters could cause effects to plant species located there due to fertilization, over-fertilization, or increased competition from non-native invasive species (refer to section 5.6.3 of the 2021 Biological Assessment for details of potential effects of retardants to plant species.) If a jettisoned load lands within, or drifts into occupied vernal pool habitat it can result in subacute or acute toxicity to wildlife species occurring there, or it could alter the water quality to become detrimental to species found there.

Many airtanker bases have identified off-site jettison areas. These generally occur on ridges, or in fields, away from concentrated human activities. These jettison areas are a minimum of 300 feet from waterways, and in many cases are much further distant. Vegetation in most jettison areas is low growing, and generally comprised of grasses, forbs and shrubs. The potential effects to species in jettison areas are discussed within the species assessments in section 5.7.4 below.

The amount of use of jettison areas varies, with airtanker bases that use more retardant generally using jettison areas more often. Detailed information is not available on the frequency and amount of retardant dropped on each jettison area.

5.7.4 Determinations of Effects to Listed Species Occurring on or Near Airtanker Bases or Jettison Areas

Amphibians

California Tiger Salamander – *Ambystoma californiense*

The threatened Central Valley distinct population segment of California tiger salamander is described in the 2021 Biological Assessment (refer to page 50 of the 2021 Biological Assessment). The Santa Barbara County distinct population segment was listed as endangered on 21 September 2000 (65 FR 57242), and the Sonoma County Distinct population segment was listed as endangered on 22 July 2002 (67 FR 47726). Habitat for all distinct population segments is similar. California tiger salamander breed in vernal pools during the winter season when rains inundate the pools. They spend the remainder of the year in burrow systems of small mammals.

Fresno, Hollister, McClellan, Paso Robles, Santa Maria, and Sonoma airtanker bases, and Hollister jettison areas are within the range of California tiger salamander (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Santa Maria and Paso Robles have identified jettison areas within their respective airport perimeters. The species is known to occur in vernal pool habitat within the perimeter of Santa Maria airport. The Forest Service tanker base contract specifies that Santa Maria airtanker base is open from May 15 to November 15, therefore the base would not be operational during the breeding season. There is potential for retardant from jettisoned loads to drift into or otherwise enter vernal pool habitat. That is unlikely to occur when the pools have water and are being used by tiger salamanders, and weathering is likely to reduce the amount and characteristics of retardant residue in those sites prior to the next breeding season. Nevertheless, there is potential for effects in the form of fertilization of vegetation in the pools, or chemical alterations to the water. Because of this possibility, airtanker operations **may affect and are likely to adversely affect California tiger salamander**. This determination replaces the determination in the 2021 Biological Assessment.

Critical habitat has been designated for each of the distinct population segments. In Santa Barbara County it was designated on 24 November 2004 (69 FR 68568). For the Central population it was designated on 23 August 2005 (70 FR 49380). For the Sonoma County population revised critical habitat was designated on 31 August 2011 (76 FR 54346). Designated critical habitat includes the Hollister jettison area and the Santa Maria and Sonoma airtanker bases. Although the primary constituent elements for each distinct population segment are worded slightly differently, they are essentially the same:

- Standing bodies of fresh water, including natural and man-made (e.g., stock) ponds, vernal pools, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 12 weeks.
- Upland habitats adjacent and accessible to and from breeding ponds that contain small mammal burrows or other underground habitat that adult California tiger salamanders depend upon for food, shelter, and protection from the elements and predation.
- Accessible upland dispersal habitat between locations occupied by the species that allow for movement between such sites.

Airtanker base operations will not alter the presence of vernal pools, the adjacent upland habitat, or the dispersal habitat. If retardant enters the vernal pool habitat when it is dry it could alter the availability of the habitat in the following year, therefore airtanker base operations and use of jettison area are **likely to adversely affect California tiger salamander critical habitat**.

Birds

Eastern Black Rail- *Laterallus jamaicensis jamaicensis*

The Eastern black rail was listed as threatened on 8 October 2020 (85 FR 63764). Critical habitat has not been designated. This species is a wetland dependent bird that requires dense emergent vegetation and extremely shallow water depths (typically less than or equal to 1 inch) over a portion of the wetland-upland interface. The transition zone between emergent wetlands and upland grasslands areas is also important habitat that provides refugia during high-water events.

Historically the eastern black rail was found in Arkansas, Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, New Mexico, Ohio, and Wisconsin (NatureServe 2022). Presently, this species is known to occur within the Arkansas River Valley of Colorado and in southcentral Kansas. The Canon City SEAT, NoCo SEAT, and Pueblo airtanker bases are within the range of this species (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects to eastern black rail due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, eastern black rail.**

California clapper rail – *Rallus longirostris obsoletus*

California clapper rail (also known as California Rideway's rail - *Rallus obsoletus obsoletus*) was listed as endangered on 13 October 1970 (35 FR 16047). Critical habitat has not been designated. This is a marshland species that nests near tidal ponds with pickleweed and cordgrass. Their diet consists of mussels, clams, small crabs, and spiders.

Historically California clapper rails were found from northern California south through San Francisco Bay. The species is now found in the San Francisco ecosystem in central California. Paso Robles airtanker base is within the range of this species (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, and because the airtanker base is surrounded by farmland, which is not habitat for this species, the effects to California clapper rail due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, California clapper rail.**

California least tern- *Sterna antillarum browni*

California least tern was listed as endangered on 2 June 1970 (35 FR 8495). Critical habitat has not been designated. This species uses beachfront habitat with sparse or low-lying vegetation and low disturbance from humans and mammalian predators. It nests on fine to coarse sand that is interspersed with larger rocks. California least terns feed primarily on small fishes captured in estuaries, embayments, and shallow, nearshore waters, particularly at or near estuaries and river mouths.

The nesting range of California least tern is predominantly the Pacific coast of California and the Baja California Peninsula, Mexico. Most of the breeding occurs in California. In 2009, two pairs of least terns nested in Glendale Arizona, producing one chick (USFWS 2020). Mesquite airtanker base, Gateway (Phoenix) airtanker base and Gateway (Phoenix) jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, and the limited number of California least terns that occur in Arizona, the effects due to airtanker base operations would be discountable. The Gateway jettison area does not contain suitable breeding or foraging habitat for this species, so drops there would have no effect on this species. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, California least tern.**

Crustaceans

San Diego fairy shrimp – *Branchinecta sandiegonensis*

The endangered San Diego fairy shrimp is described in the 2021 Biological Assessment (refer to page 178 of the 2021 Biological Assessment). Ramona airtanker base and the Ramona jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects to San Diego fairy shrimp due to airtanker base operations would be discountable. The determination in the 2021 Biological Assessment is therefore unchanged.

Critical habitat was designated on 12 December 2007 (72 FR 70648). The Ramona airtanker base is identified as being within this species' critical habitat (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The primary constituent elements of critical habitat are:

- Vernal pools with shallow to moderate depths (2 to 12 inches) that hold water for sufficient lengths of time (7 to 60 days) necessary for incubation, maturation, and reproduction of the San Diego fairy shrimp, in all but the driest years;
- Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described above, providing for dispersal and promoting hydroperiods of adequate length in the pools; and
- Flat to gently sloping topography, and any soil type with a clay component and/or an impermeable surface or subsurface layer known to support vernal pool habitat.

Airtanker base operations will not alter the presence of vernal pools, the adjacent uplands and flowing water, or the topography or soils. If retardant enters the vernal pool habitat when it is dry it could alter the availability and water quality of vernal pool habitat in the following year, however measures are in place to minimize the probability of retardant entering the pools. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, San Diego fairy shrimp critical habitat.**

California freshwater shrimp- *Syncaris pacifica*

California freshwater shrimp was listed as endangered on 31 October 1988 (53 FR 43884). Critical habitat has not been designated. This species is found in low elevation, low gradient, freshwater, perennial streams. During the winter, habitat includes shallow margins of stream pools containing undercut banks and exposed living fine-root material that provides shelter and refuge from high water velocities associated with winter storm events. During the summer months, California freshwater shrimp are often associated with submerged leafy branches. It is believed that both winter and summer habitat components need to be found in proximity in order for this species to persist over time. California freshwater shrimp feed by collecting fine particulate organic matter (NatureServe 2022).

California freshwater shrimp are restricted to a few coastal freshwater streams in Napa, Sonoma, and Marin counties, California. The species requires high water quality, low pollution, and good oxygen levels. Sonoma airtanker base in Santa Rosa, and the Sonoma jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. The Sonoma jettison area is on a ridgetop and is more than 300 feet from any waterway. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, California freshwater shrimp.**

Fish

Beautiful shiner- *Cyprinella formosa*

The beautiful shiner was listed as threatened with designation of critical habitat on 31 August 1984 (49 FR 34490). This species inhabits pools or riffles of medium-sized, clear streams, creeks, spring-fed pools, and artesian-fed ditches. It remains near but rarely within beds of plants or other cover along pond margins. Streams used by this species are typically intermittent and subject to seasonal drying and sudden flooding; individuals survive dry periods in permanent pools (NatureServe 2022).

Habitat alterations extirpated the beautiful shiner from the United States in 1970. Beautiful shiner was reestablished in three wetlands at San Bernardino National Wildlife Refuge in 1990, and as of 2019, the shiner is believed to occupy about 12 sites in the United States. Silver City airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, beautiful shiner.**

Designated critical habitat occurs on San Bernardino National Wildlife Refuge, which does not overlap airtanker bases or jettison areas.

Pecos gambusia- *Gambusia nobilis*

Pecos gambusia was listed as endangered on 13 October 1970 (35 FR 16047). Critical habitat has not been designated. The species' primary habitats include springs with a narrow temperature range, runs, spring-influenced marshes, and irrigation canals carrying spring waters. It is a surface feeder that eats a diversity of food types, including young, fish, amphipods, dipterans, cladocerans, filamentous algae, spiders, and mollusks. Gambusia are also known to be cannibalistic (NatureServe 2022).

Pecos gambusia is endemic to the Pecos River Basin in southeastern New Mexico and western Texas and originally ranged from near Fort Sumner, New Mexico, to the area around Fort Stockton, Texas. Although the mainstem Pecos River is not likely to have been important as permanent habitat, it serves as a dispersal route between tributary springs and streams. Roswell airtanker base and Roswell jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. The Roswell jettison area is more than ¼ mile from any waterways, and is used only occasionally. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Pecos gambusia.**

Virgin River Chub- *Gila seminuda*

The Virgin River chub was listed as endangered on 24 August 1989 (54 FR 35305). The Virgin River chub is a medium sized, small-scaled silvery minnow in the Cyprinidae family, endemic to the Virgin River (Utah, Arizona, and Nevada) and the Muddy River (Nevada). Spawning typically occurs in late spring; however spawning events can occasionally occur during summer months. Upon hatching, Virgin River chub fry drift downstream and collect in slow moving eddy and backwater habitats. These habitats provide ideal conditions for rearing because the shallow water increases food availability and reduces competition or predation from nonnative fishes. Adult Virgin River chub prefer deep water habitats of slow to moderate velocity, containing boulders and other instream cover. Virgin River chub are opportunistic omnivorous feeders. Their diet consists of algae, invertebrates, and smaller fish (NatureServe 2022).

The historical range of Virgin River chub included the Virgin River and Muddy River systems in Utah, Arizona, and Nevada (Figure 2). In the mainstem Virgin River, their distribution extended from the confluence of the Colorado River upstream to approximately 2.9 mi above La Verkin Springs in Utah. The species also occurred in La Verkin Creek. Mesquite SEAT airtanker base is within the range of Virgin River chub (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, Virgin River chub.**

Critical habitat for Virgin River chub was designated 26 January 2000 (65 FR 4140) and includes the 100 year floodplain of the Virgin River. The Mesquite SEAT airtanker base is outside the designated critical habitat.

Delta Smelt- *Hypomesus transpacificus*

Delta Smelt was listed as threatened on March 5, 1993 (58 FR 12854). This euryhaline species inhabits open waters of bays, tidal rivers, channels, and sloughs; it rarely occurs in water with salinity of more than 10-12 parts per thousand. When not spawning, it tends to concentrate where salt water and freshwater mix. Spawning occurs in freshwater (sometimes in slightly brackish water), primarily in tidal dead-end sloughs and channel edgewater. Larvae are buoyant and are carried downstream until they reach the rearing habitat. Delta smelt feed primarily on small planktonic crustaceans, and occasionally on insect larvae (NatureServe 2022).

Delta smelt are endemic to the San Francisco Bay and Sacramento–San Joaquin Delta estuary in California. They are found only from the San Pablo Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties. Chico airtanker base, Fresno airtanker base, Fresno jettison area, Grass Valley airtanker base, Grass Valley jettison area, McClellan airtanker base, Porterville airtanker base and Ukiah jettison area are all identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Information on use at these bases and jettison areas is found in Appendix H.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down, the effects due to airtanker base operations would be discountable. The jettison areas occur on ridgetops and are more than 300 feet from waterways, so the probably of retardant entering the water is unlikely. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Delta smelt.** The 2021 Biological Assessment originally came to a no effect determination for this species. Based on potential effects from airtanker base operations that determination is replaced by the determination made here.

Critical habitat was designated on 19 December 1994 (59 FR 65256). There are no airtanker bases or jettison areas within designated critical habitat

Big Spring spinedace- *Lepidomeda mollispinis pratensis*

Big Spring spinedace was listed as threatened with designation of critical habitat on 28 March 1985 (50 FR 12298). Habitat for this species is provided by a small perennial stream that is spring fed. Adults inhabit runs and pools with a depth of at least 10 inches. They prefer areas where leafy aquatic vegetation or overhanging banks were present. They feed opportunistically on aquatic insect larvae, algae and other plant material (NatureServe 2022).

Distribution of the species is restricted to a single population occurring in an approximately 5 mile section of the Condor Canyon reach of Meadow Valley Wash northeast of Panaca in Lincoln County, Nevada (Nature Serve 2022). Big Spring spinedace no longer occupy the Panaca Big Spring outflow, the area they were first collected, due to habitat modification and the introduction of nonnative species. Panaca airtanker base is within the range of Big Spring spinedace (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, and because the spinedace is found upstream of the airtanker base, the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, Big Springs spinedace.**

Designated critical habitat does not include airtanker bases or jettison areas.

Peppered chub- *Machrhybopsis tetranema*

Peppered chub was listed as endangered on 28 February 2022 (87 FR 11188). Adults of this species prefer shallow channels where currents flow over clean fine sand; they avoid calm waters and silted stream bottoms. Peppered chubs are aggressive, generalist feeders that have evolved for feeding in highly turbid streams. They feed primarily on larval insects, small crustaceans, immature aquatic insects, and plant material (Fish and Wildlife Service 2022).

Peppered chub is native to the upper Arkansas River drainage in Oklahoma, Kansas, Texas, New Mexico, and Colorado. Their current distribution is limited to the Ninnescah River in Arkansas and the South Canadian River between Ute Reservoir in New Mexico and Lake Meredith in the Texas panhandle, although they are no longer found in Ninnescah River surveys (Fish and Wildlife Service 2018). The primary threat to the species is dewatering of streams from water impoundment and diversion, drought, and groundwater depletions (NatureServe 2022). Amarillo jettison area is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

The Amarillo jettison area is within the Canadian River watershed, but is more than 10 miles from the Canadian River, itself. Jettison areas are 300 feet or more from waterways. Because of the distance to the species habitat, effects of retardant jettisons would be discountable. Therefore, airtanker base operations, including the use of jettison areas **may affect, but are not likely to adversely affect, peppered chub.**

Critical habitat for peppered chub was designated on 28 February 2022. Airtanker bases and jettison areas are not within the critical habitat (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Smalleye Shiner- *Notropis buccula*

Smalleye shiner was listed as endangered on 4 August 2014 (79 FR 45273). This species prefers shallow (15 to 32 inch) water in broad, open sandy channels with a moderate current. In their preferred habitat smalleye shiners are most often found using the center of the channel; they avoid the shallow depth and slow velocity of the stream edges. Smalleye shiners diet consists mainly of aquatic insects. They have a lifespan of less than three years.

The smalleye shiner historically occurred in the Brazos River basin. The species is currently restricted to the upper Brazos River and its major tributaries, which represents a range reduction of more than 50 percent. Abilene airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Abilene airtanker base is approximately 40 miles south of the Double Mountain Fork Brazos River. The Information for Planning and Consultation species list states that the species requires consideration for reservoir projects and in-channel projects that may reduce flows. Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, as well as the distance between the airtanker base and this species' habitat, retardant from the airtanker base is not expected to reach habitat for smalleye shiner. Therefore, airtanker base operations **will have no effect to smalleye shiner.**

Critical habitat for this species was designated on 4 August 2014 (79 FR 45241). It does not include airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Sharpnose shiner- *Notropis oxyrhynchus*

Sharpnose shiner was listed as endangered on 4 August 2014 (79 FR 45273). This species is an obligate riverine fish occurring in water often less than 1.6 feet deep. They are found in areas with sandy substrates (Fish and Wildlife Service 2022). Their diet consists mainly of aquatic insects and various terrestrial arthropods. They have a lifespan of less than three years (NatureServe 2022).

Historically, sharpnose shiners were found throughout the Brazos River, including the Double Mountain and Salt Forks of the Upper Brazos River drainage upstream of Possum Kingdom Lake. The primary threat to the species is habitat loss and modification due to current and future reservoir development. Other threats include sand and gravel mining, excessive sedimentation, industrial and municipal discharges, and the spread of invasive saltcedar. Abilene airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Abilene airtanker base is approximately 40 miles south of the Double Mountain Fork Brazos River. The Information for Planning and Consultation species list states that the species requires consideration for reservoir projects and in-channel projects that may reduce flows. Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, as well as the distance between the airtanker base and this species' habitat, retardant from the airtanker base will not reach habitat for sharpnose shiner. Therefore, airtanker base operations **will have no effect to sharpnose shiner.**

Critical habitat for this species was designated on 4 August 2014 (79 FR 45241). It does not include airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Pecos Bluntnose Shiner- *Notropis simus pecosensis*

The Pecos bluntnose shiner was listed as endangered with designation of critical habitat on 20 February 1987 (52 FR 5295). The shiner is a relatively small, moderately deep-bodied minnow rarely exceeding 3.0 inches in total length and with a life expectancy of no more than two years. This species inhabits large rivers with a sand, gravel, and silt substrate. It occurs in areas of low velocity at depths of seven to 16 inches. Young shiners consume primarily zooplankton, while adults consume terrestrial insects, aquatic invertebrates, larval fish, and plant seeds (NatureServe 2022).

The historical range included a 330-mile reach of the Pecos River from the Gallinas River confluence, approximately 24 mile north of Santa Rosa, New Mexico to slightly north of Carlsbad, New Mexico. There are also two historical records of this subspecies from the Pecos River system in Texas. The current range of this subspecies is limited to a 120 mile section of the Pecos River from the Taiban Creek confluence to the Brantley Reservoir delta, New Mexico. Roswell airtanker base and Roswell jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. The Roswell airtanker base is approximately 9 miles from the Pecos River, while the jettison area is more than 20 miles from any waterways, and is used only occasionally. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Pecos bluntnose shiner.**

Critical habitat does not include airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Topeka Shiner- *Notropis topeka*

The Topeka Shiner was listed as endangered on 15 December 1998 (63 FR 69008). The Topeka shiner is a small minnow, or cyprinid in the Cyprinidae family, that lives and breeds in graveled pools of low-order prairie streams in the Great Plains states of South Dakota, Minnesota, Nebraska, Iowa, Kansas, and Missouri. This species typically inhabits quiet, open, permanent pools of small, clear, high-quality headwaters and creeks that drain upland prairie areas, including tiny spring-fed pools in headwater streams and larger streams. Topeka shiner eat midge larvae and other aquatic invertebrates (abundant silt, sand, and detritus in gut contents indicates substantial benthic feeding).

This species formerly was widespread in western tributaries of the Mississippi River, from central Missouri through Iowa to southern Minnesota, west to eastern South Dakota, western Nebraska, and western Kansas. It has been extirpated in many localities but still occurs in all six states in its historical range. Most of the remaining occupied habitat is in South Dakota-Minnesota and Kansas. Recent surveys have added many new occurrences and large expansions of known range in South Dakota and Minnesota (NatureServe 2022). Valentine SEAT airtanker base in Nebraska is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, Topeka shiner.**

Critical habitat was designated 27 July 2004 (69 FR 44736). It does not include airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Woundfin- *Plagopterus argentissimus*

The woundfin was listed as endangered on 13 October 1970 (35 FR 16047). The woundfin is a small scaleless minnow, with shape and color characteristics adapted for living in swift, warm, shallow, turbid, sandy-bottomed small to medium rivers with constantly shifting substrates. Woundfin are omnivorous and feed on aquatic insects, detritus and algae. During low flow periods, when food abundance is minimal, woundfin feed almost continuously over a 24 hour period.

Historical range included the Colorado and Gila River basins in Arizona, Nevada, and Utah, including at least the Colorado River from Yuma upstream into the Virgin River in Nevada and Utah, and the Gila River from Yuma to the confluence of the Salt River. It is likely that the historical range extended farther upstream in the Verde, Salt, and Gila rivers in Arizona. Currently, the only viable population of woundfin occurs within a 16.3-mile reach in the upper Virgin River between Ash Creek and Washington Fields Diversion (NatureServe 2022). Woundfin are occasionally found downstream of this reach to the confluence of the Beaver Dam Wash in Arizona. Primary threats to woundfin include competition and predation from nonnative species and degraded habitat conditions. Mesquite airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, woundfin.**

Critical Habitat was designated 26 January 2000 (65 FR 4140). It does not include any airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Insects

Carson Wandering Skipper- *Pseudocopaeodes eunus obscurus*

The Carson wandering skipper was listed as endangered on 29 November 2001 (66 FR 59537). Critical habitat has not been designated. Habitat is alkaline desert seeps dominated by saltgrass with a freshwater source sufficient to support summer nectar flowers. Adults have been collected, and therefore are active, from late May to late July. The pupal period is a few weeks in May and June, and the larvae are present from late June through May. Their primary food is saltgrass (NatureServe 2022).

Currently, there are four extant populations of Carson wandering skipper, two in Washoe County and one in Douglas County, Nevada; and one in Lassen County, California. The population in Lassen County is larger than the three populations in Nevada combined in terms of spatial distribution and amount of habitat (NatureServe 2022). Minden-Tahoe and Stead-Reno airtanker bases and Minden-Tahoe and Stead-Reno jettison areas are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. The jettison areas occur on ridgetops, at least 300 feet from any waterways. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Carson wandering skipper.**

Mammals

Wood Bison - *Bison bison athabasca*

Wood Bison was originally listed as endangered on 2 June 1970 (35 FR 8491) and was down-listed to threatened on 4 June 2012 (77 FR 26191). Critical habitat has not been designated. In 2015, captive-reared wood bison were released in western Alaska to establish a wild, free-ranging herd. This is the Lower Innoko-Yukon herd, the only free-ranging herd in Alaska. Winter grazing habitat is wet meadows with sedges and grasses. Summer foraging habitats include meadows with slough sedge, northern reed-grass, and willow. Deciduous and pine forests associated with these meadow types are used for resting, ruminating, avoiding flies, protection from deep snow and wind, and foraging at various times of the year. (United States Department of Interior Fish and Wildlife Service 2021). Wood bison are primarily grazers and can thrive on coarse grasses and sedges; they occupy a niche within the boreal forest that is not used by other northern herbivores such as moose or caribou (NatureServe 2022).

This subspecies is a Canadian endemic, known from Alberta, British Columbia, Northwest Territories, and Yukon, and its pre-colonial range included Alaska. It is presumed extirpated from Saskatchewan. McGrath airtanker base and McGrath jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat, the effects due to airtanker base operations would be discountable. The jettison area is northeast of the airport in a forested area. Airtankers would avoid foraging habitat (meadows) during a jettison. The primary effect to wood bison would be disturbance from the aircraft during takeoff and landing, and occasionally during jettison. Because use of the McGrath tanker base is low (20,343 gallons per year on average), airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, wood bison.**

Columbia Basin pygmy rabbit- *Brachylagus idahoensis*

The Columbia Basin pygmy rabbit was listed as endangered on 30 November 2001 (66 FR 59734) under an emergency rule. The final rule to list the species as endangered was published 5 March 2003 (68 FR 10388). Critical habitat has not been designated. This is the smallest species of rabbit in North America, and is one of only two rabbit species in North America to dig its own burrow. This species is a sagebrush obligate. Dense stands of sagebrush provide year-round food and shelter. Native, perennial grasses and forbs are important food sources through spring, summer, and fall (Washington Department of Fish and Wildlife 2022). Pygmy rabbits eat big sagebrush as their primary food source, particularly in winter (NatureServe 2022).

The Washington population of pygmy rabbit has been isolated from the larger population for at least 10,000 years. The Columbia Basin pygmy rabbit is geographically and geologically distinct and the population is significant due to the unique ecological setting in which it occurs. This subspecies was believed to be extirpated from the wild in the 2000s. Reintroduction efforts have established two populations as of 2021. Threats to the species include loss and degradation of shrubsteppe habitat due to cropland conversion and development, as well as climate change (Washington Department of Fish and Wildlife 2022). The Moses Lake jettison area at Moses Coulee is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This jettison area is a secondary jettison area and has not been used in five or six years.

Because the Moses Coulee jettison area has not been used in several years and is not the primary jettison area, but still could be used occasionally, use of the jettison area **may affect, but is not likely to adversely affect, Columbia Basin pygmy rabbit.**

Giant Kangaroo Rat- *Dipodomyss ingens*

The giant kangaroo rat was listed as endangered on 5 January 1987 (52 FR 283). Critical habitat has not been designated. Optimal habitat for this species is annual grassland communities with few or no shrubs on gentle slopes that do not flood in winter. A few populations of giant kangaroo rats can be found in shrub communities, and can occur on slopes up to 22% in grade, but these areas are generally considered marginal habitat. Small, scattered populations of this species can also occur atop hills and ridges, where slopes are flat enough and soils are deep enough for burrowing. Dense stands of non-native grasses do not provide habitat (United States Department of Interior Fish and Wildlife Service 2020). The giant kangaroo rat feeds on seeds, green herbaceous vegetation and occasionally insects. In some localities, it gathers dry grass into "haystacks" to cure, later removing seeds for storage in underground burrows (NatureServe 2022).

Giant kangaroo rats historically ranged from Merced County in California south to the base of the Tehachapi Mountains in Kern County, and west to eastern San Luis Obispo County and extreme northern Santa Barbara County at elevations from 400 to 2,850 feet. Their current range includes the Ciervo-Panoche Region, Lokern and Elk Hills area of western Kern County, Carrizo Plain Natural area, and the Cuyama Valley, although there have not been surveys in the Cuyama Valley for many years (NatureServe 2022). Paso Robles airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, and the limited vegetation near the airtanker base to provide foraging habitat, the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, giant kangaroo rat.**

Fresno Kangaroo Rat- *Dipodmys nitratoides exilis*

The Fresno Kangaroo rat was listed as endangered on 30 January 1985 (50 FR 4222). Habitat for the parent species, San Joaquin Valley kangaroo rats (*Dipodmys nitratoides*), includes sandy or silty soils with a crumbly texture, with no to moderate shrub cover and scattered herbaceous plants; sparsely vegetated alkali sink communities with sandy or silty soils; valley grassland; and saltbrush and sink scrub. The species does not tolerate irrigated or cultivated habitat. It feeds on seeds and consumes some insects and green vegetation in the spring. May cache seeds in small pits in the walls of the burrow system (NatureServe 2022).

The historical range of Fresno kangaroo rat subspecies has been estimated at about 1,389 square miles, which includes some unsuitable habitat. By 1974, known habitat had been reduced and fragmented into three major areas, encompassing approximately 23 square miles in Fresno County. Since then, remaining potential habitat has been reduced by more than 50 percent. Currently there are no known, extant populations of this subspecies. The last capture was a single male at Alkali Sink Ecological Reserve in Fresno County in 1992. There is suitable habitat on private land that has not been surveyed (NatureServe 2022, United States Department of Interior Fish and Wildlife Service 2020). Fresno airtanker base and Fresno jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, and the limited vegetation near the airtanker base to provide foraging habitat, the effects due to airtanker base operations would be discountable. The jettison area is northeast of the airport on a ridge with dense shrub cover. This jettison area requires loads to be jettisoned at least 1000 feet above ground, which results in the retardant dissipating prior to reaching the ground and becoming undetectable. Therefore, airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Fresno kangaroo rat.**

Critical habitat was established on 30 January 1985 (50 FR 4222). It does not include airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Tipton Kangaroo Rat- *Dipodmys nitratoides nitratoides*

Tipton Kangaroo Rat was listed as endangered on 8 July 1988 (53 FR 25608). Critical habitat has not been designated for this species. The Tipton kangaroo rat is one of three subspecies of the San Joaquin kangaroo rat, morphologically distinguished by being larger than the Fresno kangaroo rat and smaller than the short-nosed kangaroo rat. Tipton kangaroo rats are sensitive to local habitat conditions. Researchers believe saltbush scrub and valley sink scrub vegetative communities are important predictors for Tipton kangaroo rats; however, the exact micro-habitat characteristics needed to support Tipton kangaroo rat populations are not well understood and researchers have debated which habitat factors are required to manage habitat for the subspecies. In 2016, researchers collected range-wide habitat data to build a habitat suitability model for the Tipton kangaroo rat (NatureServe 2022). These data showed open, desert communities with large alkali scalds (areas naturally bare of vegetation), and no apparent signs of past or present agriculture is the habitat preferred by Tipton kangaroo rats. Sparse ground cover with bush seepweed (*Suaeda nigra*) and few invasive grasses also correlate with Tipton kangaroo occurrences.

The largest Tipton kangaroo rat populations exist in areas of contiguous suitable habitats, such as Lokern Ecological Reserve and adjacent lands in Kern County. While populations on large areas of habitat continue to do well, the available information suggests that Tipton kangaroo rats have declined throughout their range during the past decade. Tipton kangaroo rats are still abundant at some sites, such as Semi Tropic Ecological Reserve and Lokern Natural Area and Preserve, both in Kern County. However, many of the smaller populations have declined or become locally extinct within the past ten years. All populations have

fluctuated annually in recent years, driven partially by inter-annual climatic extremes. As such, the future of the Tipton kangaroo rat remains uncertain (NatureServe 2022). Porterville airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat and the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, Tipton kangaroo rat.**

Reptiles

Giant Garter Snake - *Thamnophis gigas*

The giant garter snake was listed as threatened on 20 October 1993 (58 FR 54053). Critical habitat has not been designated for this species. This is one of the largest gartersnakes, reaching a total length of at least 63.7 inches (NatureServe 2022). The giant gartersnake is endemic to wetlands of California's Central Valley and inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals, rice fields, and the adjacent uplands. They feed on small fishes, tadpoles, and frogs (NatureServe 2022).

Historically the giant garter snake's range included much of the floor of the Central Valley (Sacramento and San Joaquin valleys) of California, from Butte County in the north to Kern County in the south, at elevations from near sea level to 400 feet. The species apparently is now extirpated from most of the range in the San Joaquin Valley. The current range is from the city of Chico in Butte County southward to the Mendota Wildlife Area in Fresno County (NatureServe 2022). Chico airtanker base, Fresno airtanker base, McClellan airtanker base and Porterville airtanker base are all identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat and the effects due to airtanker base operations would be discountable. Therefore, airtanker base operations **may affect, but are not likely to adversely affect, giant garter snake.**

Plants

Sonoma alopecurus – *Alopecurus aequalis* var. *sonomensis*

Sonoma alopecurus was listed as endangered on 22 October 1997 (62 FR 55791). Critical habitat has not been designated for this species. It is a tufted perennial in the Poaceae (grass family). The plant occurs in freshwater marshes and swamps and riparian scrub within Marin and Sonoma Counties, California. Five of six known populations are clustered within a 4.6-square mile area on the Point Reyes Peninsula in Marin County. The only known extant population in Sonoma County is located at Annadel State Park (USFWS 2011). This species is found in moist soils in permanent freshwater marshes at elevations from 15 to 1200 feet. The species appears to benefit from disturbance. It is threatened by invasive plant species (NatureServe 2022).

The species range is limited to Marin and Sonoma counties in California. Sonoma airtanker base and Sonoma jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base

or jettison area, as the only extant population in Sonoma County is at Annadel State Park. Surveys of the base and jettison area were not completed for this project; therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Sonoma alopecurus.**

San Diego ambrosia – *Ambrosia pumila*

San Diego ambrosia was listed as endangered on 2 July 2002 (67 FR 44372). This species occurs in disturbed areas and vernal pools of coastal scrub, grasslands, open floodplains and low valley bottoms below 500 feet elevation. It persists where disturbance has been superficial (NatureServe 2022).

Ambrosia pumila is known from sixteen extant populations in Riverside and San Diego Counties, California, and Baja California, Mexico. Twenty-three populations have been extirpated in San Diego County. Only seven United States populations are considered secure and protected. There are many on-going threats to this species including development, physical destruction of plants from land-use and recreation, non-native plants and climate change (NatureServe 2022). Hemet airtanker base, Ramona airtanker base, San Bernardino airtanker base, Hemet jettison area, and Ramona jettison area are all identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The known occurrences of this species are more than 12 miles west and southwest of the Hemet airtanker base, more than 18 miles west of Ramona airtanker base, and more than 18 miles southwest and south of the San Bernardino airtanker base (Calflora 2022). The jettison areas are in the hills northeast of their respective airports, and are therefore not near any known occurrences. The Hemet jettison area is at 3640 feet in elevation. The Ramona jettison area is at 1670 feet in elevation. Both areas are above the elevational range of the species and their use would have no effects on the species.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker bases, as described above. Surveys of the bases were not completed for this project; therefore, there is a small probability that they may occur in the vicinity of the airtanker bases. Base operations **may affect, but are not likely to adversely affect, San Diego ambrosia.**

Critical habitat was established on 30 November 2010 (75 FR 74546). It does not include airtanker bases or jettison areas (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

San Jacinto Valley crownscale – *Atriplex coronate* var. *notatior*

San Jacinto Valley crownscale was listed as endangered on 13 October 1998 (63 FR 54975). Critical habitat has not been designated. Habitat for San Jacinto Valley crownscale consists of seasonal wetlands such as floodplains and vernal pools. It prefers areas with a dynamic hydrologic regime that includes both local and large-scale flooding events (NatureServe 2022).

This species is known from 15 to 16 occurrences in Riverside County, California. Occurrences are primarily associated with the San Jacinto River and Old Salt Creek tributary drainages at elevations between 1310 and 1640 feet (Zacharias 2013). Approximately eight occurrences are believed to have excellent or good viability. Three occurrences are on State land in the San Jacinto Wildlife Area, one occurrence is partially on County lands, and one occurrence on a private preserve managed by the Metropolitan Water District. There are no known occurrences on federal lands (NatureServe 2022). Hemet airtanker base and Hemet jettison area are identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The jettison area is in the hills northeast the airport, south of the San Jacinto Wildlife Area at 3640 feet in elevation. This is above the elevational range of the San Jacinto Valley crownscale and its use would have no effect on the species.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base, but surveys of the base were not completed for this project. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base and base operations **may affect, but are not likely to adversely affect, San Jacinto Valley crowscale.**

Sonoma sunshine – *Blennosperma bakeri*

Sonoma sunshine was listed as endangered on 2 December 1991 (56 FR 61173). Critical habitat has not been designated. Habitat for Sonoma sunshine consists of vernal pools in Valley Grassland (NatureServe 2022) at 65 to 130 feet in elevation (Baldwin 2012).

This species is known from 15 occurrences, six of which may be extirpated. The species is known only from Laguna de Santa Rosa and the Sonoma area in Sonoma County (NatureServe 2022). The major threats to the species are urbanization, grazing and agriculture. Exotic species are identified as another threat (NatureServe 2022). Sonoma airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed for this project. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Sonoma sunshine.**

White sedge – *Carex albida*

White sedge was listed as endangered on 22 October 1997 (62 FR 54791). Critical habitat has not been designated. This species is found in marshes and sphagnum bogs.

The only extant population of this species occurs on a 3.9 square mile area in Sonoma County, California. This population is threatened by a proposed wastewater treatment facility. Competition with other plants is also a threat. Sonoma airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Known occurrences are 2 ½ miles west of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed for this project. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, white sedge.**

Hoover's spurge – *Chamaesyce hooveri*

Hoover's spurge was listed as threatened on 26 March 1997 (62 FR 14338). Critical habitat was designated 10 February 2006, but does not occur within any airtanker bases or jettison areas. Hoover's spurge prefers large, deep vernal pools along the eastern edge of California's Central Valley where it grows on the dried mudflats in the deepest portions of the vernal pool (NatureServe 2022).

There are 24 extant populations of Hoover's spurge. The species is threatened by grazing, altered hydrology, non-native plants and agriculture. Chico airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation,

accessed June 2022). Known occurrences are 3 ½ miles northwest of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed for this project. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Hoover's spurge.**

Sonoma spineflower – *Chorizanthe valida*

Sonoma spineflower was listed as endangered on 22 June 1992 (57 FR 27848). Critical habitat has not been designated. This species is found on sandy soils of the coast-prairie grassland, specifically Sirdak sand which is a rare substrate of north facing dunes with 2 to 5 percent slope (NatureServe 2022).

The only wild population of Sonoma spineflower is within the Point Reyes National Seashore; historical collections were recorded from Sonoma County. The species is threatened by habitat degradation and loss, primarily due to agricultural land uses, invasive species, and climate change (NatureServe 2022). Sonoma airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Historic occurrences were south of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed for this project. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Sonoma spineflower.**

La Graciosa thistle – *Cirsium loncholepsis*

La Graciosa thistle was included in the 2021 Biological Assessment (refer to Appendix F of the 2021 Biological Assessment); however, because it is only suspected on the Los Padres National Forest it was determined that aerially delivered retardant would have no effect to the species. This species is a perennial herb in the sunflower family. It generally grows in association with mesic areas on the margins of dune swales, dune lakes, marshes, estuaries, coastal meadows, seeps, springs, intermittent streams, creeks, and rivers (74 FR 56978). Santa Maria airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The closest known occurrences are over 6 miles from the airtanker base (Calflora 2022).

Measures in place at airtanker bases to contain retardant spills and wash-down water limit the probability of retardant entering the species' habitat. Santa Maria airtanker base has a jettison area within the airport perimeter. There is potential for retardant from jettisoned loads to drift into or otherwise enter habitat. Because of this possibility, base operations, including use of the jettison area **may affect, but are not likely to adversely affect, La Graciosa thistle.** This determination replaces the determination in the 2021 Biological Assessment.

Revised critical habitat was designated 3 November 2009 (74 FR 56978). The Santa Maria airtanker base is within critical habitat. Primary constituent elements are:

- Mesic areas associated with: (a) margins of dune swales, dune lakes, marshes, and estuaries that are associated with changing dune systems including the Santa Maria Valley Dune Complex and Santa Ynez Valley Dune Complex; (b) margins of dynamic riparian systems including the Santa Maria and

Santa Ynez Rivers and Orcutt and San Antonio Creeks; and (c) freshwater seeps and intermittent streams found in other habitats, including grassland, meadow, coastal scrub, chaparral, and oak woodland. These areas provide space needed for individual and population growth including sites for germination, reproduction, seed dispersal, seed bank, and pollination;

- Associated plant communities including: Central dune scrub, coastal dune, coastal scrub, freshwater seep, coastal and valley freshwater marsh and fen, riparian scrub (e.g., mule fat scrub, willow scrub), oak woodland, intermittent streams, and other wetland communities, generally in association with the following species: *Juncus* spp. (rush), *Scirpus* spp. (tule), *Salix* spp. (willow), *Toxicodendron diversilobum* (poison oak), *Distichlis spicata* (salt grass), *Baccharis pilularis* (coyote brush), and *B. douglasii* (Douglas' baccharis);
- Soils with a sandy component including but not limited to dune sands, Oceano sands, Camarillo sandy loams, riverwash, and sandy alluvial soils; and
- Features that allow dispersal and connectivity between populations, particularly: (a) Natural riparian drainages in Santa Maria River, Orcutt Creek, San Antonio Creek, and Santa Ynez River that are not channelized or confined by barriers or dams, such that they have soft bottoms and sides and a natural flood plain (allowing uninterrupted water flows); and (b) Natural aeolian geomorphology in the Santa Maria Dune Complex and Santa Ynez Dune Complex, and along the Santa Maria River, Orcutt Creek, San Antonio Creek, and Santa Ynez River drainages that is not confined by barriers or wind-blocks such as large manmade structures, tree rows, or windbreaks (allowing uninterrupted winds across these areas).

Orcutt Creek is within ¼ mile of the southwest corner of the airport and the jettison area on the airport grounds is over 1 mile from Orcutt Creek. Retardant is not expected to enter the critical habitat. Airtanker base operations, including use of the jettison area on the base, will not result in changes to the primary constituent elements, therefore there would be **no effect to La Graciosa thistle critical habitat**.

Pennell's bird's-beak – *Cordylanthus tenuis ssp. capillaris*

Pennell's bird's-beak was listed as endangered on 3 February 1995 (60 FR 6671). Critical habitat has not been designated for this species. This species is found in chaparral communities on serpentine substrates at elevations around 650 feet.

Pennell's bird's-beak is found in Sonoma County California on the Harrison Grade Ecological Reserve and at a nearby privately-owned area. Threats to the species are from garbage dumping, recreational uses, and vehicular traffic (NatureServe 2022). Sonoma jettison area is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Known occurrences are more than 3 miles south and southwest of the jettison area (Calflora 2022). The jettison area occurs at 1180 feet in elevation, which is above the elevational range at which this species occurs.

The jettison area is above the elevational range of the species, and several miles from known occurrences. Surveys of the jettison area were not completed for this project. Therefore, there is a small probability that this plant may occur in the vicinity of the jettison area. Use of the jettison area **may affect, but is not likely to adversely affect, Pennell's bird's beak**.

Yellow larkspur – *Delphinium luteum*

Yellow larkspur was listed as endangered on 26 January 2000 (65 FR 4156). Critical habitat was designated 18 March 2003 (68 FR 12834); critical habitat does not occur within the any airtanker bases or jettison areas.

The species occurs in rocky places within coastal scrub and coastal prairie communities on steep slopes with no overstory (NatureServe 2022).

Yellow larkspur is known only from coastal Sonoma and Marin counties in California where it occurs in three drainages. Identified threats include development, over collection, road widening, sheep grazing, and fire suppression (NatureServe 2022). Sonoma airtanker base is identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Historic occurrences were south of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base, and the airtanker base does not contain the steep slopes where the species would occur. Because habitat does not occur on the airtanker base or within the 1 ½ mile buffer of the base, there would be **no effect to yellow larkspur** due to base operations.

Lompoc yerba santa – *Eriodictyon capitatum*

Lompoc yerba santa was listed as endangered on 20 March 2000 (65 FR 14888). Critical habitat was designated on 7 November 2002 but does not include any airtanker bases or jettison areas (67 FR 67968). There are two distinct habitat types for Lompoc yerba santa. It is found on sandstone soils in chaparral and coastal sage scrub communities, and on diatomaceous Monterey shales with an overstory of Bishop pine (NatureServe 2022).

Lompoc yerba santa is known from 7 occurrences in Santa Barbara County, California. Several occurrences are on Vandenburg Air Force Base, with the remaining sites found on Hollister Ranch and on Graciosa Ridge in the Solomon Hills. The species is primarily threatened by habitat loss (NatureServe 2022). Santa Maria airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Known occurrences are 2 ½ miles southeast of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed for this project. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Lompoc yerba santa.**

San Diego button-celery – *Eryngium aristulatum* var. *parishii*

San Diego button celery was listed as endangered on 3 August 1993 (58 FR 41384). Critical habitat has not been designated. This is a biennial or perennial species found in vernal pools (NatureServe 2022).

San Diego button-celery is found from the Santa Rosa Plateau in Riverside and San Diego counties in California south into Baja California, Mexico. The greatest threat to the species is loss of vernal pool habitat, followed by dumping, trampling, runoff, vehicle traffic and nonnative species (NatureServe 2022). Ramona airtanker base and Ramona jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The known occurrences are primarily west and southwest of the airtanker base and jettison area, although there is one record from 2019 somewhere in the topographic map quadrangle that includes the airtanker base and jettison area (Calflora 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The jettison area on Orosco Ridge, does not appear to have vernal pool habitat, but surveys have not been conducted at the site. Therefore, there is a small probability that they may occur within the jettison area. Airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, San Diego button-celery.**

Pine Hill flannelbush – *Fremontodendron californicum ssp. decumbens*

Pine Hill flannelbush was listed as endangered on 18 October 1996 (61 FR 7597). Critical habitat has not been designated. This perennial, evergreen species occurs on the tops of rocky ridges and on scattered rock outcrops of gabbro in chaparral communities, or in the ecotone between chaparral and woodland. This species relies on fire to scarify seed coats for germination and to clear the area for seedlings (NatureServe 2022).

Pine Hill flannelbush is known only from the El Dorado Hills area in California and from Yuba and Nevada counties. Much of Pine Hill where the species occurs is an ecological reserve managed by the California Department of Fish and Game. One occurrence is found on Bureau of Land Management lands. The primary threats to the species are development and fire suppression (NatureServe 2022). Grass Valley airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). There are known occurrences within 1 ½ miles of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

The airtanker base is not on a rocky ridge, and does not contain rocky outcrops that are characteristic of this species' habitat, but surveys have not been done to confirm whether habitat occurs on the airtanker base. Because this species relies on fire to scarify seeds and clear areas for seedling establishment, retardant in its habitat could impair its ability to reproduce. Retardant is not expected to enter the species habitat due to measures in place at airtanker bases to contain retardant spills and wash-down water. However, if any retardant entered suitable habitat there could be effects. Base operations **may affect, but are not likely to adversely affect, Pine Hill flannelbush.**

Pecos sunflower – *Helianthus paradoxus*

Pecos sunflower was listed as threatened on 20 October 199 (64 FR 56583). Critical habitat was designated on 1 April 2008 (73 FR 17762), but does not include any airtanker bases or jettison areas. This species requires permanent wetlands, including springs, seeps, stream edges and pond margins. It grows in saturated, saline soils within deserts (NatureServe 2022).

Pecos sunflower is found at widely separated locations in central and southern New Mexico and in nearby Trans-Pecos Texas. In New Mexico, there are five populations with multiple known sites: two near the town of Grants, one on the Laguna Indian Reservation, eight in or near the town of Santa Rosa, and eleven in the Pecos River Valley from just north of Roswell to just north of Dexter. There are two populations in Texas known from three sites: two along Diamond Y Creek north of Fort Stockton and one at East Sandia Springs Preserves. Threats to this species include ground water depletion, competition with non-native plants, hybridization with common sunflower, grazing, wildfire, and development (NatureServe 2022). Roswell airtanker base and Roswell jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The known occurrences of Pecos sunflower are primarily west and southwest of the airtanker base and jettison area, although there is one record from 2019 somewhere in the topographic map quadrangle that includes the airtanker base and jettison area (Calflora 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, the effects due to airtanker base operations would be discountable. The Roswell jettison area is more than ¼ mile from any waterways, and is used only intermittently. Therefore, airtanker base operations, including use of jettison areas **may affect, but are not likely to adversely affect, Pecos sunflower.**

Burke's goldfields – *Lasthenia burkei*

Burke's goldfields was listed as endangered on 2 December 1991 (56 FR 61173). Critical habitat has not been designated. This species is found in wet meadows and vernal pools (NatureServe 2022).

Burke's goldfields is found in Lake, Mendocino, and Sonoma counties in California. Threats to this species include development, agriculture, weeds, altered hydrology, off-road vehicles and grazing (NatureServe 2022). Sonoma airtanker base, Ukiah airtanker base, and Ukiah jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker bases or jettison area, however surveys were not conducted in those areas. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Airtanker base operations, including use of jettison areas, **may affect, but are not likely to adversely affect, Burke's goldfields.**

Contra Costa goldfields – *Lasthenia conjugens*

Contra Costa goldfields was listed as endangered on 18 June 1997 (62 FR 33029). Critical habitat was designated on 10 February 2006 (71 FR 7118), but does not include airtanker bases and jettison areas. Habitat is vernal pools in open grassy areas at elevations up to 1,500 feet.

Contra Costa goldfields is known from 13 populations in 4 counties in Northern California. This species' habitat is threatened by land development, introduced invasive plants, recreational uses, road construction and widening, and the resulting habitat fragmentation. Climate change, especially severe drought, is also a threat. (NatureServe 2022). Ukiah airtanker base and Ukiah jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The closest occurrence of Contra Costa goldfields is 12 miles southwest from the town of Ukiah on the other side of the coastal mountains (Calflora 2022). The jettison area is at 3200 feet elevation, which is above the elevational range of this species.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species' habitat. The species is not known to occur on the airtanker base; however, surveys were not conducted in those areas. Therefore, there is a small probability that they may occur in the vicinity of the airtanker base. Airtanker base operations, including use of jettison areas **may affect, but are not likely to adversely affect, Contra Costa goldfields.**

Pitkin Marsh lily – *Lilium pardalinum ssp. pitkinense*

Pitkin Marsh lily was listed as endangered on 22 October 1997 (62 FR 54791). Critical habitat has not been designated. Habitat is permanently moist to wet, sandy soils in freshwater marshes at elevations from 115 to 400 feet elevation.

Pitkin Marsh lily is known from two occurrences near Sebastapol in Sonoma County, California. The greatest threats to this species are development and changes in the habitat's hydrology. Other potential threats include nonnative plants, hybridization, wildfire, severe drought and climate change (NatureServe 2022). Sonoma airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Known

occurrences of this species are south of the airtanker base, approximately 2 ½ miles from the base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species' habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed and there is a small probability that the species may occur in the vicinity of the airtanker base. Airtanker base operations **may affect, but are not likely to adversely affect, Pitkin Marsh lily.**

Butte County meadowfoam – *Limnanthes floccosa ssp. californica*

Butte County Meadowfoam was listed as endangered on 8 June 1992 (57 FR 24192). This species occurs in valley and foothill grasslands on wet soils from 115 to 3825 feet in elevation. It grows in ephemeral drainages, vernal pool depressions in ephemeral drainages, and occasionally around the edges of isolated vernal pools.

Butte County meadowfoam is an annual herb known from 21 occurrences in Butte County California. Many of the occurrences are on private land and are threatened by urbanization. Other threats include agricultural land conversion, road construction, grazing, non-native plants, and vehicle activity (NatureServe 2022). Chico airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Known occurrences are just east of the airtanker base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed and there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Butte County meadowfoam.**

Critical habitat was designated on 10 February 2006 (71 FR 7118). The Chico airport is adjacent to Unit 2 of Critical habitat (4059 acres of local/private land). The primary constituent elements of critical habitat for Butte County meadowfoam are the habitat components that provide:

- i. Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools described in paragraph (ii), providing for dispersal and promoting hydroperiods of adequate length in the pools; and
- ii. Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species and typically exclude both native and nonnative upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.

Airtanker base operations will not alter the topographic features, depressional features, or water flow within critical habitat unit 2, therefore there would be **no effect to Butte County meadowfoam critical habitat.**

Large-flowered wooly meadowfoam – *Limnanthes pumila ssp. grandiflora*

Large-flowered wooly meadowfoam was listed as endangered on 7 November 2002 (67 FR 680004). This species grows in valley bottom river terrace vernal pools at elevations of 1230 to 1312 feet, on gravelly flat areas along the vernal pool margins.

Large-flowered wooly meadowfoam is endemic to a forty square mile area of the Rogue River Valley in southern Oregon where it is known from sixteen occurrences. Two occurrences are on preserves owned and managed for conservation values by The Nature Conservancy. The species is threatened by industrial and residential development; other threats include maintenance of roads and utilities, agricultural conversion, firebreak construction, hydrologic alteration, competition with non-native grasses, livestock grazing, off-road vehicle use, and catastrophic events such as fire (NatureServe 2022). Medford airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed and there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, large-flowered wooly meadowfoam.**

Critical habitat was designated on 21 July 2010 (75 FR 42490), but does not include any airtanker bases or jettison areas.

Sebastopol meadowfoam – *Limnanthes vinculans*

Sebastopol meadowfoam was listed as endangered on 2 December 1991 (56 FR 61173). Critical habitat has not been designated. The species grows in vernal or permanently wet meadows subjected to periodic inundation by heavy rains.

Sebastopol meadowfoam is endemic to the Cotati Valley in Sonoma County, California. There are 32 extant occurrences. The greatest threat to the species is conversion of the vernal pool habitat to urban development or agriculture. Further threats include mowing, livestock grazing, off-road vehicles, recreation, trash dumping and non-native plants (NatureServe 2022). Sonoma airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). Known occurrences of Sebastopol meadowfoam are within 1 mile from the base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed and there is a small probability that they may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Sebastopol meadowfoam.**

Cook's lomatium – *Lomatium cookii*

Cook's lomatium was included in the 2021 Biological Assessment (refer to Appendix F of the 2021 Biological Assessment); however, because it is only suspected on the Rogue River-Siskiyou National Forest it was determined that aerially delivered retardant would have no effect to the species. This species is a perennial forb in the carrot family, and is known from two populations in Oregon. In the Agate Desert area in the Rogue River Valley, it grows along the margins of vernal pools, or the tops of mounds in mound-vernal pool habitat. The pools have stony bottoms or shallow layers of clay and hold water from approximately December through March, or later. In the Illinois Valley it occurs on seasonally moist alluvial floodplains

(NatureServe 2022). Medford airtanker base, which is located at the Medford airport, is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022); the species is known to occur on the Medford airport (75 FR 42490). This species' range does not overlap with any identified off-site jettison areas.

Measures in place at airtanker bases to contain retardant spills and wash-down water limit the probability of retardant entering the species' habitat. Because the species is known to occur at the airport, base operations **may affect, but are not likely to adversely affect, Cook's lomatium**. This determination replaces the determination in the 2021 Biological Assessment.

Critical habitat was designated 21 July 2010 (75 FR 42490). Eighty-three acres of the Medford airport is critical habitat unit RV9A-E. Primary constituent elements in the Rogue River Valley are:

- Vernal pools and ephemeral wetlands and depths and the adjacent upland margins of these depressions that hold water for a sufficient length of time to sustain *Lomatium cookii* germination, growth, and reproduction. These vernal pools or ephemeral wetlands support native plant populations and are seasonally inundated during wet years but do not necessarily fill with water every year due to natural variability in rainfall. Areas of sufficient size and quality are likely to have the following characteristics:
 - Elevations from 1,220 to 1,350 feet;
 - Associated dominant native plants including, but not limited to: *Alopecurus saccatus*, *Achnatherum lemmonii*, *Deschampsia danthonioides*, *Eryngium petiolatum*, *Lasthenia californica*, *Myosurus minimus*, *Navarretia leucocephala* ssp. *leucocephala*, *Phlox gracilis*, *Plagiobothrys bracteatus*, *Trifolium depauperatum*, and *Triteleia hyacinthina*; and
 - A minimum area of 20 acres to provide intact hydrology and protection from development and weed sources.
- The hydrologically and ecologically functional system of interconnected pools or ephemeral wetlands or depressions within a matrix of surrounding uplands that together form vernal pool complexes within the greater watershed. The associated features may include the pool basin and ephemeral wetlands; an intact hardpan subsoil underlying the surface soils up to 2.5 feet in depth; and surrounding uplands, including mound topography and other geographic and edaphic features that support systems of hydrologically interconnected pools and other ephemeral wetlands (which may vary in extent depending on site-specific characteristics of pool size and depth, soil type, and hardpan depth).
- Silt, loam, and clay soils that are of ultramafic and non-ultramafic alluvial origin, with a 0 to 3 percent slope, classified as Agate–Winlo or Provig–Agate soils.
- No or negligible presence of competitive, nonnative invasive plant species. Negligible is defined for the purpose of this rulemaking as a minimal level of nonnative plant species that will still allow *Lomatium cookii* to continue to survive and recover.

Vernal pools on the airport are within critical habitat. Retardant is not expected to enter the critical habitat, but there is a limited probability that it could. Because retardant can result in increases in any nonnative invasive species, airtanker base operations **may affect, but are not likely to adversely affect, Cook's lomatium critical habitat**.

Willow monardella – *Monardella viminea*

Willow monardella was listed as endangered on 13 October 1998 (63 FR 54938). The species is found on the sandy beach of coastal rocky drainages just outside of the streambed.

Willow monardella is found in San Diego County, California. As of 2012, there were eight extant occurrences (NatureServe 2022). This species is threatened by urbanization, hydrologic alternations, road improvements, vehicles, and non-native plants (CNPS Rare Plant Inventory 2022). Ramona airtanker base and Ramona jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The known occurrences of willow monardella are approximately 9 miles southwest of the airtanker base, and 12 miles from the jettison area (Calflora 2022).

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The jettison area is on Orosco Ridge, which is approximately 0.4 miles (over 2000 feet) from the nearest waterway. No effects are anticipated from use of the jettison area because of its distant to potential habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed and there is a small probability that they may occur in the vicinity of the airtanker base. Airtanker base operations **may affect, but are not likely to adversely affect, willow monardella.**

Critical habitat was designated on 6 March 2012 (77 FR 13394), but does not include any airtanker bases or jettison areas.

Spreading navarretia – *Navarretia fossalis*

Spreading navarretia was listed as threatened on 13 October 1998 (63 FR 54975). Habitat for this species is vernal pools, alkali playas, and alkali sinks. It can also be found in human made depressions, such as ditches, that mimic vernal pools (NatureServe 2022). This species is found from 300 to 4700 feet elevation (Calflora 2022).

The species occurs in southern California and adjacent northwestern Baja California in Mexico. There are less than 20 extant occurrences in California, clustered at three general locations. Threats to the species' habitat include agricultural or urban development, alteration of hydrology and floodplain dynamics, competition from non-native plants, road and pipeline construction, off-road vehicles, trampling by livestock, and weed abatement and fire suppression practices (NatureServe 2022). Hemet airtanker base, Ramona airtanker base, Paso Robles airtanker base, Hemet jettison area, and Ramona jettison area are all identified as being within this species range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). There are known occurrences directly southwest of the Hemet-Ryan airport, within 0.4 miles south of Ramona airtanker base, and 2 ½ miles southeast of the Paso Robles airtanker base (Calflora 2022). The jettison areas are in the hills northeast of their respective airports. The Hemet jettison area is at 3640 feet in elevation and the Ramona jettison area is at 1670 feet in elevation.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker bases and the jettison areas are on ridges where vernal pool habitat is unlikely to occur. Surveys were not completed for those areas and there is a small probability that the species may occur in their vicinity. Base operation, including the use of jettison areas, **may affect, but are not likely to adversely affect, spreading navarretia.**

Critical habitat was designated on 7 October 2010 (75 FR 62192), but does not include any airtanker bases or jettison areas.

Many-flowered navarretia – *Navarretia leucocephala* ssp. *plieantha*

Many-flowered navarretia was listed as endangered on 18 June 1997 (62 FR 33029). Critical habitat has not been designated. This species grows on the margins of vernal pools and lakes with a volcanic ash substrate, and wet ground in forest openings.

Many-flowered navarretia is known from five extant populations in two counties in California. Threats include urbanization, hydrologic changes, and timber harvest (NatureServe 2022). Sonoma airtanker base is identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). There are known occurrences within 1 mile from the base (Calflora 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed. Therefore, there is a small probability that this species may occur in the vicinity of the airtanker base. Airtanker base operations **may affect, but are not likely to adversely affect, many-flowered navarretia.**

Knowlton's cactus – *Pediocactus knowltonii*

Knowlton's cactus was listed as endangered on 29 October 1979 (44 FR 62244). Critical habitat has not been designated. Habitat for this species is found under the shade of trees and shrubs and in open areas in dry pinyon-juniper woodlands at 5900 to 6700 feet in elevation. It occurs on tertiary alluvial deposits that have formed gravelly, dark, sandy loams on slopes or hills.

Knowlton's cactus is known from one site in San Juan County in northwestern New Mexico. Most of the population occurs on a preserve owned by The Nature Conservancy, with a few individuals occurring on adjacent land managed by the Bureau of Land Management. This species is threatened by collecting, oil and gas exploration and development, livestock grazing, off-road vehicles, and destruction of habitat (NatureServe 2022). Durango airtanker base is identified as being within this species' range, at the northernmost extent (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). This species' range does not overlap with any identified off-site jettison areas.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker base; however, surveys of the base were not completed. Therefore, there is a small probability that this species may occur in the vicinity of the airtanker base. Base operations **may affect, but are not likely to adversely affect, Knowlton's cactus.**

Showy Indian clover- *Trifolium amoenum*

Showy Indian clover was listed as endangered on 22 October 1997 (62 FR 54791). No critical habitat has been designated. The species is typically found in low, wet swales in grasslands and on grassy hillsides up to about 1300 feet in elevation

Showy Indian clover has one native extant population in Marin County, California. This population is on private land where threats include development, grazing by gophers, potential erosion and trampling, and non-native plants (NatureServe 2022). Sonoma airtanker base, Ukiah airtanker base, and Ukiah jettison area are identified as being within this species' range (United States Department of Interior Fish and Wildlife Service Information for Planning and Consultation, accessed June 2022). The jettison area is at 3200 feet in elevation, which is above the elevational range of the species.

Because of the measures in place at airtanker bases to contain retardant spills and wash-down water, retardant is not expected to enter the species habitat. The species is not known to occur on the airtanker bases; however, surveys of the base were not completed. Therefore, there is a small probability that this species may occur in the vicinity of the airtanker base. Airtanker base operations **may affect, but are not likely to adversely affect, showy Indian clover.**

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Appendix H: Permanent Airtanker Base information

This table includes basic information for each airtanker base, including the jettison area location, the type of airtankers the base can service, the retardant type and amount used, and the available information on wash down water treatment and frequency of jettison area use.

Base Name	Base ID	Airport Elevation (Feet)	Jettison Latitude (DDD° MM.MMMM' N)	Jettison Longitude (DDD° MM.MMMM' W)	Jettison Note	Host Agency	Airport Name	Airport Latitude (DDD° MM.MMMM' N)	Airport Longitude (DDD° MM.MMMM' W)	Base City	Base State	SEAT Capable	LAT Capable	VLAT Capable	MAFFS Capable	Retardant Type	Open Season	2012 to 2021 yearly average retardant use	low retardant use in one year	high retardant use in one year	Frequency retardant use (# years used out of 10)	Liquid or dry concentrate	wash down water treatment	Jettison Area Use (through 2021)
Abilene	ABI	1791	032 25.0460	99 41.1390	West side Runway 17R	State - Texas Forest Service	Abilene Regional Airport	032 24.7300	099 40.0920	Abilene	TX	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	As Needed	74,519	0	484,833	0.2			
Alamogordo	ALM	4200	032 49.5300	105 50.4500		USFS	White Sands Regional Airport	032 50.2700	105 59.7700	Alamogordo	NM	Yes	Yes	No	No	Phos-Chek MVP-Fx		121,866	4,104	411,328	1.0	dry	none	not used recently
Albuquerque	ABQ	5355	034 58.0300	106 26.0700		USFS	Albuquerque International Sunport Airport	035 02.8700	106 36.4500	Albuquerque	NM	Yes	Yes	Yes	Yes	Phos-Chek MVP-Fx		194,662	0	458,906	0.9	dry	sand/oil separator to containment tank	used 3 times in the last 5 years
Amarillo	AMA	3607	035 17.1230	101 48.6640	Bearing 296 Magnetic 6.8 miles from AMA	State - Texas A&M Forest Service	Rick Husband Amarillo International Airport	035 13.1600	101 42.3500	Amarillo	TX	Yes	Yes	No	No		As Needed	36,943	0	308,865	0.2			
Battle Mountain	BAM	4532	040 36.3000	116 46.6000		BLM	Lander County Airport	040 35.9400	116 52.4600	Battle Mountain	NV	Yes	Yes	No	Yes	Phos-Chek LC-95A-R		382,176	31,063	1,255,851	1.0			
Bemidji	BJI	1390	047 22.3500	095 07.4700		State - Minnesota DNR	Bemidji Regional Airport	047 30.1700	094 55.7000	Bemidji	MN	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	April - June	23,480	0	158,576	0.7			
Billings	BIL	3652	046 09.2300	108 08.4100	29 nautical miles 44 degrees off of Billings VOR	BLM - Eastern Montana Dakotas District	Billings Logan International Airport	045 48.3800	108 31.3500	Billings	MT	Yes	Yes	No	Yes	Phos-Chek LC-95A-R	June 1 through September 15	578,354	57,480	1,525,588	1.0			
Boise	BOI	2871	043 26.0600	116 06.5400	3,000' Drop height, avoid livestock, vehicles, radio towers	USFS (hosting BLM)	Boise Air Terminal / Gowen Field	043 33.9300	116 12.8700	Boise	ID	Yes	Yes	No	Yes	Phos-Chek MVP-Fx	June - September	904,307	291,130	1,558,806	1.0	dry	5,000 gallon underground storage tank	
Brainerd	BRD	1232	046 37.2700	094 02.5100		State - Minnesota DNR	Brainerd Lakes Regional Airport	046 23.8300	094 07.8500	Brainerd	MN	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	April-June	16,629	0	147,643	0.3			
Burns	BNO	4158	043 41.1800	119 02.3200	Powerlines 1 mile south of JA. JA 7.8 miles NW of BNO	BLM	Burns Municipal Airport	43 35.5200	118 57.3300	Burns	OR	Yes	No	No	No	Phos-Chek LC-95A-R		184,043	76,291	455,826	1.0			
Canon City	IV6	5439	038 25.8200	105 06.2200		BLM	Canon City / Fremont County Airport	038 25.8200	105 06.2200	Canon City	CO	Yes	No	No	No		May - August	35,020	0	157,732	0.5			
Casper SEAT	CPR	5350	43 00.8830	106 27.9000	North of airport flat open sagebrush; 2 mile NE of railroad tracks	BLM	Casper / Natrona County Int'l Airport	042 54.1200	106 24.6000	Casper	WY	Yes	Yes	Yes	No	Phos-Chek LC-95A-Fx	As needed	82,927	0	163,103	0.7			
Cedar City	CDC	5622	037 46.3700	113 22.2300		BLM	Cedar City Regional Airport	037 42.4700	113 05.3500	Cedar City	UT	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx		599,140	249,397	926,150	1.0			
Chattanooga	CHA	683			Strawberry Mountain (34 35.84' N, 85 10.46' W); Starr Mountain (35 17.31' N, 84 28.28' W); Presswood Mountain (35 10.04' N, 84 33.90' W); Sylco Ridge (35 02.19' N, 84 36.21' W)	USFS	Chattanooga Metropolitan Airport	035 02.2200	085 12.3100	Chattanooga	TN	Yes	Yes	No	No	Phos-Chek MVP-Fx		62,409	0	506,307	0.4	dry	sand/oil separator to containment tank	not in last 10 years
Chester	O05	4528	040 12.4	121 11.3	From O05, 134 for 6 nm, Prativille Plantation	USFS	Rogers Field Airport	040 17.3500	121 14.5900	Chester	CA	Yes	Yes	No	No	Phos-Chek MVP-Fx		207,300	37,126	464,659	1.0	dry	sand/oil separator to containment tank	light use
Chico	CIC	240			Contact base on airtanker base frequency for jettison area locations and drop instructions. Bald Mountain (38 57.64' N, 121 28.37' W); smoke (40 03.93' N, 121 37.72' W)	State	Chico Municipal Airport	039 48.1600	121 51.4900	Chico	CA	Yes	Yes	No	Yes	Phos-Chek MVP-Fx		586,314	46,928					
Coeur d'Alene	COE	2320	047 50.2500	116 37.2500	47 47.87' N, 116 34.99' W	USFS	Pappy Boyington Field	047 46.5500	116 48.5200	Coeur d'Alene	ID	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	As needed	514,752	41,371					
Columbia	O22	2118	038 05.60	120 23.50	American Camp Lookout	State CAL Fire	Columbia Airport	038 02.1700	120 24.6300	Columbia	CA	Yes	No	No	No	Phos-Chek MVP-Fx		466,288	348,510					
Craig	CAG	6393	40 47.4700	107 59.2800	Secondary: Chief Fire Scar (14nm. SW of craig) at 40 23.04 x 17.47.59	BLM	Craig / Moffat County	040 29.5800	107 31.3200	Craig	CO	Yes	No	No	No			64,536	0					

Dallesport	DLS	247	045 37.1800	121 09.9600	Runway triangle Area	State - Washington State DNR	Columbia Gorge Regional/ The Dalles	045 37.1000	121 10.1100	Dallesport	WA	Yes	No	No	No		unknown	unknown	unknown	unknown			
Deer Park SEAT	DEW	2211	047 57.6900	117 25.1000	Water and Gel can also be jettisoned in grass between runway 16/34 and taxiway	State - Washington State DNR	Deer Park Airbase	047 58.0200	117 25.8300	Deer Park	WA	Yes	No	No	No		unknown	unknown	unknown	unknown			
Delta Junction	BIG	1277	063 52.0000	145 22.0000	Try to drop south of the ag fields	State - Alaska Division of Forestry	Fort Greely / Allen Army Airfield	063 59.3200	145 43.3000	Delta Junction	AK	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx	31,872	0	92,187	0.6			occasional
Durango	DRO	6685	037 09.4700	107 44.5000		USFS	Durango / La Plata County Airport	037 09.7800	107 44.8200	Durango	CO	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx	153,842	32,500	488,754	1.0	LC	sand/oil separator to containment tank	
Ely	ELO	1456	047 47.2200	091 37.2000	August Lake	USFS	Ely Municipal	047 49.6700	091 49.9800	Ely	MN	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	42,868	0	294,227	0.3			
Fillmore	U19	4988	000 00.0000	000 00.0000	Contact Base	BLM	Fillmore Municipal Airport	038 57.7300	112 21.2700	Fillmore	UT	Yes	No	No	No		61,864	0	330,607	0.7			
Fort Huachuca	FHU	4719	031 49.4100	110 25.3800	Contact Base Manager, also west end of runway or between runway and taxiway, and (31 38.77' N, 110 16.3' W)	USFS	Sierra Vista Municipal / Libby Army Airfield	31 35.9700	110 20.8800	Hereford	AZ	Yes	Yes	Yes	Yes	Phos-Chek MVP-Fx	454,818	25,071	1,291,745	1.0	dry	none	Used on airport jettison 1 time in last 10 years
Fort Wainwright	FBK	460	064 34.0000	147 20.0000	MOA	BLM	Ladd Army Airfield	064 50.2000	147 36.9700	Fort Wainwright (Fairbanks)	AK	No	Yes	No	Yes	Phos-Chek LC-95A-Fx	207,205	0	610,650	0.8			occasional
Fortuna (Rohnerville)	FOT	392			Jettison Area is parallel and south of runway on RW-29 approach. Contact base	State - CAL Fire	Rohnerville Airport	040 33.1200	124 07.5800	Fortuna	CA	Yes	Yes	No	No	Phos-Chek MVP-Fx	144,388	8,890	192,755	1.0			light use
Fox (Lancaster)	WJF	2351	034 44.3000	118 13.0000	Airport North and parallel to runway 118.525 256.9 0700-2100	USFS	Gen. William J Fox Airfield	034 44.2700	118 13.0700	Lancaster	CA	Yes	Yes	No	Yes	Phos-Chek MVP-Fx	473,814	2,400	974,790	1.0	dry	sand/oil separator to evaporation pond	moderate use
Fresno	FAT	336	037 00.0000	119 20.0700	Burrough Mountain 1000 AGL Drop Height	USFS	Fresno Yosemite International Airport	036 46.2700	119 42.0800	Fresno	CA	Yes	Yes	No	Yes	Phos-Chek MVP-Fx	740,757	75,911	1,724,628	1.0	dry	sand/oil separator to city sanitary sewer	moderate use
Gateway (Phoenix)	IWA	1382	033 29.3000	111 34.3000	Also (33 21.19' N, 110 40.04' W)	USFS	Phoenix-Mesa Gateway	033 18.4700	111 39.3300	Phoenix - Mesa Gateway	AZ	Yes	Yes	Yes	Yes	LCE20Fx	1,416,124	36,585	3,789,187	1.0	LC	sand/oil separator at airport	1 time a year on average, none in last 2 years
Grand Junction	GJT	4858	039 36.0000	107 42.0000		BLM	Grand Junction Regional Airport	039 07.7500	108 32.3100	Grand Junction	CO	Yes	Yes	No	Yes	Phos-Chek LC-95A-R	513,781	45,768	1,613,720	1.0			
Grangeville	GIC	3310	045 51.3800	116 10.6800		USFS	Idaho County Airport	045 56.4500	116 07.2000	Grangeville	ID	Yes	No	No	No		217,434	26,348	404,440	1.0	LC	ditch	
Grass Valley	GOO	3152	039 14.70	120 53.0	S2's only. Forest Service: "Buckeye", Cal Fire: "Purdon"	USFS/ State - CAL Fire	Nevada County Air Park	039 13.3800	121 00.0000	Grass Valley	CA	Yes	No	No	No	Phos-Chek MVP-Fx	355,780	146,000	500,199	1.0			moderate use
Greybull	GEY	3941	44 32.0700	108 05.1000	44 32.07 x 108 05.10 North of GEY 44 29.55 x 108 04.40 South of GEY	BLM	South Bighorn County Airport	044 30.5000	108 04.8400	Greybull	WY	Yes	No	No	No		10,449	1,500	66,540	0.3			
Hamilton SEAT	6S5	3642	000 00.0000	000 00.0000	Adjacent to airstrip- between airstrip and fence/ditch along East side of airstrip.	USFS	Ravalli County Airport	046 15.1200	114 07.5800	Hamilton	MT	Yes	No	No	No		12,607	0	95,942	0.5			
Helena	HLN	3877	046 47.0600	111 39.0600	3 different Jettison Areas contact ATBM for more info. Bear Trap burn area (46 47.00' N, 112 31.60' W); Sweats/Cabin Gulch (46 47.1' N, 111 45.50' W); Hedges burn area (46 44.5' N, 111 18.50' W); McDonald Pass area (46 39.00' N, 112 18.50' W)	USFS	Helena Regional Airport	046 36.5200	111 58.5700	Helena	MT	Yes	Yes	Yes	Yes	Phos-Chek LC-95A-Fx	539,275	19,484	1,610,336	1.0	LC	underground storage tank	Not used in 17 years
Hemet-Ryan	HMT	1512	033 50.27	116 52.42		State	Hemet (Ryan Field)	033 43.4900	117 01.1900	Hemet	CA	Yes	No	No	No	Phos-Chek MVP-Fx	473,337	142,615	850,500	1.0			light use

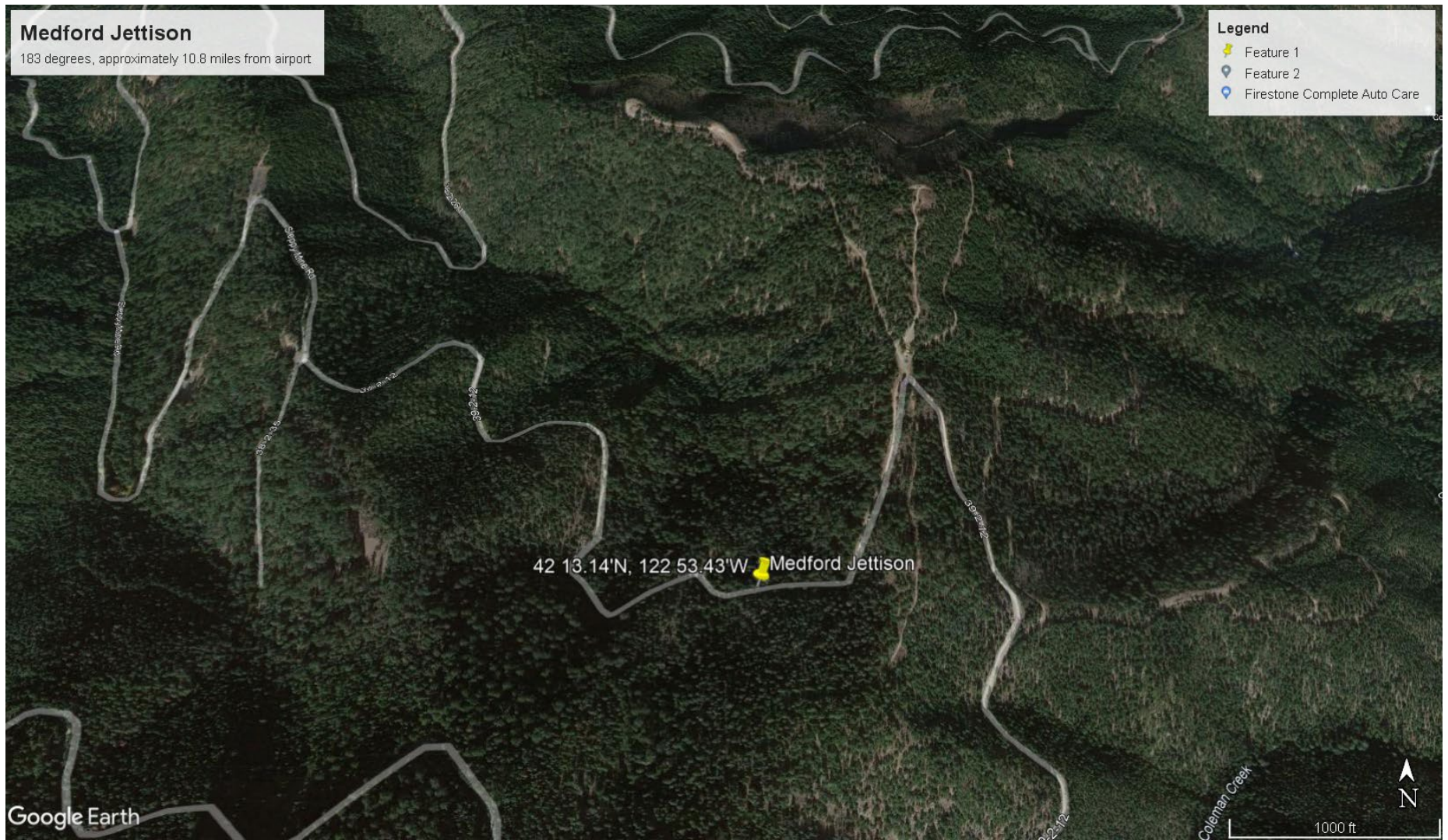
Hibbing	HIB	1354	047 13.5100	092 51.5700		State - Minnesota DNR	Chisolm / Hibbing Range Regional Airport	047 23.4800	092 50.0800	Hibbing	MN	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	Always	2,960	0	12,049	0.5			
Hill AFB	HIF	4789	41 17.56	112 24.63	Retardant Jettison areas: 40 51.02 x 112 29.54. Promontory Point (Private Property/ Land Use Agreement).	USFS	Hill Air Force Base	041 08.0500	111 58.4000	Ogden	UT	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx		392,634	62,242	1,231,864	1.0	LC	underground storage	
Hollister	CVH	230	36 58.58	121 24.09	off airport-Hills north of airport-Contact Base	State	Hollister Municipal Airport	036 53.2000	121 24.0700	Hollister	CA	Yes	No	No	No	Phos-Chek MVP-Fx		389,335	0	1,071,089	0.9			
Hot Springs	HRS	3148	043 22.1463	130 23.3188	East side parallel to main runway 1-19	State - South Dakota Wildland Fire	Hot Springs Municipal	043 22.0794	103 23.5707	Hot Springs	SD	Yes	No	No	No	Phos-Chek LC-95A-R	As Needed	2,602	0	26,015	0.1			
Jeffco	BJC	5673	040 11.9200	105 21.3500	Coffin Top Mountain 330 degrees @ 19nm off Jeffco VOR	USFS	Rocky Mountain Metropolitan Airport	039 54.8000	105 07.2300	Broomfield	CO	Yes	Yes	No	Yes	Phos-Chek LC-95A-R		439,207	13,037	1,776,587	1.0	LC	sand/oil separator to containment tank	since 2017 - used twice in 2021
John Day SEAT	GCD	3697	044 18.3500	119 06.5000		USFS	Grant County Regional / Ogilvie Field	044 24.4000	118 57.7000	John Day	OR	Yes	No	No	No	Phos-Chek LC-95A-Fx		130,060	35,435	327,547	1.0			
Kenai	ENA	99	60 42.10	151 11.70	CONTACT Soldotna Dispatch. Avoid riparian area, drop on hill	State - Alaska Division of Forestry	Kenai Municipal Airport	060 34.0800	151 14.6700	Soldotna	AK	Yes	Yes	No	No	Phos-Chek LC-95A-Fx		36,605	0	195,346	0.5			occasional
Klamath Falls	LMT	4095	042 35.00	121 31.00	Lone Pine burn scar 28nm @ 5 degrees from LMT. Large older reproducing burn scar north of the Sprague River slightly south of Calimis Butte	USFS	Klamath Falls Airport	042 10.2500	121 44.1500	Klamath Falls	OR	Yes	Yes	No	Yes	Phos-Chek LC-95A-R	June 1 - October 15	348,015	59,101	840,833	1.0	LC	sand/oil separator to city sanitary sewer	0-3 times a year
La Grande	LGD	2717	045 28.0000	118 13.0000	14 miles NW of La Grande Airport	USFS	La Grande / Union County Airport	045 17.4100	118 00.4200	La Grande	OR	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	June 1 - October 15	392,924	56,109	1,200,683	1.0	LC	sand/oil separator to evaporation pond	2-3 times per year
Lake City	LCQ	201	30 24.62	82 21.07	Contact Base	USFS	Lake City Municipal Airport	30 10.9233	82 34.6117	Lake City	FL	Yes	Yes	No	No	Phos-Chek MVP-Fx		102,835	0	932,527	0.4	dry	sand/oil separator to containment tank	not in last 10 years
Lakeview	LKV	4733	042 05.1000	120 37.0000		BLM	Lake County Airport	042 09.3500	120 24.5000	Lakeview	OR	Yes	No	No	No	Phos-Chek LC-95A-Fx		152,830	38,262	281,213	1.0			
Lewistown	LWT	4167	047 02.0000	109 28.0000		BLM	Lewistown Municipal	047 02.0000	109 27.3700	Lewistown	MT	Yes	No	No	No			39,984	0	297,611	0.3			
McCall	MYL	5024	044 49.43	115 57.20	granite rock features	USFS	McCall Municipal Airport	044 53.6000	116 06.2800	McCall	ID	Yes	Yes	No	No	Phos-Chek LC-95A-Fx		189,103	60,401	414,071	1.0	LC	10,000 gal underground storage	
McClellan	MCC	77	39 17.21	120 53.03	Scotts located by Grass Valley	State CAL Fire	McClellan Airfield	038 39.6300	121 23.5300	McClellan	CA	Yes	Yes	Yes	Yes	Phos-Chek MVP-Fx		3,446,353	1,053,329	7,750,603	1.0			
McGrath	MCG	343	063 08.0000	155 15.0000	Alone Mountain	State - Alaska Division of Forestry	McGrath Airport	062 56.7300	155 36.5200	McGrath	AK	Yes	Yes	No	No	Phos-Chek LC-95A-Fx		20,343	0	103,144	0.7			occasional
Medford	MFR	1335	042 13.08	122 53.25	Sleepy Mine (42 13.08' N, 122 53.25' W); Yellow Jacket Ridge (42 02.00' N, 122 56.50' W); Squaw Peak (42 03.70' N, 112 57.7' W). On Airport 42 22.21 x 122 52.29	USFS	Rogue Valley International	042 22.5800	122 52.7800	Medford	OR	Yes	Yes	Yes	Yes	Phos-Chek LC-95A-Fx	June 1 - October 15	781,552	163,991	1,591,101	1.0	dry	sand/oil separator to evaporation pond	0-2 times a year
Mesquite	67L	1975			Contact Base	BLM	Mesquite Airport	036 50.0800	114 03.4300	Mesquite	NV	Yes	No	No	No			69,619	0	310,045	0.5			
Miles City	MLS	2630	046 25.9800	105 53.3300	Contact Base (NW area of airport on north side of runway 12). Diagram in unit SEAT supplement	BLM	Frank Wiley Field Airport	046 25.5700	105 52.6200	Miles City	MT	Yes	No	No	No			118,779	0	412,300	0.9			
Minden-Tahoe	MEV	4722	039 04.3400	119 40.3400		State	Minden-Tahoe Airport	039 00.3500	119 45.1800	Minden-Tahoe	NV	Yes	No	No	No			7,095	0	70,950	0.1			

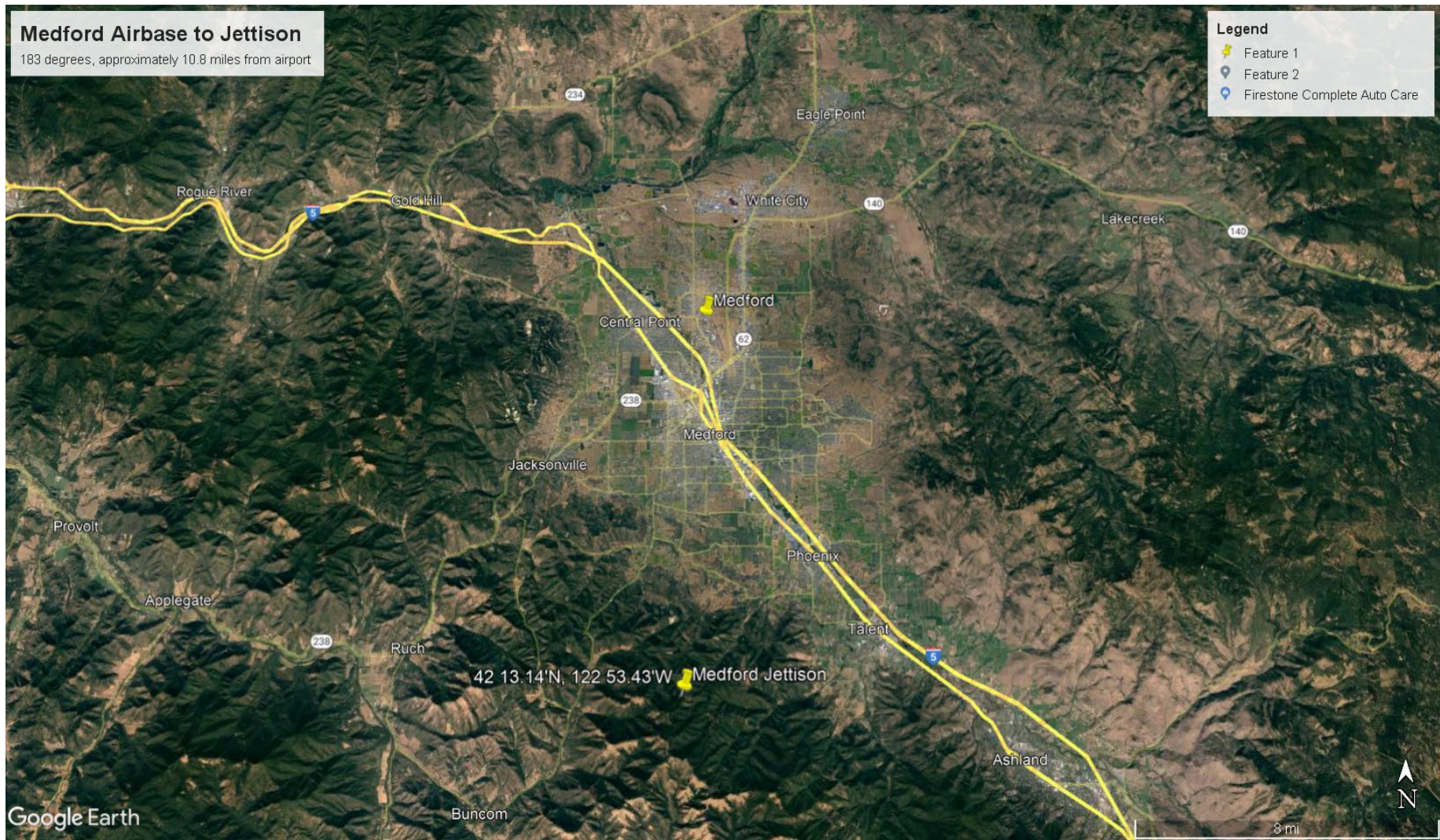
Missoula	MSO	3206			Blue Mountain (46 47.00' N, 114 10.00' W), Hellgate/Mt. Sentinel (46 51.00' N, 113 56.45' W); Deep Creek/Albert Creek (46 57.37' N, 114 15.68' W) If Necessary—Parallel and South of Runway 11/29—Contact Tower	USFS	Missoula International Airport	046 55.3800	114 05.5000	Missoula	MT	Yes	Yes	No	No	Phos-Chek MVP-Fx	As needed	579,982	189,519	1,640,846	1.0	dry	sand/oil separator to evaporation pond	
Moses Lake	MWH	1189			Saddle Mtn (46 48.13' N, 119 37.52' W); Moses Coulee (47 23.06' N x 119 54.28' W)	USFS	Grant County International Airport	047 11.5300	119 18.2500	Moses Lake	WA	Yes	Yes	Yes	Yes	Phos-Chek LC-95A-Fx	June 1 - October 15	1,317,830	270,192	2,853,649	1.0	LC	sand/oil separator to evaporation pond	
Mountain Home	U76	3164	43 12.5100	115 43.3000	Lockman Butte N. side of I-84; 43 12.51 x 115 43.30	BLM	Mountain Home Municipal Airport	043 07.7000	115 43.7300	Mountain Home	ID	Yes	No	No	No	LCE20Fx		153,056	41,460	340,304	1.0			
NoCo SEAT Base	FNL	5016	040 27.1000	105 00.7000	West of runway 33—15 Depending on Crosswind	State - Colorado	Northern Colorado Regional Airport (FNL)	040 26.6250	105 00.3030	Fort Collins (Loveland)	CO	Yes	No	No	No	Phos-Chek MVP-Fx	February 1 - November 30	56,742	0	109,629	0.7			
Omak	OMK	1305				BIA	Omak Airport	48 27.5300	119 31.0700	Omak	WA	Yes	No	No	No			0	0	0	0.0			
Ontario SEAT	ONO	2193			Contact Base	BLM	Ontario Municipal Airport	044 01.3200	117 00.6200	Ontario	OR	Yes	No	No	No	Phos-Chek LC-95A-Fx		202,262	91,215	419,264	1.0			
Palmer	PAQ	242	061 44.0000	148 58.0000	Wishbone Hill	State - Alaska Division of Forestry	Palmer Municipal Airport	061 35.7800	149 05.5200	Palmer	AK	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx		84,944	8,767	305,756	1.0			occasional
Panaca	1L1	2193			1 Mile West of Airport	BLM	Lincoln County Airport	37 47.5300	114 25.1800	Lincoln County	NV	Yes	No	No	No			30,806	0	180,015	0.4	LC	sand/oil separator to containment tank	
Paso Robles	PRB	840			Contact Base, on airport	State - CAL Fire	Paso Robles Municipal Airport	35 40.6000	120 38.0000	Paso Robles	CA	Yes	Yes	No	Yes	Phos-Chek MVP-Fx		765,583	0	2,903,192	0.9			light use
PIERRE SEAT	PIR	1744	044 23.4970	100 16.4673	Northeast edge parallel to main Runway 13-31	State - South Dakota Wildland Fire	Pierre regional	044 22.4460	100 17.1573	Rapid City	SD	Yes	No	No	No	Phos-Chek LC-95A-R	As Needed	6,409	0	63,035	2.0			
Pocatello	PIH	4452	043 12.1200	112 51.3600		BLM	Pocatello Regional Airport	042 54.8900	112 34.6000	Pocatello	ID	Yes	Yes	Yes	Yes	Phos-Chek LC-95A-R		1,037,446	141,620	2,968,881	1.0			
Porterville	PTV	443	036 01.4700	119 03.4600	Contact Base, on airport	USFS/ State - CAL Fire	Porterville Municipal Airport	036 01.6200	119 03.2900	Porterville	CA	Yes	Yes	No	No	Phos-Chek MVP-Fx		898,859	433,851	1,749,024	1.0	dry	sand/oil separator to city sanitary sewer	light use
Prescott	PRC	5034	034 51.6540	112 13.8580	high level drop preferred	USFS	Ernest A. Love Field	34 39.3900	112 24.8300	Prescott	AZ	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx		371,030	8,710	868,126	1.0	LC	lined evaporation pond	Used twice in 2021
Princeton SEAT	PNM	979	045 25.6610	093 43.2030		State - Minnesota DNR	Princeton Municipal	045 33.6500	093 36.3700	Princeton	MN	Yes	No	No	No			950	0	6,000	0.2			
Pueblo	PUB	4729			See Map in Base Operations Trailer	USFS	Pueblo Memorial Airport	038 17.0400	104 29.4800	Pueblo	CO	Yes	Yes	Yes	Yes	Phos-Chek LC-95A-Fx		106,791	0	417,051	0.6			
Ramona	RNM	1395	033 06.08	116 53.12	Orosco Ridge	State - CAL Fire	Ramona Airport	033 02.3500	116 54.9100	Ramona	CA	Yes	Yes	No	No	Phos-Chek MVP-Fx		339,881	89,300	592,900	1.0	dry	sand/oil separator to evaporation pond	light use
Rapid City	RAP	3204	44 02.1200	103 03.3200	(44 29.45' N, 104 26.57' W); (44 20.28' N, 104 10.67' W); (44 10.83' N, 103 51.72' W); (44 12.73' N, 103 23.77' W); (44 01.62' N, 103.25.25' W); (44 03.42' N, 103 38.77' W); (43 53.14' N, 103 49.30' W); (43 49.30' N, 103 56.63' W); (43 39.05' N, 103 50.98' W)	USFS	Rapid City Regional Airport	44 02.1200	103 03.3100	Rapid City	SD	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx	June 1 - Sept 30/as needed	90,086	0	216,382	0.7	LC	sand/oil evaporation pond	
Redmond	RDM	3080			NE of Bend Airport (44 07.00' N, 121 06.00' W); Between Bend and Sisters (44 16.00' N, 121 22.00' W)	USFS	Roberts Field	44 15.5700	121 09.1200	Redmond	OR	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	June 1 - October 15	846,722	341,747	1,689,492	1.0	LC	sand/oil separator to wastewater treatment plant	1-2 times per year
Rifle	RIL	6813	039 36.0000	170 42.0000	Hogbacks	BLM	Rifle / Garfield County Regional Airport	39 31.4500	107 43.5700	Rifle	CO	Yes	No	No	No	Phos-Chek LC-95A-Fx	As Needed	63,623	0	265,721	0.6			

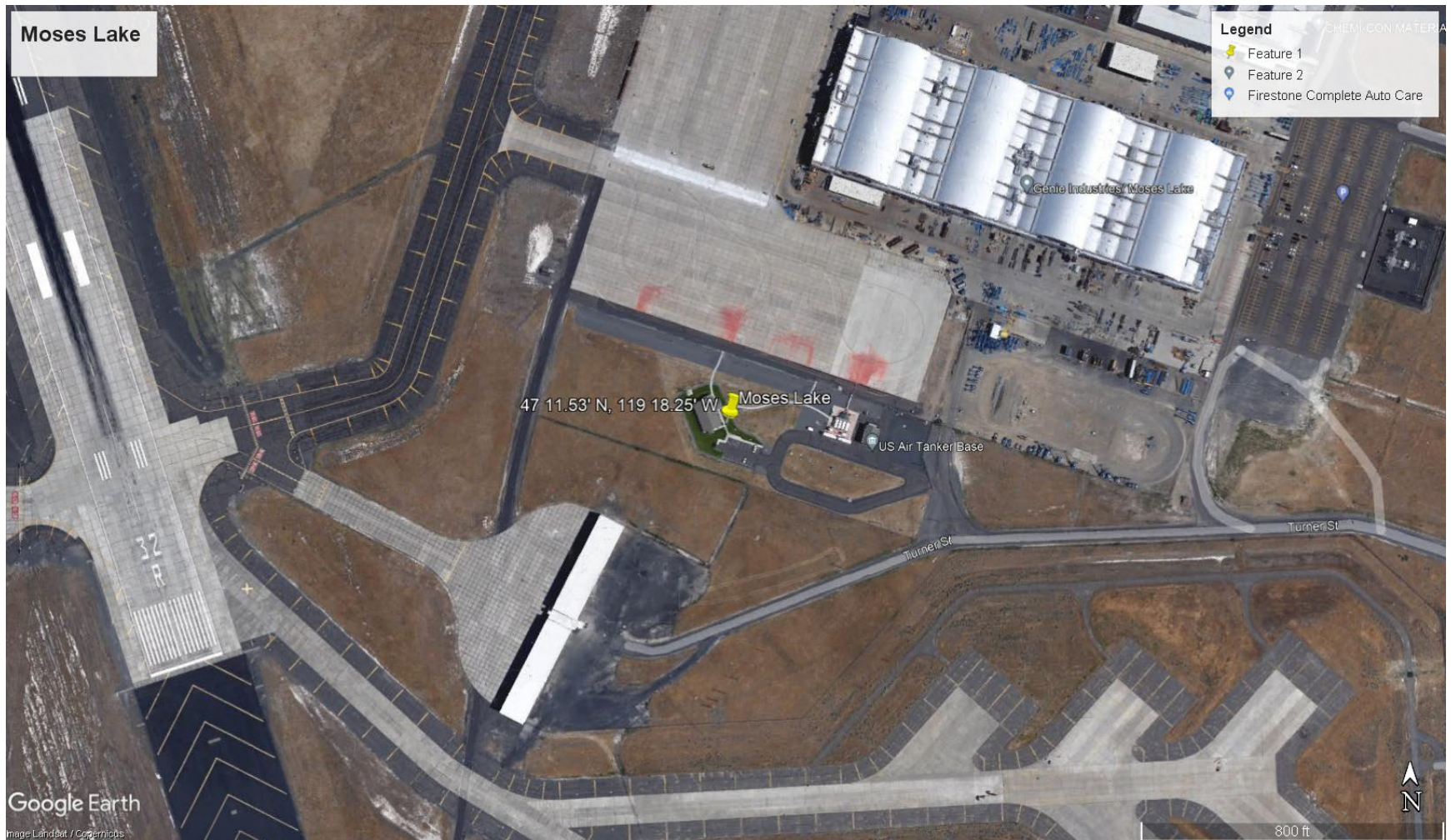
Riverton	RIW	5528	43 03.8550	108 27.5900	approx. 2.5 miles South of the airport.	BLM	Riverton Regional Airport	43 03.8550	108 27.5900	Riverton	WY	Yes	No	No	No		12,346	0	36,629	0.5				
Rock Spring	RKS	6764			Pending	BLM	Southwestern Wyoming Regional Airport	041 35.6533	109 03.9116	Rock Springs	WY	Yes	No	No	No	Phos-Chek LC-95A-Fx	As Needed	3,631	0	36,311	0.1			
Ronan	7S0	3086			Between Taxiway and Runway, North end	BIA	Ronan Airport	47 34.0000	114 06.1700	Ronan	MT	Yes	No	No	No			265,458	0	537,038	0.9			
Roswell	ROW	3671	33 14.4	104 42.7	Contact Base	BLM	Roswell Industrial Air Center	33 18.3200	104 31.1500	Roswell (Industrial)	NM	Yes	Yes	Yes	Yes	Phos-Chek LC-95A-Fx		106,248	0	463,760	0.9			used a few times for SEATs
Safford	SAD	3177			Directly north of the BLM Air Operations Center inside fence	BLM	Safford Regional Airport	32 51.1500	109 38.4200	Safford	AZ	Yes	No	No	No			98,021	0	282,246	0.8			
San Bernardino	SBD	1159	034 11.0000	117 12.0000	north of the airport	USFS	San Bernardino International Airport	34 06.3500	117 14.4800	San Bernardino	CA	Yes	Yes	Yes	Yes	Phos-Chek MVP-Fx	May 29 - Nov 3	2,082,674	402,587	5,776,566	1.0	dry	sand/oil separator to wastewater treatment plant	moderate use*
Santa Maria	SMX	261	034 53.560	120 26.836	On field, adjacent and parallel to runway 30	USFS	Santa Maria/ Capt. G Allen Hancock Field	034 53.5000	120 27.3500	Santa Maria	CA	Yes	Yes	Yes	Yes	Phos-Chek MVP-Fx		1,166,071	80,992	2,303,264	1.0	dry	containment tank and private disposal company	moderate use
Sonoma (Santa Rosa)	STS	128	38 33.31	122 57.01	Off airport-Hills west of airport-From STS 280 d 7nm	State - CAL Fire	Charles M. Shultz - Sonoma County Airport	38 30.8800	122 48.7500	Santa Rosa (Sonoma County)	CA	Yes	Yes	No	No	Phos-Chek MVP-Fx		376,848	0	964,920	0.6			light use
Show Low	SOW	6415	034 15.9400	110 00.7800	North Side of field. Notify FBO prior on 123.0	BIA	Show Low Regional Airport	34 15.9200	110 00.3400	Show Low	AZ	Yes	No	No	No			14,981	0	58,249	0.3			
Silver City	SVC	5446	032 38.1000	108 09.9388	Contact Base, Airport property north of runway 26-08	USFS	Grant County Airport	32 37.8700	108 08.9700	Silver City (Grant County)	NM	Yes	Yes	No	No	Phos-Chek MVP-Fx		97,935	0	319,699	0.9	dry	above-ground containment tank	1-2 times per year
Stead/Reno	RTS	5050	039 51.0000	119 50.0000	11 miles NNN at Bedell Flat	BLM	Reno / Stead Airport	39 39.5800	119 52.1500	Reno	NV	Yes	Yes	No	Yes	Phos-Chek LC-95A-Fx		758,236	129,213	2,162,453	1.0			
Tanacross (Tok)	TSG	1549	063 23.0000	143 10.00		State - Alaska Division of Forestry	Tanacross Airport	063 22.3000	143 20.3800	Tanacross (Tok)	AK	Yes	Yes	No	No	Phos-Chek LC-95A-Fx		35,593	0	140,791	0.5			occasional
Tooele SEAT	TVY	4321	040 51.0000	112 29.9000	Stansbury Island-19 miles NE of Airport	BLM	Tooele Valley Airport	040 36.5300	112 20.8800	WVC	UT	Yes	No	No	No			244,891	82,595	433,828	1.0			
Twin Falls	TWF	4154	042 26.2700	114 39.0800	1 mile NW of Berger Butte-TWF VOR 237 @ 8nm	BLM	Joslin Field / Magic Valley Regional Airport	42 28.9800	114 28.6500	Twin Falls	ID	Yes	Yes	No	Yes	Phos-Chek LC-95A-R		633,263	77,760	1,525,532	1.0			
Ukiah	UKI	617	39 09.71	123 03.47	Off airport-Cow Mountain from UKI -058 deg 7nm	State - CAL Fire	Ukiah Municipal Airport	39 07.6000	123 12.1800	Ukiah	CA	No	Yes	No	No			377,761	107,285	821,959	1.0			light use
Valentine SEAT	VTN	2591			Adjacent or Parallel to the Runway away from city well north side of property	State - Nebraska	Valentine Municipal	042 51.6600	100 32.9700	ST Valentine	NE	Yes	No	No	No			23,343	0	103,014	0.4			
Warroad SEAT	RRT	1076	048 55.3300	095 20.1200		State	Warroad International Airport	048 56.8000	095 21.5000	Grand Rapids	MN	Yes	No	No	No	Phos-Chek LC-95A-Fx	As Needed	8,120	0	66,500	0.5			
Wells	LWL	5772			Contact Base	BLM	Wells Municipal / Harriet Field	41 06.9000	114 55.5700	Wells	NV	Yes	No	No	No		June 1 - September 30	128,957	0	650,800	0.4			
West Yellowstone	WYS	6649	044 41.1800	111 07.0400	West Side of Runway	USFS	Yellowstone Airport	44 41.7500	111 06.4200	West Yellowstone	MT	Yes	Yes	No	No	Phos-Chek MVP-Fx		86,778	0	364,072	0.6	closed after 2019		
Winnemucca	WMC	4308	041 01.1200	117 46.3480	North side of Winnemucca Mtn.	BLM	Winnemucca Municipal Airport	40 53.8000	117 48.3500	Winnemucca	NV	Yes	No	No	No			207,815	28,178	520,192	1.0			
Winslow	INW	4941	034 57.7200	110 51.1500	drop at altitude	USFS	Winslow / Lindberg Regional Airport	35 01.2700	110 43.1200	Winslow	AZ	Yes	Yes	No	No	Phos-Chek LC-95A-Fx	05/03 - 07/12	97,122	793	261,453	1.0	LC	sand/oil separator to containment tank	1 time in the last 10 years

Appendix I: Aerial Photos of Airtanker Bases and Jettison Areas











Moses Lake Jettison

- Legend**
- Feature 1
 - Feature 2
 - Firestone Complete Auto Care

46 48.08' N, 119 37.31' W Moses Lake Jettison

Google Earth

900 ft



Appendix J: Species list from iPaC

A shapefile of the airtanker bases and jettison areas was uploaded into the Information for Planning and Consultation (iPaC) system to determine which species needed to be considered in this addendum consultation. From the initial list, a list of those species not previously analyzed was used to determine with Airtanker bases the new species occurred on. This appendix lists all species found on those 34 bases.

Category	Species	Scientific Name	Status	Determination	Albion Airbase and Jettison	Albion Airbase	Amari Airbase	Canon City Airbase and Jettison	Chico Airbase	Durango Airbase and Jettison	Fort Huachuca Airbase	Fort Huachuca Jettison	Fresno Airbase	Starway (Phoenix) Airbase	Starway (Phoenix) Jettison	Grass Valley Airbase	Grass Valley Jettison	Henet Airbase	Henet Jettison	Hollister Airbase	Hollister Jettison	Jeffco Airbase	Jeffco Jettison	Lake City Airbase	Lake City Jettison	McClellan Airbase	McGrath Jettison	Medford Airbase	Medford Jettison	Mesa Airbase	Minden Taboe Airbase	Minden Taboe Jettison	Moses Lake Airbase	Moses Lake Jettison	NACO SEAT Airbase and Jettison	Pinnac Airbase and Jettison	Paso Robles Airbase and Jettison	Porterville Airbase and Jettison	Pueblo Airbase	Remona Airbase	Remona Jettison	Roswell Airbase	Roswell Jettison	San Bernardino Airbase	San Bernardino Jettison	Santa Maria Airbase and Jettison	Sonoma (Santa Rosa) Airbase	Santa Rosa Jettison	Silver City Airbase and Jettison	Stead-Reno Airbase and Jettison	Stead-Reno Jettison	Utah Airbase	Utah Jettison	Valentine Airbase and Jettison
reptile	gopher tortoise	Gopherus polyphemus	T	NE																																																		
reptile	northern Mexican gartersnake	Thamnophis eques megalops	T, CH	NLAA, NLAA					X	X													X	X					X																									
reptile	narrow-headed gartersnake	Thamnophis rufipunctatus	T, PCH	NLAA, NLAA																																																		
reptile	giant garter snake	Thamnophis gigas	T	NLAA				X																	X																													