

## Chapter 7: Environmental Overview

## 7.1 Environmental Overview Introduction

In accordance with the Federal Aviation Administration’s (FAA) *Advisory Circular 150/5070-6B*, this chapter provides information on existing conditions related to the relevant environmental impact categories outlined in *FAA Order 1050.1F, Environmental Impacts: Policies and Procedures* and *Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.<sup>40, 41</sup> Included data and information provide an overview of the human and natural environmental features that should be accounted for in the identification and analysis of development alternatives at the Burlington International Airport (BTV or the Airport). This chapter is not intended to constitute an “Affected Environment” under NEPA; it provides a description of the environmental features and resources on and adjacent to property at the Airport that are “easily seen and/or readily documented,” which can aid in the preparation of an environmental assessment or an environmental impact statement where NEPA review is necessary.<sup>42</sup> In addition to the requirements outlined in *Orders 1050.1F and 5050.4B*, this chapter addresses relevant environmental regulations at the state level.

This environmental overview documents environmental features and resources with respect to five Airport Development Areas: 1) Airport Operating Area (AOA), 2) Terminal Area, 3) Terminal Support, 4) South General Aviation, and 4) General Aviation Commercial/Industrial. In addition, the United States (U.S.) National Guard property that sits north of the AOA is discussed where relevant.

## 7.2 Biological Resources

Impacts to biological resources on federally-funded projects are regulated by several statutes, Executive Orders, and other legal guidance documents, including the Endangered Species Act (16 U.S.C. §§ 1531-1544) among others that the following sections document. Based on a definition from FAA’s *1050.1F Desk Reference*, which provides guidance for environmental impact analyses, “biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities and include fish, wildlife, plants, and their respective habitats.”<sup>43</sup> The following sections identify and describe, as applicable, the ecological communities, flora and fauna, and threatened and endangered species at the Airport.

### 7.2.1 Ecological Communities

Most of the Airport is developed for aviation operations; however, a variety of small-scale ecological communities are scattered throughout the Airport’s property. A tract of the Northern Hardwood Forest natural community type is at the eastern edge of the AOA and is firmly within the eastern part of the U.S. National Guard property. This tract is approximately 70 acres in size and spans these areas of the

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<sup>40</sup> FAA. (2005). *Advisory Circular 150/5070-6B*. Retrieved 12 November 2018, from [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_150\\_5070-6B\\_with\\_chg\\_1&2.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_150_5070-6B_with_chg_1&2.pdf)

<sup>41</sup> Wild and Scenic Rivers, a subset of the Water Resources environmental impact category per *FAA Orders 1050.1F and 5050.4B*, and Coastal Resources are not detailed in this environmental overview. There are no Designated Wild and Scenic Rivers, as the Federal Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287) defines, at the Airport or adjacent to the Airport property. There are no coastal resources, as the Coastal Barrier Resources Act (16 U.S.C. § 3501 et seq.) defines, present at or near the Airport; the entirety of the Airport falls within inland Vermont.

<sup>42</sup> FAA. (2005). *Advisory Circular 150/5070-6B*. Retrieved 12 November 2018, from [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_150\\_5070-6B\\_with\\_chg\\_1&2.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_150_5070-6B_with_chg_1&2.pdf)

<sup>43</sup> FAA. (2015). *1050.1F Desk Reference*. Retrieved 12 November 2018, from [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_policy\\_guidance/policy/faa\\_nepa\\_order/desk\\_ref/media/desk-ref.pdf](https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_policy_guidance/policy/faa_nepa_order/desk_ref/media/desk-ref.pdf)

Airport and an adjacent parcel. The Northern Hardwood Forest natural community type is ranked as S5 in the State of Vermont, meaning it is common and widespread. Only large, high-quality examples of this natural community type would qualify as State-Significant. The community at the Airport is not included in the Vermont Natural Heritage Inventory database, indicating that it is not a State-Significant natural community. Northern Hardwood Forests supports many of Vermont's native plant and animal species.

Roughly 13 acres of the White Pine-Red Oak-Black Oak Forest natural community type<sup>44</sup> is present in the northeast part of the U.S. National Guard property. This natural community is ranked as S2 in Vermont, meaning it is rare and imperiled in the state. This community is recorded in the Vermont Natural Heritage Inventory database, and as of 2013 has the Element Occurrence Rank of "C." This combination of S2 rarity and C-level rank means that it is a State-Significant natural community.

Though not typically regarded as a high-quality ecological community, disturbed land next to paved areas such as those within the AOA is typically inhabited by disturbance-tolerant wildflowers, ferns, small mammals, insects, and birds. As these areas are commonly subject to routine maintenance by mowing, these ecological communities can be considered relatively ephemeral.

### 7.2.2 Flora and Fauna

The Airport Development Areas at the Airport collectively represent a highly modified landscape, which influences the presence and abundance of plant and wildlife species. A variety of deciduous trees – both native and ornamental – are scattered across the Airport. Most of the Airport, however, is managed as grassland or as a horticultural area. The Airport carefully regulates the height of grass species and adheres to a list of approved plants for horticultural and ornamental use, including:

- Bracken fern (*Pteridium aquilinum*);
- Summersweet (*Clethra alnifolia*);
- Steeplebush (*Spiraea tomentosa*);
- Meadowsweet (*Filipendula ulmaria*);
- Sweetfern (*Comptonia peregrina*);
- Dwarf bush honeysuckle (*Diervilla lonicera*);
- Cinnamon fern (*Osmundastrum cinnamomeum*);
- Fringed sedge (*Carex crinita*);
- White meadowsweet (*Spiraea alba*);
- Sugar maple (*Acer saccharum*);
- Gray birch (*Betula populifolia*);
- Paper birch (*Betula papyrifera*);
- Eastern cottonwood (*Populus deltoides*);
- Pitch pine (*Pinus rigida*); and
- Eastern hemlock (*Tsuga canadensis*).

To enhance safe air carrier operations, Airport grounds are managed to maintain uniformity and decrease their appeal to wildlife in accordance with the 2017 revision of the Airport's *2015 Wildlife*

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<sup>44</sup> Thompson, E.H. and E.R. Sorenson. (2005). *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. University Press of New England. Hanover, New Hampshire.

*Hazard Management Plan (WHMP)*.<sup>45</sup> Despite diligent safety efforts, Airport grounds invariably provide habitat for a variety of insects and small mammals, such as Eastern cottontail rabbits (*Sylvilagus floridanus*), woodchuck (*Marmota monax*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), mice, voles, moles, and shrews. These prey animals attract predators such as mammals and raptors. Harassment and removal of wildlife species requires federal and state permits from regulatory agencies, including the U.S Fish and Wildlife Service (USFWS) and the Vermont Fish and Wildlife Department.

The WHMP indicates that a variety of mammal species occur on or near the Airport property, including red fox (*Vulpes vulpes*), grey fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), beaver (*Castor canadensis*), and weasel (Family *Mustelidae*). Vermont's two ungulate species, white-tailed deer (*Odocoileus virginianus*) and moose (*Alces alces*), are not commonly found within the fenced Airport property. While not explicitly mentioned in the WHMP, a variety of other common mammal species may occasionally be present at the Airport, including squirrels and chipmunks (Family *Sciuridae*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*) and muskrat (*Ondatra zibethicus*).

The WHMP also documents a variety of raptor species at the Airport including: American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), broad-winged hawk (*Buteo platypterus*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipter striatus*), turkey vulture (*Cathartes aura*), and snowy owl (*Bubo scandiacus*). Raptors frequent Airport grounds, attracted by small prey species, as well as open habitat. Other common bird species reported in the WHMP include:

- American crow (*Corvus brachyrhynchos*);
- European starling (*Sturnus vulgaris*);
- Brown-headed cowbird (*Molothrus ater*);
- Red-winged blackbird (*Agelaius phoeniceus*);
- Canada goose (*Branta canadensis*);
- Rock dove (*Columba livia*);
- Mourning dove (*Zenaida macroura*);
- Ring-billed gull (*Larus delawarensis*);
- Herring gull (*Larus argentatus*);
- Wild turkey (*Meleagris gallopavo*);
- Mallard (*Anas platyrhynchos*);
- American black duck (*Anas rubripes*);
- Wood duck (*Aix sponsa*);
- Horned lark (*Eremophila alpestris*);
- Snow bunting (*Plectrophenax nivalis*); and
- Savannah sparrow (*Passerculus sandwichensis*).

### 7.2.3 Threatened and Endangered Species

Federally-funded airport projects must consider threatened and endangered species under the Endangered Species Act [16 U.S.C. §§ 1531-1544]. Section 7(a)(2) of the Endangered Species Act requires that federal agencies coordinate with USFWS and the National Marine Fisheries Service to ensure that

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<sup>45</sup> Burlington International Airport. (2015). Burlington International Airport Wildlife Hazard Management Plan FAR Part 139, Section 337.

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FAA-authorized actions will not likely jeopardize the continued existence of federally-listed threatened or endangered species, or the elimination of critical habitat.

The Vermont Natural Heritage Inventory includes records of threatened and endangered species within the Airport property (see **Figure 7-1**). Mist netting and acoustic surveys conducted in the summer of 2011 determined that three bat species were present within the forested area on the eastern border of the U.S. National Guard property including:

- ***Myotis septentrionalis* (northern long-eared bat)**: a federally threatened species and is listed as endangered in Vermont. USFWS has determined that designating critical habitat for *M. septentrionalis* is not prudent.<sup>46</sup> No critical habitat for *M. septentrionalis*, therefore, exists within the Airport property or surrounding areas.
- ***Myotis leibii* (eastern small-footed bat)**: a species listed as threatened in Vermont, but not federally-listed. Because *M. leibii* is not federally-listed, no Information for Planning and Consultation (IPaC) information on critical habitats was available.
- ***Myotis lucifugus* (little brown bat)**: a species listed as endangered in Vermont and is not federally-listed. Because *M. lucifugus* is not federally-listed, no IPaC information on critical habitats was available.

Bald eagles (*Haliaeetus leucocephalus*) are commonly sighted along Lake Champlain, its tributaries, and other local water bodies. Although the bald eagle was delisted under the Endangered Species Act, it continues to be protected under the Bald and Golden Eagle Protection Act (16 U.S.C. § 668 et seq.), administered by USFWS. This Act protects the bald eagle, its nests, and its eggs from unauthorized capture, purchase, or transportation. Bald eagles are listed as endangered by the Vermont Fish and Wildlife Department. The Airport maintains an Eagle Depredation Permit from the USFWS Migratory Bird Permit Office and a Threatened and Endangered Species Takings Permit from the Vermont Agency of Natural Resources (ANR) which allows it to use non-lethal methods to harass American Bald Eagles. Migratory birds are protected under the Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.), administered by USFWS. An October 2018 database review through the USFWS IPaC portal<sup>47</sup> identified 14 migratory bird species on the USFWS Birds of Conservation Concern list that have distributional ranges overlapping with the Airport. These species are:

- Bald eagle (*Haliaeetus leucocephalus*);
- Black-billed cuckoo (*Coccyzus erythrophthalmus*);
- Bobolink (*Dolichonyx oryzivorus*);
- Canada warbler (*Cardellina canadensis*);
- Cerulean warbler (*Setophaga cerulea*);
- Dunlin (*Calidris alpina arctica*);
- Eastern whip-poor-will (*Antrostomus vociferous*);
- Golden eagle (*Aquila chrysaetos*);
- Golden-winged warbler (*Vermivora chrysoptera*);

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<sup>46</sup> USFWS. (2018). Northern Long-eared Bat Questions and Answers Designating Critical Habitat is Not Prudent. Retrieved 25 October 2018, from <https://www.fws.gov/midwest/endangered/mammals/nleb/faqs/nlebch.html>

<sup>47</sup> USFWS. (2018). Information for Planning and Consultation. Retrieved 25 October 2018, from <https://ecos.fws.gov/ipac/>

- Lesser yellowlegs (*Tringa flavipes*);
- Long-eared owl (*Asio otus*);
- Semipalmated sandpiper (*Calidris pusilla*);
- Snowy owl (*Bubo scandiacus*); and
- Wood thrush (*Hylocichla mustelina*).

Additionally, the following bird species are protected by Vermont’s Endangered Species Law (10 V.S.A. Chapter 123), which protects species listed as “Threatened” and “Endangered.” While the Airport may not necessarily harbor breeding populations of state-endangered or state-threatened species, any potential development or activity must be conducted consistent with applicable regulations and practices administered by the Vermont Fish and Wildlife Department.

- Bald eagle (*Haliaeetus leucocephalus*) – Endangered
- Black tern (*Chlidonias niger*) – Endangered
- Common nighthawk (*Chordeiles minor*) – Endangered
- Common tern (*Sterna hirundo*) – Endangered
- Eastern whip-poor-will (*Antrastomus vociferous*) – Threatened
- Grasshopper sparrow (*Ammodramus savannarum*) – Threatened
- Henslow’s sparrow (*Ammodramus henslowii*) – Endangered
- Loggerhead shrike (*Lanius ludovicianus*) – Endangered
- Red knot (*Calidris canutus*) – Threatened.<sup>48</sup>
- Rusty blackbird (*Euphagus carolinus*) – Endangered
- Sedge wren (*Cistothorus platensis*) – Endangered
- Spruce grouse (*Falcapennis canadensis*) – Endangered
- Upland sandpiper (*Bartramia longicauda*) – Endangered

The Airport maintains a Depredation Permit issued by the USFWS Migratory Bird Permit Office that allows for the lethal take of eight bird species and the live-trapping and relocation of one bird species. The Airport also maintains a Depredation Permit issued by the Vermont Fish and Wildlife Department for the harassment and lethal take of many non-threatened and non-endangered species.

Several records from the Vermont Natural Heritage Inventory Database.<sup>49</sup> indicate that rare plants are present in several Airport Development Areas. None of these plants are federally-listed or state-listed as threatened or endangered. Accordingly, they are not protected under federal and state law. These plants include:

- *Trillium cernuum* (nodding trillium) populations were reported from the edges of wetlands within the AOA and South General Aviation Airport Development Areas. This plant is ranked as Uncommon (S3) in Vermont.
- An historic record for *Carex atlantica* var. *capillacea* (Howe’s sedge) is present from the 1890s. The original specimen was collected in Higbee Swamp in the City of South Burlington, which is speculated to have existed between the Airport and Vermont Route 2. This area could coincide with the AOA, Terminal Support, Terminal Area, South General Aviation, and General Aviation-

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<sup>48</sup> Red knot (*Calidris canutus rufa*) was added to the Federal list on 12 January 2015. Listed in Vermont by default, per statute; has not undergone rule-making in Vermont.

<sup>49</sup> ANR. (2018). Vermont Natural Heritage Inventory. Element Occurrence Reports.

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Commercial Industrial. This plant is ranked as Rare (S1) in Vermont. Since the 1890s, much of this area has been filled, suggesting that *C. atlantica* var. *capillacea* may not currently exist at the Airport.

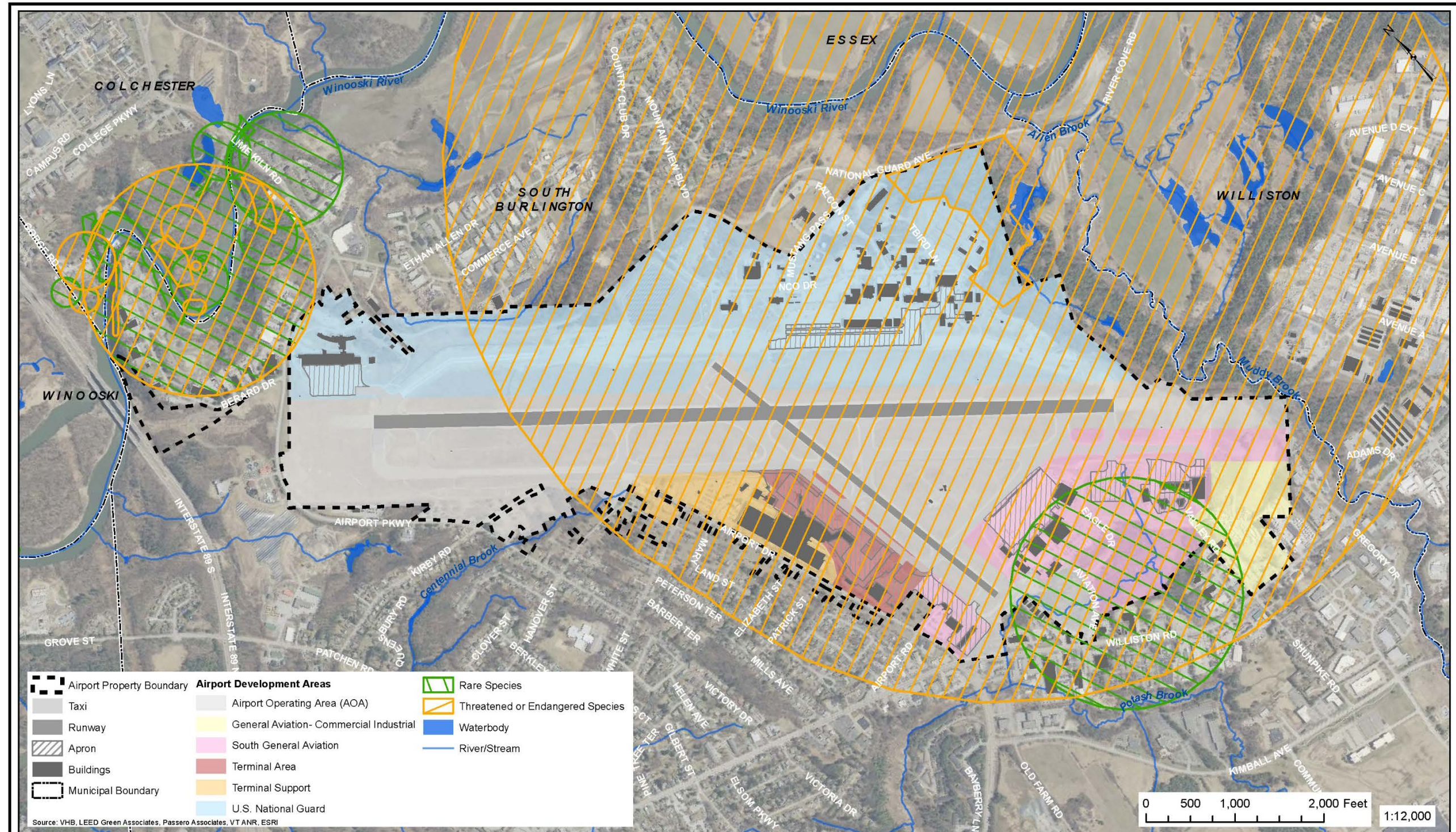
In addition to the above, *Carex brevior* (short-beaked sedge) was identified in the U.S. National Guard property includes at its northwestern edge in 2002, near the northwest end of Runway 15-33. *C. brevior* is ranked as Uncommon (S3) in Vermont. *Dicanthelium depauperatum* (depauperate panic-grass) is also known to occur in the U.S. National Guard property at its western edge. This plant species is typically found in woodlands, grasslands, and rocky or sandy sites. *Dicanthelium depauperatum* is ranked as Uncommon (S3S4) in Vermont.



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Figure 7-1: Biological Resources – Rare, Threatened, and Endangered Species



<p><b>PA</b> PASSERO ASSOCIATES engineering architecture</p>	<p><b>Burlington International Airport</b></p>	<p><b>Biological Resources</b> Rare, Threatened, and Endangered Species</p>	<p>Figure 7-1</p>
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## 7.3 Water Resources

Per FAA's *1050.1F Desk Reference*, water resources include surface waters and groundwater. Many of these resources are essential for human society, as they provide sources of drinking water, as well as support recreation, transportation and commerce, industry, agriculture, and aquatic systems. Water resources are an important part of the natural environment, as surface water, groundwater, wetlands, and floodplains act together to process and filter water flowing through terrestrial and aquatic ecosystems. Actions in and near water resources can have far-reaching impacts on the environment and the surrounding built human landscape, meriting careful analysis before projects take place. The following sections describe the water resources around the Airport and the regulatory framework governing federal activities within each resource category.

### 7.3.1 Wetlands

Wetlands are areas inundated by surface or groundwater with a frequency sufficient to support vegetation that depends on saturated or seasonally saturated soil conditions. Wetlands include areas such as swamps, marshes, bogs, and fens. Wetlands are a key area of interchange between terrestrial and aquatic ecosystems, and provide benefits to humans, fish, and wildlife. Wetlands are also known to play a key role in protecting water quality and storage of floodwaters.

Any development project must be evaluated for potential wetland impacts. If impacts may occur, coordination with the U.S. Army Corps of Engineers (USACE) and ANR is required. USACE has jurisdiction over regulated wetlands under Section 404 of the Clean Water Act (33 U.S.C. 1344) (CWA) and Section 10 of the River and Harbors Act (33 U.S.C. 403). ANR identifies and protects significant wetlands and their values and functions under 10 V.S.A. §905b(18). Both USACE and ANR issue authorizations for actions that include discharge of dredged or fill material into wetlands. ANR also regulates the clearing of vegetation within wetland areas and wetland buffer zones around significant wetlands as defined under the Vermont Wetland Rules (100 feet for Class I and 50 feet for Class II wetlands).<sup>50</sup> Additionally, Executive Order 11990 (42 Federal Register 26961) requires federal agencies to avoid adverse impacts on wetlands wherever alternatives exist.

Three Class II wetlands, as designated by the Vermont Department of Environmental Conservation (DEC) Wetlands Program, are present in the South General Aviation Airport Development Area and a southern part of the AOA (see **Figure 7-2**). These wetlands, listed below, are mapped in the Vermont Significant Wetlands Inventory and in the Airport's 2018 *Stormwater Pollution Prevention Plan (SWPPP)*. The Vermont Significant Wetlands Inventory is inclusive of the National Wetlands Inventory established by USFWS.

- Wetland "W1" consists of 3.16 acres
- Wetland "W2" consists of 7.03 acres
- Wetland "W3" consists of 24.52 acres

### 7.3.2 Floodplains

Floodplains are lowland areas next to waters that periodically flood. Floodplains provide valuable benefits to society and the environment by absorbing floodwaters and buffering nearby land from river

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<sup>50</sup> ANR. (2018). *Vermont Wetland Rules*. Retrieved 25 October 2018, from <https://dec.vermont.gov/content/vermont-wetland-rules>

channel movement. Floodplains having a 1 percent chance of flooding in any year are called 100-year floodplains. Federally-funded projects are advised under the FAA *1050.1F Desk Reference* to avoid adverse impacts on natural and beneficial floodplain values (defined in Paragraph 4.k of Department of Transportation [DOT] Order 5650.3, *Floodplain Management and Protection*).

To determine the presence of 100-year floodplains on the Airport property, four Federal Emergency Management Agency Flood Insurance Rate Maps - also known as FIRMs - covering the Airport were reviewed: #50007C0257D, #50007C0256D, #50007C0258D, and #50007C0259D. None of the Airport Development Areas lie within the limits of a 100-year floodplain.

### 7.3.3 Surface Water

Surface waters include streams, rivers, creeks, brooks, reservoirs, ponds, lakes, springs, and all bodies of surface waters, artificial or natural, which are contained within, flow through, or border upon the state or any portion of it.<sup>51</sup> Surface water quality in the U.S. is regulated by the U.S. Environmental Protection Agency (EPA) under the CWA (33 U.S.C. §§ 1251-1387). To implement these CWA requirements, EPA has delegated the authority to ANR to establish and regulate compliance with the Vermont Water Quality Standards (VWQS). The VWQS establish Water Quality Criteria as the applicable state regulatory standard for managing surface waters to protect human health and aquatic biota.

Stormwater discharges in Vermont are regulated by two different administrative programs. For those projects that fall under state regulatory authority, ANR has jurisdiction over operational-phase (i.e., post-construction) discharges of stormwater. These discharges are regulated through the Vermont Stormwater Management Rule for Stormwater Unimpaired Waters (effective March 15, 2011), adopted under the authority of 10 V.S.A. §§ 1263-1264. The purpose of the Stormwater Management Rule is to reduce stream channel instability, pollution, and sedimentation, minimizing risks to surface water quality. Within the Stormwater Management Rule, ANR sets forth treatment standards as the applicable regulatory standards for stormwater management. Under the National Pollutant Discharge Elimination System permitting process, ANR is also the EPA-delegated regulatory authority with jurisdiction over certain other stormwater discharges to surface waters, including construction-phase stormwater discharges.

In addition to state-level regulatory authority, proposed impacts to streams and rivers are regulated under the jurisdiction of USACE. USACE regulates physical impacts to Waters of the U.S. below the ordinary high-water mark under Section 404 of the CWA and in some cases under Section 10 of the Rivers and Harbors Act of 1899. Rivers and Harbors Act regulation applies to “navigable waters” which, in Vermont, include Lake Champlain, the Connecticut River, and other major rivers and tributaries, including the portion of the Winooski River to the north of the Airport. These represent waters that are “presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.” Section 401 of the CWA provides states with the authority to ensure that a federally-issued permit would not violate the VWQS, and as such a Water Quality Certification is required from ANR in conjunction with a Section 404 authorization under the General Permit.

For projects that fall under state regulatory authority, ANR also has jurisdiction over stream alterations and placement of stream-crossing structures pursuant to 10 V.S.A. Chapter 41. Further, under the Vermont Highway Law 19 V.S.A. § 10(12), commonly referred to as Title 19, the Vermont Agency of

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<sup>51</sup> ANR. (2017). *Vermont Water Quality Standards, Environmental Protection Rule Chapter 29A*. Retrieved 15 November 2018, from [https://dec.vermont.gov/sites/dec/files/documents/wsm�\\_water\\_quality\\_standards\\_2016.pdf](https://dec.vermont.gov/sites/dec/files/documents/wsm�_water_quality_standards_2016.pdf)

Transportation must conduct a consultation with ANR for any project that involves streams, ponds, or lakes. The consultation includes sharing project information and plans; however, there is no formal permit process associated with Title 19.

For projects that are regulated under Act 250, Criterion 1(E) requires that projects will, when feasible, maintain natural stream channel condition and will not endanger the health, safety, or welfare of the public or adjoining landowners [10 V.S.A. § 6086(a)(1)(E)]. Additionally, the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-667d) requires federal agencies to conserve wildlife resources if the intended project will alter the water of a stream or other water body.

**Figure 7-2** depicts surface waters and drainage areas at and adjacent to the Airport. The most notable surface water near the Airport is the Winooski River. It is located to the north of the Airport and flows west to make confluence with Lake Champlain at Colchester. At its closest approach, the Winooski River is approximately 700 feet from the northeast corner of the Airport at the U.S. National Guard property. The drainage area of the Winooski River is roughly 1,050 square miles at this location; approximately 527 acres of the Airport property drain to this water body.

The Airport is positioned in what can be considered a watershed divide among three smaller streams, two of which are tributary to the Winooski River.

- **Muddy Brook:** flows from south to north just east of the eastern limits of the Airport. It makes confluence with Allen Brook just north of its crossing of Poor Farm Road, a short distance from the Winooski River. The watershed area for Muddy Brook is roughly 21.3 square miles, roughly 18.3 percent of which is urban lands and roughly 7.3 percent is impervious.<sup>52</sup> Approximately 95 acres of the Airport property drain to Muddy Brook, including limited, far eastern portions of the AOA, South General Aviation Area, and General Aviation – Commercial Industrial Area lie, as well as the far eastern (primarily forested) portion of the U.S. National Guard property.
- **Centennial Brook:** rises just north of the Airport's short-term cell phone lot and flows west through a largely forested corridor and under Interstate 89 before turning north to make confluence with the Winooski River roughly one-half mile above the Winooski Dam. Centennial Brook is on the 2018 list of impaired surface waters with completed and approved Total Maximum Daily Loads (TMDLs).<sup>53</sup> Centennial Brook is impaired due to stormwater runoff from land development and associated erosion.<sup>54</sup> The drainage area for Centennial Brook is roughly 887 acres, some 30 acres of which fall on the Airport property. Its watershed includes much of the Terminal Support Area, a portion of the Terminal Area, and a portion of the AOA around the intersection of Runway 15-33 and Runway 1-19.
- The third stream, **Potash Brook**, is a tributary of Lake Champlain. Its closest approach to the Airport is just south of the intersection of Williston Road and Kennedy Drive. A tributary to Potash Brook rises within the forested wetland area near the south end of Runway 1-19. Potash

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<sup>52</sup> USGS. (2018). Basin characteristics for Muddy Brook from U.S. Geological Survey online StreamStats program. Retrieved 21 November 2018, from <https://streamstats.usgs.gov/ss/>

<sup>53</sup> DEC. (2018). *List of Priority Surface Waters, Part D. Impaired Surface Waters with Completed and Approved TMDLs*. Retrieved 21 November 2018, from [https://dec.vermont.gov/sites/dec/files/documents/mp\\_PriorityWatersList\\_PartD\\_2018.pdf](https://dec.vermont.gov/sites/dec/files/documents/mp_PriorityWatersList_PartD_2018.pdf)

<sup>54</sup> DEC. (2007). *Total Maximum Daily Load To Address Biological Impairment in Centennial Brook (VT08-02) Chittenden County, Vermont*. Retrieved 21 November 2018, from [https://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/SWImpaired/sw\\_cen\\_tmdl\\_approved.pdf](https://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/SWImpaired/sw_cen_tmdl_approved.pdf)

Brook is also on the 2018 list of impaired surface waters with completed and approved TMDL and is also impaired due to stormwater runoff from land development and associated erosion. The drainage area for Potash Brook is roughly 7.1 square miles.<sup>55</sup> Approximately 210 acres of the Airport property drain to Potash Brook, including the eastern portion of the AOA, the South General Aviation Area, and portions of the General Aviation – Commercial Industrial Area, Terminal Area, and Terminal Support Area.

According to the DEC Stormwater Program, there are no offsets or separate fees required for projects in stormwater-impaired watersheds having approved Flow Restoration Plans, which includes both Centennial Brook and Potash Brook. Compliance with Section 2.4 of the current Vermont Stormwater Management Manual is all that is required for a project that is strictly a redevelopment project. Any areas of expansion in the redevelopment project would need to meet the applicable standards.<sup>56</sup>

In general, the surface waters surrounding the Airport are classified by ANR as Class B waters, indicating that they can, to a degree, support fish and wildlife, public water supply, agricultural use, and boating and recreation purposes, although they are not the highest quality ecologically. A portion of the AOA, South General Aviation, Terminal Area, and Terminal Support Airport Development Areas belong to an ANR-mapped Surface Water Source Protection Area (SPA), specifically a Zone 3 Secondary Recharge Area in the Champlain Water District. A Surface Water SPA is the watershed area contributing surface water and groundwater flow to a drinking water intake. Zone 3 consists of watershed area outside the more restrictive Zones 1 and 2 where land uses have potential to impact drinking water quantity and quality. The DEC Drinking Water & Groundwater Protection and Waste Management Divisions may restrict activities within SPAs (e.g., landfills, sludge disposal, pesticide applications) to protect public drinking water resources and such considerations are also factored into decision-making for Act 250 Land Use Permits.

### 7.3.4 Groundwater

Groundwater is subsurface water occurring in spaces between soil and rock formations. This includes aquifers, which are geologic areas storing or transmitting groundwater. Groundwater is an important public resource for many individual households and communities at-large. Potential impacts from Airport development projects can include reduced groundwater recharge and potential contamination through releases of contaminants.

Several federal and state agencies regulate groundwater and drinking water resources. The Safe Drinking Water Act (42 U.S.C. §§ 300(f)-300j-26; 40 CFR parts 141-149), administered by EPA, prohibits federal agencies from funding actions that would contaminate EPA-designated sole source aquifers (SSA) or surrounding recharge areas. This Act is administered in Vermont by ANR under the Water Supply Rule (revised and adopted on March 17, 2020). Within the Water Supply Rule, ANR sets forth the Maximum Contaminant Levels as the applicable regulatory standards for drinking water. An SSA is defined as one that supplies at least 50 percent of the drinking water for its service area, and there are no reasonably available alternative drinking water sources should the aquifer become contaminated. The SSA program allows for EPA review of federally funded projects that have the potential to affect

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<sup>55</sup> DEC. (2006). *Total Maximum Daily Load To Address Biological Impairment in Potash Brook (VT05-11) Chittenden County, Vermont*. Retrieved 21 November 2018, from [https://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/SWImpaired/sw\\_pot\\_tmdl\\_finalapproved.pdf](https://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/SWImpaired/sw_pot_tmdl_finalapproved.pdf)

<sup>56</sup> Winn Wilson, Environmental Analyst, DEC Stormwater Program, November 20, 2018.

## BURLINGTON INTERNATIONAL AIRPORT, BURLINGTON, VERMONT

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designated SSAs and their source areas. The Airport property is not located over an SSA and therefore potential projects are not subject to EPA Section 1424(e) of the Safe Drinking Water Act.

Groundwater in Vermont is managed under the jurisdiction of ANR by the Groundwater Protection Rule and Strategy (revised and adopted on July 6, 2019), adopted under the authority of the 10 V.S.A. §§ 1390-1394. The purpose of this rule and strategy is to manage groundwater resources, minimizing risks to groundwater quality by limiting human activities that may present unreasonable risks to the use classifications of groundwater in the vicinities of such activities. ANR sets forth the Vermont Groundwater Enforcement Standards as the applicable regulatory standards for groundwater within the Groundwater Protection Rule and Strategy. DEC maintains regulatory programs that oversee public drinking water supplies, groundwater reclassification, groundwater withdrawal, wastewater systems, and underground injection control (UIC). The Airport currently operates a de-icing fluid interception and subsurface injection system, which is described in **Section 7.1.6**.

Most of the Airport is built on sandy soils, which have high permeability. Previous analysis indicates that depth to groundwater ranges from seven to over 20 feet below grade.<sup>57</sup> ANR has classified the groundwater in the area of the Airport as a Class III water resource suitable for domestic water supply, irrigation, agricultural use, and general industrial and commercial use. No Airport Development Area lies within a Groundwater Source Protection Area,<sup>58</sup> and no underground sources of drinking water are present at the site. Twenty-seven monitoring wells are installed throughout the AOA and the U.S. National Guard Airport Development Area, but otherwise, no public or private wells occur within any Airport Development Area. Typically, any groundwater monitoring well can be closed and replaced in-kind in coordination with the DEC for the wells within the AOA and the DEC and the U.S. Department of Defense for the wells in the U.S. National Guard Airport Development Area. Four documented private bedrock water wells are within an approximately 1-mile radius from the Airport.

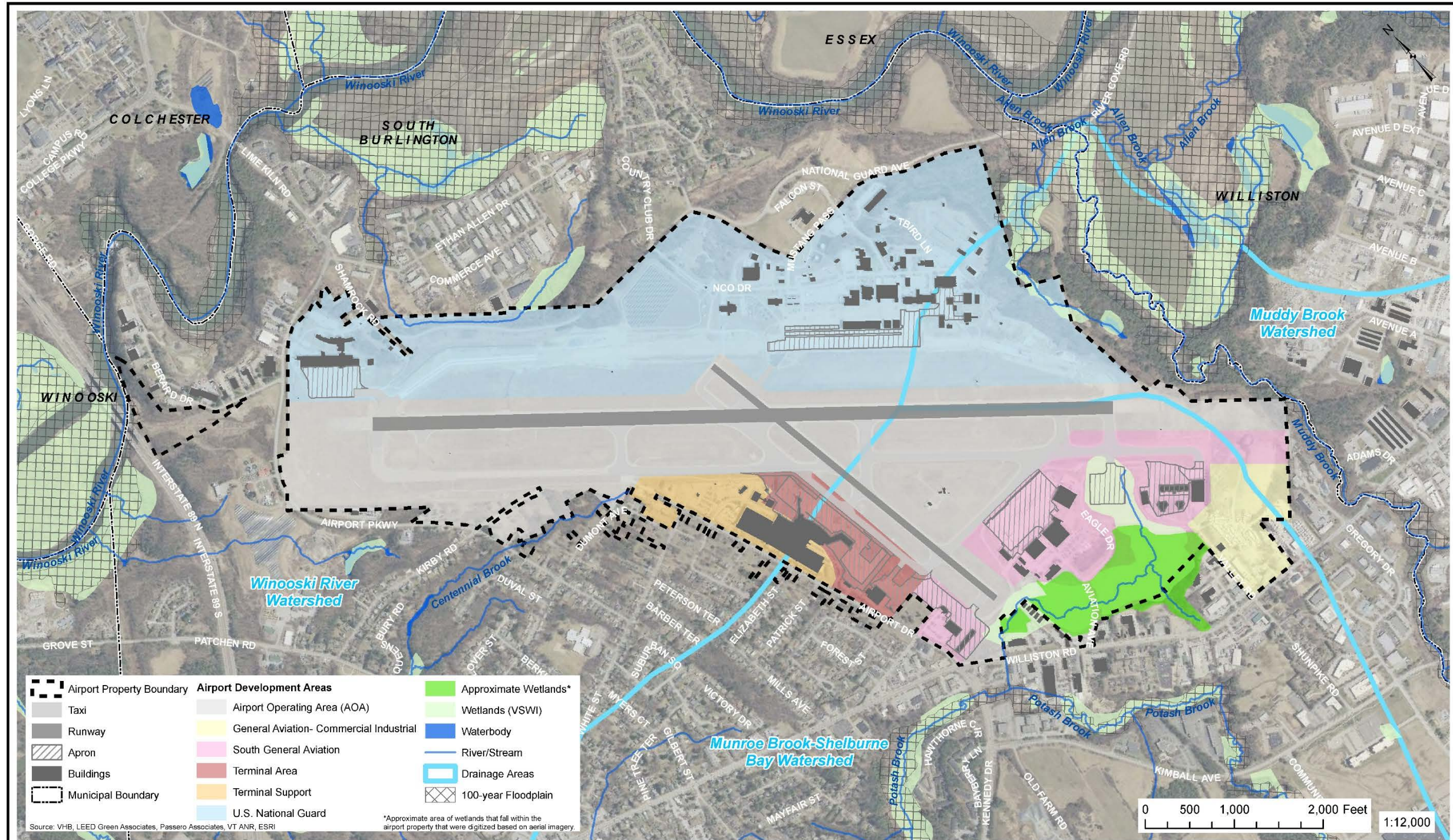
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<sup>57</sup> VHB. (2016). UIC Permit Amendment Application Narrative: Air Carrier Apron UIC System Reconstruction. Burlington International Airport (BTV) UIC Permit #6-0075.

<sup>58</sup> ANR. (2018). Natural Resources Atlas. Retrieved 14 November 2018, from <https://anr.vermont.gov/maps/nr-atlas>



Figure 7-2: Water Resources



<p><b>PA</b> PASSERO ASSOCIATES engineering architecture</p>	<p><b>Burlington International Airport</b></p>	<p><b>Water Resources</b></p>	<p>Figure 7-2</p>
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## 7.4 Climate

Greenhouse gas (GHG) emissions in the atmosphere affect the global climate.<sup>59</sup> In 2016, aircraft emissions accounted for 8.1 percent of the transportation sector's share of GHG emissions in the U.S., and among this total, commercial aviation accounted for 5.8 percent.<sup>60</sup> FAA acknowledges that "minimizing GHG emissions and identifying potential future impacts of climate change are important for a sustainable national airspace system" and that "climate change is a global phenomenon that can have local impacts."<sup>61</sup> Per FAA's *Order 1050.1F Desk Reference*, FAA actions should consider 1) the potential effects of a proposed action or its alternatives on climate change as indicated by its GHG emissions and 2) the implications of climate change for the environmental effects of a proposed action or alternatives.

The City of Burlington's *Climate Action Plan* (2013) reports that the Airport generated just over 2,000 metric tons of carbon dioxide equivalents (tCO<sub>2</sub>e) in 2010, increasing by 3 percent over 2007 levels.<sup>62</sup> Between 2010 and 2013; however, greenhouse gas emissions deriving from electricity, natural gas, and vehicle fleet fuel consumption decreased by approximately 23 percent, from 2,287 tCO<sub>2</sub>e to 1,771 tCO<sub>2</sub>e.<sup>63</sup> The *Climate Action Plan* specifies a reduction target for the Airport of 10 percent from 2010 levels by 2025.<sup>64</sup>

GHG emissions reduction at the Airport supports relevant local and state goals. Burlington and South Burlington joined the Vermont Climate Pledge Coalition, which pledges to at least meet the obligations of the U.S. under the Paris Agreement. This pledge includes a voluntary reduction target of 26 to 28 percent.<sup>65</sup> In 2015, Vermont committed to a GHG emissions reduction goal of 80 to 95 percent below 1990 levels by 2050.<sup>66</sup>

Presently, the Airport has not conducted a climate vulnerability assessment nor identified climate adaption measures to support the resiliency of its operations. According to the *Vermont Climate Assessment*, the state is projected to see rising temperatures (3°F by 2050 and 5°F by late century), increasing precipitation (more snow in the near-term, transitioning to rainfall as temperatures increase),

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<sup>59</sup> IPCC. (2014). *Fifth Assessment Report*. Retrieved 25 November 2018, from <https://www.ipcc.ch/report/ar5/syr/>

<sup>60</sup> EPA. (2018). *Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions 1990-2016*. Retrieved 15 November 2018, from <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100USI5.pdf>

<sup>61</sup> FAA. (2015). *1050.1F Desk Reference*. Retrieved 12 November 2018, from [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/environ\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/media/desk-ref.pdf](https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faq_nepa_order/desk_ref/media/desk-ref.pdf)

<sup>62</sup> City of Burlington. (2013). *Burlington, VT: Climate Action Plan*. Retrieved 12 November 2018, from [https://www.burlingtonvt.gov/sites/default/files/Legacy/About\\_Us/Climate%20Action%20Plan.pdf](https://www.burlingtonvt.gov/sites/default/files/Legacy/About_Us/Climate%20Action%20Plan.pdf)

<sup>63</sup> City of Burlington. (2018). *Burlington's most recent emissions data*. Retrieved 15 July 2019, from <https://www.burlingtonvt.gov/sites/default/files/u268/City%20of%20Burlington%20Emission%20Summary%20and%20Trends.pdf>

<sup>64</sup> City of Burlington. (2013). *Burlington, VT: Climate Action Plan*. Retrieved 12 November 2018, from [https://www.burlingtonvt.gov/sites/default/files/Legacy/About\\_Us/Climate%20Action%20Plan.pdf](https://www.burlingtonvt.gov/sites/default/files/Legacy/About_Us/Climate%20Action%20Plan.pdf)

<sup>65</sup> Vermont Climate Pledge Coalition. (2018). *We're Still In*. Retrieved 18 November 2018, from <https://vermontclimatepledge.org/>

<sup>66</sup> State of Vermont. (2017). *Climate Change in Vermont: Emissions and Goals*. Retrieved 18 November 2018, from <https://climatechange.vermont.gov/climate-pollution-goals>

weather extremes (increased chances of record-breaking temperatures), and shifting precipitation patterns due to “blocking” of the jet stream – specifically, increased likelihood of unseasonably high or low temperatures and/or precipitation.<sup>67</sup> These changes have the potential to negatively impact the Airport and its proposed development projects with respect to facility integrity, environmental quality, and public health and safety.

## 7.5 Air Quality

Under authority of the Clean Air Act (CAA) and its amendments, EPA established the National Ambient Air Quality Standards (NAAQS) for criteria pollutants to protect public health and welfare. Ambient air is generally defined as the portion of the atmosphere, external to buildings, to which the public has access. When an area’s ambient air quality complies with the NAAQS, EPA designates that area as in “Attainment.” EPA delegates authority to DEC for monitoring and enforcing air quality regulations in Vermont.

Projects in areas that do not comply with the NAAQS (i.e., “Nonattainment” areas), must demonstrate General Conformity. A Conformity determination is made to show an action will not interfere with the State Implementation Plan (SIP) or prevent an area from complying with the NAAQS. Transportation Conformity is required of highway or transit projects that are funded by the Federal Highway Administration (FHWA) or Federal Transit Administration. General Conformity applies to all other federal actions. Most actions at airports are subject to General Conformity.

DEC maintains a network of ambient air monitors across the state in response to the CAA. The Airport is in Chittenden County that, based on DEC’s monitoring network, has been designated as in Attainment for all pollutants regulated by the NAAQS. As the Airport is in an Attainment area, projects that occur at the Airport are not required to demonstrate Conformity with the SIP.

Airport projects that would not cause or create a reasonably foreseeable emission increase can be qualitatively evaluated to comply with the CAA. Large projects that would cause a substantial change in pollutant emissions would require a full quantitative emissions analysis. These evaluations would occur during the environmental documentation, before the construction, of the specific project. Airport projects could also result in minor improvements in air quality such as changes to the airfield that reduce aircraft travel during the landing and takeoff cycle. Finally, in the short-term, construction of the proposed projects could result in minor impacts on air quality at and in the immediate vicinity of the Airport related to the use of construction vehicles and equipment and would be further evaluated for a quantitative or qualitative assessment during the environmental documentation.

Additionally, specific tenant activities (e.g., aircraft painting, fueling, storage) or the installation of combustion equipment may result in pollutant emissions that could require a stationary source permit from the Vermont Air Pollution Control Division of ANR. This requirement would be project specific and the need for such permit would be determined once tenant requirements are firmly defined. The appropriate permits would be obtained from ANR prior to the construction of such facilities or installation of equipment requiring a permit.

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<sup>67</sup> The Gund Institute for Ecological Economics and The University of Vermont. *Considering Vermont’s Future in a Changing Climate*. Retrieved 18 November 2018, from [http://dev.vtclimate.org/wp-content/uploads/2014/04/VCA2014\\_FullReport.pdf](http://dev.vtclimate.org/wp-content/uploads/2014/04/VCA2014_FullReport.pdf)

## 7.6 Natural Resources and Energy Supply

Per FAA Order 1050.1F, FAA requires that environmental documents describe any anticipated impacts to natural resources and energy supply resulting from airport construction and maintenance. Further, FAA encourages airports to consider whether their activities “have the potential to cause demand to exceed available or future supplies of these resources.”<sup>68</sup> Relatedly, FAA Order 1053.1, *Energy and Waste Management Program for FAA Buildings and Facilities* encourages the development of facilities that exemplify the highest standards of design, including principles of sustainability.

The Airport’s consumption of energy supplies derives primarily from its daily operations, but also includes construction activities. Electricity is provided to the Airport by Burlington Electric and Green Mountain Power, while natural gas is provided by Vermont Gas Systems. The Airport had a net energy use of 4.74 megawatts (MW) in 2017, down 12.4 percent from 2013.<sup>69</sup> As reported in the City of Burlington’s *Climate Action Plan*, the Airport’s natural gas consumption decreased from approximately 160,000 cubic feet (CCFs) in 2007 to approximately 138,000 CCFs in 2010.<sup>70</sup> Vehicle fleet fuel consumption rose 218 percent, from 25,000 gallons (3,493.3 MBTU) of diesel, biodiesel, and gasoline in 2007 to 48,000 gallons (6,517.2 MBTU) in 2010.<sup>71</sup> Gasoline, diesel, jet fuel, and avgas are provided by various independent suppliers.

The Airport’s declining utility-sourced electricity consumption is due, in part, to its roof-mounted solar photovoltaic (PV) system sited on top of its parking garage with a generation capacity of 500 KW. In 2017, this system provided 11 percent of the Airport’s total electricity.<sup>72</sup> Additional renewable electricity generation occurring on-Airport, but outside of the Airport’s ownership and control, include Heritage Aviation’s roof mounted PV system with a capacity of 24 kilowatts (kW) and small wind turbine with a capacity of 100 kW, as well as the ground-mounted PV system on the U.S. National Guard property with a capacity of approximately 1.5 MW.<sup>73</sup>

Increases in passenger activity (and associated aircraft operations) and proposed developments at the Airport have the potential to increase the consumption of available resources. South Burlington’s *Comprehensive Plan* (2016) indicates that energy suppliers have capacity to meet demand due to growth.<sup>74</sup> Further, according to the *National Climate Assessment*, Chittenden County is not water

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<sup>68</sup> FAA. (2015). *1050.1F Desk Reference*. Retrieved 12 November 2018, from [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/environ\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/media/desk-ref.pdf](https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faq_nepa_order/desk_ref/media/desk-ref.pdf)

<sup>69</sup> Email correspondence between Mike Leach, Burlington Electric, and Larry Lackey, BTV, November 19, 2018.

<sup>70</sup> City of Burlington. (2013). *Burlington, VT: Climate Action Plan*. Retrieved 12 November 2018, from [https://www.burlingtonvt.gov/sites/default/files/Legacy/About\\_Us/Climate%20Action%20Plan.pdf](https://www.burlingtonvt.gov/sites/default/files/Legacy/About_Us/Climate%20Action%20Plan.pdf)

<sup>71</sup> Ibid.

<sup>72</sup> Email correspondence between Mike Leach, Burlington Electric, and Larry Lackey, BTV, November 19, 2018.

<sup>73</sup> Brighter Vermont. (2018). Community Energy Dashboard. Retrieved 19 November 2018, from <https://www.vtenergydashboard.org/energy-atlas>

<sup>74</sup>South Burlington. (2016). *Comprehensive Plan*. Retrieved 19 November 2018, from [http://www.southburlingtonvt.gov/document\\_center/planning/SB\\_Comprehensive\\_Plan\\_Complete\\_Adopted\\_2-1-2016.pdf](http://www.southburlingtonvt.gov/document_center/planning/SB_Comprehensive_Plan_Complete_Adopted_2-1-2016.pdf)

stressed,<sup>75</sup> and any use of other natural resources (e.g., asphalt, aggregate, and wood) is not anticipated to be significant enough to alter regional natural resource availability.

Airport staff will evaluate the projected resource and energy requirements for all proposed Airport developments to determine and introduce feasible measures to reduce their energy and natural resource footprint. Ongoing updates to the Airport's energy system infrastructure, such as the replacement of every incandescent and outdated fluorescent bulbs and upgrades to their heating and cooling system,<sup>76</sup> will continue to improve efficiency and contribute to reduced resource consumption.

## 7.7 Hazardous Materials, Solid Waste, and Pollution Prevention

FAA Order 1050.1F requires airports to consider the waste streams that would be generated by a project, potential hazardous materials that could be used during project construction and operation, the potential to encounter existing hazardous materials at contaminated sites, and the potential to interfere with any ongoing remediation. In accordance with these requirements, a desktop screening of federal databases was performed and included the Resource Conservation and Recovery Act (RCRA) Transportation, Storage, and Disposal Facilities and RCRA Generators list and state databases including the Vermont Hazardous Sites List, Spills, Registered Underground Storage Tank, Above Ground Storage Tank, Solid Waste Landfills, and Public Water supply lists. Based on this screening, multiple DEC-listed Hazardous Sites exist both within the Airport property and in surrounding areas.

**Figure 7-3** presents the locations of known hazardous sites and landfills at and around the Airport. In addition to these known locations of environmental concern, **Figure 7-3** also presents known "high-risk" sites including underground and aboveground storage tanks, hazardous waste generators, and dry cleaners. Regardless of hazardous site status, "high-risk" environmental sites should be evaluated prior to acquisitions or Airport development.

The following on-Airport oil and hazardous materials (OHM) facilities are located within the Airport Development Areas and have documented contamination in place as of October 2018:

- **Site # 972200 (North/south Hanger B I A):** Potential impacts to soil, soil vapor, and groundwater contamination from petroleum release from a former UST in the South General Aviation Area.
- **Site # 923113 (Hertz Rent A Car/National Car):** Groundwater and soil contamination from historical surface release of petroleum in the Terminal Support Area.
- **Site # 770043 (Vermont Air National Guard):** Potential impacts to soil, soil vapor, and groundwater related to releases of chlorinated volatile organic compounds, petroleum, and per- and poly-fluorinated compounds (PFAS) in the U.S. National Guard Area. Active remediation systems are in place. PFAS investigation and remedial design is on-going.

The Airport will conduct an ASTM Standard E1527-13 Phase I Environmental Site Assessment (ESA) for all properties identified for acquisition. Dependent upon the findings of the Phase I ESA, the Airport may

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<sup>75</sup> National Climate Assessment. (2014). *Water Stress in the US*. Retrieved 19 November 2018, from <https://nca2014.globalchange.gov/highlights/report-findings/water-supply/graphics/water-stress-u-s>

<sup>76</sup> Efficiency Vermont. Burlington International Airport expands and saves over \$147,000 annually. Retrieved 19 November 2018, from <https://www.efficiencyvermont.com/about/customer-stories/burlington-international-airport-expands-saves-over-147-000-annually>

need to conduct a Phase II ESA to evaluate any recognized environmental conditions identified in the respective Phase I ESAs.

The Airport maintains a Spill Prevention, Containment, and Countermeasures (SPCC) Plan to promote the strategies necessary to limit the chance of releases of OHM, as well as procedures to be followed in response to an accidental release of OHM. Any expansion of the Airport or redevelopment effort that substantively changes or expands upon the existing OHM storage facilities will require the SPCC plan to be updated.

Remote aircraft de-icing locations are required to meet design, safety, and environmental needs. De-icing at the Airport is currently conducted within the Terminal Area at the General Aviation area adjacent to Taxiway C, on the 890 Ramp also known as the Air Cargo Apron, and on the Valley West Apron, specifically on the terminal apron prior to aircraft taxiing to the departure runway threshold. The Airport currently operates three separate de-icing fluid interception and subsurface injection systems that are permitted under DEC UIC permits; as of July 2020, these permits have all been consolidated into one permit covering all three systems. Monitoring of the collected de-icing fluid and of groundwater in the vicinity of the UIC systems has been performed twice annually since 2007 and has verified that to-date, existing operations have consistently met Vermont Groundwater Enforcement Standards and have been in compliance with the UIC permits. Any changes to de-icing practices that involve a change in the deicing fluids, expansion of deicing areas, or an expansion or change to the existing UIC system will require a permit amendment. Any new de-icing fluid interception and subsurface injection systems would require new permits. Additionally, the Vermont DEC requires the Airport implement measures to ensure that petroleum from fueling operations does not enter the UIC systems.

Section 132(b) of the FAA Modernization and Reform Act of 2012 (49 U.S.C. § 47101(g)(2)) expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid water, consistent with applicable state and local recycling laws, including the cost of a waste audit.”<sup>77</sup> Accordingly, an airport master plan must address issues relative to solid waste including:

- The feasibility of solid waste recycling;
- Minimizing the generation of solid waste;
- Operation and maintenance requirements;
- The review of waste management contracts; and
- The potential for cost savings or the generation of revenue.

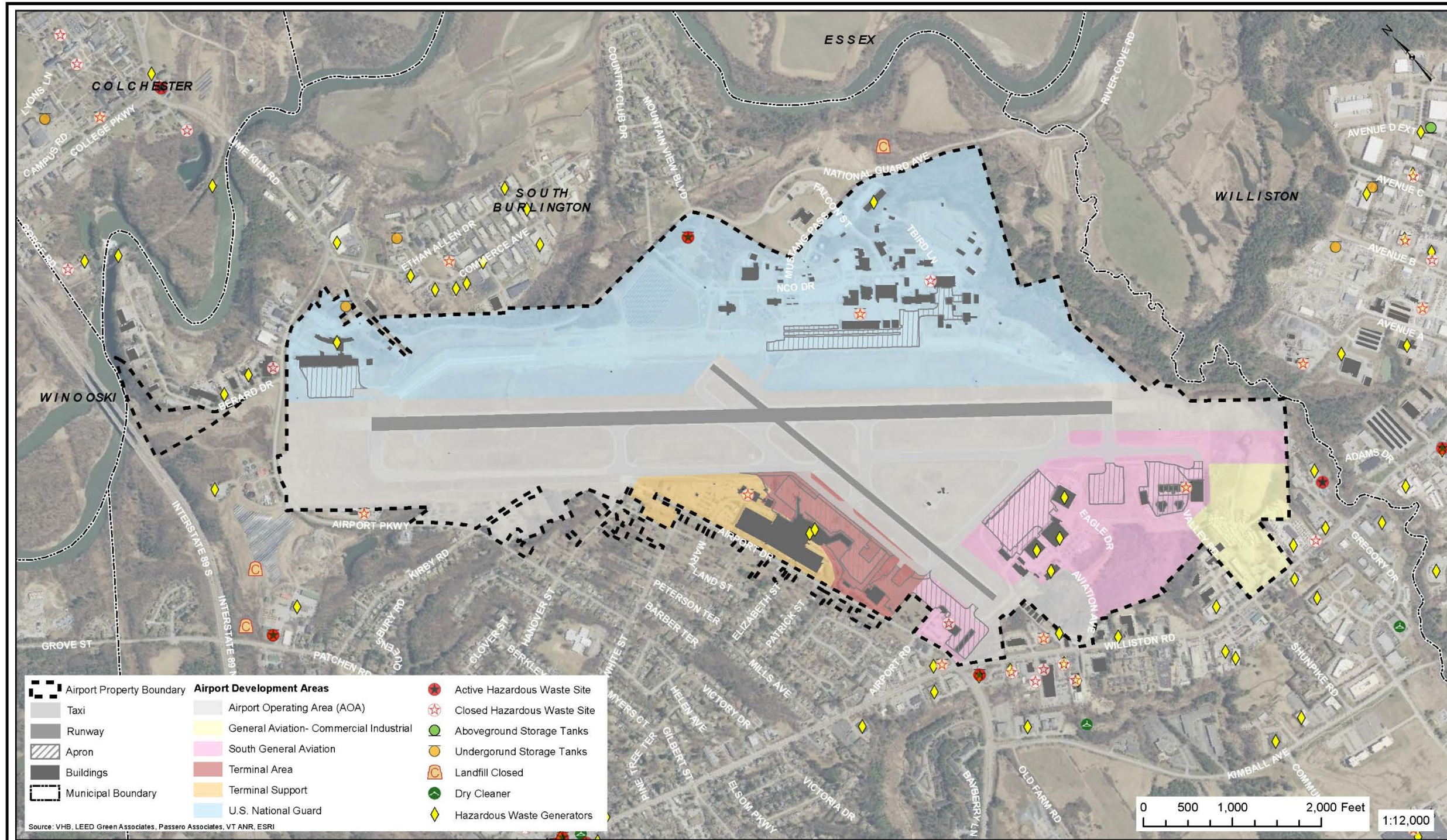
**Section 2.14** provides information on solid waste management and recycling at the Airport.

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<sup>77</sup> FAA. (2012). *FAA Modernization and Reform Act of 2012*. Retrieved 19 November 2018, from <https://www.gpo.gov/fdsys/pkg/CRPT-112hrpt381/pdf/CRPT-112hrpt381.pdf>



Figure 7-3: Hazardous Materials



Burlington International Airport

Hazardous Materials

Figure 7-3



## 7.8 Land Use

Per FAA Order 1050.1F, the FAA requires the assessment of an airport project's potential impacts on land use, both on- and off-airport. Such impacts are typically analyzed based on the significance of impacts in other categories, particularly noise.<sup>78</sup> Noise and noise-related land use considerations are presented in **Section 7.1.8**.

Incompatible land uses that could interfere with an airport may include those uses that inhibit navigation or other airport operations such as land uses that emit high intensity lighting or visual obstacles (e.g., tall buildings) or attract migratory birds. An airport could interfere with particularly sensitive adjacent land uses such as schools, parks, and religious institutions, and this incompatibly often results from noise generated at an airport though it could also relate to ground transportation, light emissions, air quality, or other impacts associated with airport operations.

On-Airport land uses include a range of aviation and ground transportation activities necessary to support the Airport's operations. The following describes land uses within each of the Airport Development Areas. In addition, the U.S. National Guard (Vermont Air National Guard) has facilities north of Runway 15-33.

- **Airport Operating Area (AOA):** consists of the Airport's runways and taxiway system serving commercial, general aviation, and military aircraft operations.
- **Terminal Area:** consists of the main terminal building, the commercial apron, and the Airport's maintenance administration and support facilities.
- **Terminal Support:** consists of the parking garage and surface parking, the FAA Building and Air Traffic Control Tower (ATCT), and other support operations such as the parking control office, car wash, and airfield lighting vault.
- **South General Aviation:** consists of the Airport's maintenance workshop/garage, as well as general aviation and cargo aprons and associated administrative offices, hangars, and maintenance facilities including those affiliated with fixed-based operator Heritage Aviation, the Vermont Flight Academy, and U.S. Customs and Border Protection.
- **General Aviation – Commercial Industrial:** consists of Airport-owned property that includes land associated with a former rock quarry and commercial properties along Williston Road (e.g., Hardscapes & Masonry Supply) that are currently in operation.

It is unlikely that any of the Airport Development Areas would be considered primary agricultural soils. **Section 7.1.13** discusses this environmental consideration further.

Located in South Burlington, the Airport is zoned as its own district ("Airport District") per South Burlington's Zoning Bylaw and as shown in the accompanying Zoning Map.<sup>79</sup> The Airport is surrounded by a mixture of land uses. To the north of the Airport are commercial and industrial areas, open space and farmland, and a small low-density residential neighborhood that abuts the U.S. National Guard

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<sup>78</sup> FAA. (2015). *1050.1F Desk Reference*. Retrieved 12 November 2018, from [https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/environ\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/media/desk-ref.pdf](https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faq_nepa_order/desk_ref/media/desk-ref.pdf)

<sup>79</sup> South Burlington. (2016). *Zoning Map*. Retrieved 14 November 2018 from <http://www.southburlingtonvt.gov/Planning/Regulations%20&%20Plans/LDRs%20Effective%2012-11-2017%20Map%201%20Zng.pdf>

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property. East of the Airport are open space and farmland and commercial/industrial land uses; to the southeast are predominantly commercial/industrial uses; to the southwest is the low-density residential neighborhood of Chamberlin; and to the west are public land uses that include the South Burlington Airport Parkway Wastewater Treatment Plant and Chittenden Solid Waste District Solid Waste Drop-Off Center. The Chamberlin neighborhood includes the Chamberlin School on White Street and open spaces such as an unnamed parcel with a recreation path affiliated with the Community Lutheran Church (Williston Road) and lands associated with the Centennial Woods Natural Area.<sup>80</sup>

While many of these land uses, particularly the commercial, industrial, and recreational lands, are generally compatible with the Airport and its operations, the residential land uses and the Chamberlin School are not. To address this incompatibility, the Airport began acquiring noise incompatible properties in 1985, with many properties purchased in the Chamberlin neighborhood between 1992 and 2015 - especially along Airport Drive.<sup>81</sup> The Airport's *Noise Land Inventory and Reuse Plan Update* (2017)<sup>82</sup> evaluates properties that have been acquired to-date, as well as properties planned to be acquired with Airport Improvement Program (AIP) funds for land use and noise compatibility purposes.

The most recent *South Burlington Comprehensive Plan*, completed in 2016, highlights several issues related to land use and airport compatibility. The plan raises concerns about the Airport encroaching into residential areas and the need to create a new transition between the Airport and parcels that are vacant in the Chamberlin neighborhood due to the Airport's land acquisition programs. Further, the plan calls for transportation and roadway projects to address mobility issues due to experienced and projected increased roadway traffic associated with growth in Airport operations. The plan promotes maintaining compatible land uses around the Airport in the future, while also collaborating with the Airport on broader planning initiatives to meet the interests of the Airport and the City. The 2016 *Chamberlin Neighborhood Land Use and Transportation Plan*<sup>83</sup> and 2013 and 2018 *Chittenden County ECOS Plans*<sup>84, 85</sup> reflect these issues. Airport staff will evaluate compatibility of proposed Airport developments with existing land uses and in relation to the abovementioned planning documents.

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<sup>80</sup> RSG. (2016). *Chamberlin Neighborhood Land Use and Transportation Plan*. Retrieved 14 November 2018, from <https://www.ccrpcvt.org/wp-content/uploads/2016/01/Chamberlin-Neighborhood-Final-Report-with-Appendices-June-2016.pdf>

<sup>81</sup> CHA. (2017). *Noise Land Inventory and Reuse Plan Update*. Burlington International Airport.

<sup>82</sup> Ibid.

<sup>83</sup> RSG. (2016). *Chamberlin Neighborhood Land Use and Transportation Plan*. Retrieved 14 November 2018, from <https://www.ccrpcvt.org/wp-content/uploads/2016/01/Chamberlin-Neighborhood-Final-Report-with-Appendices-June-2016.pdf>

<sup>84</sup> Chittenden County Regional Planning Commission. (2013). *2013 Chittenden County ECOS Plan*. Retrieved 14 November 2018, from <https://www.ccrpcvt.org/wp-content/uploads/2016/01/ECOS-Plan-Final-MERGED-20160610.pdf>.

<sup>85</sup> Chittenden County Regional Planning Commission. (2018). *2018 Chittenden County ECOS Plan*. Retrieved 14 November 2018, [http://www.ecosproject.com/wp/wp-content/uploads/2017/09/ECOSPlan\\_MainPiece\\_FinalDraft\\_20180611-1.pdf](http://www.ecosproject.com/wp/wp-content/uploads/2017/09/ECOSPlan_MainPiece_FinalDraft_20180611-1.pdf).

## 7.9 Noise and Compatible Land Use

Noise is defined as unwanted or excessive sound. FAA Order 1050.1F and the *1050.1F Desk Reference*.<sup>86</sup> provide guidance for environmental impact analysis of noise in accordance with Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.<sup>87</sup> Per the *1050.1F Desk Reference*, detailed noise analysis is required for certain types of airport actions that have the potential to significantly change existing airport noise conditions. Noise impact thresholds for evaluating the potential effects of these types of airport projects are different than the FAA's Part 150 noise compatibility guidelines.

Airport noise is evaluated based on the annual day-night average sound level (DNL). The DNL represents noise as it occurs over a 24-hour period with a 10-decibel (dB) penalty applied to noise occurring between 10 p.m. and 7 a.m. due to the greater sensitivity to noise events at night. All land uses are considered noise compatible in areas where airport noise is below DNL 65 dB. Land uses which are non-compatible with airport noise DNL 65 dB or higher include residences, schools, churches, hospitals, libraries, nursing homes, and outdoor amphitheatres. For certain types of airport actions that have the potential to significantly change existing airport noise conditions, under NEPA and the FAA's associated implementing procedures, a significant noise impact is defined as an increase in noise of DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level or that will be exposed at or above the DNL 65 dB level due to the DNL 1.5 dB or greater increase when compared to the no action alternative for the same timeframe. For air traffic and airspace procedural actions, it is also necessary to identify where there would be changes in noise of DNL 3 dB or more between DNL 60 and 65 dB or changes in noise of DNL 5 dB or more between DNL 45 and 60 dB.

The FAA regulation *Airport Noise Compatibility Planning* (14 CFR Part 150).<sup>88</sup> "Part 150" defines land uses that are normally compatible with various levels of exposure to noise and provides technical assistance to airports to follow noise compatibility planning and implementation programs. Previous Part 150 noise studies for the Airport were completed in 2015 and 2008 to provide a detailed update to the Noise Exposure Mapping (NEM) (i.e., noise contour footprint) surrounding the Airport. The most recent Part 150 Update of the NEM was drafted in May 2019 due to the City's interest in continuing implementation of federally supported noise mitigation at BTV. BTV prepared an updated 2018 NEM and a forecast 2023 NEM and associated report on September 19, 2019. The 2018 and 2023 noise exposure maps were approved by the FAA on September 26, 2020.

### 7.9.1 Noise Exposure Map

The most recent FAA-approved NEM evaluated aircraft operations in 2018 and forecasted operations in 2023. Noise contours were generated using the FAA Aviation Environmental Design Tool (AEDT2d).<sup>89</sup> for civilian operations and transient military operations and the U.S. Department of Defense's NOISEMAP model for military aircraft operations based on the Airport. Each noise model was run separately, and

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<sup>86</sup> FAA. 2015. "1050.1F Desk Reference." Accessed January 15, 2019.

[https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/environ\\_policy\\_guidance/policy/faq\\_nepa\\_order/desk\\_ref/media/desk-ref.pdf](https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faq_nepa_order/desk_ref/media/desk-ref.pdf).

<sup>87</sup> CEQ. "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act." 40 CFR 1500-1508.

<sup>88</sup> FAA. "Airport Noise Compatibility Planning." 14 CFR 150.

<sup>89</sup> AEDT version 2.d was used to prepare all noise exposure contours without any unauthorized "calibration" or "adjustment."

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the outputs were combined to present an average annual day contour and grid point values using the hybrid approach recommended by FAA.

The analysis modeled 68,042 total flight operations in 2018 and 64,543 total flight operations in the 2023 forecast year based on the FAA Terminal Area Forecast. The 2018 noise exposure contours are overall smaller than the previously modeled 2015 and forecasted 2023 contours because of the drawing down of F-16C aircraft in the fleet in preparation for F-35A aircraft and periods of construction on Runway 15-33 that resulted in reduced usage of afterburner departures by the F-16C aircraft. The contribution of civilian aircraft to noise exposure is relatively negligible compared to the contribution of military aircraft. The 2023 noise contours include the use of F-35A aircraft in place of the current F-16C aircraft. The noise model was modified (with FAA concurrence) to include ground noise associated with taxiway movements, maintenance run-ups and other aircraft operations at the terminal gates, cargo area, and general aviation ramps. The NEM resulting from the study for forecasted 2023 operations are presented in **Figure 7-4**.

**Figure 7-4** shows that the area within the DNL 65 dB contours is expected to increase in all directions for the 2023 forecast year, resulting in increases in noise impacts to non-compatible land uses. The largest increase in area occurs northwest and southeast of the airfield in line with Runway 15-33. The exhibit shows that residential areas within the DNL 65 dB contour are primarily located northeast, southwest, and south of Runway 15-33, the main runway at the Airport. These residential land uses are non-compatible with the predicted Airport noise. Depending on the individual building's outdoor-to-indoor Noise Level Reduction (NLR), there are also a few discrete noise-sensitive receptors that are potentially non-compatible with the predicted Airport noise such as educational facilities, places of worship, health care facilities, and public gathering facilities. One such property is the Winooski United Methodist Church, which is on the National Register of Historic Places (National Register).

The noise exposure results for 2018 and 2023 NEM are summarized in **Table 7-1**. In total, the Part 150 study estimated that 2,344 residential dwelling units would experience noise exposure between DNL 65 and 70 dB, 283 residential dwelling units would experience noise exposure between DNL 70 and 75 dB, and 13 residential dwelling units would experience noise exposure greater than DNL 75 dB in 2023. Based on the 2010 Census, this corresponds to an estimated total of 2,640 dwelling units and 6,125 residents experiencing noise exposure greater than DNL 65 dB in 2018 and 2023, respectively.

*Table 7-1: Residential Land Use Noise Incompatibility*

Year	65-70 dB		70-75 dB		75 dB +		Total 65 dB +	
	Dwelling Units	Population	Dwelling Units	Population	Dwelling Units	Population	Dwelling Units	Population
2018	156	362	8	19	-	-	164	380
2023	2,344	5,438	283	657	13	30	2,640	6,125

*Source: "Burlington International Airport; 14 CFR Part 150 Update; 2018 and 2023 Noise Exposure Maps" City of Burlington, Vermont. September 2019.*

### 7.9.2 Noise Compatibility Program

The Airport's existing Noise Compatibility Program (NCP) was approved by the FAA in June of 2008. In April 2020, BTV submitted a revision to the 2008 NCP reflecting existing conditions (2018) and updated

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forecast NEM (2023),<sup>90</sup> which was noticed in the Federal Register on April 22, 2020.<sup>91</sup> Public review of the Draft 2020 NCP was from April 14, 2020 until June 13, 2020. This update will be approved or disapproved by the FAA on or before October 11, 2020. The purpose of submission of the NCP to the FAA was to request FAA approval to support continued participation in the FAA Airport Improvement Program. The NCP is essentially a list of the actions the Airport proposes to undertake to minimize existing and future noise/land use incompatibilities.

The existing NCP includes numerous actions to reduce noise, such as the extension of Taxiway G (in progress), terminal power installation and restrictions of auxiliary power/ground power usage (not fully implemented), noise abatement flight paths for certain operations on Runway 15-33 (not fully implemented), a voluntary land acquisition program (implemented), and other operational, monitoring and land use measures. As of September 2015, the FAA had issued 12 grants to the City, totaling \$32.6 million, to acquire land through the voluntary land acquisition program.

The NCP Update proposes the development of a more robust noise mitigation program than the previously approved NCP and is focused on community-based programs. It includes new mitigation measures, and modifications to existing measures, which are designed to preserve and enhance the existing land use. The City prefers the local surrounding residential areas to remain a source of affordable housing and stability for the area. All programs are recommended to be voluntary. The recommended NCP revision is summarized in **Table 7-2**.

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<sup>90</sup> Burlington International Airport, 14 CFR Part 150 Update, Noise Compatibility Program Update, Prepared for City of Burlington by The Jones Payne Group and HMMH, April 6, 2020.

<sup>91</sup> Federal Register/ Volume 85, No. 78, Wednesday, April 22, Notices, page 22510.

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Table 7-2: NCP Update – Recommended Measures and Changes from the 2008 NCP

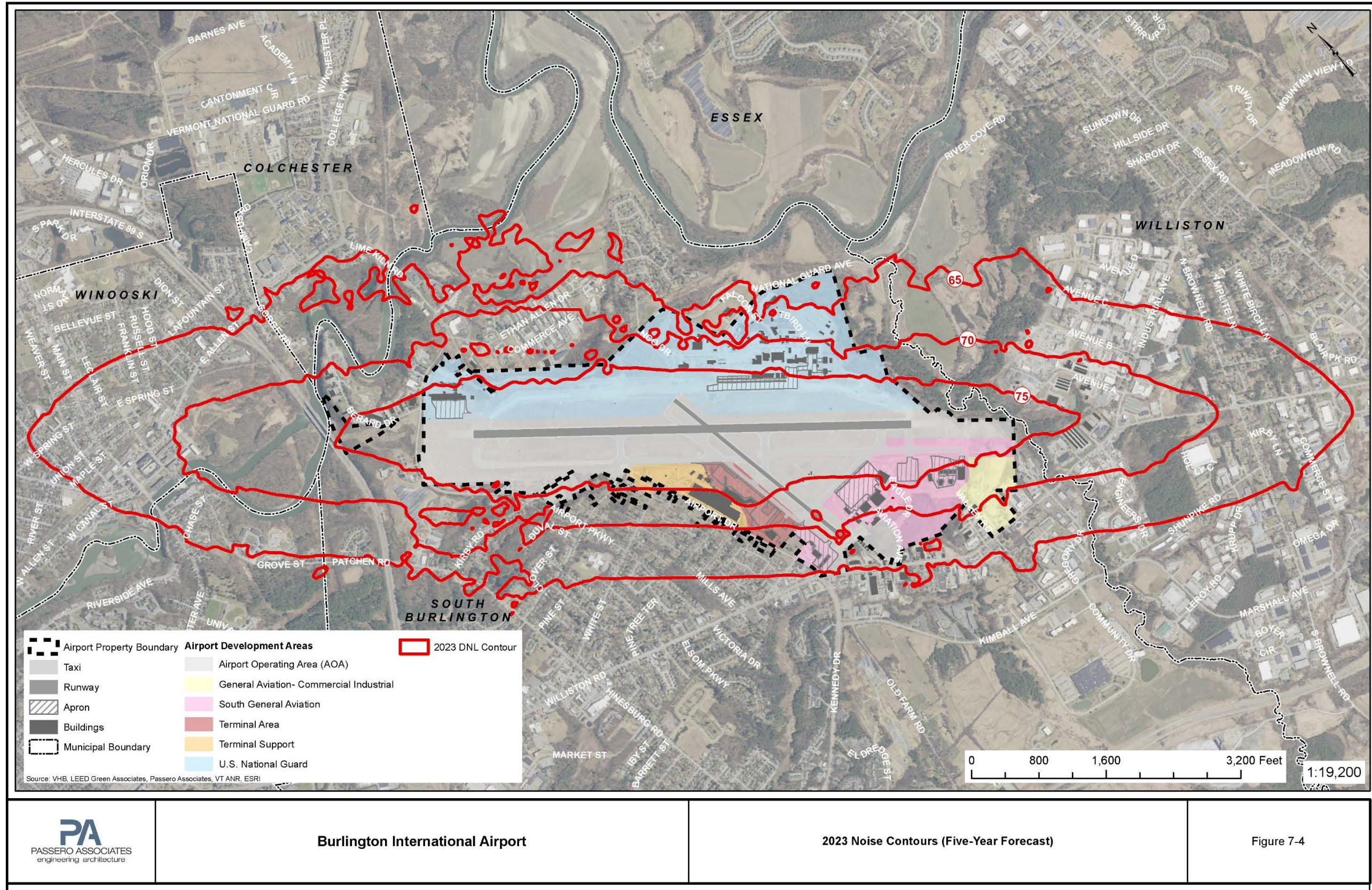
Measure	Description of Change from 2008 NCP
<b>Ongoing Monitoring and Review of NEM and NCP Status</b>	No change
<b>Noise Monitoring and Flight Track Monitoring</b>	This measure has been updated to include noise monitoring in addition to the previously included measure for flight track monitoring. Currently, the City is only pursuing acquisition of a flight track monitoring system.
<b>Land Acquisition and Relocation</b>	A modification to the 2008 Land Acquisition and Relocation Program to limit the eligibility to parcel where the majority of the non-compatible parcel is located within the 75 dB DNL contour.
<b>Sound Insulation of Residential Structures</b>	Qualified incompatible residential land uses within the 65 and up to the 75 dB DNL contours, and residential land use located partially within the 75 dB DNL noise contours where a majority of the parcel is located outside the 75 dB DNL contour, would be included in a sound insulation program. A clarification from the 2008 NCP for properties that touch the 75 DNL due to AEDT modeling settings would be treated as 70 DNL.
<b>Sound Insulation of Noise Sensitive Buildings</b>	Qualified incompatible non-residential land uses within the 65 and up to the 75 dB DNL contours would be included in a sound insulation program as per the 2008 program.
<b>Purchase Assurance for Single Family Parcels</b>	A new measure that would allow qualified incompatible owner-occupied single-family parcels within the 65 DNL up to the 75 DNL contours to be included in a purchase assurance program. The City would acquire the home in exchange for an avigation easement, provide sound insulation, and resell the home on the open market for fair market value.
<b>Sales Assistance for Single Family Parcels</b>	A new measure where qualified incompatible owner-occupied single-family parcels within the 65 DNL up to the 75 DNL contours and not eligible for sound insulation would be included in a sales assistance program.
<b>Purchase of Avigation Easement for Noise</b>	Measure to be removed.

Source: “Burlington International Airport; 14 CFR Part 150 Update; Noise Compatibility Program Update” City of Burlington, Vermont. April 2020.

The Airport’s *Noise Land Inventory and Reuse Plan Update* (2017)<sup>92</sup> evaluates properties that have been acquired to-date, as well as properties planned to be acquired with AIP funds for land use and noise compatibility purposes. The 2023 NEM presented in **Figure 7-4** will be used in the process to determine non-compatible land uses and mitigation-eligible parcels once the FAA has accepted the updated Part 150 NCP Update.

<sup>92</sup> CHA. (2017). *Noise Land Inventory and Reuse Plan Update*. Burlington International Airport.

Figure 7-4: 2023 Noise Contours (Five-Year Forecast)



**Burlington International Airport**

**2023 Noise Contours (Five-Year Forecast)**

**Figure 7-4**



## 7.10 Visual Effects

Visual effects involve light emissions and the nature of the visual character of an area. Light emissions can create annoyances for, or otherwise interfere with, normal activities in neighboring land uses. Visual character is assessed relative to the potential of a proposed airport development to undermine the importance, uniqueness, and aesthetic value of visual resources; contrast with visual resources; or block or obstruct views of visual resources. Light emissions can also affect the visual character of an area by altering the aesthetic qualities that collectively define that area.

### 7.10.1 Light Emissions

The Airport is classified as a Part 139, Class I airport, which means that it serves scheduled operations for large air carrier aircraft or any other type of air carrier operations. As such, it must adhere to 14 CFR 139, Certification of Airports, which includes requirements for providing and maintaining lighting systems for air carrier operations such as runway lighting, taxiway lighting, an airport beacon, approach lighting, and obstruction lighting. Other lighting at the Airport includes ramp lighting on the commercial and cargo terminal aprons, street lighting on access roadways, and lighting associated with the Airport's other buildings and facilities, though such lighting is generally buffered from surrounding areas by vegetated areas. Those lighting types mentioned would be considered light emissions as they relate to the Airport and its operations. Their use is consistent with the Airport's schedule of operating 24 hours per day, 365 days per year.

Airport improvements can alter existing lighting conditions through the installation of additional lighting or changes to the locations of existing lighting. Such lighting alterations would likely occur on currently developed portions of the Airport but may also occur in the broader vicinity in the case of approach and obstruction lighting; the approach and departure paths for both runways at the Airport are largely in manufacturing and commercial land uses. Lighting conditions can also be altered by a change in the visual buffers surrounding the Airport such as through tree clearing. Any changes to lighting conditions within the Airport and in its vicinity where light emissions could generate annoyances or otherwise interfere with normal activities in adjacent land uses, particularly where regarding light-sensitive areas such as homes, parks, or other recreational areas, would require an evaluation of potential measures to lessen any identified adverse effects.

### 7.10.2 Visual Resources and Character

The Airport is bordered by commercial, industrial, residential, active agricultural, and open space land uses. The Chamberlin neighborhood, which South Burlington's Comprehensive Plan 2016 refers to as "one of the City's historic neighborhoods," is located to the southwest of the Airport. The Chamberlin neighborhood mostly consists of Minimal Traditional, Colonial Revival, and Ranch houses, built between the 1940s-1950s. Previous studies of portions of the neighborhood have found that none of the properties in the Chamberlin neighborhood are eligible for listing in the National Register, but some areas may be eligible as potential historic districts. Within the Airport, there are no sites identified or listed in the State or National Registers; however, some have been identified as potentially historic (see **Section 7.1.11**). The Airport sits against the backdrop of the Green Mountains to the east. The Airport does not obstruct views of this landscape from surrounding areas, as it sits at a similar or lower elevation and most of the Airport is comprised of horizontal infrastructure.

Visual effects on the existing environment, architecture, historic or cultural setting, or land use planning in these areas would be determined in consultation with jurisdictional agencies, such as through Section

4(f) of the DOT Act, Section 6(f) of the Land and Water Conservation Fund Act, and Section 106 of the National Historic Preservation Act (NHPA), and with the public. Land uses surrounding the Airport, however, are generally buffered from the Airport by natural topography and landscape plantings. Since 1992, the Airport's property acquisitions for land use and noise compatibility purposes have created a further buffer between it and the Chamberlin neighborhood, especially along Airport Drive (see **Sections 7.1.7** and **7.1.8**).

Any proposed Airport development would be designed and constructed to be consistent with the character of the Airport's visual context and is, therefore, not likely to negatively affect visual resources. The Airport would nonetheless consult with federal, state, and local governmental agencies and the community on the potential for visual effects from a proposed Airport development.

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

Per FAA Order 1050.1F, social impacts are to be evaluated as part of any proposed airport development; NEPA implementing regulations require federal agencies to consider effects to the human environment and reasonable alternatives to avoid or minimize such effects. Further, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates Federal agencies to include minority and low-income populations in the public involvement process and to identify and address a potential action's disproportionately high and adverse effects on such populations. DOT Order 5610.2(a), *Final DOT Environmental Justice Order*, affirms the DOT's commitment to environmental justice principles. Under Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, federal agencies must make child protection a high priority.

### 7.11.1 Socioeconomics

The Airport is located within the City of South Burlington in Chittenden County, which have populations of 18,704 and 160,510, respectively. Based on the *2012-2016 American Community Survey (ACS) 5-Year Estimates*, approximately 3,500 persons live within 0.5-mile of the Airport.<sup>93,94</sup> This represents an aggregate of portions of census block groups that intersect with adjacent communities including the City of Burlington to the west; the City of Winooski and Town of Colchester to the North; the Town of Essex to the northeast; and the Town of Williston to the southeast. The population density surrounding the Airport is nearly 800 persons per square mile, while the housing density is about 390 units per square mile.

**Table 7-3** and **Table 7-4** provide additional demographic information for the area around the Airport as well as for the larger context geographies in which the Airport resides.

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<sup>93</sup> Intersecting census block groups include 500070040022, 500070025003, 500070022003, 500070040021, 500070026013, 500070031001, and 500070040021.

<sup>94</sup> EPA. (2018). *Environmental Justice Screening and Mapping Tool (Version 2018)*. Retrieved 5 November 2018, from <https://ejscreen.epa.gov/mapper/>

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Table 7-3: Socioeconomic Profiles

	U.S.	Vermont	Chittenden County	South Burlington	Airport Vicinity <sup>1</sup>
<b>Population</b>	318,558,162	626,249	160,510	18,704	3,540
<b>Population Under Age 5</b>	6%	5%	5%	5%	6%
<b>Population Over 64</b>	15%	17%	13%	18%	19%
<b>Civilian Unemployed in Labor Force</b>	5%	3%	3%	3%	3%
<b>Housing Units</b>	134,054,899	326,812	67,523	8,859	1,729
<b>Owner-Occupied Housing Rate</b>	64%	71%	64%	63%	61%

Sources: U.S. Census Bureau, 2012-2016 ACS 5-Year Estimates; EPA, Environmental Justice Screening and Mapping Tool (Version 2018)

<sup>1</sup>'Airport Vicinity' is defined as 0.5-mile around the Airport. This includes an aggregate of portions of intersecting block groups (500070040022, 500070036002, 500070036001, 500070006001, 500070025003, 500070022003, 500070040021, 500070026013, and 500070031001).

Specific proposed Airport developments will need to be evaluated for their potential to affect local socioeconomic conditions. Related principal impacts include residential or commercial displacements/relocations, changes to neighborhood characteristics, disruption to local traffic patterns, and changes to local employment and the community tax base. Should land acquisition be necessary for a proposed Airport development, it must be conducted in compliance with 49 CFR Part 24 - Uniform Relocation Assistance and Real Property Acquisition Policies Act for Federal and Federally-Assisted Programs and FAA AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*.

Airport development projects have the potential to generate secondary or induced socioeconomic impacts. Such impacts can involve shifts in population movement and growth, increased public service demands, and changes in business and economic activity. Proposed Airport developments are likely to have the benefit of increasing employment opportunities in the region and supporting state-wide economic development initiatives by attracting new businesses as well as allowing existing businesses to expand operations. More information on the Airport's role in the regional economy is provided in **Chapter 2**.

### 7.11.2 Environmental Justice

The primary intent of environmental justice evaluations is to identify and address disproportionate and adverse effects from potential federal actions, including airport development actions funded under the AIP or any airport action subject to FAA approval, on minority or low-income populations. For the purposes of this Master Plan, minority and low-income populations were identified within 0.5-mile of the Airport, which is inclusive of nine intersecting census block groups. Minority populations were identified using the following definition: "percent minority as a fraction of population, where minority is

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defined as all but Non-Hispanic White Alone using the following definition.”<sup>95</sup> Per DOT Order 5610.2, low-income populations include persons living in households where the median household income is at or below the Department of Health and Human Services’ (HHS) poverty guidelines. The latest ACS data were used to identify minority populations and low-income populations proximate to the Airport.

According to the CEQ’s *Environmental Justice Under the National Environmental Policy Act*, the threshold for identifying minority populations is 50 percent or “meaningfully greater” than the general population or other relevant geographic area.<sup>96</sup> As shown in **Table 7-4**, no census block group within 0.5-mile of the Airport has a minority population greater than 50 percent, though block group 500070026013 has a significantly larger minority population (26 percent) than South Burlington (14 percent), Chittenden County (10 percent), and Vermont (5 percent).<sup>97</sup> Proposed Airport developments will be evaluated against their potential to generate disproportionate and adverse effects within this block group.

The HHS poverty guidelines are based on the number of persons living in households. According to the latest ACS data, the average household sizes in the Census block groups within 0.5-mile of the Airport range from 2 to 3 persons. The HHS poverty guidelines for two-person households is \$16,240 and is \$20,420 for three-person households.<sup>98</sup> As shown in **Table 7-4** none of the block groups are at or below these guidelines; the lowest median household income among them is \$26,769 in block group 500070022003. Based on this information, proposed Airport developments are not likely to result in disproportionately high and adverse effects to low-income populations.

Table 7-4: Environmental Justice Evaluation Details

Census Block Group	Minority Population	Median Household Income	Average Household Size <sup>1</sup>	Linguistically Isolated Households
500070040022	15%	\$65,385	2	0%
500070036002	17%	\$50,735	2	2%
500070036001	5%	\$72,692	2	0%
500070006001	17%	\$47,579	2	1%
500070025003	12%	\$50,841	2	0%
500070022003	16%	\$26,769	3	0%
500070040021	26%	\$63,750	2	3%
500070026013	13%	\$97,237	3	0%
500070031001	5%	\$72,667	2	0%

Source: U.S. Census Bureau, 2012-2016 ACS 5-Year Estimates

<sup>1</sup>Values rounded to nearest whole number.

<sup>95</sup> EPA. (2017). *Glossary of EJSCREEN Terms*. Retrieved 6 November 2018, from <https://www.epa.gov/ejscreen/glossary-ejscreen-terms>

<sup>96</sup> CEQ. (1997). *Environmental Justice Under the National Environmental Policy Act*. Retrieved 6 November 2018, from [https://www.epa.gov/sites/production/files/2015-02/documents/ej\\_guidance\\_nepa\\_ceq1297.pdf](https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf)

<sup>97</sup> U.S. Census Bureau. (2016). *2012-2016 ACS 5-Year Estimates*. Retrieved 6 November 2018, from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

<sup>98</sup> U.S. Department of Health and Human Services. (2017). *2017 Poverty Guidelines for the 48 Contiguous States and the District of Columbia*. Retrieved 6 November 2018, from <https://aspe.hhs.gov/2017-poverty-guidelines>

For the purpose of informing future public outreach related to Airport development projects, the latest ACS data were used to identify the “percent of households in which no one age 14 and over speaks English “very well” or speak English only (as a fraction of households).”<sup>99</sup> As shown in **Table 7-3**, no census block group has linguistically isolated households that comprise more than 3 percent of all households. Other than English, the most prevalent language spoken near the Airport is Spanish; 5 percent or persons age 5 and above living within 0.5-mile of the Airport speak this language.<sup>100</sup>

### 7.11.3 Children’s Environmental Health and Safety Risks

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* requires that federal agencies make the identification and assessment of environmental health and safety risks that may disproportionately affect children a high priority. Under NEPA, impacts to children are considered separately from that of adults, as children’s exposure to such impacts can be experienced at a higher intensity. Among the census block groups identified in **Table 7-4** according to the *2012-2016 ACS 5-Year Estimates*, there are 1,050 children under the age of 5 (5 percent of the area’s total population) and 2,066 children between the ages of 5 and 17 (11 percent of the area’s total population).<sup>101</sup>

At a more granular level, schools and daycare centers with higher concentrations of children are the most likely places for a disproportionate impact to children’s environmental health and safety. A review EPA’s EJ Screen and readily available web mapping sources indicate that such facilities in the census block groups within 0.5-mile of the Airport include, but may not be limited to:

- The Chamberlin School – 262 White Street, South Burlington
- Loveworks Child Care Center - 1600 Williston Road, South Burlington
- Children’s School - 173 Patchen Road, South Burlington
- International Children’s School – 1 Executive Drive, South Burlington
- Rick Marcotte Central School – 10 Market Street, South Burlington
- Frederick H. Tuttle Middle School – 500 Dorset Street, South Burlington
- South Burlington High School – 550 Dorset Street, South Burlington
- Trinity Children’s Center - 34 Fletcher Place, Burlington
- EJ’s Kids Klub - 45 Avenue D, Williston
- Children’s Unlimited - 35 Dorset Lane, Williston
- The Williston Enrichment Center - 82 Winter Sport Lane, Williston
- Hiawatha School – 34 Hiawatha Avenue, Essex Junction

The Airport will evaluate proposed Airport development projects for their potential to have a disproportionate health and safety impact on children, particularly as they relate to the above facilities.

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<sup>99</sup> U.S. Environmental Protection Agency. (2017). *Glossary of EJSCREEN Terms*. Retrieved 6 November 2018, from <https://www.epa.gov/ejscreen/glossary-ejscreen-terms>

<sup>100</sup> U.S. Environmental Protection Agency. (2018). *Environmental Justice Screening and Mapping Tool (Version 2018)*. Retrieved 5 November 2018, from <https://ejscreen.epa.gov/mapper/>

<sup>101</sup> U.S. Census Bureau. (2016). *2012-2016 ACS 5-Year Estimates*. Retrieved 6 November 2018, from <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

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

Section 106 of the National Historic Preservation Act (Section 106 and NHPA, 16 U.S.C. 470) requires all federal agencies to consider the effects of federal undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on such projects prior to the expenditure of any federal funds. A federal undertaking is defined as a project, activity, or program either funded, permitted, licensed, or approved by a federal agency. Undertakings may take place either on or off federally controlled property and include new and continuing projects, activities, or programs and any of their elements, whether they have been previously considered under Section 106 or not. Section 106 also requires federal agencies to consult on the Section 106 process with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), Indian Tribes (to include Alaska Natives), and Native Hawaiian Organizations (NHO). Federal regulations at 36 C.F.R 800 govern the Section 106 process and outline how federal agencies are to consult with SHPOs, THPOs, NHOs, and other interested parties, identify historic properties, determine whether and how such properties may be affected, and resolve adverse effects.

A historic property is any property that is listed in or eligible for listing in the National Register. These properties can be buildings, structures, sites, objects, or districts and include above-ground and below-ground (i.e., archaeological) resources. If a property has not previously been determined eligible or ineligible for the National Register, as part of the Section 106 process, it should be evaluated by the federal agency in consultation with the SHPO to determine if it meets eligibility. **Figure 7-5** depicts potentially historic properties at and around the Airport. These resources are described below.

### 7.12.1 Above-ground Historic Resources

As of September 2018, per a desktop review of the Vermont Division for Historic Preservation's (DHP) Online Resource Center (ORC),<sup>102</sup> there are no above-ground historic properties previously surveyed by Vermont Historic Sites and Structures Survey or listed in the State or National Registers within any of the Airport Development Areas. Based on a cursory examination of resources during a site visit and a review of information contained in *Burlington International Airport, A History 1920-2010*,<sup>103</sup> however, certain structures may be potentially historic as these buildings are over or are approaching 50 years of age, which is the general guideline for consideration of eligibility in the National Register. Additional studies would be required to determine if these structures are individually eligible for the National Register or collectively constitute a historic district.

The following identifies the potentially historic buildings in the Airport Development Areas. These buildings should be evaluated for its historic significance and integrity. There are no resources apparent/buildings located within the AOA. The U.S. National Guard property was not included in this review.

#### South General Aviation Area

- **1935 Administration / Terminal Building:** Located at 1130 Airport Drive, this building is home to UVM Medical Center/Dartmouth-Hitchcock Medical Center's DHART helicopter, Montair Flight

<sup>102</sup> Vermont. (2018). Division for Historic Preservation: Online Resource Center. Retrieved 16 November 2018, from [www.orc.vermont.gov](http://www.orc.vermont.gov)

<sup>103</sup> James Tabor. (2010). *Burlington International Airport. A History: 1920-2010*. Board of Airport Commissioners, Burlington, VT.

Service, and Fli-Rite Aviation. It was completed in the 1935, relocated to its current location in 1944 and given a new south wing in 1945.<sup>104</sup> It is unclear if the beacon tower on this squat, flat-roofed structure is the original tower. When constructed, the Administration Building housed the U.S. Weather Bureau, the Customs and Immigration Services, and the Civil Aeronautics Administration.<sup>105</sup>

- **Vermont Flight Academy Building:** Located at 355 Valley Road, this building includes unique doors that fold in the middle and slide up to open. This building appears on the 1973 topographic map, but not the 1962 aerial photograph, and therefore could be 50 years old or older.<sup>106</sup>
- **Alert Hangars:** Located at 274 Valley Road, these hangars have a unique architectural style. They appear on a 1962 aerial photograph and are therefore over 50 years old.<sup>107</sup> They house the Burlington Technical Center, Aerodyme Corporation, and a private tenant.

#### Terminal Area/Terminal Support Area

- The architectural firm Fay, Spofford, and Thorndike designed the second **administration complex/terminal building** that was completed in 1950. In 1972, this terminal building underwent a complete renovation that effectively enclosed the original building within a new terminal. In 1984, a 21,000-square foot addition was added to the terminal. In 1989, FAA added a control tower, which is still in use today. In 1998, an expansion added a second level to a parking garage and a new mezzanine, as well as another 15,000 square feet of terminal space (designed by the local architectural firm Freeman French Freeman). The original ATCT located in this second administration complex/terminal building was repurposed as an Observation Tower.<sup>108</sup>

Based on available records, a determination of eligibility for the current terminal building has not been completed. Considering the degree of modifications and additions that have taken place since the original construction in 1950, it is unlikely that the terminal building would be considered eligible for listing in the National Register.

#### General Aviation – Commercial Industrial

- Various metal-clad, one-story commercial buildings are located on either side of Valley Road, apparently dating to the late 20th century. These are unlikely to be historic, but survey and evaluation are recommended.

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<sup>104</sup> *ibid.*

<sup>105</sup> James Tabor. (2010). *Burlington International Airport. A History: 1920-2010*. Board of Airport Commissioners, Burlington, VT.

<sup>106</sup> *ibid.*

<sup>107</sup> *ibid.*

<sup>108</sup> James Tabor. (2010). *Burlington International Airport. A History: 1920-2010*. Board of Airport Commissioners, Burlington, VT.

#### Land Use and Reuse Area (Noise Land)

- The Land Use and Reuse Area crosses through the Chamberlin neighborhood. This neighborhood is composed primarily of Minimal Traditional, Colonial Revival, and Ranch style homes, constructed predominantly in the 1940s-1950s. In 2010, the New England Preservation Collaborative completed the Burlington International Airport Neighborhood Survey, (“Neighborhood Survey”) to survey residential structures surrounding the Airport, eligible for purchase and removal through the Federal Aviation Regulation, “Part 150, Noise Compatibility Program.”

The Neighborhood Survey evaluated whether properties within the survey area were eligible for listing in the National Register; it did not evaluate the entire neighborhood. The results of the Neighborhood Survey found that none of the properties in this area were eligible individually, but there were potential historic districts. Potential historic districts, including the Dumont, Elizabeth-Mills-Patrick, Sunrise Park, North/South Henry Court and Ledoux Terrace developments, are associated with post-WWII suburbanization and development along with the expansion of the Airport. Collectively, several groups of properties in these areas are potentially eligible for listing as contributing resources to a historic district as they relate to events that have made a significant contribution to the broad patterns of history (Criterion A under the National Register Criteria for Evaluation).<sup>109</sup>

Some of these developments overlap with the Land Use and Reuse Area. To accurately determine whether these properties are historically significant, it is likely that the entire Chamberlin neighborhood would need to be surveyed by qualified architectural historians, meaning those who have 36 CFR Part 61 qualifications.

It should be noted that Eldredge Cemetery, located at 1159-1027 Airport Drive, does not fall within any Airport Development Area, but it is located in between the Terminal Area and the South General Aviation Area.

### 7.12.2 Archaeological Resources

The DHP was consulted in September 2018 regarding known archaeological resources at the Airport. At that time, there were no recorded sites within the Airport property. The surrounding area, however, is highly sensitive for Precontact archaeological sites and there are sites reported in the neighborhoods south and west of the Airport. The areas around Allen Brook, Potash Brook, and Muddy Brook show evidence for Precontact occupation.<sup>110</sup> There are archaeological sites in the U.S. National Guard property north of Runway 15-33 that were found during road realignments.<sup>111</sup> Maps depicting the location of known sites are confidential and therefore not included in this report. Such mapping is available by request from the DHP.

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<sup>109</sup> Reimann, Lisa and James Duggan (2010). Burlington International Airport Neighborhood Survey. New England Preservation Collaborative (rev. September 2010), pg. 29-30.

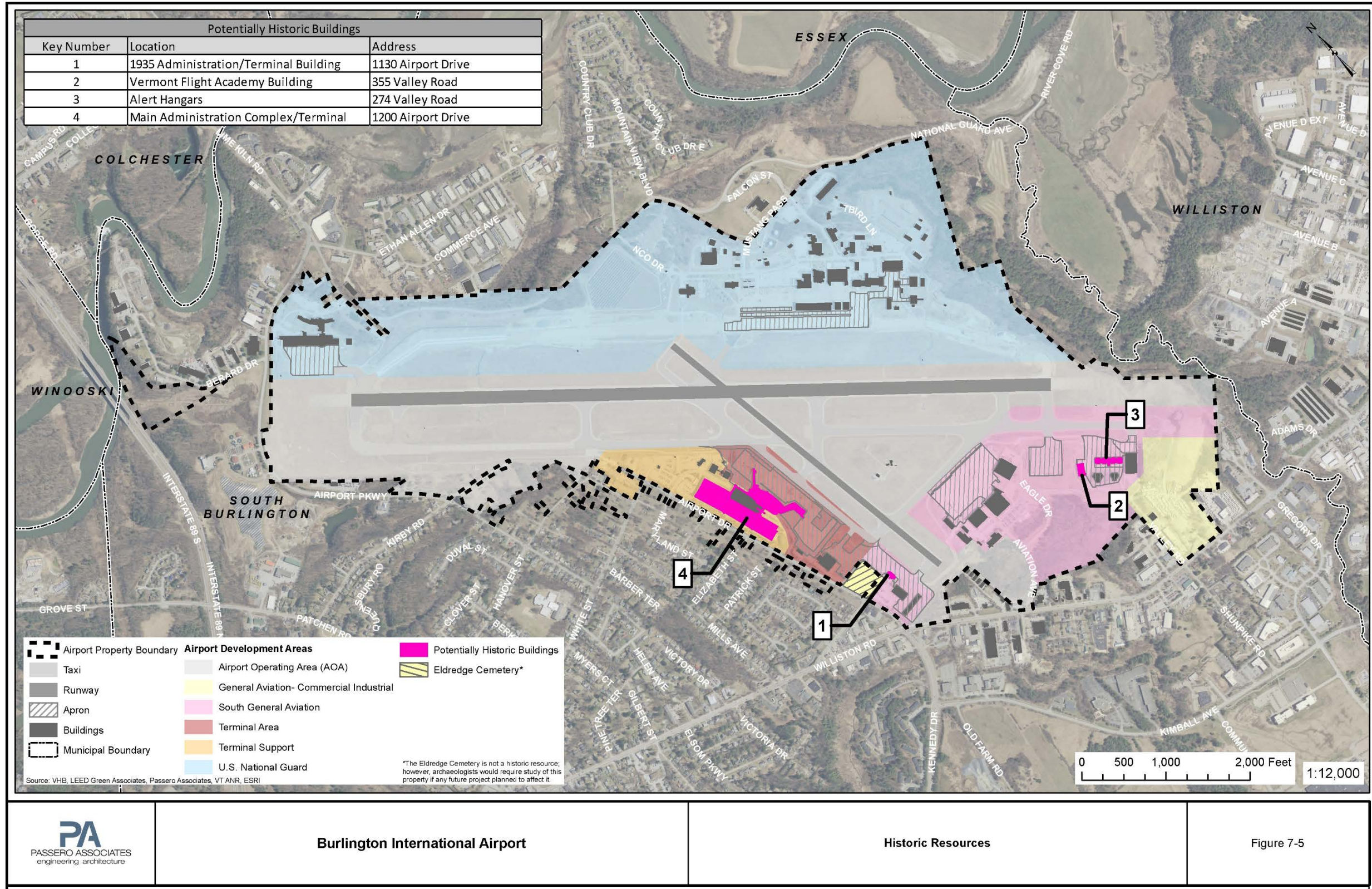
<sup>110</sup> Email communication between Yvonne Basque, Vermont Division for Historic Preservation Archaeologist, and Kaitlin O’Shea, VHB Preservation Planner, September 19, 2018.

<sup>111</sup> *ibid.*

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Figure 7-5: Historic Resources



 <p><b>PASSERO ASSOCIATES</b> engineering architecture</p>	<p><b>Burlington International Airport</b></p>	<p><b>Historic Resources</b></p>	<p>Figure 7-5</p>
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## 7.13 Department of Transportation Act, Section 4(f)

Section 4(f) of the DOT Act protects significant publicly owned public parks, recreation areas, and wildlife and waterfowl refuges as well as significant historic sites, whether they are publicly or privately owned. Section 4(f) is codified as 49 U.S.C. 303 and 23 U.S.C. 138. FHWA regulations 23 C.F.R 774 implement the law. Section 4(f) applies to all agencies within the DOT, including FAA. Transportation projects that do not require the approval or funding of a DOT agency are not subject to the requirements of Section 4(f).

There are no Section 4(f) public parks, recreation areas, or wildlife or waterfowl refuges in any of the Airport Development Areas. The Section 4(f) resources in the Airport Development Areas would include those historic resources eligible for or listed in the National Register. These might include the to-be-determined resources discussed above in **Section 7.1.11**. The Land Use and Reuse Area might contain Section 4(f) resources if any of the areas within the Chamberlin neighborhood are determined to be a historic district.

Though no known archaeological sites are present within an Airport Development Area, Section 4(f) also applies to archeological sites that are on or eligible for the National Register and that warrant preservation in place, including those sites discovered during construction.

## 7.14 Farmlands

The Farmland Protection Policy Act (FPPA) regulates federal activities that would convert farmland to other uses under 7 U.S.C. §§ 4201-4209. The FPPA regulates farmland defined as prime, unique, or of statewide or local importance. The FPPA requires coordination with the Natural Resources Conservation Service (NRCS) if projects would permanently convert prime farmland to other uses. According to the FPPA, “farmland” does not include land already in or committed to urban development. Vermont also regulates conversion of prime agricultural soils on projects subject to Act 250 jurisdiction, under Criterion 9(B)-Primary Agricultural Soils.

A review of available ANR soil mapping information indicates that most of the Airport Development Areas are underlain by Adams and Windsor loamy sands, which are prime farmland soils of Statewide Importance. Small portions of the South General Aviation Airport Development Area are underlain by Statewide (b) Munson and Raynham silt loams. Another small area spanning the southeastern portion of the AOA, South General Aviation, and General Aviation-Commercial Industrial Airport Development Areas includes Statewide (a) Adams and Windsor loamy sands. Soils of Statewide Importance are valued for production of food, feed, forage, and oilseed crops; however, these soils typically have limitations such as excessive slope or erosion, excessive wetness or slow permeability, a flooding hazard, shallow depth, and low water capacity.

The Airport falls within the Burlington, VT Urbanized Area (11755 [UA]).<sup>112</sup> Accordingly, there are no “Important Farmlands” subject to the provisions of §658.2 of the FPPA within the Airport Development Areas.

With respect to Act 250 Jurisdiction, and specifically to 10 V.S.A. §6001, it is unlikely that the Airport Development Areas would be considered primary agricultural soils regardless of the underlying soil

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<sup>112</sup> U.S. Census Bureau. (2010). *2010 Census – Urbanized Area Reference Map: Burlington, VT*. Retrieved 19 November 2018, from [https://www2.census.gov/geo/maps/dc10map/UAUC\\_RefMap/ua/ua11755\\_burlington\\_vt/DC10UA11755.pdf](https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua11755_burlington_vt/DC10UA11755.pdf)

mapping given the degree of development that has occurred. Further, the amount of remaining, unaffected soils is limited and likely of insufficient size and location, relative to adjoining land uses, to be capable of supporting or contributing to an economic or commercial agricultural operation.

## 7.15 Anticipated Environmental Review and Permitting Requirements

The alternatives development process resulted in 10 projects, including two that connect to off-Airport roadways, to be studied by others. These projects are distributed by planning horizon, with four projects planned for development within 0 to 5 years, two projects within 5 to 10 years, two projects within 0 to 10-plus years, and one project anticipated for 10 to 20 years; one project is beyond the planning horizon of this Master Plan (20+ timeframe). The most significant project is the Terminal Building Expansion.

The following sections discuss the likely environmental review and permitting requirements for the projects proposed as part of this Master Plan, along with potential project groupings to streamline the effort and cost associated with obtaining federal approvals under NEPA.

## 7.16 Anticipated Project Phasing and Groupings

In addition to streamlining and reducing costs for obtaining federal approvals under NEPA, it is important to consider projects in relation to one another to avoid either segmentation of similar projects or to take possible cumulative impacts into account. Accordingly, where appropriate, this Master Plan suggests projects that could be grouped together. Projects that could be grouped together for combined or concurrent environmental review would include projects with similar:

- Airport development areas (i.e., Airport Operating Area, South General Aviation, Terminal Area, Terminal Support, Land Use and Reuse, and General Aviation – Commercial Industrial);
- Planning timeframes (0 to 5 years, 5 to 10 years, 0 to 10-plus years, 10 to 20 years, and 20-plus years); and
- Permit and approval requirements.

**Table 7-5** shows the possible project groupings based on the criteria listed above.

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Table 7-5: Overview of Anticipated Phasing and Project Groupings

ID	Project	Development Area	Planning Timeframe	Potential Groupings (by Project ID) <sup>1</sup>
1	Relocated Taxiway B	Airport Operating Area	0 to 5 years	2 and 5
2	Hotspot 1 Remediation/ Taxiway E Relocation	Airport Operating Area	0 to 5 years	1 and 5
5	Parallel Taxiway to Runway 1-19 - From Taxiway C to Runway 1	Airport Operating Area	0 to 5 years	1 and 2
3	General Aviation/Cargo Expansion	South General Aviation Area	0 to 10-plus years	NA
4	Terminal Building Expansion (Phased)	Terminal Area	0 to 10-plus years	NA
6	Remote Deicing Pad	Airport Operating Area	5 to 10 years	NA
7	Relocation of Taxiway M	Airport Operating Area	10 to 20 years	NA
8	Relocation of Maintenance Building (Maintenance Building and Parking Lot)	Terminal Support	0 to 5 years	NA
9	Access Road Connection to Kennedy Drive	Off-Airport	5 to 10 years	NA
10	Support projects for Access Road to I-89 and Noise Land Reuse	Land Use and Reuse/Off- Airport	20-plus years	NA

<sup>1</sup>Projects that could be grouped together for combined or concurrent environmental review.

## 7.17 Overview of Anticipated Project Review and Permitting

This section provides an overview of the likely federal environmental review processes and federal, state, and local permits and approvals for the projects that are proposed as part of this Master Plan. **Table 7-6** details these review processes and permitting/approval requirements by project, as well as provides general project descriptions. Additional environmental review and permitting assessment will be required as the projects are advanced into the design phase. Mitigation may also need to be considered to offset project impacts.

### 7.17.1 Federal Environmental Review and Permitting

Projects included in this Master Plan will be subject to environmental review under NEPA due to changes in the Airport Layout Plan. The class of action will depend on its level of likely environmental impacts, though the agglomeration or grouping of projects may affect the level of review (i.e., a Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement). Master Plan projects typically subject to a Categorical Exclusion would include taxiway and runway improvements; however, if such projects are to be constructed within the same timeframe, they could be grouped, and thusly may be subject to an Environmental Assessment due to anticipated cumulative impacts. Another

project that would likely be subject to a Categorical Exclusion is the relocation of the Maintenance Building. The Terminal Building Expansion project and the Noise Land Reuse Project/Access to Route I-89 Project would likely require preparation of an Environmental Assessment.

All projects that require federal review under NEPA would necessitate consideration under Section 106 of the National Historic Preservation Act and Section 4(f) of the Department of Transportation Act for possible impacts to historic resources. Based on available records, a determination of eligibility for the current terminal building has not been completed. Considering the degree of modifications and additions that have taken place since the original construction in 1950, it is unlikely that the terminal building would be considered eligible for listing in the National Register, but this would have to be verified as part of the Section 106 process.

The two roadway access projects, which would be studied by other entities, would likely be subject to Section 404 review for anticipated impacts to waters of the U.S. (may be avoidable with design refinement) and FHWA approval required for break in control of access for the roadway portions of the projects.

### 7.17.2 State Environmental Review and Permitting

All projects that would expand or redevelop impervious surfaces in excess of jurisdictional thresholds would require an Operational Stormwater Discharge Permit, which would be incorporated subsequently in the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R). Construction Stormwater Discharge Permits for land disturbance over 1 acre would also be required. All Airport improvement projects would likely trigger Act 250 jurisdiction, necessitating a Land Use Permit amendment(s). Jurisdiction over the two roadway projects would be determined based on the area of disturbance and underlying Act 250 permits that may be in place at the time. Depending on proposed soil disturbance and hazardous materials findings, a site characterization and DEC-approved Soil Management Plan or other mitigation plans may be required. Any expansion of the Airport or redevelopment effort that substantively changes or expands upon the existing oil and hazardous materials storage facilities will require the Airport's Spill Pollution Prevention Plan to be updated.

For the Terminal Expansion Project and Remote Deicing Pad Project, UIC permits may require amendment if there are physical changes proposed for the injection system, if new impervious surfaces are routed to the existing injection system, or if there are operational changes such as using a different type of deicing fluid or an increase to the amount of runoff or deicing fluid used that exceeds the permitted volume. In July 2020, DEC issued a new "combined" UIC Permit (No. UIC-6-0137) that regulates all the existing UIC systems used for the disposal of aircraft deicing fluid at BTV. The Terminal Expansion Project would also potentially require a Stationary Source Permit from ANR if it would introduce new combustion equipment that would put facility-wide emissions above the permitting threshold.

Any projects with the potential for improvements to extend to agency rights-of-way, including the General Aviation/Cargo Expansion Project and the Access Road to I-89 Project, would require a Vermont Agency of Transportation Section 1111 Permit. These projects may also require coordination with the Vermont Fish and Wildlife Department regarding tree clearing and protected bat species.

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The Relocation of Maintenance Building (Maintenance Building and Parking Lot) Project may require modification to the existing “Indirect Source Air Pollution Control Permit to Construct” (AP-08-036). This modification would be required only if parking capacity at the Airport is increased.

The two roadway projects are likely to require a Vermont State Wetland Permit for impacts to presumed Class II wetland(s) and buffers. For the Access Road connection to Kennedy Drive Project, a Flood Hazard Area and River Corridor Permit for encroachment on Potash Brook floodplain and riparian corridor may be required, and depending on the degree of stream channel encroachment, as would a Stream Alteration Permit (or Title 19 consultation).

### 7.17.3 Municipal Review and Permitting

The Airport is within the boundaries of the municipality of South Burlington. The Terminal Building Expansion Project and the General Aviation/Cargo Expansion Project would both likely be subject to approval by the City of South Burlington Development Review Board. Inclusion of city representatives in federal and state public meetings and permit review is recommended.



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Table 7-6: Potential Environmental Permits and Approvals

ID	Project	Description	Development Area	Planning Timeframe	Potential Groupings (by Project ID) <sup>1</sup>	Potential Federal Permits/Approvals	Potential State Permits/Approvals	Potential Municipal Permits/Approvals
1	Relocated Taxiway B	Taxiway B connects to Runway 15-33 in the mid third of the runway. The relocation/realignment of Taxiway B will improve flow and further separate this taxiway from Runway 1-19.	Airport Operating Area	0 to 5 years	2 and 5	- NEPA: Categorical Exclusion or Environmental Assessment depending on the extent of new impervious surfaces and possible grouping. - Section 106 for any project receiving federal dollars or permits. - Section 4(f) of the DOT Act for all agencies under US DOT, including FAA.	- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R). - Construction Stormwater Discharge Permit for land disturbance over 1 acre. - Act 250: Land Use Permit amendment required. - Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.	NA
2	Hotspot 1 Remediation/Taxiway E Relocation	Hot Spot 1 is located at the intersection of Runway 1-19 and Runway 15-33 because of the expansive pavement in this area. This project would relocate Taxiway E off Taxiway D with direct connection to Runway 15-33, still offering a short route to the runway environment, but outside a hot spot area.	Airport Operating Area	0 to 5 years	1 and 5	- NEPA: Categorical Exclusion or Environmental Assessment depending on the extent of new impervious surfaces and possible grouping. - Section 106 for any project receiving federal dollars or permits. - Section 4(f) of the DOT Act for all agencies under US DOT, including FAA.	- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R). - Construction Stormwater Discharge Permit for land disturbance over 1 acre. - Act 250: Land Use Permit amendment required. - Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.	NA
5	Parallel Taxiway to Runway 1-19 - From Taxiway C to Runway 1	Taxiway A is the parallel taxiway to Runway 1-19, but primarily serves the terminal apron area. With the existing geometry, this taxiway serves both general aviation, seeking to reach Runway 19, as well as terminal aircraft, who upon pushback from the terminal building may close operations on Taxiway A.  This extension serves general aviation aircraft to access Runway 1 and provides a route to Taxiway C without crossing Runway 1-19.	Airport Operating Area	0 to 5 years	1 and 2	- NEPA: Categorical Exclusion or Environmental Assessment depending on the extent of new impervious surfaces and possible grouping. - Section 106 for any project receiving federal dollars or permits. - Section 4(f) of the DOT Act for all agencies under US DOT, including FAA.	- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R). - Construction Stormwater Discharge Permit for land disturbance over 1 acre. - Act 250: Land Use Permit amendment required. - Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.	NA

Table 7-6: Potential Environmental Permits and Approvals (Continued)

ID	Project	Description	Development Area	Planning Timeframe	Potential Project Groupings	Potential Federal Permits/Approvals	Potential State Permits/Approvals	Potential Municipal Permits/Approvals
3	General Aviation/Cargo Expansion	The facility requirements indicated a need for additional hangars and apron space. The general aviation areas at the Airport are earmarked for existing uses, thus additional space is required to meet these facility requirements. Ideally general aviation should be kept separate from commercial service.	South General Aviation Area	0 to 10-plus years	NA	<ul style="list-style-type: none"> <li>- NEPA: Categorical Exclusion or Environmental Assessment depending on scale.</li> <li>- Section 106 for any project receiving federal dollars or permits.</li> <li>- Section 4(f) of the DOT Act for all agencies under US DOT, including FAA.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R).</li> <li>- Construction Stormwater Discharge Permit for land disturbance over 1 acre.</li> <li>- Act 250: Land Use Permit amendment required.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> <li>- Transportation: Vermont Agency of Transportation Section 1111 Permit required if improvements extend to Williston Road.</li> <li>- Potential coordination with the Vermont Fish and Wildlife Department regarding tree clearing and protected bat species.</li> </ul>	City of South Burlington Development Review Board Approval
4	Terminal Building Expansion (Phased)	<p>The terminal building and gates were designed for regional jet aircraft. The fleet mix is changing and the existing infrastructure will not be able to accommodate the larger fleet mix. The location of Taxiway A and Runway 1-19 are physical constraints on the apron space for the terminal building, limiting the Airport's ability to accommodate the fleet change.</p> <p>Additionally, the facility requirements identified areas that need improvements inside the terminal building, including a consolidated passenger security screening area. The planning for this project is underway and is expanding the terminal to the south.</p>	Terminal Area	0 to 10-plus years	NA	<ul style="list-style-type: none"> <li>- NEPA: Categorical Exclusion or Environmental Assessment depending on scale and phasing.</li> <li>- Section 106 for any project receiving federal dollars or permits.</li> <li>- Section 4(f) of the DOT Act for all agencies under US DOT, including FAA.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R).</li> <li>- Construction Stormwater Discharge Permit for land disturbance over 1 acre.</li> <li>- Act 250: Land Use Permit amendment required.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> <li>- Underground Injection Control (UIC) Permits may require amendment if there are physical changes proposed for the injection system, if new impervious surfaces are routed to the existing injection system, or if there are operational changes such as using a different type of deicing fluid or an increase to the amount of runoff or deicing fluid used that exceeds the permitted volume. In July 2020, DEC issued a new "combined" UIC Permit (No. UIC-6-0137) that regulates all the existing UIC systems used for the disposal of aircraft deicing fluid at BTV.</li> <li>- Potential Stationary Source Permit from ANR if it would introduce new combustion equipment that would put facility-wide emissions above permitting thresholds. (See last paragraph of Air Quality section of Environmental Overview.)</li> <li>- Any expansion of the Airport or redevelopment effort that substantively changes or expands upon the existing oil and hazardous materials storage facilities will require the Airport's Spill Pollution Prevention Plan to be updated.</li> </ul>	City of South Burlington Development Review Board Approval

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Table 7-6: Potential Environmental Permits and Approvals (Continued)

ID	Project	Description	Development Area	Planning Timeframe	Potential Project Groupings	Potential Federal Permits/Approvals	Potential State Permits/Approvals	Potential Municipal Permits/Approvals
6	Remote Deicing Pad	A remote deicing pad off Taxiway G near the end of Runway 15 (where a holding bay would typically be located) that would tie into the existing UIC deicing system allowing aircraft to deice away from the terminal building just prior to takeoff.	Airport Operating Area	5-10 years	NA	<ul style="list-style-type: none"> <li>- NEPA: Categorical Exclusion or Environmental Assessment depending on the extent of new impervious surfaces.</li> <li>- Possible Section 106 compliance required, applies to any project receiving federal dollars or permits/approvals.</li> <li>- Possible Section 4(f) compliance, applies for all agencies under US DOT, including FAA.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R).</li> <li>- Potential Construction Stormwater Discharge Permit if land disturbance exceeds 1 acre.</li> <li>- Act 250: Land Use Permit amendment required.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> <li>- UIC Permits may require amendment if there are physical changes proposed for the injection system, if new impervious surfaces are routed to the existing injection system, or if there are operational changes such as using a different type of deicing fluid or an increase to the amount of runoff or deicing fluid used that exceeds the permitted volume. In July 2020, DEC issued a new "combined" UIC Permit (No. UIC-6-0137) that regulates all the existing UIC systems used for the disposal of aircraft deicing fluid at BTV.</li> </ul>	NA
7	Relocation of Taxiway M	Taxiway M is a bypass taxiway at Runway 15 end, located with the glideslope critical area. Aircraft parked here are too close to the glideslope antennae and interrupt the signal. The relocation provides ATC with a bypass taxiway, in cases of ground holds, that does not interfere with glideslope signal.	Airport Operating Area	10 to 20 years	NA	<ul style="list-style-type: none"> <li>- NEPA: Categorical Exclusion or Environmental Assessment depending on the extent of new impervious surfaces.</li> <li>- Possible Section 106 compliance required, applies to any project receiving federal dollars or permits/approvals.</li> <li>- Possible Section 4(f) compliance, applies for all agencies under US DOT, including FAA.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R).</li> <li>- Potential Construction Stormwater Discharge Permit if land disturbance exceeds 1 acre.</li> <li>- Act 250: Land Use Permit amendment required.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> </ul>	NA

Table 7-6: Potential Environmental Permits and Approvals (Continued)

ID	Project	Description	Development Area	Planning Timeframe	Potential Project Groupings	Potential Federal Permits/Approvals	Potential State Permits/Approvals	Potential Municipal Permits/Approvals
8	Relocation of Maintenance Building (Maintenance Building and Parking Lot)	The existing size and location of the Airport maintenance building is not conducive to airfield operations, and is undersized to accommodate the required equipment. As a result, much of the equipment is not stored indoors. A larger facility is required to better support airfield operations, while still maintaining airside access.	Terminal Support	0 to 5 years	NA	<ul style="list-style-type: none"> <li>- NEPA: Categorical Exclusion</li> <li>- Possible Section 106 compliance required, applies to any project receiving federal dollars or permits/approvals.</li> <li>- Possible Section 4(f) compliance, applies for all agencies under US DOT, including FAA.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds. Issued permits would be incorporated into the existing MS4 Permit for the Burlington International Airport (7021-9014.A2R).</li> <li>- Construction Stormwater Discharge Permit for land disturbance over 1 acre.</li> <li>- Act 250: Land Use Permit amendment required.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> <li>- Any expansion of the Airport or redevelopment effort that substantively changes or expands upon the existing oil and hazardous materials storage facilities will require the Airport's Spill Pollution Prevention Plan to be updated.</li> <li>- Potentially requires modification to the existing "Indirect Source Air Pollution Control Permit to Construct" (AP-08-036) as it increases total parking capacity with the new Parking Lot.</li> </ul>	Involved parcels owned by the City of Burlington (Airport Noise Parcels); proposed conversion to transportation use and tie into South Burlington roadway (Airport Parkway) would be potentially subject to subdivision review by the Cities of Burlington and South Burlington.
9	Access Road Connection to Kennedy Drive  Assume I-89 work conducted by others.	<p>This is included here to show support by the Airport for others to perform further studies. This will not be an airport project.</p> <p>Ground access to the Airport has been included in many studies. There is no direct linkage from I-89 to the Airport, except via a 2 mile stretch of Williston Road. This lends itself to locals using backroads to avoid traffic on Willison Road, which raises a concern for the local communities. There have been numerous corridor studies that have examined many alternatives to provide access from I-89 directly to the Airport.</p>	Off-Airport	5 to 10 years	NA	<ul style="list-style-type: none"> <li>- NEPA: Categorical Exclusion or Environmental Assessment depending on USACE permit.</li> <li>- Section 106 compliance required.</li> <li>- Section 4(f) of the DOT Act applies.</li> <li>- Section 404 review for unavoidable impacts to waters of the U.S. (may be avoidable with design refinement).</li> <li>- FHWA approval required for break in control of access.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds.</li> <li>- Construction Stormwater Discharge Permit for land disturbance over 1 acre.</li> <li>- Act 250: Land Use Permit potentially required if grouped with other projects and disturbance is greater than 10 acres and/or amendments for abutting parcels having existing permits.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> <li>- Flood Hazard Area and River Corridor Permit for encroachment on Potash Brook floodplain and riparian corridor.</li> <li>- Vermont State Wetland Permit for impacts to Class II wetland(s) and buffers.</li> <li>- Potential Stream Alteration Permit (or Title 19 consultation), depending on degree of stream channel encroachment.</li> </ul>	NA

**BURLINGTON INTERNATIONAL AIRPORT, BURLINGTON, VERMONT**

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Table 7-6: Potential Environmental Permits and Approvals (Continued)

ID	Project	Description	Development Area	Planning Timeframe	Potential Project Groupings	Potential Federal Permits/Approvals	Potential State Permits/Approvals	Potential Municipal Permits/Approvals
10	Access Road to I-89  Assume I-89 work conducted by others.	<p>This is included here to show support by the airport for others to perform further studies. This will not be an airport project.</p> <p>Ground access to the Airport has been included in many studies. There is no direct linkage from I-89 to the Airport, except via a 2 mile stretch of Williston Road. This lends itself to locals using backroads to avoid traffic on Willison Road, which raises a concern for the local communities. There have been numerous corridor studies that have examined many alternatives to provide access from I-89 directly to the Airport.</p> <p>This alternative uses noise-acquired lands to provide direct connection to I-89 via a connection between Airport Drive and Airport Parkway.</p> <p>Note: Likely permits and approvals to be the responsibility of the proponent (i.e., the State of Vermont/VTrans); the Airport's role to be determined.</p>	Land Use and Reuse/Off-Airport	20-plus years	NA	<ul style="list-style-type: none"> <li>- NEPA: Likely Environmental Assessment.</li> <li>- Section 106 compliance required.</li> <li>- Section 4(f) of the DOT Act applies.</li> <li>- Section 404 review for unavoidable impacts to waters of the U.S. (may be avoidable with design refinement).</li> <li>- FHWA approval required for break in control of access.</li> </ul>	<ul style="list-style-type: none"> <li>- Operational Stormwater Discharge Permit for expansion or redevelopment of new impervious surfaces beyond jurisdictional thresholds.</li> <li>- Construction Stormwater Discharge Permit for land disturbance over 1 acre.</li> <li>- Act 250: Land Use Permit potentially required if grouped with other projects and disturbance is greater than 10 acres and/or amendments for abutting parcels having existing permits.</li> <li>- Hazardous Materials: May require site characterization and DEC-approved Soil Management Plan or other plan depending on proposed soil disturbance and findings.</li> <li>- Transportation: Vermont Agency of Transportation Section 1111 Permit required if improvements extend to Williston Road.</li> <li>- Potential coordination with Vermont Fish and Wildlife Department regarding tree clearing and protected bat species.</li> <li>- Vermont State Wetland Permit for impacts to Class II wetland(s) and buffers.</li> </ul>	City of South Burlington Subdivision Review and Development Review Board Approval.

<sup>1</sup>Projects that could be grouped together for combined or concurrent environmental review.

