

# **WRITTEN RE-EVALUATION OF THE 2022 FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT/RECORD OF DECISION FOR ZIPLINE INTERNATIONAL INC. DRONE PACKAGE DELIVERY OPERATIONS IN SALT LAKE CITY, UTAH AND SURROUNDING AREA AND RECORD OF DECISION**

## **ZIPLINE INTERNATIONAL INC. AMENDMENT TO OPERATIONS SPECIFICATIONS (OPSPEC)**

### **Introduction and Background**

#### **Introduction**

This written re-evaluation (WR)/Record of Decision (ROD) evaluates whether supplemental environmental analysis is needed to support the Federal Aviation Administration (FAA) Office of Safety Standards, Flight Standards Service decision to amend Zipline International Inc.'s (Zipline) OpSpec to allow for the following changes to operations in Salt Lake City, Utah and surrounding area:

- (1) An increase in operations under 14 Code of Federal Regulations (CFR) Part 135 from 20 operations per day to 100 operations per day,
- (2) Holiday operations, and
- (3) Operations from 0700 (7:00 AM) to 2200 (10:00 PM) local time. The original OpSpec allowed for operations from 0700 (7:00 AM) to 1730 (5:30 PM).

The FAA's issuance of an amended OpSpec is a major federal action subject to the requirements of the National Environmental Policy Act of 1969 (NEPA). As such, the FAA must assess the potential environmental impacts of issuing the amended OpSpec. FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* provides that the FAA may prepare a WR to determine whether the contents of a previously prepared environmental document remains substantially valid or whether significant changes to a previously analyzed proposed action require the preparation of a supplemental environmental assessment (EA) or environmental impact statement (EIS). The affected environment and environmental impacts of Zipline drone package delivery in Salt Lake City, Utah and surrounding area were analyzed in the 2022 *Final Environmental Assessment and Finding of No Significant Impact/Record of Decision for Zipline International Inc. Drone Package Delivery Operations, Salt Lake City, Utah and Surrounding Area*. The FAA's Finding of No Significant Impact (FONSI) and Record of Decision (ROD) were issued for this action on December 23, 2022. This

WR/ROD evaluates whether supplemental environmental analysis is needed to support the FAA's decision to amend Zipline's OpSpec.

In accordance with Paragraph 9-2.c of FAA Order 1050.1F, the preparation of a new or supplemental EA is not necessary when the following can be documented:

1. The proposed action conforms to plans or projects for which a prior EA and FONSI have been issued or a prior EIS has been filed and there are no substantial changes in the action that are relevant to environmental concerns;
2. Data and analyses contained in the previous EA and FONSI or EIS are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts; and
3. Pertinent conditions and requirements of the prior approval have been, or will be, met in the current action.

This WR/ROD analyzes whether the three factors above have been met and provides the FAA's determination regarding whether the contents of the 2022 EA remain valid.

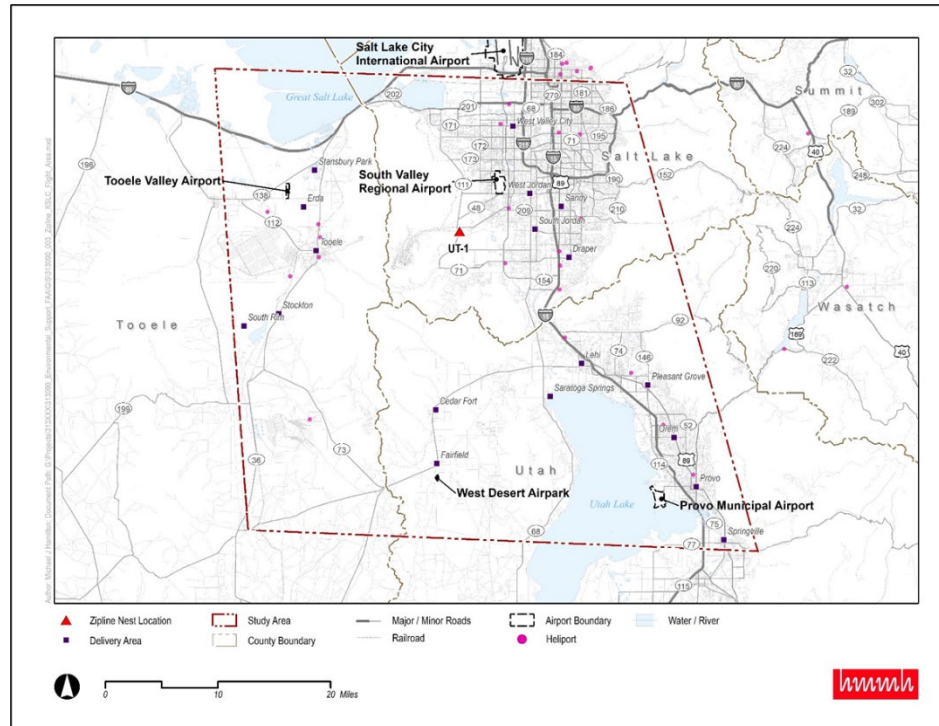
## Background

The 2022 EA analyzed the potential environmental impacts of Zipline conducting commercial package delivery from one hub or "nest" location in Salt Lake City, Utah. The 2022 EA assessed up to 20 delivery flights per day during daylight hours up to seven days per week, with no flights on holidays. The 2022 EA did not consider nighttime operations. The FAA published a Notice of Availability (NOA) for the draft EA on October 26, 2022. The FAA received six comment submissions during the 14-day public comment period. These comments were addressed in the final EA. On December 23, 2022, the FAA published a NOA for the final EA and FONSI/ROD.

Zipline conducts deliveries to customers in 17 communities in the operating area, identified in Section 2.1 of the 2022 EA, from its nest in South Jordan/Salt Lake City, Utah. The total approximate delivery area is 1,675 square miles. At its widest point, the study area, shaped like a polygon, is approximately 45 miles east to west and 41 miles north to south. The study area is split fairly evenly among Salt Lake County (approximately 490 square miles), Tooele County (approximately 542 miles), and Utah County (approximately 643 square miles). The proposed operations would occur during daylight after 7 am and nighttime hours until 10 pm up to seven days per week including holidays under the Proposed Action. Figure 1 shows the South Jordan/Salt Lake City nest location and study area.

The nest is located in a capped portion of the Trans-Jordan Landfill located in South Jordan, Utah, approximately 16 miles south of I-80 in Salt Lake City. Zipline worked closely with the landfill representatives on safe land re-use for pre-construction and construction practices, including design changes where relevant. Appropriate processes were implemented, including but not limited to, settlement monitoring, gas detection system, and operational and safety procedures. The nest site

is centrally located to provide deliveries to a mix of privately-owned agricultural, commercial, and residential properties within the study area. Delivery operations are distributed evenly across the 17 delivery communities.



**Figure 1. South Jordan/Salt Lake City Nest Location and Study Area**

The Zipline unmanned aircraft (UA or “drone”) used for delivery operations has a maximum takeoff weight of less than 55 pounds, including a maximum payload of approximately 4 pounds. The fixed wing flight platform uses electric power from rechargeable lithium-ion batteries and is launched from the central nest location via a launching system. Returning drones are retrieved using a wire capture line on a recovery system. The aircraft includes a parachute safety system that can be deployed in cases of emergency.

After launch, Zipline’s UA will rise to a cruising altitude between 130 feet and 400 feet above ground level (AGL) and follow a preplanned route to its delivery site. Aircraft will typically fly en route between 250 feet and 400 feet AGL and will always stay above 130 feet AGL except when descending to drop a package or if an appropriate response to an emergency scenario. The aircraft descends into its delivery loop and releases a package from approximately 60 feet AGL. Packages are carried internally in the aircraft’s fuselage and are dropped by opening a set of payload doors on the aircraft. Packages descend to their delivery site under a small parachute. Zipline’s aircraft will not touch the ground in any other place than the nest (except during emergency landings) since it remains aerial while conducting deliveries.

## Proposed Action

Zipline has requested an OpSpec amendment to increase the scope of its operations to include the following:

- (1) An increase in operations from 20 delivery flights per day to 100 delivery flights per day,
- (2) Delivery flights on holidays, and
- (3) Delivery flights from 0700 (7:00 AM) to 2200 (10:00 PM) local time., The original OpSpec allowed for delivery flights from 0700 (7:00 AM) to 1730 (5:30 PM) local time.

All other aspects of the action analyzed in the 2022 EA remain the same, including the UA, flight profile, and operating area (refer to Chapter 2 of the 2022 EA). As mentioned in the 2022 EA, Part 107 operations was considered the no action alternative analysis and described below under Affected Environment. Current Part 107 operations intends to transition into the Part 135 operations only<sup>1</sup>.

## Affected Environment

The affected environment under the proposed action remains largely the same as discussed in the 2022 EA. No substantial changes or alterations have occurred to the environmental impact categories or the study area. Thus, the 2022 EA remains a valid discussion of the affected environment for the proposed action.

Under Part 107<sup>2</sup> and waivers, Zipline has been operating 5 days a week, including some holidays, with flights approximately 20 minutes in duration and up to a maximum of 32 flights per day. In addition, Zipline is authorized to conduct beyond visual line of sight package delivery flights under Part 107 operating authorities and waivers although these existing operations are limited in that they cannot be conducted for compensation or hire. Zipline began conducting validation, calibration, and demonstration flights under its Part 107 waiver in February 2022.

Zipline intends to transition all current operations in Salt Lake City, Utah, and surrounding area from Part 107 to Part 135 and to be implemented as described by the proposed action. Therefore, no expectation of cumulative effects from operating under the two types of certificated operations only the maximum of 100 flights per day from each nest under Part 135.

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<sup>1</sup> Email from Zipline verifying this information, 21 Nov 23.

<sup>2</sup> On June 28, 2016, the FAA published Part 107, which allowed people to begin conducting routine, civil small UAS operations (Operation and Certification of Small Unmanned Aircraft Systems, 81 FR 42064). On January 15, 2021, the FAA published a final rule amending Part 107 to permit routine small UAS operations at night or over people under certain conditions (Operation of Small Unmanned Aircraft Systems over People, 86 Fed. Reg. 4314). The FAA applied a Categorical Exclusion to the Part 107 Rule and the Part 107 Amendments to satisfy its compliance with NEPA and other special purpose environmental laws.

## Re-evaluation of Environmental Consequences

### Resources Not Analyzed in Detail

The following environmental impact categories were reviewed and dismissed from detailed analysis in the 2022 EA: air quality; climate; coastal resources; farmlands; hazardous materials, solid waste, and pollution prevention; land use; natural resources and energy supply; visual effects (light emissions only); and water resources (wetlands, floodplains, and groundwater). Refer to Section 3.1 of the 2022 EA for the rationale for dismissing these impact categories. The changes to the action analyzed in the 2022 EA – increasing daily operations, operating on holidays, and operating during some hours of darkness – does not change the rationale for dismissing those impact categories, other than light emissions. Therefore, all impact categories originally dismissed other than visual effects are not re-evaluated in this WR/ROD. The impact categories that were analyzed in detail in the 2022 EA are re-evaluated below in the context of the changes to the action.

### Resources Analyzed in Detail

#### Biological Resources (including Fish, Wildlife, and Plants)

Potential biological resource impacts under the proposed action would be comparable to those impacts described in the 2022 EA. The study area the FAA analyzed for biological resources in the 2022 EA would not change under the proposed action.

A U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) was generated on 07 November 2023 and no new species were identified in the study area. In accordance with 50 CFR § 402.16 *Reinitiation of Consultation*, no conditions were met to conduct reinitiation. Therefore, the previous consultation in the 2022 EA is sufficient and relevant to this proposed action (see Section 3.2 of the 2022 EA for a detailed description of previous consultation efforts).

The study area is predominantly located within the Great Salt Lake Major Land Resource Areas and a small portion of the eastern boundary within the Wasatch and Uinta Mountains Major Land Resource Area in Utah. Within the Great Salt Lake area, there are a variety of ecoregions including salt desert, sagebrush basins and slopes, woodland and shrub covered low mountains, and moist Wasatch front foot slopes. Within the Wasatch and Uinta Mountains area, the project area is predominantly semiarid foothills. These types of habitats support a variety of insects, reptiles, amphibians, mammals, and birds. There are several aquatic habitats that occur in the study area, including the southernmost portion of the Great Salt Lake, the northern portion of Utah Lake, a portion of the Provo River, and man-made water impoundment areas. Great Salt Lake is an important avian resource providing food, such as brine shrimp (*Atremia spp.*) and brine fly (*Ephydra hians*), breeding habitat, and migratory staging areas for millions of birds including waterfowl, wading birds, and shorebirds. Zipline does not plan to fly over Great Salt Lake or Utah Lake.

The current proposed action continues to be located at the previous study area and operations would continue to occur over urban and rural residential areas, rural farmland, natural areas, and commercially developed properties. These areas provide habitat for many of the more common wildlife species in the region including opossums (*Didelphis virginiana*); squirrels (*Sciurus spp.*); rabbits (*Sylvagus spp.*); groundhogs (*Marmota monax*); bats (*Chiroptera spp.*); mice (*Mus spp.*), voles (*Microtus arvalis*), and other rodents; coyote (*Canis latrans*), foxes (*Vulpes spp.*), bear (*Ursus spp.*), raccoon (*Procyon lotor*), weasels (*Mustela spp.*), otter (*Lontra canadensis*), skunks (*Mephitis mephitis*), bobcat (*Lynx rufus*), and other carnivores; deer (*Odocoileus spp.*) and elk (*Cervus canadensis*); songbirds (*Passeriformes spp.*), waterfowl, wading birds, and shorebirds; reptiles; amphibians; and insects.

The changes to the action analyzed in the 2022 EA—increasing daily operations, operating on holidays, and operating during some hours of darkness—would not substantially change the potential impacts on biological resources. Increased nest operations would produce marginally greater levels of noise, light, and human activity at the existing nest location. However, the nest is located on a landfill and is surrounded by low quality, edge habitat. Any common, urban species in the vicinity of the nest site are likely habituated to human disturbance and would not be adversely affected by increased nest operations. Similarly, increased frequency of operations would likely only marginally increase UA-related disturbance to biological resources. Due to the large size of the study area, individual locations within the 1,675-square mile operating area would only experience marginally increased overflights. Biological resources within the operating area would not experience a substantially greater number of overflights; any additional disturbance caused by overflights would not increase stress, reduce reproductive success, or induce injury or mortality outside the range of natural variation for any species.

Although operating in darkness involves emission of additional lighting for aircraft identification and safety, these lights are not expected to substantially impact biological resources. Zipline's UAs are equipped with two lights on each wing tip, directional red and green center lights, and a strobe. These lights are automatically powered during operations after civil twilight and are visible from three statute miles to allow other aircraft to identify operating UAs in low-light conditions. Prolonged exposure to artificial lighting can affect foraging, susceptibility to predation, activity rates, and behavior of many wildlife species (Beier 2006). However, given the relatively low frequency of overflight of any given area and the large size of the operating area, operation of safety lights would not substantially alter the light environment for biological resources or induce behavioral changes in any exposed species. Any temporary disturbance from safety light exposure would only last the duration of the overflight and would not alter energy expenditure or reproductive success outside the range of natural variation.

Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action is not expected to have a significant impact on biological resources.

## **Department of Transportation Act Section 4(f)**

Impacts on Section 4(f) properties under the proposed action would be comparable to those impacts described in the 2022 EA. As described in the 2022 EA, the FAA identified many properties that could meet the definition of a Section 4(f) property, including public parks and historic sites. Identified Section 4(f) resources include but are not limited to the Timpanagos Cave National Monument, American Fork Canyon, Utah Lake State Park, Wardle Fields Regional Park, and Parleys Historic Nature Park. The 2022 EA determined the proposed action would not result in a physical or constructive use (i.e., substantial impairment) to any of the potential Section 4(f) resources or properties in the operating area.

Under the proposed action there would be no change to the study area that was reviewed in the 2022 EA, and no new Section 4(f) resources that would require further analysis. The changes for the proposed action compared to the action analyzed in the 2022 EA – increasing daily operations, operating on holidays, and operating during some hours of darkness – would not substantially change the impacts on potential Section 4(f) properties. Although the proposed action would increase the frequency of operations, it is highly unlikely that any given Section 4(f) property would experience a substantial increase in overflights given their dispersion throughout the 1,675-square mile operating area. The FAA has determined that infrequent UA overflights as described in the proposed action are not considered a constructive use of any Section 4(f) resource and would not cause substantial impairment to any of the Section 4(f) resources in the study area. Noise and visual effects from Zipline’s occasional overflights are not expected to diminish the activities, features, or attributes of the resources that contribute to their significance or enjoyment. Furthermore, Zipline already operates five days a week, including some holidays, with up to 30 flights per day in the Salt Lake City operating area under Part 107. Thus, the proposed action is similar to existing conditions and is not expected to result in impacts that are significantly different than those potential impacts described in the 2022 EA. There are no substantial changes in the proposed action relevant to environmental findings in the 2022 EA, and there are no significant new circumstances or information relevant to environmental concerns under the current action. Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action would not result in significant impacts on Section 4(f) properties.

## **Historical, Architectural, Archeological, and Cultural Resources**

Historical, architectural, archeological, and cultural resource impacts under the proposed action would be comparable to those impacts described in the 2022 EA even though delivery operations would be increased from 20 per day to 100 per day. Flights will continue to be evenly distributed to permit only a small number of overflights per day to affect a historic or cultural resource. In addition, no complaints or other issues have occurred during current operations. The Area of Potential Effects (APE) previously analyzed in the 2022 EA would not change under the proposed action.

In accordance with 36 CFR § 800.4(a)(1), the FAA consulted with the Utah State Historic Preservation Officer (SHPO) and tribes that may potentially attach religious or cultural significance to resources in the APE for the 2022 EA. The FAA sent a consultation letter to the Utah SHPO on August 24, 2022,

requesting concurrence with the FAA's determination that no historic properties would be affected by the proposed action. In response, the Utah SHPO provided additional information to the FAA regarding the identification of historic properties in the APE and with a recommendation that a no adverse effect determination would be more appropriate for the undertaking. Based on this correspondence, the FAA revised its determination to a no adverse effect finding for the undertaking, and the Utah SHPO replied in concurrence on September 2, 2022. Based on the nature of potential UA effects on historic properties—namely limited to non-physical, reversible impacts from visual presence and noise of transiting UAs—and the limited number of daily flights in conjunction with the FAA's noise exposure analysis, the FAA has determined this undertaking does not change the previous determination and does not require reinitiating consultation.

The FAA also consulted with the Northwestern Band of Shoshone Nation; the Ute Indian Tribe of the Uintah and Ouray Reservation, Utah; the Confederated Tribes of the Goshute Reservation, Nevada and Utah; the Shoshone-Bannock Tribes of the Fort Hall Reservation; and the Skull Valley Band of Goshute Indians of Utah for the 2022 EA. No responses from any tribes were received. Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action would not result in significant impacts on historical, architectural, archeological, and cultural resources.

## Noise and Noise-Compatible Land Use

Impacts related to noise and noise-compatible land use under the proposed action would be comparable to those impacts described in the 2022 EA<sup>3</sup>. During the preparation of the 2022 EA, the FAA initiated an analysis of potential noise exposure in the area that could result from implementation of the proposed action. The FAA's Office of Environment and Energy approved the use of this noise methodology as detailed in the 2022 EA and concurred with continued use of this methodology for this WR/ROD (see Attachment 1).

The Day-Night Average Sound Level (DNL) noise exposure analysis concluded that for all flight phases, and even in areas with the highest noise exposure (i.e., the nest), noise levels would still be well below FAA's DNL 65 decibel (dB) threshold at noise-sensitive receivers.

When considering the noise levels associated with Zipline's level of operations combined with existing aircraft noise levels in these areas, noise levels would not increase by DNL 1.5 dB within areas of existing aviation noise exposure of DNL 65 dB or newly expose an area to DNL 65 dB as a result of a DNL 1.5 dB increase.

Accordingly, the data and analyses contained in the 2022 EA remain substantially valid. There are no substantial changes in the proposed action that are relevant to noise impact findings in the 2022 EA,

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<sup>3</sup> The FAA has issued requirements for assessing aircraft noise in FAA Order 1050.1F, Appendix B. The FAA's required noise metric for aviation noise analysis is the yearly Day-Night Average Sound Level (DNL) metric. A significant noise impact is defined in Order 1050.1F as an increase in noise of DNL 1.5 decibel (dB) or more at or above DNL 65 dB DNL noise exposure or a noise exposure at or above the 65 dB level due to a DNL 1.5 dB or greater increase. The compatibility of existing and planned land uses with an aviation proposal is usually associated with noise impacts.



and there are no significant new circumstances or information relevant to environmental concerns under the current action. The proposed action considered in this WR/ROD would not have a significant impact on noise.

## **Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks**

Impacts related to socioeconomics, environmental justice, and children's environmental health and safety risks under the proposed action would be comparable to those impacts described in the 2022 EA. As with the 2022 EA, the proposed action would not alter local populations, public services, or the local economy. No disproportionate impact is expected to low-income or minority populations as a result of the proposed action. The proposed action is not expected to impact children's environmental health and safety. These potential impacts are comparable within the scope of the impacts analyzed in the previous 2022 EA. Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action would not result in significant impacts related to socioeconomics, environmental justice, and children's environmental health and safety risks.

## **Visual Effects (including Light Emissions)**

Visual effects under the proposed action would be comparable to those emissions and impacts described in the 2022 EA. Under the proposed action, operations would occur into the nighttime hours up until 10 pm. Daytime operations will begin after 0700 as analyzed in the 2022 EA. Per FAA Order 1050.1F, the FAA has not established a significance threshold for light emissions or for visual resources/visual character. Those operations conducted at nighttime are not expected to be significant and would not impact visual resources. Existing light sources would be used at times not required by current activities at the site. However, the proposed action would not impact visual resources.

The proposed action would not change any landforms or land uses; therefore, there would be no effect on the visual character of the area. The operations would happen in airspace only. The FAA estimates that at typical operating altitude and speeds, the UA en route would be observable for approximately six seconds by an observer on the ground. The proposed action would involve airspace operations that are unlikely to result in visual impacts anywhere in the study area, including sensitive areas such as Section 4(f) properties where the visual setting is an important aspect of the property. This is due in part to Zipline's flight planning system which prepares an optimized flight path from the nest to each designated delivery site. The software ensures that each route integrates and adheres to all of the restrictions entered into the database, including Section 4(f) properties, which can be automatically avoided based on the time of day and other factors. Additionally, because of the short duration that each drone flight could be seen from any resource in the study area and the expected maximum of proposed flights per day (100) spread throughout the 1,675-square-mile study area, these factors would minimize any potential for significant visual impacts at any location in the study area. Any visual effects are expected to be similar to existing air traffic in the study area.

These potential impacts are within the scope of impacts analyzed in the 2022 EA. Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action would not result in significant impacts related to visual effects.

## **Water Resources (including Surface Waters)**

The proposed action is consistent with the 2022 EA and would not be expected to result in significant impacts to surface waters. No construction activities would occur under the proposed action. The proposed action would not have the potential to adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values, or to adversely affect surface waters such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained, and such impairment cannot be avoided or satisfactorily mitigated. The potential likely source of surface water contamination on the UA, the aircraft's Lithium-ion battery packs, are not expected to detach from the aircraft. Furthermore, the UA is not expected to become lost in the event of a water landing as Zipline is required to locate and secure any downed aircraft. For these reasons, the proposed action is consistent with the previous 2022 EA and would not have the potential to exceed water quality standards established by federal, state, local, and tribal regulatory agencies, nor would it have the potential to contaminate public drinking water supply such that public health may be adversely affected. Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action would not result in significant impacts related to water resources (surface waters).

## **Cumulative Impacts**

The proposed action would not result in significant cumulative impacts to any environmental impact category. Furthermore, the proposed action would not result in cumulative impacts which would be substantially different from those cumulative impacts analyzed in the 2022 EA. The 2022 EA analyzed the environmental impacts of the proposed action along with the potential environmental impacts of past, present, and reasonably foreseeable future actions and determined that the proposed action would not result in significant cumulative impacts to any environmental impact category. As discussed above, no significant impacts are expected from the proposed action. Further, impacts associated with the proposed action would not be expected to increase beyond those considered in the 2022 EA. Accordingly, the data and analyses contained in the 2022 EA remain substantially valid, and the proposed action would not result in significant cumulative impacts.

## **Findings**

The FAA prepared this WR/ROD to determine whether Zipline International Inc.'s request for an amendment to its OpSpec for commercial drone package delivery operations conforms to the prior environmental documentation and the data contained in the 2022 EA remains substantially valid, there are no significant environmental changes, and all pertinent conditions and requirements of the prior approval have been met or will be met in the current action.

The areas evaluated in this WR included biological resources; Department of Transportation Act, Section 4(f); historical, architectural, archeological, and cultural resources; noise and noise-compatible land use; visual effects; and water resources.

Based on the above review and in accordance with FAA Order 1050.1F, paragraphs 9-2(c) and 9-3, the FAA has determined that preparation of a supplemental or new EA or EIS is not necessary.

## Decision and Order

The FAA recognizes its responsibilities under NEPA, Council on Environmental Quality (CEQ) regulations, and its own directives. Recognizing these responsibilities, the undersigned has carefully considered the FAA's goals and objectives in reviewing the environmental aspects of the proposed action to approve Zipline's request to amend Zipline's OpSpec to allow changes to its UA commercial package delivery operations in Salt Lake City and the surrounding area. Based upon the above analysis, the FAA has determined that the proposed action meets the purpose and need.

This WR/ROD considered the original 2022 environmental review which included the purpose and need to be served by the proposed action, alternatives to achieving them, the environmental impacts of these alternatives, and conditions to preserve and enhance the human environment. This WR/ROD provides a fair and full discussion of the impacts of the proposed action. The NEPA process included appropriate consideration for avoidance and minimization of impacts, as required by NEPA, the CEQ regulations, and other special purpose environmental laws, and appropriate FAA environmental orders and guidance.

The FAA assesses that, with respect to the proposed action, the NEPA requirements have been met. FAA approval of this environmental review document indicates that applicable federal requirements for environmental review of the proposed action have been met.

Having carefully considered and being properly advised as to the anticipated environmental impacts of the proposal as re-evaluated with respect to the 2022 EA and the FONSI/ROD, under the authority delegated by the Administrator of the FAA, the undersigned finds the OpSpec amendment, and other approvals necessary to enable Zipline's requested operations in Salt Lake City and the surrounding area are consistent with existing national environmental policies and objectives as set forth in Section 101 of NEPA and other applicable environmental requirements, and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(C) of NEPA. The undersigned further finds that the action is the type of action that does not require an Environmental Impact Statement under NEPA.

Responsible FAA Official: \_\_\_\_\_

Derek Hufty

Manager, General Aviation and Commercial Operations Branch

Emerging Technologies Division

Office of Safety Standards, Flight Standards Service

## **Right of Appeal**

This Written Re-Evaluation/ROD constitutes a final agency action and a final order taken pursuant to 49 U.S.C. §§ 40101 et seq. and constitutes a final order of the FAA Administrator which is subject to exclusive judicial review by the Courts of Appeals of the United States in accordance with the provisions of 49 U.S.C. § 46110. Any party having substantial interest in this order may apply for a review of the decision by filing a petition for review in the appropriate U.S. Court of Appeals no later than 60 days after the order is issued in accordance with the provisions of 49 U.S.C. § 46110.

## Reference

Beir, P. 2006. Effects of Artificial Night Lighting on Terrestrial Mammals. Ecological consequences of night lighting on terrestrial mammals, 19-42.

## Attachment 1



# Federal Aviation Administration

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## Memorandum

Date: November 16, 2023

To: David Senzig, Manager (Acting), Noise Division, Office of Environment and Energy (AEE-100)

From: Adam Scholten, Noise Division, Office of Environment and Energy (AEE-100)

Subject: Review of Written Re-evaluation (WR) Noise Analysis Methodology for Zipline International Inc. Proposed Amended Sparrow/P-1 UA Operations in Salt Lake City, UT and Surrounding Area

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The Office of Environment and Energy, Noise Division (AEE-100), is assisting the Office of Flight Standards, General Aviation and Commercial Branch (AFS-752) with the noise analysis for the Written Re-evaluation (WR) of the 2022 Final Environmental Assessment (EA), Finding of No Significant Impact, and Record of Decision (FONSI/ROD) for Zipline International Inc. (Zipline) proposed amended operations using the Sparrow/P-1 unmanned aircraft (UA) in Salt Lake City, Utah (UT) and the surrounding area to provide package delivery services as a 14 CFR Part 135 operator.

The Proposed Action is for Zipline to expand existing operations using the Sparrow/P-1 UA in Salt Lake City and the surrounding area to deliver packages from a single central distribution center, referred to as a “nest”, connecting to a supporting route network to deliver packages to potential delivery locations (“delivery sites”) such as medical centers, health facilities, and private homes within the operating area to seventeen surrounding communities. Typical operations of the UA consist of departure from the nest via launch by catapult and a climb to an approximate en route altitude between 250-400 feet above ground level (AGL). The UA then navigates along a defined path from the nest to the intended delivery site. Approaching the delivery site, the UA will fly a pattern near the delivery point, descend to 60 feet AGL, and drop a package via parachute within a pre-defined drop zone. Following delivery, the UA will climb back to en route altitude, fly along a defined path back to the nest, and then be recovered at the nest via a cable driven arrestor system.

Under the scope of the Proposed Action Zipline has submitted an adjustment to their existing approved Operations Specifications (OpSpecs) and referenced in OpSpec B050, Authorized Areas of En Route Operations, Limitations, and Provisions. This adjustment reflects expanding hours of operations to reflect operating from 7 AM to 10 PM local time, allowing for operations to occur on holidays, and increasing the number of daily delivery operations from a single nest from a maximum of 20 per day to 100 per day distributed among twelve communities within the previously approved operating area. Under the Proposed Action Zipline does not propose conducting deliveries during acoustical nighttime hours, which are defined as the period between 10 PM and 7 AM local time. Approval of a Federal Action amending Zipline’s OpSpecs is required before these expanded operations can occur.

As the FAA does not currently have a standard approved noise model for assessing UA, and in accordance with FAA Order 1050.1F, all non-standard noise analysis in support of the noise impact analysis for the National Environmental Policy Act (NEPA) must be approved by AEE. A prior noise analysis methodology was approved by AEE for evaluating Zipline's initial package delivery operations in Salt Lake City, UT with the Sparrow/P-1 UA as detailed in Appendix C of the December 2022 EA<sup>1</sup>. However, since the completion of that EA, preliminary supplemental noise measurements for the Sparrow/P-1 UA were provided to AEE in May 2022 in conjunction with noise certification tests<sup>2</sup>. Notably, the supplemental noise measurements indicate differences in the measured noise levels for some flight phases of the Sparrow/P-1 UA relative to the measurements used in the previously approved noise analysis methodology.

Upon further analysis of the supplemental noise measurements and comparison to the previously approved noise analysis methodology, as well as consideration of the scope of the Proposed Action, AEE believes continued use of the previously approved noise analysis methodology from the December 2022 EA is warranted for this WR. As detailed in the previously approved methodology, if Zipline were to increase operations of the Sparrow/P-1 UA up to as many as 500 daily deliveries from a single nest the resulting noise levels would be at or below DNL 45 dB for the en route and delivery flight phases. For the nest, noise levels of DNL 65 dB or greater would only occur within 25 feet of the nest infrastructure, and DNL 60 dB within 50 feet of the nest infrastructure, respectively. Considering the Salt Lake City nest and surrounding operating area, the extents of these noise levels would remain entirely on Zipline property within the Trans-Jordan Landfill, would not infringe on the locations of noise sensitive receivers, and would not be expected to add DNL 1.5 dB within DNL 65 dB of airport noise contours or become DNL 65 dB with an increase of DNL 1.5 dB for those airports located within the Salt Lake City operating area. Therefore, even at an operations level of 500 daily deliveries from a single nest, they would not generate a significant impact.

Under the scope of the Proposed Action, Zipline is proposing to increase operations from a maximum of 20 to 100 delivery operations per day at the Salt Lake City nest and surrounding operating area during daytime hours (7 AM to 10 PM local time). Although there are differences in the preliminary supplemental noise measurements relative to those utilized in the previously approved noise analysis methodology, these differences would not be of the magnitude equivalent to a 25-fold increase in operations as represented by increasing daily deliveries from 20 to 500 within the operating area. This level of operations is also far beyond the scope of 100 daily deliveries as detailed in the Proposed Action. Therefore, AEE does not believe use of an updated noise analysis methodology incorporating the preliminary supplemental noise measurement data would change the conclusions reached for the noise analysis relative to the December 2022 EA and concurs with continued use of the previously approved noise analysis for this WR.

Please understand that this concurrence is limited to this particular WR, location, vehicle, and circumstances associated with the Proposed Action for Zipline to increase operations from a maximum of 20 to 100 delivery operations per day at the Salt Lake City nest and surrounding operating area during daytime hours. Any additional projects using this or other methodologies or variations in the vehicle will require separate approval.

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<sup>1</sup> Final Environmental Assessment and Finding of No Significant Impact/Record of Decision Zipline International Inc. Drone Package Delivery Operations in Salt Lake City, Utah and Surrounding Area, FAA, December 2022, <https://faa.gov/uas/advancedoperations/nepaanddrones/Zipline-Drone-Package-Delivery-Operations-Salt-Lake-City>

<sup>2</sup> J R Engineering Document JR394 IR, Noise Compliance Report: Zipline Sparrow, J R Engineering, May 11, 2022