

# **Appendix I**

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Wildlife Hazards Analysis (April 2018)

SWCA

WILDLIFE HAZARD ANALYSIS FOR THE  
RECOLOGY HAY ROAD LANDFILL  
CONDITIONAL USE PERMIT REVISION,  
SOLANO COUNTY, CALIFORNIA

APRIL 2018

PREPARED FOR  
**Ascent Environmental**

PREPARED BY  
**SWCA Environmental Consultants**



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RECOLOGY HAY ROAD LANDFILL  
CONDITIONAL USE PERMIT REVISION  
SOLANO COUNTY, CALIFORNIA**

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# 1 INTRODUCTION

SWCA Environmental Consultants (SWCA) has prepared this Wildlife Hazard Analysis report at the request of Ascent Environmental. The intent of this report is to evaluate the proposed Recology Hay Road Landfill (landfill) Conditional Use Permit U-11-09 Revision (proposed project) for the potential to create new or exacerbate existing wildlife hazards to aircraft in the area. The analysis is based on the policies and criteria included in the Travis Air Force Base (AFB) Land Use Compatibility Plan (Travis LUCP; U.S. Air Force [USAF] 2015), with consideration to the landfill's existing bird deterrence program and Bird/Animal Aircraft Strike Hazard (BASH) strategies. Where potential wildlife hazards associated with the proposed project are identified, management recommendations are provided to reduce or mitigate the risk associated with the hazard(s).

This report has been prepared to respond to Section 5.8.2, Known Wildlife Hazards in Solano County, of the Travis LUCP. This policy requires that a Wildlife Hazard Analysis be prepared for discretionary projects located in the Bird Strike Hazard Zone and Outer Perimeter of the Travis LUCP area. The results of the Wildlife Hazard Analysis must be considered in the environmental review process required by the California Environmental Quality Act (CEQA). The Travis LUCP does not specify the methods to be employed when conducting the Wildlife Hazard Analysis. The methods employed for this analysis followed the guidelines for Wildlife Hazard Site Visits (WHSV) provided in the Federal Aviation Administration (FAA) Draft Advisory Circular 150/5200-38 – *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans* (FAA n.d. [2016]). The WHSV methods are appropriate for evaluating the proposed project because they provide guidelines, procedures, and recommendations for assessing wildlife attractants and movements near airfields.

## 1.1 Project Location and Setting

The project site includes 640 acres on the existing landfill property, which is located approximately 8 miles southeast of the city of Vacaville in unincorporated Solano County, California (refer to Figure 1). The landfill is located at 6426 Hay Road, immediately west of State Route 113 at its intersection with Hay Road. Agricultural land uses surround the property, with Travis AFB located approximately 4 miles to the southwest. According to the Travis LUCP, the landfill falls within the Outer Perimeter of the Travis AFB Wildlife Hazard Analysis Boundaries, as shown in Figure 4 of the Travis LUCP (USAF 2015). In addition, the landfill falls within Compatibility Zone C, which includes areas occasionally affected by concentrated numbers of low-altitude aircraft overflights (USAF 2015).

### 1.1.1 Existing Operations

The 640-acre project site includes the active landfill (approximately 256 acres) with specific subareas, also known as disposal modules, for solid waste disposal and an 80-acre borrow pit area; the approximately 11-acre Recology Vacaville-Solano fleet maintenance shop (Vacaville Shop); an 18-acre Bird Sanctuary Pond (BSP); 95 acres of undeveloped open space; approximately 180 acres of mitigation area (eastern and western). The Jepson Prairie Organics (JPO) composting operation is located on approximately 54 acres within the 256-acre permitted landfill boundary. A proposal to reduce the JPO footprint to 39 acres is currently in progress and handled by the County of Solano (County) Local Enforcement Agency in a separate application. The project site is owned and operated by Recology, an integrated resource recovery company. The landfill provides solid waste disposal services to both municipal and commercial customers in the San Francisco Bay Area and the Sacramento Valley. The site primarily serves San Francisco as well as Solano County, specifically the cities of Vacaville and Dixon.



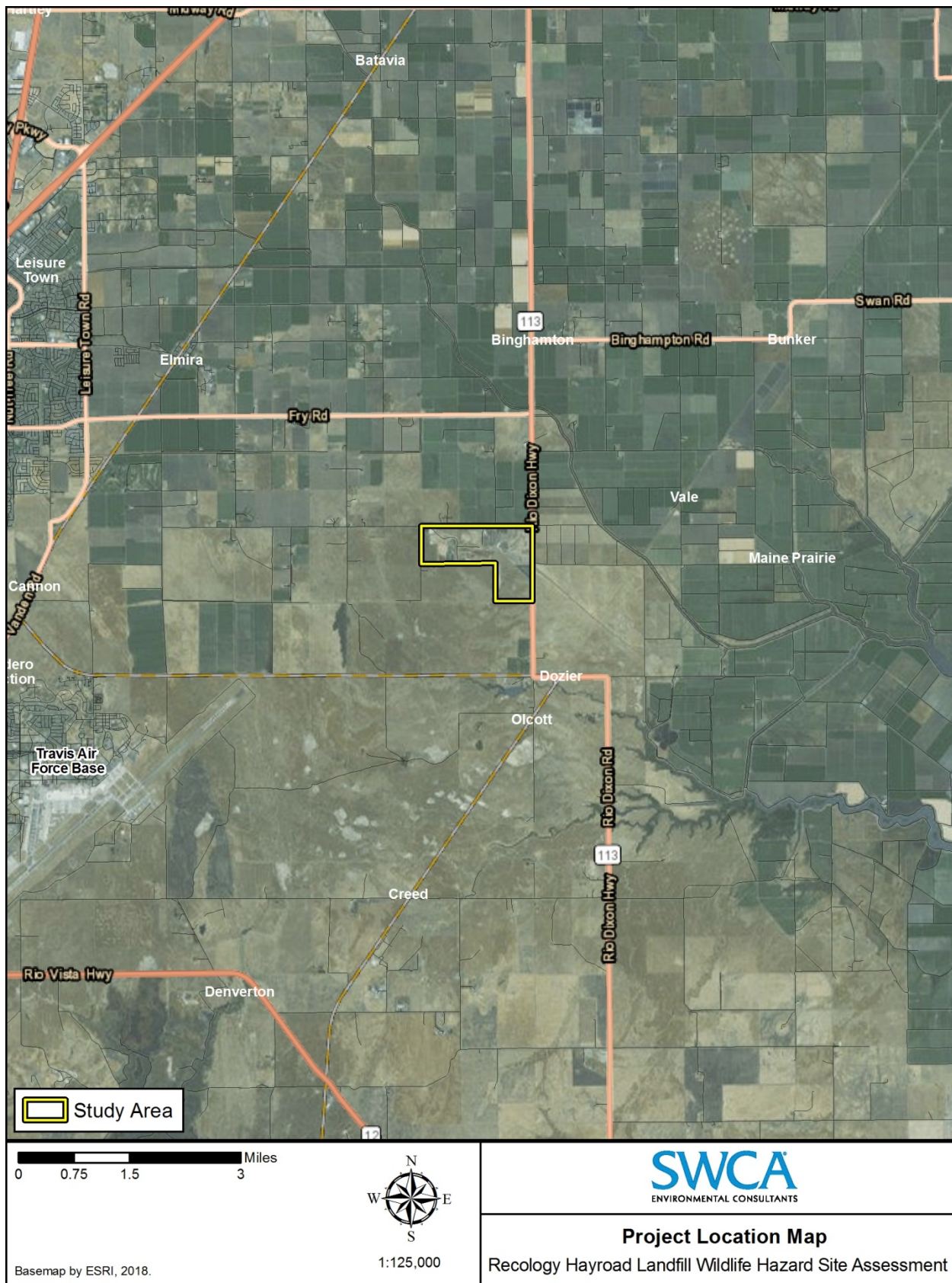


Figure 1. Project location map.

The landfill is a Class II and Class III waste management facility that is authorized by its Solid Waste Facility Permit (SWFP) and CUP to accept a maximum of 2,400 tons per day (tpd) of municipal solid waste (MSW) for disposal and 2,500 tons of friable asbestos per month. In 2016, the landfill received a total of 603,636 tons of MSW. Within that period, the landfill received a 7-day average peak of 1,898 tpd of MSW and a monthly peak of 1,041 tons of friable asbestos. On several occasions within the last few years, the MSW tonnage received by the landfill has reached the 2,400-tpd limit established within the SWFP and CUP. On such days, haulers are instructed to proceed to other disposal locations that have daily throughput capacity for that day.

The JPO compost facility is located within the permitted boundary of the Hay Road Landfill. JPO operates under the same CUP as the landfill but has a Compostable Materials Handling Permit (CMHP) that is separate from the landfill's SWFP. The County complies with legislative mandates from the State of California requiring more diversion from landfills, which results in a higher demand for resource recovery, recycling, and composting. The JPO compost facility is permitted to accept an average of 600 tpd of compostable green material, agricultural material, and food wastes, with a peak daily total tonnage of 750 tpd. In 2016, the JPO compost facility received an average of 275 tpd of compost feedstock, with a peak daily total tonnage of 641 on June 1, 2017.

The soil borrow pit measures approximately 80 acres and has a current maximum excavation depth of approximately 60 feet below ground surface. The borrow pit is offset approximately 115 feet from Hay Road and 150 feet from the base of the adjacent landfill to the east.

Per the requirements of a U.S. Army Corps of Engineers (USACE) Nationwide Permit, which was issued on January 6, 1993, portions of the property outside the landfill and borrow pit boundaries will be placed under permanent conservation easement independent from the proposed project. The areas to be placed under easement include a 40.57-acre western mitigation area, which is located to the west of the soil borrow pit and to the south of the Vacaville Shop, and a 140.70-acre eastern mitigation area, which is located to the south of the landfill. These two areas are not located within the permitted landfill boundary.

The BSP is a manmade triangular-shaped feature located directly south of the landfill. Independent from the proposed project, the BSP is also being placed under permanent conservation easement, although it will still receive site stormwater and water pumped from the borrow pit.

## **1.2 Project Description**

The County is considering amending the existing CUP to reflect changes requested by Recology Hay Road (RHR). These changes would require the project to be analyzed in the Supplemental Environmental Impact Report (SEIR), and are summarized below. Construction of the landfill changes are anticipated to begin in 2020 and become operational in 2021.

### **1.2.1 Disposal Area Expansion**

Lateral expansion of the RHR landfill disposal area would occur within an approximately 24-acre triangular area (Triangle) located south of the JPO compost facility (as shown on Exhibit 2, the project site plan [Appendix A]). The Triangle is currently undeveloped open space and would be included within the permitted landfill boundary for landfill disposal uses. Inclusion of this area would increase the landfill's total disposal capacity by approximately 8.8 million cubic yards and extend the estimated life of the landfill by approximately 9 years. The landfill's existing groundwater and landfill gas monitoring network, as well as its leachate collection system, would be modified to include the proposed expansion. Because the JPO compost facility does not generate solid waste for disposal but reduces the amount of

solid waste disposed of at the landfill, the proposed capacity increase of the landfill would also extend the potential life of the compost facility by 9 years.

### **1.2.2      *Correction to Disposal Limits of Disposal Module-1***

Recent test borings conducted at the landfill show that Disposal Module-1 (DM-1), as delineated in Exhibit 2, extends beyond the geographic limits originally identified for disposal of waste in the CUP and SWFP. Historical disposal of waste within DM-1 occurred in a 0.3-acre area near the northeast corner of DM-1 not captured by the existing disposal limit (for location, see the red area identified in Exhibit 2). As part of the project, the CUP would be modified to acknowledge that DM-1 extends beyond its originally defined disposal limits and the permitted disposal limit would be adjusted to reconcile the newly understood disposal footprint.

### **1.2.3      *Modification to Landfill Peak Tonnage Limit***

The project includes a revision of the existing daily tonnage limit for the landfill and establishment of a new peak limit of tpd, as well as an average limit of tpd. The existing CUP allows for 2,400 tpd of landfill disposal. Occasionally, the landfill has received more than 2,400 tons of MSW; on a peak day in 2016, the landfill received 2,446 tons of MSW, requiring Recology to turn away trucks so as not to exceed the existing peak limit of the CUP. As part of the project, the CUP would be amended to allow for a peak day limit of 2,750 tpd, with a 7-day average limit of 2,400 tpd of disposal. The inclusion of a peak tonnage limit higher than the existing 2,400 tpd limit would allow the facility to accept additional waste on peak days without having to divert haulers to other facilities while en route. The yearly tonnage limit at the landfill would not change with implementation of the project.

### **1.2.4      *Construction and Demolition Sorting Operation***

The project includes a modification of existing on-site operations to include a designated area for the sorting, separation, and processing of construction and demolition (C&D) materials. The landfill is already permitted to receive C&D waste stream. However, the proposed CUP modification would authorize the sorting of this waste stream, which would allow for greater recovery of recyclable materials and greater diversion of materials from landfill disposal. Incoming C&D waste streams would be processed using portable equipment, primarily screens, sort lines, and a shredder, which could be moved around the site as the disposal area shifts within the landfill property. The footprint of the C&D sorting operation would be approximately 150 feet by 300 feet and would include all equipment and stockpiled materials.

### **1.2.5      *Disposal of Friable Asbestos***

Currently, the landfill is permitted to receive up to 2,500 tons per month of friable asbestos. However, within the landfill property, disposal of this material is currently limited to DM-1, which is anticipated to reach its capacity and close in 2021. As part of permit modifications and except for DM-2.1, friable asbestos disposal is proposed within all existing disposal modules. No modification of the monthly tonnage limit on friable asbestos disposal would occur; rather, the on-site location would change.

### **1.2.6      *Modification of the Existing Soil Borrow Pit***

As part of the proposed CUP modifications, the limits of the existing soil borrow pit would be deepened and widened to accommodate the increased need for soil at the landfill. The existing borrow pit measures 80 acres with a current maximum excavation depth of 60 feet below ground surface (bgs). A modification to the B&J Drop Box Company Borrow Pit Plan would be required to allow the landfill to increase the

footprint of the borrow pit by approximately 6 acres and deepen the borrow pit by an additional 88 feet bgs to provide an additional 3.6 million cubic yards of soil for use in landfill construction and operation activities. Proposed expansion of the borrow pit would not extend past an existing topsoil berm located adjacent to the Western Mitigation Area.

### **1.2.7 Project Objectives**

Consistent with CEQA Guidelines Section 15124(b), a clear statement of the basic objectives of the project, including its purpose, shall be presented. The applicant has identified the following project objectives for the purposes of the SEIR:

- increase the landfill's disposal capacity by approximately 8.8 million cubic yards;
- extend the estimated landfill life by approximately 9 years;
- extend the ability of JPO to compost Solano County organics by approximately 9 years;
- correct the permitted landfill boundary to reflect existing conditions at the site;
- allow the landfill more flexibility in how it balances high-volume and low-volume days;
- achieve higher solid waste diversion at the landfill with better sorting of C&D materials;
- allow for the continued disposal of friable asbestos in Solano County past the filling and closure of the existing permitted monofill (DM-1), projected to be 2021; and
- increase the area and depth of the landfill borrow site for excavation of soil necessary to provide cover for the landfill and avoid the import of soil.

## **2 METHODS**

SWCA's qualified airport wildlife damage biologist (refer to Appendix B, SWCA Qualifications) Travis Belt conducted a background review and wildlife hazard site visit at the landfill. The literature review included queries of the Federal Aviation Administration's (FAA) Wildlife Hazard Strike Database (FAA database) and the Air Force Safety Automated System (AFSAS; USAF 2017) to gain insight on past wildlife strikes at the nearby Travis AFB. In addition to the database queries, SWCA reviewed the Travis LUCP (USAF 2015), the Norcal Waste Systems Hay Road Landfill, Inc. Bird Control Program (ESA Associates [ESA] 2006), and the Recology Hay Road Landfill Bird Control Program Quarterly Monitoring Reports for 2015, 2016, and the first half of 2017, prepared by ESA.

The wildlife hazard site visit was conducted on December 5 and 6, 2017. The December 5, 2017, survey was conducted between 1:00 PM and 5:00 PM (approximately 20 minutes after sunset). The December 6, 2017, survey was conducted between 8:00 AM and 12:30 PM. Conditions during the surveys were dry, windy, and clear with temperatures ranging between 55 and 68 degrees Fahrenheit. Photos of the site are included in Appendix C. During the site visit, the biologist conducted wildlife surveys from a variety of vantage points including the capped refuse sites, the soil borrow pit, the bird sanctuary, and the active face. The observations focused on collecting the following data:

- Recorded bird species present and noted estimated abundance, activity, and location; type of habitat used; and time of observations (refer to Appendix D for a list of wildlife species observed).
- Documented mammals observed and evidence of mammal activity, such as scats, tracks, runs, and burrows. Included time of observations, activity, location, and type of habitat used.

- Identified habitat attractants, including natural habitats and man-made attractants on and around the landfill.
- Observed how the wildlife used the habitat on the landfill to ascertain the wildlife/habitat relationship.

## 3 RESULTS

### 3.1 Current Wildlife Control Efforts

RHR's current wildlife deterrent efforts largely focus on the implementation of the Norcal Waste Systems Hay Road Landfill, Inc. Bird Control Program (BCP; ESA 2006) and include:

- **Active face management:** Minimizing the size of the active face to reduce available foraging area.
- **Pyrotechnic use:** Occasional use of bird bombs and whistles to haze foraging birds. Pyrotechnic use is listed in the BCP but was not observed during the wildlife hazard site visit.
- **Falconry:** Seasonal deployment of trained falcons to chase off foraging gulls. Falconers are present on a full-time basis during the peak gull activity season, which is roughly between October and June (ESA 2006). Falconers were present and active during the December 2017 WHSV.

Other wildlife control methods currently employed at the landfill but not necessarily included in the BCP include:

- **Grass management:** RHR mows the grasses on inactive disposal modules to approximately 6 inches on an as-needed basis.
- **Water body management:** Vegetation in the ditch that conveys pumped water from the existing borrow pit to the existing BSP is removed annually. RHR removes the vegetation from one-third of the ditch each year. This schedule allows for the vegetation in the entire ditch to be removed on a 3-year cycle but does not remove the vegetation in the entire ditch in any 1 year.
- **Landfill Gas Control:** The landfill has an existing gas collection and control system (GCCS) that is in compliance with 27 California Code of Regulations Section 20919 for gas control. The GCCS is operated in accordance with regulations and permits issued for the facility. The system is an active gas extraction system utilizing vertical gas collection wells and other collection mechanisms with landfill gas (LFG) blowers that apply vacuum to the collection system and convey the collected LFG to control devices (an enclosed flare and an internal combustion engine) to destroy the methane and other constituents of concern.

### 3.2 Wildlife Observed and Attractants Utilized On and Adjacent to the Landfill

#### 3.2.1 Wildlife Observed

The following discussion categorizes the avian species observed during the WHSV and documented in the BCP Quarterly Reports into guilds. A guild is a group of species that use resources in similar ways and may not always follow taxonomic classifications. For the purpose of this study, guilds were assigned based on the species' foraging behaviors and their expected responses to common management actions.

Identification of the various guilds using the landfill environment allows the biologist to accurately identify what resources the guilds are attracted to the landfill, and to subsequently identify potential hazardous wildlife attractants. The gulls and blackbird/starling guilds were the most abundant observed and documented at the landfill. Table 1 summarizes the guilds observed and the attractants utilized by each guild, and the guilds observed and/or documented at the landfill are discussed below.

**Table 1. Summary of Wildlife Guilds Observed and Attractants Utilized**

Guild	Attractants Utilized							
	Active Face	Inactive Disposal Module	Borrow Pit	Bird Sanctuary	Eastern Mitigation Area	Stormwater Feature	Composting Facility	Recycling Facility
Gulls	X		X	X	X		X	
Blackbirds/Starlings	X			X	X	X	X	X
Ducks and Geese			X	X	X			
Corvids		X	X		X	X	X	X
Raptors/Owls/Vultures		X			X			
Wading/Shore Birds		X	X		X			
Ground Birds	X	X	X		X	X		X
Mammals			X				X	

### 3.2.1.1 GULLS

At the landfill, the gull guild includes those species belonging to the *Larus* genus and include California gull (*Larus californicus*), ring-billed gull (*L. delawarensis*), western gull (*L. occidentalis*), and likely other species as well. Gulls are medium- to large-sized flocking birds that are a major concern to aviation safety. During the WHSV, gulls' attraction to the landfill was largely concentrated on the active face and the BSP. Several hundred gulls were observed in these locations. In addition, smaller numbers of gulls were observed and have been documented at the borrow pit and at the composting facilities.

### 3.2.1.2 BLACKBIRDS AND STARLINGS

The blackbird and starling guild was represented by red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), and European starling (*Sturnus vulgaris*). The Travis AFB wildlife strike data includes these species in the perching bird guild. Tri-colored blackbirds (*Agelaius tricolor*) have also been documented at the landfill. Blackbirds and starlings were observed and have been documented in large numbers on the active face, on the composting facility, in wetlands/waterbodies, and perching on the various structures at the landfill. Flocks of several hundred blackbirds/starlings were observed foraging, perching, and loafing in various parts of the landfill during the WHSV.

### 3.2.1.3 DUCKS AND GEESE

Waterfowl observed at the landfill include Canada geese (*Branta Canadensis*) and mallards (*Anas platyrhynchos*). Sixty-four Canada geese and eight mallards were observed loafing in the borrow pit pond during the evening WHSV survey. The 64 Canada geese departed the pond in groups of approximately 10 over a 20-minute period starting just after sunset. All the Canada geese groups flew northeast to an unknown location. Over 70 Canada geese were observed grazing in the eastern mitigation area near the BSP in the morning of December 6, 2017. There was no observed waterfowl attraction to the composting facility stormwater pond.



#### **3.2.1.4 CORVIDS**

At the landfill, the corvid guild is represented by American crow (*Corvus brachyrhynchos*) and common raven (*C. corax*). Both these species were observed in low numbers at the composting facility, active face, inactive disposal modules, BSP, and recycling bunkers.

#### **3.2.1.5 RAPTORS, OWLS, AND VULTURES**

Raptors observed at the landfill included merlin (*Falco columbarius*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and turkey vulture (*Cathartes aura*). Owls were not observed during the WHSV, but it is assumed that barn owl (*Tyto alba*) likely forages in the area during the evening and night hours. The merlin, northern harrier, and turkey vultures observed did not show any attraction to the landfill facilities. These birds were observed in the eastern mitigation area and the adjacent agricultural areas. Several red-tailed hawks were observed perching and foraging in the annual grasses that cover the inactive disposal modules. The red-tailed hawks were likely hunting small mammal prey in the grasses.

#### **3.2.1.6 WADING BIRDS AND SHOREBIRDS**

Great blue heron (*Ardea herodias*), great egret (*A. alba*), killdeer (*Charadrius vociferous*), and Wilson's snipe (*Gallinago delicata*) represent the wading bird and shorebird guild observed at the landfill. These species are largely associated with mesic sites, but may also be observed in upland habitats. The great blue heron was observed flying over the landfill but was not observed utilizing any of the landfill features. The great egret, killdeer, and Wilson's snipe were observed foraging in the borrow pit pond and the BSP. None of these species showed any attraction to the existing composting facility stormwater basin.

#### **3.2.1.7 GROUND BIRDS AND PERCHING BIRDS**

The ground birds guild includes those species that spend a significant amount of time foraging on the ground, nest on or near the ground, and typically make short flights at low elevation between foraging sites. Travis AFB strike reports include these bird species in the perching bird guild and the doves guild. The ground birds observed at the landfill during the WHSV included mourning dove (*Zenaidura macroura*), western meadow lark (*Sturnella neglecta*), house sparrow (*Passer domesticus*), California towhee (*Melospiza crissalis*), house finch (*Haemorhous mexicanus*), and white-crowned sparrow (*Zonotrichia leucophrys*). These species were observed throughout the landfill, with greater concentrations in the grasses on the inactive disposal modules, on the recycling material bunkers, and perched on fences.

#### **3.2.1.8 MAMMALS**

Mammals observed at the landfill included domestic cats, black-tailed jackrabbit (*Lepus californicus*), and North American river otter (*Lontra canadensis*). Although not observed during the survey, it is assumed that various small rodents such as mice and rats are also prevalent at the landfill. The black-tailed jackrabbits were observed foraging on the grasses of inactive disposal modules, the domestic cats were observed foraging in the composting facility, and the North American river otters were observed in the borrow pit pond.

### **3.2.2 Wildlife Attractants Utilized**

Wildlife attractants can generally be classified as food, water, and cover. The guiding document for identifying wildlife attractants at and around airports is FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports* (AC 33B). For the purposes of this study, it is not important to identify individual plant species, but rather to identify various habitat types such as forest,

grassland, agricultural field, water, etc. The wildlife attractants on the landfill property and immediately surrounding areas include the landfill facilities, water bodies, grassland, and agriculture.

### **3.2.2.1 LANDFILL FACILITIES**

The landfill facilities that are significant wildlife attractants are the active face, composting facility, and recycling facilities. The active face, where MSW is deposited on a daily basis, provides ample foraging opportunities for wildlife. In most cases, wildlife foraging on the active face are in search of putrescent waste, which emits odors that attract foraging wildlife. Based on the WHSV and the data provided in the BCP Quarterly Monitoring Reports, a variety of gulls and blackbirds are attracted to the active face at the landfill.

The composting facilities receive organic wastes and were observed to attract blackbirds and corvids during the WHSV. The BCP Quarterly Monitoring Reports document blackbirds and gulls in the utilizing the composting facility.

The recycling facilities include material bunkers located adjacent to the existing administrative office, where recyclables are temporarily stored. During the WHSV, this area mostly contained cardboard and paper materials. Some of the cardboard materials were likely received from local restaurants and contained food scraps. A variety of blackbird and sparrow species were observed foraging in the recycling material bunkers and were likely attracted to the remnant food scraps in the cardboard.

### **3.2.2.2 WETLANDS AND WATERBODIES**

Wetlands and waterbodies at and near the landfill include the pond in the borrow pit, the stormwater detention pond at the composting facility, the BSP, the drainage ditch that conveys water from the borrow pit to the BSP, and the vernal pool habitat in the adjacent grasslands. These habitats provide loafing and foraging areas for a variety of bird species. Multiple flocks of Canada geese were observed utilizing the borrow pit pond, the BSP, and the vernal pools in the grasslands. Large flocks of gulls were observed loafing at the BSP. Red-winged blackbirds and Brewer's blackbirds were observed in the wetland vegetation (*Typha* sp.) in the drainage ditch and the BSP.

### **3.2.2.3 GRASSLAND**

This cover type is dominated by annual grassland and includes the vernal pool habitat discussed above as well as the annual grass cover on the inactive disposal modules. These areas provide shelter, foraging, and nesting habitat for western meadowlarks, horned larks, raptors, coyotes, red foxes, and many other species that inhabit open habitats.

### **3.2.2.4 AGRICULTURAL LAND**

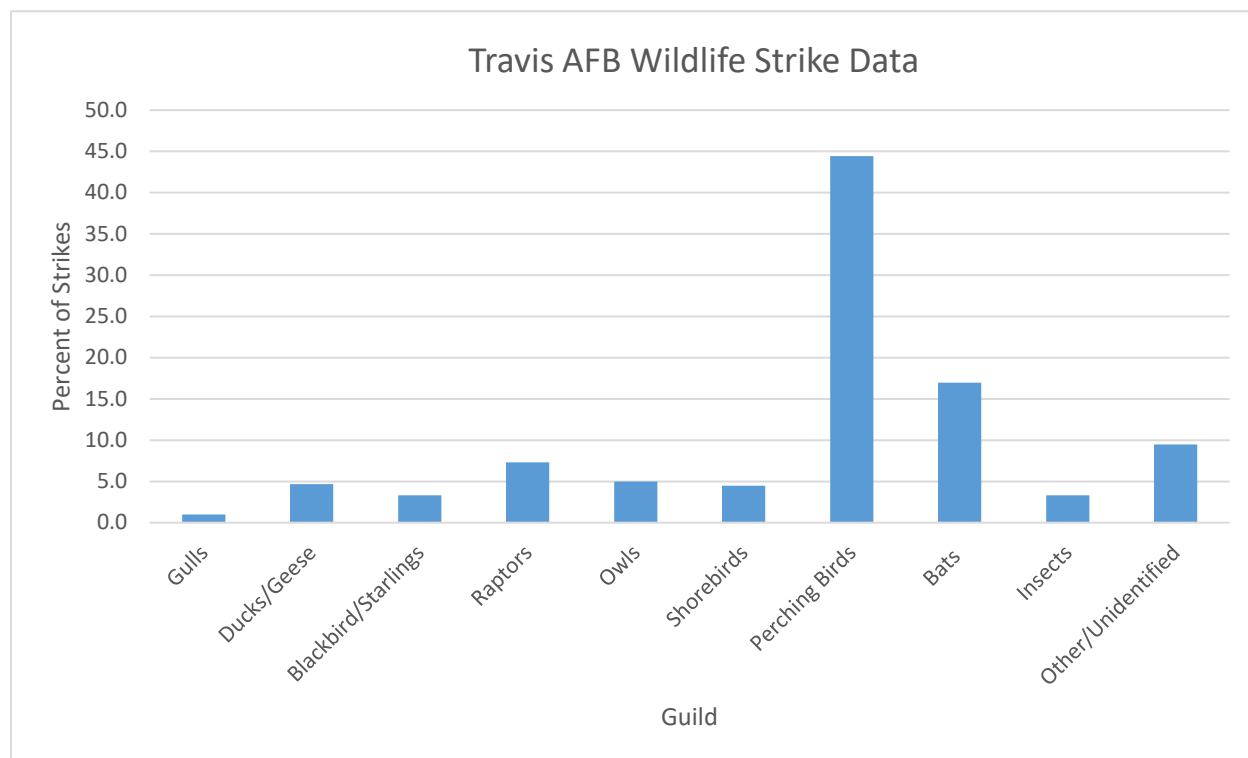
Agricultural land is located to the north, east, and west of the landfill and includes a variety of crops. Many of the agricultural areas include irrigation ponds/ditches, grasslands, row crops, and fallow fields. The combination of water and cropland provide desirable feeding and stopover habitat for many species of birds.

## **3.3 Wildlife Strike Data**

To gain insight about which guilds present wildlife strike hazards at Travis AFB, SWCA obtained an Air Force Safety Automated System (AFSAS) data output of documented wildlife strikes at Travis AFB from the Travis AFB Wing Safety Office. The AFSAS data output included all wildlife strikes documented



between January 2012 and December 20, 2017. In addition, SWCA queried the FAA Wildlife Strike Database for documented strikes at Travis AFB. The following discussion summarizes the Travis AFB strike data in relation to the wildlife guilds observed at the landfill. The intent of the analysis is to determine if the species utilizing the landfill have been associated with wildlife strikes at Travis AFB.



**Figure 2. Guilds involved with aircraft strikes at Travis AFB.**

The Travis AFB strike data indicates that 601 wildlife strikes have been reported by Travis AFB between 2012 and 2017. Figure 2 shows the percent of strikes associated with each wildlife guild. The most abundant guilds at the landfill included gulls and blackbird/starlings. Gulls were documented in 0.998% of the strikes and blackbirds or starlings were documented in 3.3% of the strikes. All of the six documented strikes with gulls occurred in the peak gull season (October–June) for the area. Likewise, 12 of the 20 documented strikes with blackbirds/starlings occurred between October and March. The Travis AFB strike data indicates that the winter months have increased strike potential.

The low percentage (less than 5%) of strikes with species that are abundant at the landfill indicates that few of the Travis AFB documented strikes may be attributed to birds at the landfill. Regardless of the low number of documented strikes with gulls and blackbirds/starlings at Travis AFB, it is clear that the landfill attracts these species to the area, which can increase the potential for strikes to occur. Therefore, continued management of the wildlife attraction to the landfill is warranted.

## 4 RECOMMENDATIONS

The existing monitoring reports and the WHSV survey indicate that the gull and blackbird/starling guilds are the most prevalent avian guilds that utilize the landfill. In addition, the WHSV survey data shows that Canada geese and other waterfowl utilize the landfill at least periodically. These avian guilds are attracted to the landfill active face, composting facility, recycling facility, and water features. The proposed project would modify these existing wildlife attractants, but would not add new wildlife attractants to the landfill.

To maintain consistency with the Travis LUCP, RHR should consider incorporating the following recommendations into the proposed project. The following recommendations are provided to reduce the wildlife attraction to the landfill. These recommendations are not intended to supersede or modify the existing wildlife management activities that are being implemented at the landfill. The existing wildlife management activities should continue to be implemented at the landfill regardless of the status of the proposed project.

## **4.1 Project Design Considerations**

The presence of putrescible waste and other food materials attracts wildlife to landfills. The most effective means of reducing wildlife attraction to the landfill would be to design the facility in such a way that makes the waste inaccessible to wildlife. The following design recommendations are provided with the purpose of reducing wildlife attraction to the post-project facility. It is understood that practicability factors such as cost, resource availability, environmental considerations, site availability, and community considerations shape the decisions regarding facility designs. Although these are important factors, they are beyond the scope of this study and are not considered.

### **4.1.1 Landfill Proposed Expansion Area**

To reduce available gull and blackbird foraging opportunities, the active face of the landfill should be kept as small as possible and should be covered often. As discussed in Section 3.1, RHR currently manages the size of the active face to minimize wildlife foraging opportunities on the active face. The existing landfill management should be applied to the proposed project.

Landfill gas odors are a major contributor to wildlife attraction to landfills. Decomposing waste produces carbon dioxide, methane, water vapors, carbon monoxide, hydrogen sulfide, and volatile organic compounds. The hydrogen sulfide and volatile organic compounds emit odors that attract wildlife. To reduce the potential wildlife attraction, RHR should extend the existing GCCS or a similar system into the proposed expansion area (refer to Section 3.1).

### **4.1.2 Landfill Water Features**

Implementation of the proposed project would require RHR to modify the existing drainage that conveys water from the borrow pit pond to the BSP. In addition, the proposed project includes expansion of the borrow pit, which could increase the amount of open water habitat in the borrow pit. The following measures are recommended to reduce wildlife attraction to water features associated with the proposed project. The following measures are not intended to be applied to the existing bird sanctuary pond.

1. If stormwater basin(s) are included in the project designs, the stormwater basin should be designed for a maximum 48-hour detention period for the design storm and remain completely dry between storms (Cleary and Dolbeer 2005). If standing water is expected to remain for more than 48 hours, consider the installation of physical barriers to waterbodies. Such barriers may include:
  - a. Use floating balls, also known as Bird Balls or Bird Deterrent Balls, on the water surface. These are approximately 4-inch balls made of plastic, foam, or other buoyant material. The balls float on the water surface and deter birds from landing or wading into the water.
  - b. Install a wire grid system above the water surface will deter birds from landing in the water. At the Landfill, the birds of concern vary from medium to large in size. Installing the grid system so that it runs in various crisscross patterns at two elevations would form a non-penetrable grid.

- c. Install and continuously operate a fountain in the waterbody. The fountain should disturb at least 30% of the water surface. This may deter water birds from landing in the waterbody.
2. Design the relocated drainage ditch so that it is as deep as possible and has steep sides (approximately 2:1), side substrate of rock or concrete, no vegetation, and minimal water surface area (Cleary and Dolbeer 2005). This will deter wading birds from standing on the banks and water birds from landing on the water. Birds are less likely to use deep drainages because the steep banks impede the birds' ability to detect overhead threats. Ensure that the design is easily maintained to be void of vegetation or covered. Drainpipes, culverts, and screens should be easily maintainable so they can be kept clear of debris and drainage is not impeded.
3. Expansion of the existing borrow pit may increase the surface area of open water habitat, which could increase the attraction of water birds. Large equipment is routinely operated in the borrow pit area. The noise that is generated by the large equipment helps to reduce the wildlife attraction to the water. Adding pyrotechnic launchers to the existing equipment noise could increase the wildlife deterrent capabilities of the equipment and further reduce the wildlife attraction to the area.

#### **4.1.3 Recycling Facility**

The proposed project does not include modifications to the existing recycling bunkers. If RHR considers modifications to the bunkers as part of a future project, RHR could reduce wildlife attraction to the bunkers by enclosing the structures. Many food products are delivered to restaurants, stores, and consumers in cardboard boxes. The cardboard boxes retain the smell and scraps of the food. Based on observations at the landfill, the smell and remnant food scraps attract blackbirds, starlings, finches, and sparrows to the recycling materials bunkers. To further reduce the existing wildlife attraction to the recycling material bunkers, RHR could modify the existing recycling bunkers so that they are enclosed structures that reduce the ability for wildlife to access the recyclables.

#### **4.1.4 Structures**

Utilize structure designs that reduce perching and roosting opportunities. Blackbirds and starlings often perch on structures with overhanging ledges, power lines, antennas, and other tall objects. Site designs should avoid structures that provide over hanging ledges or tall objects for roosting and perching.

#### **4.1.5 Landscaping**

Avian species utilize trees and shrubs for roosting, perching, shelter, and food. Designs for the landfill should avoid placing shrubs, ornamental trees, or hedgerows within 1,000 feet of a disposal module, and should avoid the use of species that produce fruit or berries. Birds are less attracted to vegetation with open canopies. Therefore, site designs should avoid placing trees and shrubs in a way that will result in overlapping or closed canopies.

## **5 RECOMMENDED CEQA DETERMINATION**

The Recology Hay Road Landfill is an existing landfill and wildlife attractant that is situated within the outer perimeter of the Travis LUCP. As such, wildlife attraction to the landfill is a major concern to Travis AFB. This concern has prompted RHR and Travis AFB BASH managers to coordinate wildlife control efforts at the landfill. RHR routinely implements wildlife control efforts to reduce wildlife attraction and access to the landfill. The ongoing coordination and implementation of the wildlife control

efforts has helped to minimize the potential for wildlife strikes with avian species that utilize the landfill. Based on the existing strike data, less than 5% of the documented strikes at Travis AFB are attributed to species that routinely forage at the landfill.

The proposed project includes lateral expansion of the landfill and modifications to the existing landfill water features but would not result in a larger active landfill face or increased foraging opportunities for wildlife. With the assumption that RHR is committed to extending the existing bird control program and other management actions (GCCS and grass and water feature maintenance) to the proposed project elements, it is unlikely that the proposed project would exacerbate the existing wildlife attraction to the landfill or create new wildlife hazards to Travis AFB aircraft. Therefore, a less-than-significant impact CEQA determination is recommended. Implementation of the recommended design measures provided above may further reduce the wildlife attraction to the landfill and should be incorporated as feasible.

## 6 REFERENCES CITED

- Cleary, E.C., and R.A. Dolbeer. 2005. *Wildlife Hazard Management at Airports: A Manual for Airport Personnel*. 2nd ed. Washington, D.C.: Federal Aviation Administration and U.S. Department of Agriculture, Animal and Plant Health Inspection Services, Wildlife Services.
- Federal Aviation Administration. n.d. [2016]. Draft Advisory Circular 150/5200-38 *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*. U.S. Department of Transportation Federal Aviation Administration.
- ESA Associates. 2006. *Norcal Waste Systems Hay Road Landfill, Inc. Bird Control Program*.
- . 2015. *Recology Hay Road Landfill Bird Control Program Quarterly Monitoring Report*.
- . 2016. *Recology Hay Road Landfill Bird Control Program Quarterly Monitoring Report*.
- . 2017. *Recology Hay Road Landfill Bird Control Program Quarterly Monitoring Report*.
- U.S. Air Force (USAF). 2015. *Travis Air Force Base Land Use Compatibility Plan*.
- . 2017. Air Force Safety Automated System – Wildlife Strike Data Output January 2012 through December 2017.

## **APPENDIX A**

### **Site Plan**





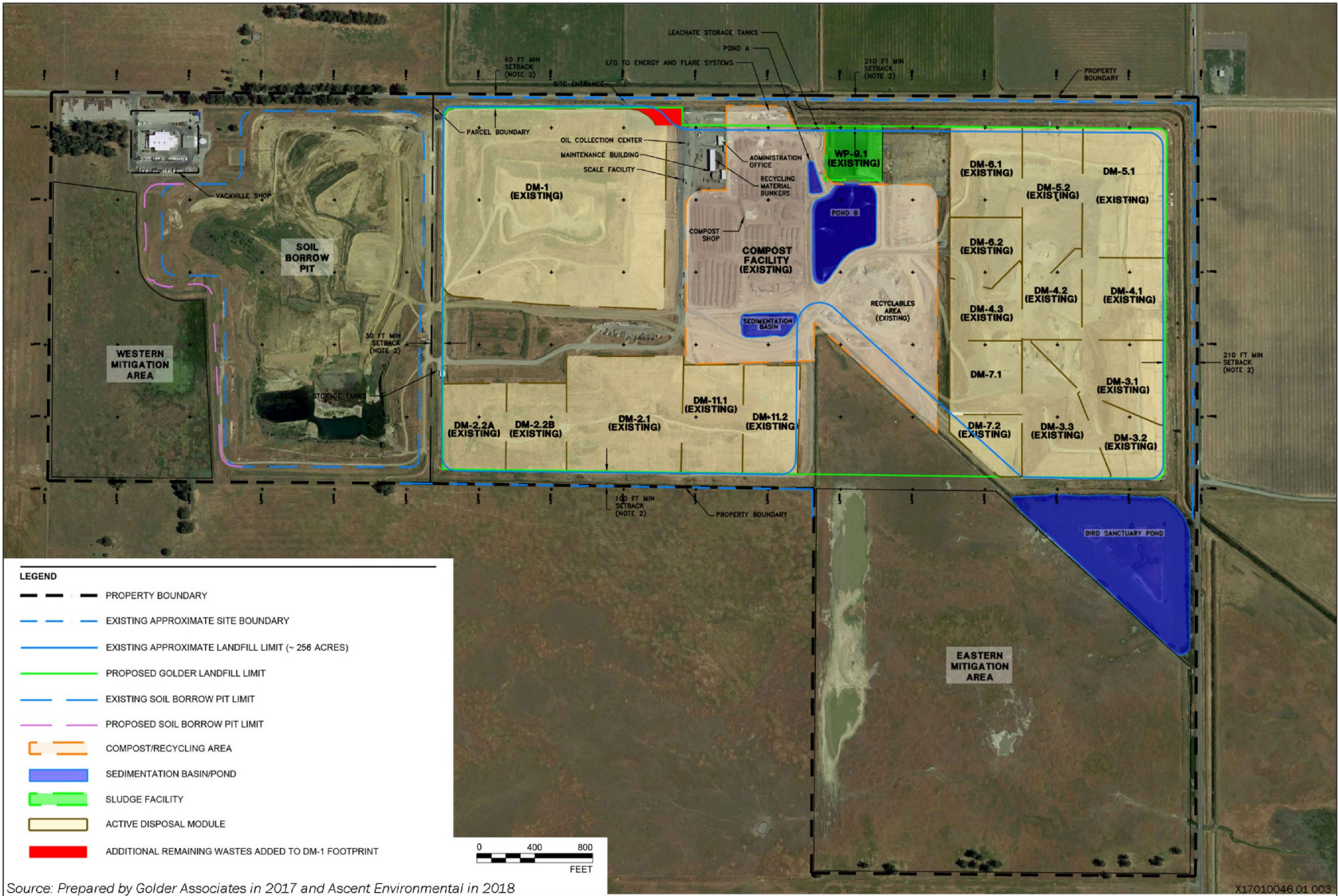


Exhibit 2

Project Site Plan





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## **APPENDIX B**

### **SWCA Qualifications**



## TRAVIS BELT, B.S., SENIOR BIOLOGIST/QUALIFIED AIRPORT WILDLIFE BIOLOGIST

Mr. Belt is a senior biologist with natural resources management experience in both California and Hawaii. He regularly conducts special-status species surveys and habitat mapping, prepares biological reports, performs compliance monitoring, and performs Wildlife Hazard Assessments (WHAs). He has designed and conducted special-status species survey programs that focused on utilizing global positioning technology to map endangered species habitat and population boundaries. Such surveys included detailed mapping of habitat boundaries within large survey areas (1,000+ acres) and identifying point locations of individual protected species.

Mr. Belt conducts biological monitoring activities for sensitive species research programs and construction-related projects. He is a FAA-approved wildlife hazard biologist. As a Qualified Wildlife Airport Biologist, he studies wildlife movements at airports, determines what movements may threaten aircraft safety, and provides recommendations to mitigate the identified hazards.

### YEARS OF EXPERIENCE

15

### EXPERTISE

Biological assessments  
Wildlife Hazard Assessments  
Special-status species surveys  
Wetland delineation  
Mitigation planning

### EDUCATION

B.S., Forestry and Natural Resources,  
e: Watershed Management, m: Fire  
Management; California Polytechnic  
State University, San Luis Obispo, 2001

### REGISTRATIONS / CERTIFICATIONS

FAA-Approved Wildlife Hazard Biologist  
Plant Voucher Collecting Permit, CDFW;  
2081(a)-09-05-V

Scientific Collecting Permit, CDFW;  
SC-9726

Morro shoulderband snail 10(a)(1)(A)  
Recovery Permit; USFWS; TE 824123-4

California Rapid Assessment Method  
Field Practitioner

### TRAINING

Advanced Wildlife Hazard Management  
for Airports; Loomacres Wildlife  
Management, Nashville, Tennessee,  
2014

SFY-3000 Airport Wildlife Hazard  
Management Workshop; Embry-Riddle  
Aeronautical University, Orlando,  
Florida, 2010

### SELECTED PROJECT EXPERIENCE

**Lanai Airport (LNY) Wildlife Hazard Assessment; Maui County, Hawaii; Hawaii Department of Transportation, Maui County Airports.** SWCA is conducting a WHA at LNY per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Qualified Airport Wildlife Biologist Overseeing FAA Wildlife Hazard Biologist. Designing and coordinating all surveys and evaluations, and reviewing all WHA reports, while mentoring a WHA-trained biologist.*

**Flagstaff Pulliam Airport (FLG) Wildlife Hazard Assessment; Coconino County, Arizona; Coffman Associates, City of Flagstaff Airports.** SWCA is conducting a WHA at FLG per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Overseeing FAA Wildlife Hazard Biologist. Designing and coordinating all surveys and evaluations, and reviewing all WHA reports, while mentoring a WHA trained biologist.*

**Confidential Landfill Project, Kauai County, Hawaii; Confidential Client:** SWCA conducted a WHA per FAA WHA survey protocols, including 1 year of wildlife surveys on an active landfill and proposed landfill sites. SWCA evaluated the potential effects of landfill operations on local aviation operations. *Role: Project Manager/FAA Wildlife Hazard Biologist. Designed all surveys, oversight of survey implementation, evaluated all data, stakeholder coordination, and prepared the final reports.*

**Naval Air Station Lemoore Bird/Animal Aircraft Strike Hazard (BASH) Plan for the Lemoore NAS Solar Photovoltaic Facility; Liberty Company, LLC.** SWCA assisted Recurrent Energy with lease negotiations and development of a BASH plan designed to monitor the potential BASH concerns associated with converting active agricultural lands to solar facilities. *Role: Project Manager/BASH Biologist. Assisted lease negotiations in relationship to BASH monitoring, designed BASH monitoring protocols.*

**Santa Maria Public Airport (SMX) Wildlife Hazard Assessment; Santa Barbara County, California; Coffman Associates.** SWCA conducted a WHA at SMX per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Project Manager/FAA Wildlife Hazard Biologist. Conducted all surveys and evaluations, and prepared final reports.*

**Monterey Regional Airport (MRY) Wildlife Hazard Assessment; Monterey County, California; Coffman Associates, Monterey Peninsula Airport District.** SWCA conducted a WHA at MRY per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Project Manager/FAA Wildlife Hazard Biologist. Conducted all surveys and evaluations, and prepared the final reports.*

**TRAINING (cont'd)**

USACE Wetland Delineation Training,  
Wetland Training Institute; San Diego,  
California, 2006

California Rapid Assessment Method  
Field Practitioner Training; Santa Cruz  
County, California, 2012

**Meadows Field Airport (BFL) Wildlife Hazard Assessment; Kern County, California; Coffman Associates, Kern County Airports.** SWCA conducted a WHA at BFL per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Project Manager/FAA Wildlife Hazard Biologist. Conducted all surveys and evaluations, and prepared the final reports.*

**Laughlin/Bullhead International Airport (IFP) Wildlife Hazard Assessment; Mohave County, Arizona; Coffman Associates, Mohave County Airports.** SWCA conducted a WHA at IFP per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Qualified Airport Wildlife Biologist Overseeing FAA Wildlife Hazard Biologist. Designed and coordinated all surveys and evaluations, and reviewed all WHA reports, while mentoring a WHA-trained biologist.*

**Kingman Airport (IGM) Wildlife Hazard Assessment; Mohave County, Arizona; Coffman Associates, City of Kingman.** SWCA conducted a WHA at IGM per FAA WHA survey protocols, including 1 year of wildlife surveys on the airport property and within a 5-mile radius, and submittal of WHA reports to FAA. *Role: Qualified Airport Wildlife Biologist Overseeing FAA Wildlife Hazard Biologist. Designed and coordinated all surveys and evaluations, and reviewed all WHA reports, while mentoring a WHA-trained biologist.*

**Vandenberg Air Force Base (VAFB) Bird/Wildlife Aircraft Strike Hazard (BASH); Santa Barbara; County, California; VAFB Conservation Flight.** SWCA provided assistance on the VAFB BASH program, which included evaluating the existing BASH Plan at the airfield, recommending management actions to reduce strikes, evaluating the potential effects on wildlife hazards resulting from a large-scale wetland restoration project within VAFB flight patterns, and preparing a BASH Air Field Management Plan and BASH updates. *Role: Project Manager/Wildlife Hazard Biologist. Conducted all surveys and evaluations, and prepared the plan and updates.*

**Monterey Regional Airport (MRY) Biological and Historical Resources Inventories; Monterey County, California; Coffman Associates.** SWCA conducted biological and historical architecture resources inventories for the entire 597-acre MRY property located in the city of Monterey. The biological inventory included data on protected resources present, provided the associated constraints, and discussed potential mitigation for the resources, including an analysis of existing mitigation programs. The historical inventory surveyed 21 properties including primary- and secondary-source research exploring the people, events, and patterns of development. The historic context section presented in this report identified two principal themes of significance: (1) World War II era, defense-related development, and (2) the early history and development of aviation on the Monterey Peninsula. *Role: Project Manager / Biologist. Conducted field surveys and authored the biological inventory, and provided project management for the historical resources inventory.*

**Monterey Regional Airport (MRY) Runway Safety Improvement Project; Monterey County, California; Coffman Associates.** SWCA provided biological, paleontological, and archeological support, including CEQA and NEPA compliance documents, for the project planning. In addition, SWCA conducted wildlife surveys, mitigation monitoring during and after construction, and reporting for the runway safety area expansion construction project, located on approximately 38.5 acres of the 597-acre property located in the city of Monterey. *Role: Project Manager / Biologist. Conducted field surveys, sensitive plant species collection to support mitigation/restoration efforts, construction monitoring, and mitigation monitoring.*

**Monterey Regional Airport (MRY) Infields Rehabilitation Project; Monterey County, California; Monterey Peninsula Airport District.** SWCA conducted biological surveys and documentation for the proposed infield rehabilitation program at MRY. The study included a biological document suitable for CEQA and NEPA compliance documents and Section 7 consultation with USFWS. *Role: Project Manager / Biologist. Conducted field surveys, sensitive plant species collection to support mitigation/restoration efforts, construction monitoring, and mitigation monitoring.*

**Half Moon Bay (HAF) Airport Taxiway and Access Roads Project; San Mateo County, California; San Mateo County Department of Airports.** SWCA conducted biological and cultural resource surveys and permitting assistance for construction of new taxiways, an access road, and drainage and fence improvements at the airport. *Role: Senior Biologist. Conducted biological surveys for protected species and jurisdictional Waters of the U.S., and assisted with preparation of NEPA documents and permit applications.*

**Natural Resources Surveys for the MV-22/H-1 EIS; Hawaii County, Hawaii; Belt Collins, LLC.** SWCA conducted biological surveys for the NEPA documentation supporting several proposed helicopter landing pads and drop zones on Pohakuloa Training Area. *Role: Lead Botanist. Designed and implemented special-status plant surveys in the project areas.*

## **APPENDIX C**

### **Photo Documentation**





**Photo C-1. Overview of the landfill taken from the existing DM-11.2. Photo shows the active disposal module in the upper right and the composting facilities to the left. Photo taken on December 5, 2017.**



**Photo C-2. View of the composting facility. Photo taken on December 5, 2017.**





**Photo C-3. View of the active face at the currently operating disposal module. Photo taken on December 6, 2017.**



**Photo C-4. View of Canada geese in the borrow pit pond. Photo taken on December 5, 2017.**

## **APPENDIX D**

### **List of Species Observed**



**Table D-1. List of Wildlife Species of Observed**

Scientific Name	Common Name
<b>BIRDS</b>	
<b>Wading Birds</b>	
<i>Ardia herodias</i>	great blue heron
<i>Ardea alba</i>	great egret
<b>Swans and Geese</b>	
<i>Branta canadensis</i>	Canada goose
<b>Dabbling Ducks</b>	
<i>Anus platyrhynchos</i>	mallard duck
<b>Diurnal Raptors</b>	
<i>Cathartes aura</i>	turkey vulture
<i>Circus cyaneus</i>	northern harrier
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Falco sparverius</i>	American kestrel
<i>Falco columbarius</i>	merlin
<b>Plovers, Oysercatchers, Stilts, and Avocets</b>	
<i>Charadrius vociferous</i>	killdeer
<b>Sandpipers</b>	
<i>Calidris minutilla</i>	least sandpiper
<i>Gallinago delicata</i>	Wilson's snipe
<b>Skuas, Jaegers, and Gulls</b>	
<i>Larus californicus</i>	California gull
<i>Larus argentatus</i>	herring gull
<i>Larus delawarensis</i>	ring-billed gull
<b>Pigeons and Doves</b>	
<i>Zenaida macroura</i>	mourning dove
<i>Streptopelia decaocto</i>	Eurasian colored dove
<i>Columba livia</i>	rock pigeon
<b>Tyrant Flycatchers</b>	
<i>Sayornis nigricans</i>	black phoebe
<b>Jays, Crows, and Allies</b>	
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
<b>Mimids</b>	
<i>Mimus polyglottos</i>	northern mockingbird
<b>Waxwings, Silky-Flycatchers, and Starlings</b>	
<i>Sturnus vulgaris</i>	European starling

Scientific Name	Common Name
<b>Emberizine Sparrows and Allies</b>	
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
<i>Passer domesticus</i>	house sparrow
<b>Icterids</b>	
<i>Sturnella neglecta</i>	western meadowlark
<i>Agelaius phoeniceus</i>	red-winged blackbird
<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Molothrus ater</i>	brown-headed cowbird
<b>Finches and Old World Sparrows</b>	
<i>Carpodacus mexicanus</i>	house finch
<b>MAMMALS</b>	
<b>Felidae</b>	
<i>Felis catus</i>	domestic cat
<b>Raccoons, Skunks, and Weasels</b>	
<i>Lontra canadensis</i>	North American river otter
<b>Lagomorphs</b>	
<i>Lepus californicus</i>	black-tailed jackrabbit
<b>Rodents</b>	
<i>Spermophilus beecheyii</i>	California ground squirrel