Environmental Assessment (EA) for Aviation Technology Park Facility Development at SHD

Shenandoah Valley Regional Airport (SHD)
Weyers Cave, Virginia

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1. Introduction/Background

The Shenandoah Valley Regional Airport Commission (the Commission), owner and operator of the Shenandoah Valley Regional Airport (SHD), proposes "Aviation Technology Park Facility Development" at SHD. SHD is a commercial service airport in Weyers Cave, Virginia which also serves significant corporate aviation use. The general extents of the Aviation Technology Park at SHD are outlined in yellow in **Figure 1**.

There is existing, scattered development within the Aviation Technology Park at SHD, including an apron and taxiway that were constructed in 2009 to serve a corporate tenant. The existing corporate hangar buildings at SHD, which are located south of the terminal building, are fully occupied, and to meet existing and anticipated future aircraft storage demand, the Commission is moving forward with additional proposed development in this area.

There have been several previous National Environmental Policy Act (NEPA) reviews on other airport development projects on this site. In 2000, an Environmental Assessment (EA) for "Construction of Runway Safety Area and Relocated State Route 771" was prepared with a Finding of No Significant Impact (FONSI) issued by FAA in September 2000. This document was reevaluated in 2008, again in 2017, and for a third time in 2021 as the proposed development concepts were revised based on tenant demand and to meet the most recent FAA design standards

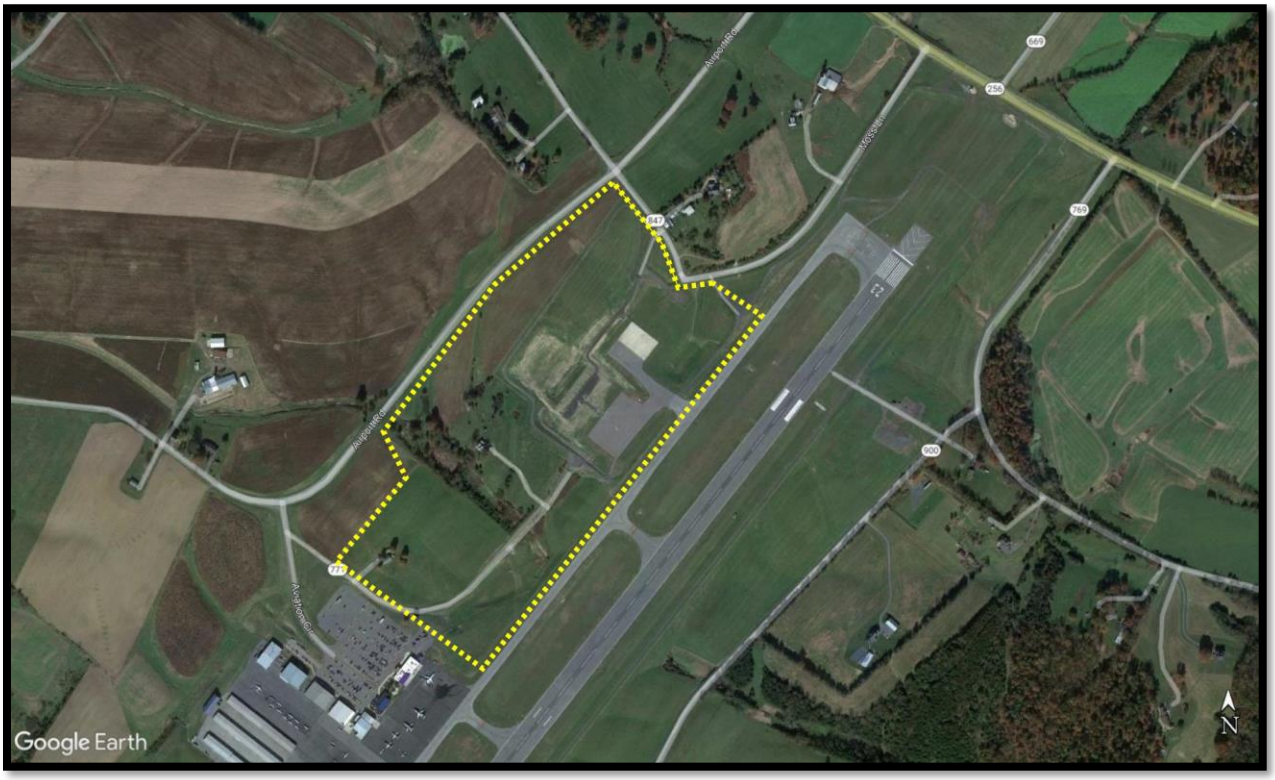
In 2020, an EA was prepared for "Phase One Development" at SHD. The Proposed Action for the 2020 EA contemplated 12 actions including proposed development within the boundaries of the Aviation Technology Park, including Hangar 'V', automobile access from Airport Road, a proposed new fuel farm, and a ground service equipment (GSE) storage building, which are depicted in grey in **Figure 2**. A FONSI was issued by the Federal Aviation Administration (FAA) for the 2020 EA in March 2020 (see Attachment A). In 2021, the EA was Reevaluated to include additional projects within the Aviation Technology Park boundaries, including a temporary access road and automobile parking to serve proposed Hangars E and F, and a refined utility installation plan. The Reevaluation was issued by FAA in May 2021 (see Attachment A).

Construction of Hangars E, F, and V was finalized in summer 2023, and the hangars received their certificates of occupancy in June and July 2023. However, at the time that this report was drafted (fall 2023/winter 2024), the hangars are not yet occupied. These projects (Hangars E, F, and V) are depicted in grey in **Figure 2** and were environmentally reviewed under separate efforts.

As the Commission continues its effort to accommodate existing and anticipated future demand for corporate aircraft facilities at SHD, this 2024 EA has been prepared to environmentally review additional development within the Aviation Technology Park that was not reviewed under previous efforts.

This EA has been prepared in accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.

Figure 1: General Extents of Aviation Technology Park



Source: Google Earth, Delta Airport Consultants, Inc.

2. Proposed Action

The Proposed Action analyzed in this EA includes the following projects which are conceptually depicted in **Figure 2**.

1. **Construct Hangars H, I, T, and U**
    a. Hangar H is conceptually proposed to be 120' x 120' in size and 45-feet above ground level (AGL) in height.
    b. Hangar I is conceptually proposed to be 150' x 120' and 45-feet AGL.
    c. Hangars U and T are conceptually proposed to be 200' x 200' and 65-feet AGL.
    d. Hangars T and U are proposed for larger aircraft such as the Boeing Business Jet or Bombardier Global; however, depending on the tenant, they could accommodate two or three smaller jet aircraft instead. Hangars H and I are intended to accommodate smaller jets. They could accommodate six to 10 new jet aircraft; again, this would depend on the needs of the future tenants.
2. **Construct Associated Aprons, Taxilanes, Taxiway Connectors for Hangars H, I, T, and U**
    a. Taxilanes are to be designed to meet Airplane Design Group (ADG) III/Taxiway Design Group (TDG) 3 standards. ADG and TDG are FAA design classifications based on the physical dimensions of aircraft. ADG III includes aircraft with wingspans ranging from 79 feet to 117 feet. TDG is a classification based on undercarriage dimensions; TDG 3 includes

aircraft with main gear width ranging from 10 to 30 feet, and cockpit to main gear width up to approximately 65 feet.

b. The apron serving Hangars U and T is conceptually depicted at approximately 120,000 square feet (SF). The apron serving Hangars H and I is conceptually depicted at approximately 80,000 SF. Both aprons are anticipated to be constructed of asphalt.

3. **Construct Access Road east of Proposed Hangar V**
   a. A two-lane airside access road (25 feet wide x 650 feet long) is to be constructed east of Hangar V to replace the current airside access points that would be demolished with the construction of Hangar U and its associated apron.
4. **Construct Access Road to the Fuel Farm and Rehabilitate Old Airport Road**
   a. The portion of old Airport Road depicted in **Figure 2** will be rehabilitated with a 2-inch asphalt overlay, with the exception of the 350 feet of road closest to the airport apron. This portion will likely have to be reconstructed to allow for adjustment in grade as the aprons will be approximately 15 feet higher than old Airport Road.
   b. The road is proposed to keep fuel trucks off Taxiway A.
5. **Construct a Connector Taxiway from the Corporate Hangars to Taxiway A**
   a. The new taxiway will provide access from the new hangars to the existing Taxiway A.
6. **Construct Fuel Truck Parking**
   a. Fuel truck parking is to be approximately 60 feet wide by 50 feet deep and constructed of concrete.
   b. For fuel trucks to park when accessing the new fuel farm location, which was environmentally reviewed during a previous effort (see **Figure 2**).
7. **Install Perimeter Fence**
   a. Approximately 5,600 linear feet (LF) of perimeter fence is shown to establish a secure perimeter and enhance safety between the air operations area (AOA) and the non-AOA sides of the airfield for the new development. Temporary fence (approximately 700 LF) would accommodate phasing of some of the development. The fence would be 8-feet high with barbed wire. The final fence alignment is not yet known and is depicted conceptually on **Figure 2**.
8. **Automobile Parking and Access (to serve new hangars)**
   a. The auto parking lot serving Hangars U and T is conceptually depicted at approximately 88,000 SF, while the auto lot proposed to serve Hangars I and H is conceptually depicted at 20,000 SF.
9. **Commercial Apron Expansion**
   a. The existing commercial service aircraft apron is proposed to be expanded by approximately 50’ to meet FAA design criteria for the aircraft currently or anticipated to use the apron, the CRJ-200 and the EMB-145. Currently, the taxilane object-free areas (TLOFA) are not met and the apron expansion would allow them to meet FAA design standards. The TLOFA is centered on the taxiway and should remain clear of objects for safety reasons, except for those objects which must be located there for air navigation or aircraft ground maneuvering purposes.
10. **Realigned Road to Ramp**
    a. The initial access road between the commercial apron and the fuel farm was environmentally reviewed under the 2020 Finding of No Significant Impact (FONSI). The alignment has been revised to avoid impacts to an existing stormwater management pond.

Items 1 through 9 are depicted conceptually on the approved Airport Layout Plan (ALP, see **Figure 3**, with the general extents of the Aviation Technology Park identified in yellow). Item 10 is a realignment of the access road currently depicted on the ALP. The proposed fence alignment has not been finalized, so this review includes almost all "future" fence as depicted conceptually on the ALP. It also includes an alternate, temporary fence alignment that is not on the ALP, which is intended to serve until the future facilities west of the corporate area are constructed.

3. Purpose and Need

The Purpose of the 2024 Proposed Action is to provide airfield infrastructure to accommodate the current and future operational demand, enhance safety, and enhance customer service. The Need for Proposed Action is the inability of current facilities to accomplish this purpose. The Commission reports that several existing tenants which are currently housed in hangars south of the terminal area have outgrown the space and have expressed a need for additional facilities, including hangar storage and associated apron space, taxiway access to the runway-taxiway system, and automobile access and parking.

The hangars are initially intended to accommodate existing tenants who have outgrown the current hangar storage offerings at SHD. However, they could also accommodate new aircraft.

Hangars T and U are proposed for large ADG III aircraft such as the Boeing Business Jet or Bombardier Global; however, depending on the tenant, they could accommodate two or three smaller jet aircraft instead. Hangars H and I are intended to accommodate smaller jets. They could accommodate six to 10 small jet aircraft; again, this would depend on the needs of the future tenants. This means that under the "worst case" scenario (that the hangars accommodate all new aircraft and not existing tenants), the hangars could account for from eight to 16 new based aircraft at SHD. Jets of all sizes regularly operate at SHD currently.

While it is difficult to predict the number of future operations associated with the new hangars, the FAA Aerospace Forecast 2023-2043 notes that in five years, jet aircraft are anticipated to operate approximately 315 hours per year on average. Assuming a three-hour average trip duration, this amounts to 105 annual operations each, meaning that in the "worst case scenario," the hangars could account for 1,680 additional annual operations at SHD. This represents less than five percent of current total operations at SHD, which the FAA 5010-1 *Airport Master Record* reports to be over 37,000 annually.

The FAA's Terminal Area Forecast (TAF) anticipates an increase in total operations at SHD over the next five year period to be almost 4,000 operations, and specifically, 1,025 itinerant general aviation operations (see Table 1). TAF forecasts are based on time-series analysis and do not take into account potential additional operations caused by individual projects on the airfield.

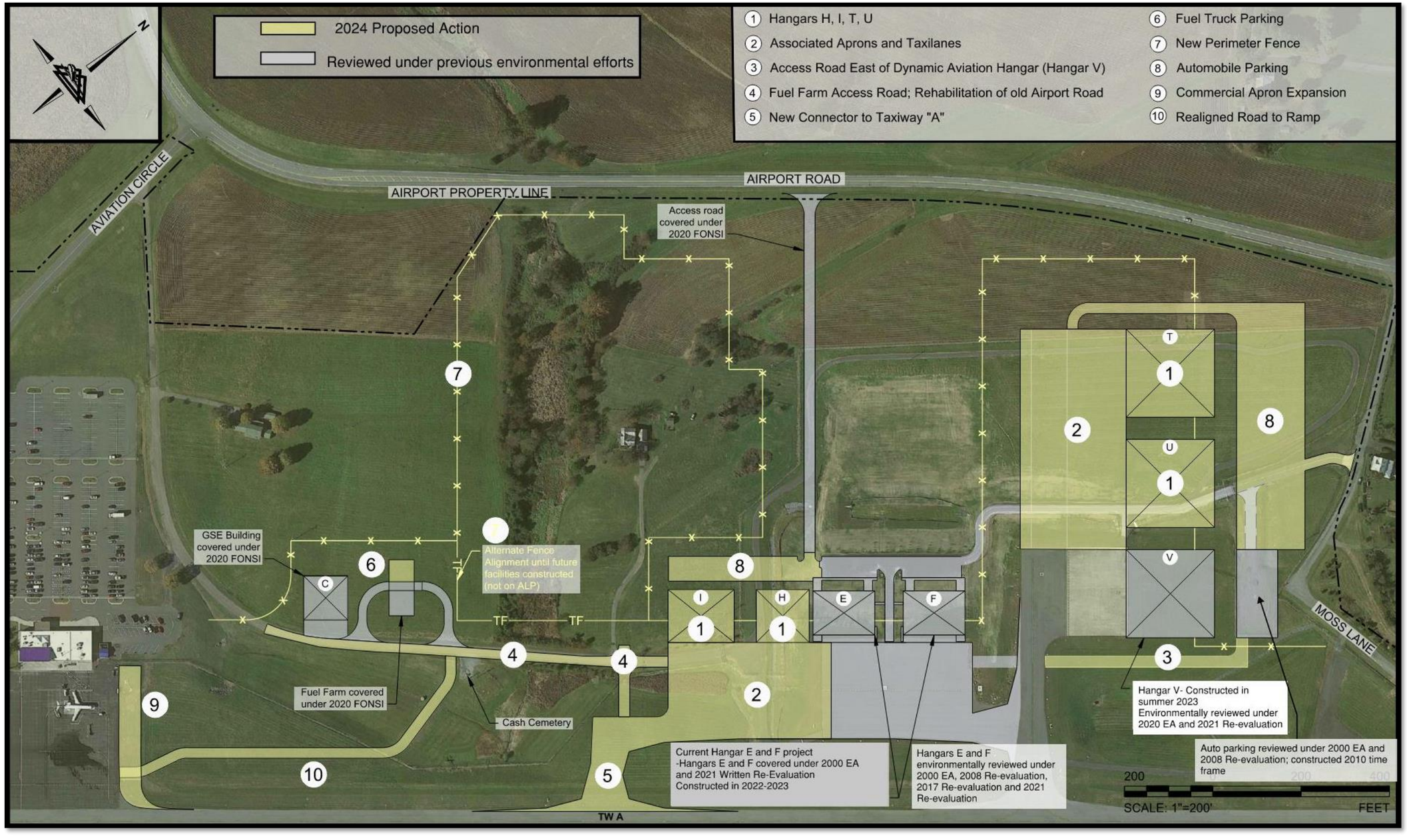
Table 1: FAA-TAF Forecast for SHD

Year	Total Operations	Total General Aviation Itinerant Operations	Based Aircraft
2024	38,608	8,984	64
2029	42,596	10,009	64

Source: FAA-TAF

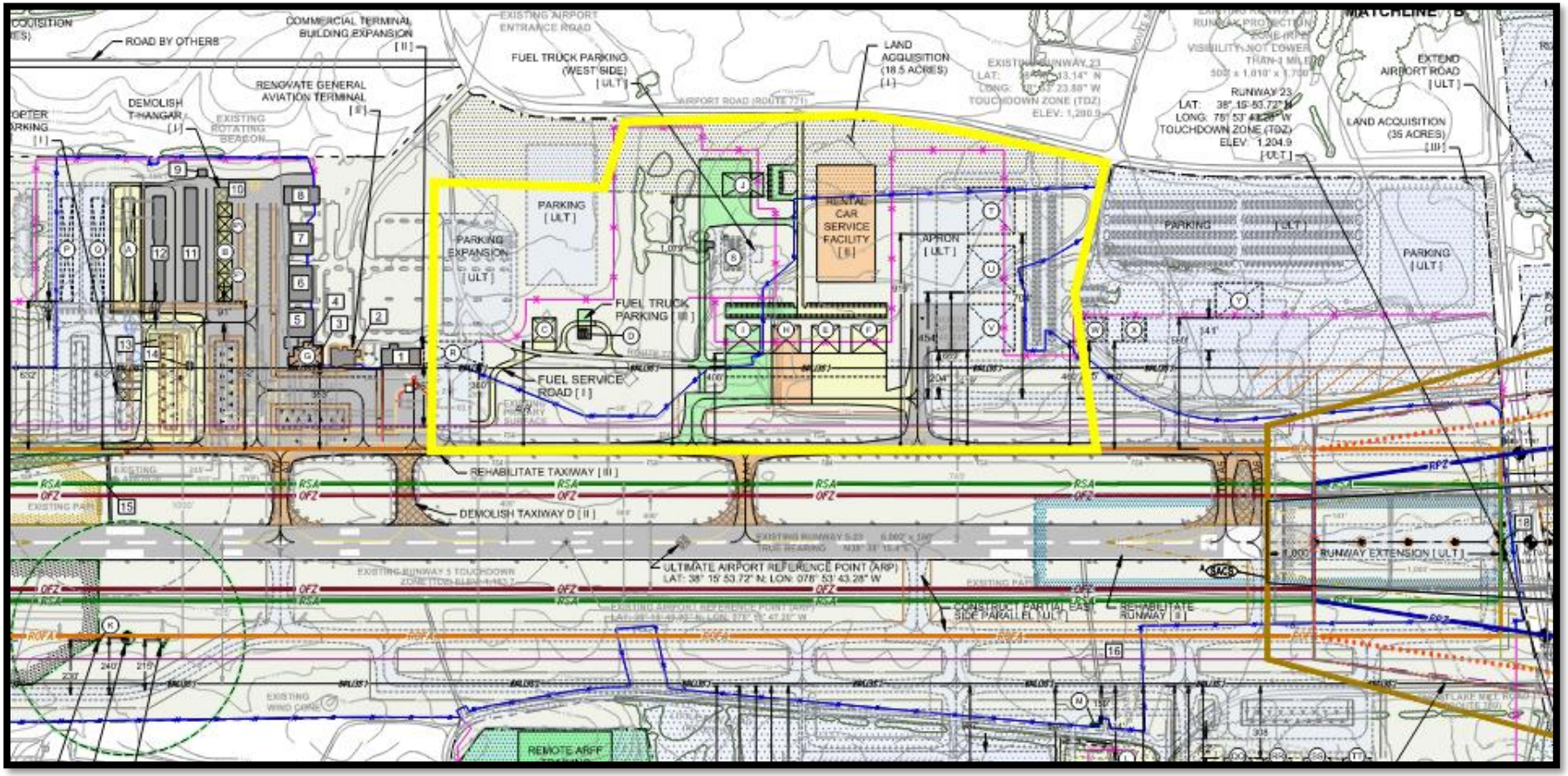
The perimeter fence would be installed after those improvements are constructed to enhance safety by separating the AOA from the non-AOA sides of the airfield for new development. To improve customer service and enhance safety, automobile access to a future fuel farm site is to be established. The current fuel farm is located south of the terminal area near a row of T-Hangars with no direct automobile access which requires fuel trucks to drive on the airfield to access the fuel tanks and return to the main road. The new location in the Aviation Technology Park would limit fuel trucks to aprons and roadway systems. It would also centralize the location of the fuel facility to better serve the new development proposed in the Aviation Technology Park. The expansion of the commercial apron would accommodate the types of aircraft using the facility.

Figure 2: Proposed Action



Source: Delta Airport Consultants, Inc

Figure 3: Excerpt from Approved ALP



Source: Delta Airport Consultants, Inc.

4. Alternatives

This section compares the No Action and the Build/Proposed Action alternatives.

4.1 No Action Alternative

The No Action alternative serves as a basis for comparing environmental consequences of potential alternatives carried forward for analysis in the EA. Under the No Action alternative, the 2024 Proposed Action would not be constructed, meaning the additional hangars, apron and apron expansion, taxilane and taxiway connectors, automobile parking and access facilities, fuel truck parking, and perimeter fence would not be constructed. This would prevent the Commission from providing additional airfield infrastructure to accommodate the current and future operational demand and enhancing customer service and security, as stated in the Purpose and Need for the project. Although this alternative does not meet the stated Purpose and Need, it has been carried forward for analysis in accordance with Council on Environmental Quality (CEQ) regulations and FAA guidance in Order 1050.1F and Order 5050.4, *NEPA Implementing Instructions for Airport Actions.*

4.2 Build Alternative

The Build alternative assumes that the 2024 Proposed Action would be constructed, which would provide new corporate hangars and supporting facilities, automobile access as well as automobile parking, security fence, and utilities to serve the corporate hangars. The fuel truck parking and access would be constructed, enhancing safety and customer convenience. The commercial apron would be expanded to accommodate the aircraft operating there. This would enable the Commission to provide airfield infrastructure to accommodate the current and future operational demand and to enhance customer service, as stated in the Purpose and Need for the project. The Aviation Technology Park area is the next logical area of development on the airfield based on its relatively flat topography and proximity to the runway and taxiway system and existing automobile access from Airport Road. There is not another suitable location on the airfield with the same amount of space, proximity to the runway and taxiway, and automobile access to accommodate the Proposed Action. Because the Build alternative enables the Commission to move forward with the hangar development, therefore supporting the stated Purpose and Need, it has been selected as the Preferred Alternative.

The federal action requiring preparation of this NEPA document is FAA authority to approve or disapprove changes to the ALP for all portions of the proposed project, FAA authority to regulate land use for property acquired with federal funding of which the majority of the project is located, and FAA approval authority for any projects funded through the Airport Improvement Program (AIP), any other FAA-administered grant in aid program, and Passenger Facility Charges (PFC). In this case, FAA funding and/or PFCs are anticipated for some of the proposed projects, including the perimeter fencing and airside access road projects.

5. Affected Environment

SHD is located within Augusta County, Virginia in the northwestern portion of the state, approximately 17 miles northeast of the City of Staunton and two miles southwest of the community of Weyers Cave. The surrounding topography is mountainous slopes and ridges, with elevations ranging from 1,100 feet

to 3,400 feet with rolling hills and valleys. The airport property is situated at an elevation of 1,201 feet above mean sea level (MSL) and encompasses 433± acres. There is one runway at the airport, Runway 5-23, which is 6,002 feet long and 150 feet wide.

SHD is an operating, commercial service airport with a robust general aviation user base. The existing terminal area is nearly built-out. The airport property is bordered by commercial, institutional, industrial, residential, and agricultural properties. The Aviation Technology Park is in the northwest portion of the airfield and is generally bordered to the south by Route 771 and to the north by Route 847/Valley Church Road (see **Figure 1**).

This Affected Environment section includes a description of each of the environmental impact categories as listed in FAA Order 1050.1F to establish a "baseline" from which to assess potential impacts.

5.1 Air Quality

Pursuant to the Clean Air Act (CAA), the Environmental Protection Agency (EPA) establishes, enforces, and periodically reviews the National Ambient Air Quality Standards (NAAQS). NAAQS have been established for six common air pollutants, referred to as criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter with a diameter of 10 micrometers or less (PM_{10}), particulate matter (PM) with a diameter of 2.5 micrometers or less ($PM_{2.5}$), and sulfur dioxide (SO_2). The EPA designates areas as either meeting (attainment) or not meeting (nonattainment) the NAAQS. Once the measured pollutant concentrations in a nonattainment area meet the NAAQS and the additional re-designation requirements in the CAA, the EPA will designate the area as a maintenance area.

The EPA designates Augusta County, where SHD is located, as an attainment area for NAAQS.

5.1.1 State Implementation Plan (SIP)

The responsibility for designating areas that are in attainment, nonattainment, or maintenance for each of the criteria pollutants was delegated to the states by the EPA. A SIP is a state's detailed description of the regulations, programs, and measures the state will use to reduce air pollution within the state and to fulfill its responsibilities under the CAA to attain the NAAQS for all criteria air pollutants. To comply with a SIP a federal action must not result in any new violations or worsen any existing violations of the NAAQS, must not delay timely attainment of any standard or any required interim emission reductions or other milestones, and must meet the conditions of general conformity regulations.

5.1.2 General Conformity

The General Conformity Rule was established under CAA Section 176(c)(4) and serves to ensure that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses/permits, or approves any activity within a nonattainment or maintenance area, to demonstrate that the project conforms to the applicable SIPs before the project is otherwise approved.

Under the General Conformity Rule, project-related emissions of the criteria pollutants are compared to *de minimis* level thresholds. If the emissions exceed the thresholds, a formal Conformity Determination may be required to demonstrate that the project conforms to the applicable SIP. Conversely, if project-related emissions are below the threshold levels, the project is assumed to conform to the SIP.

Table 2: NAAQS

POLLUTANT		PRIMARY/ SECONDARY	AVERAGING TIME	LEVEL
Carbon Monoxide (CO)		Primary	8 hours	9 ppm
			1 hour	35 ppm
Lead (Pb)		Primary and Secondary	Rolling 3-month average	0.15 µg/m^3 (a)
Nitrogen Dioxide (NO_2)		Primary	1 hour	100 ppb
		Primary and Secondary	1 year	53 ppb
Ozone (O_3)		Primary and Secondary	8 hours	0.070 ppm(c)
Particle Pollution (PM)	$PM_{2.5}$	Primary	1 year	9.0 µg/m^3
		Secondary	1 year	15.0 µg/m^3
		Primary and Secondary	24 hours	35 µg/m^3
	PM_{10}	Primary and Secondary	24 hours	150 µg/m^3
Sulfur Dioxide (SO_2)		Primary	1 hour	75 ppb(d)
		Secondary	3 hours	0.5 ppm

Source: EPA, National Ambient Air Quality Standards (NAAQS), 2024

Notes: ppb = parts per billion, ppm = parts per million, and µg/m^3 = micrograms per cubic meter of air

(a) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

(b) The level of the annual NO_2 standards is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(c) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(d) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which id designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its SIP to demonstrate attainment of required NAAQS.

5.2 Biological Resources

The main statutes, executive orders and other guidance concerning biological resources in this area includes:

- The Endangered Species Act

- The Bald and Golden Eagle Protection Act
- The Fish and Wildlife Coordination Act and
- The Migratory Bird Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that a proposed action does not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of associated habitat. Under the Act, an "endangered" species is defined as any species that is in danger of extinction throughout all, or a significant portion, of its range. A "threatened" species is considered to be any species that is likely to become an endangered species within the foreseeable future.

Biological resources include various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, etc.) as well as lakes, rivers, wetlands, forests, and upland habitats. Vegetation around the airport consists of forests and open grasslands utilized as pastures. There are small pockets of forest lands in the airport area. Wildlife within the area of the airfield include woodchucks, coyotes, squirrel, deer, wild turkey, red fox and small rodents. Reptiles include species such as the common garter snake, eastern rattlesnake, and eastern box turtle. The project area also includes amphibians such as the spring peeper, American toad, green frog and spotted salamander as well as numerous insects and resident and migratory bird species.

The United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) database identified three federally protected mammals which may occur on or near the project area: the Endangered, Indiana Bat (*Myotis sodalis)*, the Endangered, Northern Long-eared Bat (NLEB) (*Myotis septentrionalis)*, and the Proposed Endangered Tricolored Bat (*Perimyotis subflavus*). The Monarch Butterfly (*Danaus plexippus*), a Candidate species, and 10 migratory birds, including the Bald Eagle, were also identified by the IPaC database. There are no critical habitats, wildlife refuges, or fish hatcheries within the project area (see Attachment B).

The Virginia Department of Wildlife Resources (DWR) identifies 558 species which could occur within two miles of the project area, including 12 state-listed species. These are:

- Northern long-eared bat
- Madison Cave Isopod (crustacean)
- Little brown bat
- Tri-colored bat
- Brook floater (mollusk)
- Eastern tiger salamander
- Bewick's Wren (bird)
- Peregrine Falcon
- Loggerhead Shrike (bird)
- Appalachian Grizzled Skipper (butterfly)
- Madison Cave Amphipod (crustacean)
- Migrant Loggerhead Shrike (bird)

Wetlands are discussed in **Section 5.14.1**.

5.3 Climate

Primary statutes, regulations, and Executive Orders related to climate include:

- The Clean Air Act
- Executive Order 13514, *Federal Leadership in Environmental Energy and Economic Performance*
- Executive Order 13653, *Preparing the United States for the Impacts of Climate Change*, and
- Executive Order 13693, *Planning for Federal Sustainability*

According to the FAA Order 1050.1F *Desk Reference*, greenhouse gases (GHGs) are defined as carbon dioxide (CO_2), methane (CH_2), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

GHG is a category of pollutants for which there is global and national concern. The majority of GHG emissions from transportation are CO_2 emissions resulting from the combustion of petroleum-based products, like gasoline, in internal combustion engines. The EPA reports that commercial airplanes and large business jets contribute 10 percent of U.S. transportation emissions, and account for three percent of the nation's total GHG production. Globally, aviation produced 2.4 percent of total CO_2 emissions in 2018.[1] GHG emissions have not been regulated under the CAA as air pollutants. In January 2021, EPA finalized GHG emissions standards that apply to certain new (new type design airplanes or in-production airplanes on or after January 1, 2028) commercial airplanes such as large passenger jets. According to the Virginia Department of Environmental Quality (DEQ), statewide average GHG emissions in Virginia between 2016 and 2019 were 141.6 million metric tons carbon dioxide equivalent (CO_2e).

5.4 Coastal Resources

Coastal resources can include islands, transitional, and intertidal areas, salt marshes, wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as fish and wildlife and their respective habitats within these areas. Federal activities involving or affecting coastal resources are governed by the Coastal Barrier Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and Environmental Order (EO) 13089, *Coral Reef Protection*.

Augusta County is not located within Virginia's Coastal Zone.

5.5 Department of Transportation (DOT) Act, Section 4(f)

Statutes and Regulations Related to Section 4(f) Properties include:

- The Land and Water Conservation Fund Act of 1965, and
- U.S. Department of Transportation Act – Section 4(f)

Section 4(f) of the U.S. DOT Act of 1966 protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. There are no known parks, recreation areas, wildlife refuges, or historic sites on airport property or in the immediate vicinity of the airport.

[1] *https://www.eesi.org/papers/view/fact-sheet-the-growth-in-greenhouse-gas-emissions-from-commercial-aviation*

5.6 Farmlands

Farmlands are agricultural areas considered important and protected by federal, state, and local regulations. The Farmland Protection Policy Act (FPPA) regulates federal actions with the potential to convert farmland to non-agricultural uses. Specifically, the Act regulates farmland as prime, unique, or of statewide or local importance. According to FAA Order 1050.1F *Desk Reference*, direct impacts to farmlands typically involve the conversion of farmlands to non-agricultural use.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), approximately 33 percent of the soils within the project area are classified as Prime Farmland, while the remainder are classified as Not Prime Farmland (see **Figure 4**).

While there are areas of farmland within and adjacent to the project area, the airport property does not meet the definition of farmland as contained in the FPPA because it is already located within the existing airport property and dedicated for aeronautical development.

Figure 4: Soils Classification within Project Area

Source: USDA NRCS Web Soil Survey

5.7 Hazardous Materials, Solid Waste, and Pollution Prevention

Hazardous materials, solid waste, and pollution prevention are impact categories that include an evaluation of potential waste streams that could be generated by the project, potential hazardous materials either used during construction/operation or encountered at a contaminated site, and potential to interfere with ongoing remediation of a contaminated site.

Specifically, these impact categories include an evaluation of:

- Waste streams that would be generated by a project, potential for the wastes to impact environmental resources, and the impacts on waste handling and disposal facilities that would likely receive the wastes;
- Potential hazardous materials that could be used during construction and operation of a project, and applicable pollution prevention procedures;
- Potential to encounter existing hazardous materials at contaminated sites during construction, operation, and decommissioning of a project; and
- Potential to interfere with any ongoing remediation of existing contaminated sites at the proposed project site or in the immediate vicinity of a project site.

Solid waste, hazardous waste, hazardous substance, hazardous materials, and pollution prevention are defined as follows:

Solid Waste is defined by the implementing regulations of the Resource Conservation and Recovery Act (RCRA) generally as any discarded material that meets specific regulatory requirements and can include such items as refuse and scrap metal, spent materials, chemical by-products, and sludge from industrial and municipal waste and water treatment plants.

Hazardous waste is a type of solid waste defined under the implementing regulations of RCRA. A hazardous waste is a solid waste that possesses at least one of the following four characteristics: ignitibility, corrosivity, reactivity, or toxicity. RCRA imposes stringent requirements on the handling, management, and disposal of hazardous waste, especially in comparison to the requirements for non-hazardous wastes.

Hazardous substance is a term broadly defined under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). These substances can include any element, compound, mixture, solution, or substance designated as hazardous under Section 102 of CERCLA; any hazardous substance designated under Section 311(b)(2)(A) or any toxic pollutant listed under Section 307(a) of the Clean Water Act (CWA); any hazardous waste under Section 3001 of RCRA; any hazardous air pollutant listed under Section 112 of the CAA; and any imminently hazardous chemical substance or mixture for the EPA Administrator has “taken action under” Section 7 of the Toxic Substances Control Act (TSCA). The definition of the hazardous substances under CERCLA excludes petroleum products, unless specifically listed or designated there under.

Hazardous material is any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. The term hazardous

material includes both hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials.

Pollution prevention refers to methods used to avoid, prevent, or reduce pollutant discharges or emissions through strategies as using fewer toxic inputs, redesigning products, altering manufacturing and maintenance processes, and conserving energy.

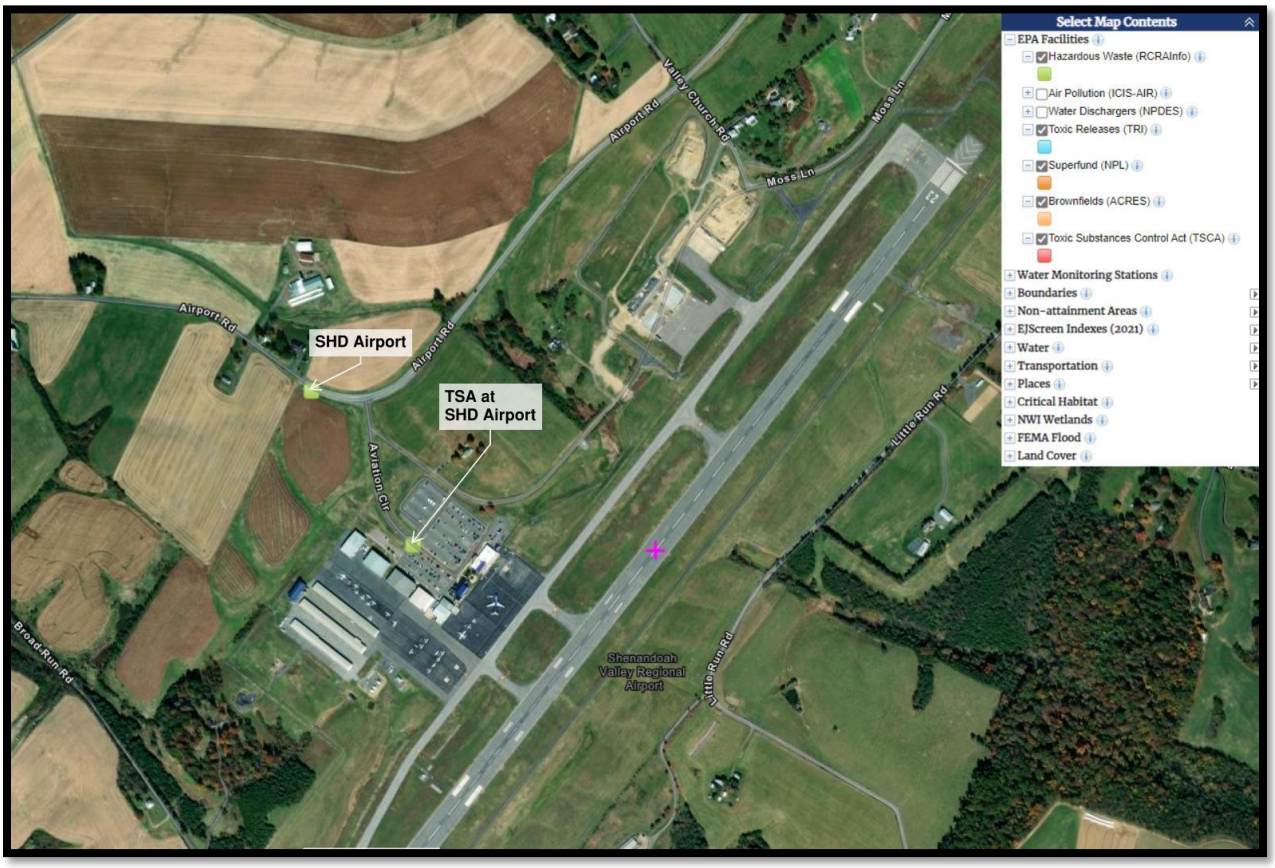
The hazardous substances known to be found at the airport are aircraft and ground equipment fuel, deicing chemicals, and fire-fighting chemicals. The EPA's 'NEPAssist' website identifies two hazardous-waste handlers, the SHD airport itself and the Transportation Security Administration (TSA) at SHD, as entities that report to the EPA (see **Figure 5**). The Environmental Compliance History Online (ECHO) reports for both entities confirm that they are in compliance with EPA (see Attachment C).

The project does not involve fuel facilities (although it does propose the construction of parking for fuel trucks) or the acquisition of land. There are no Superfund or Brownfield sites located on or in the vicinity of the airport, and there are no landfills in the airport vicinity.

Solid waste from airport activities is disposed of at the Augusta County Regional Landfill and Recycling Facility located five miles south of Staunton, Virginia, which accepts solid waste and recyclables as well as used oil, antifreeze, and lead acid batteries.

The Airport maintains a Stormwater Pollution and Prevention Plan (SWPPP), which summarizes potential pollutant sources (such as storage activities and operations that could potential impact stormwater quality) and contains methods to be employed to control spills and unauthorized releases. The SWPPP notes that the use of materials that may have an adverse effect on the environment will be minimized, and the least toxic chemicals for a particular purpose will be used. The SWPPP is to be updated after construction to account for the new development and associated operations on the airfield.

Figure 5: Hazardous Reporting at SHD and the Vicinity



Source: EPA "NEPAssist" mapper

5.8 Historical, Architectural, Archaeological, and Cultural Resources

Historical, architectural, archaeological, and cultural resources encompass a range of sites, properties, and physical resources relating to human activities, society, and cultural institutions. As stated in the FAA 1050.1 *Desk Reference*, Section 106 of the National Historic Preservation Act (NHPA) is the principal statute concerning such resources. Section 106 requires federal agencies to consider the effects of their undertaking (or action) on properties listed or eligible for listing in the National Register of Historic Places (NRHP).

The Proposed Action would occur on airport property. There are two on-airport residences that are within the approximately 80 acre direct area of potential effect (APE) for the development. One residence was constructed circa 1925 and the second residence is assumed to be over fifty years old, although its exact construction date is unknown. A small private cemetery, Cash Cemetery, is also within the direct APE.

There are also several residences within the defined 150± acre indirect APE which could be impacted indirectly by the project, including visually. The Virginia Department of Historic Resources (DHR) online mapper, V-Cris, does not identify archaeological resources within the direct or indirect APEs.

Based on preliminary coordination with the DHR, a Phase 1 Architectural Survey for the Aviation Technology Park Development was requested and prepared in May 2023 to assess the nine architectural resources within the direct and indirect APEs for the project to assess potential project impacts (see **Table 3**).

Table 3: Resources Investigated During Architectural Survey

DHR ID	Property Name	Property Description/Date	NRHP Eligibility Recommendation
Within Direct APE			
007-6273	On-airport residence/ 14 Aviation Circle	1925	Not eligible
007-6274	On-airport residence/ 18 Aviation Circle	1925	Not eligible
007-6281	Cash Cemetery	Small family cemetery within fenced area. No visible headstones.	Not eligible
Within Indirect APE			
007-6275	390 Valley Church Road	1925	Not eligible
007-6277	244 Airport Road	1974	Not eligible
007-6276	224 Airport Road	1909	Not eligible
007-6279	Oakland Farms, Corner of Weyers Cave Road and Moss Lane	Pre-1957	Not eligible
007-6278	71 Moss Lane	1900	Not eligible
007-6280	321 Valley Church Road	1918	Not eligible

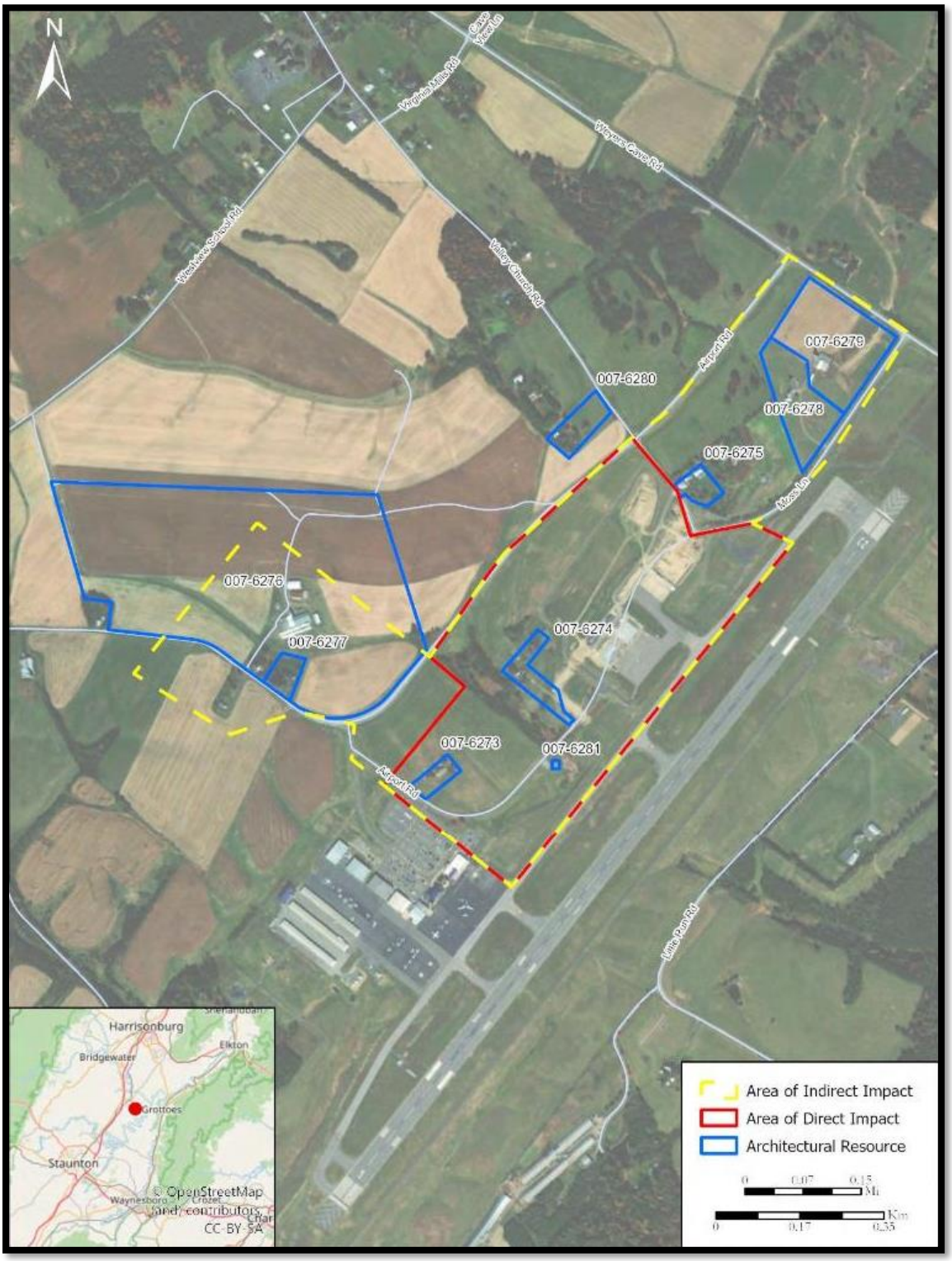
Source: Commonwealth Heritage Group
NOTE: DHR = Virginia Department of Historic Resources

None of the resources were determined to be significant and none were recommended as eligible for listing in the NRHP.

The report and recommendations were submitted to the DHR in June 2023 (see **Attachment D**).

Three Native American tribes- the Catawba Indian Nation, the Delaware Nation, Oklahoma, and the Monacan Indian Nation – have expressed interested in Augusta County and letters associated with the proposed undertaking were provided to each of these tribes (see **Attachment D**).

Figure 6: Location of APEs and Architectural Resources Surveyed



Source: Commonwealth Heritage Group

5.9 Land Use

As stated in the FAA Order 1050.1 *Desk Reference*, the compatibility of existing and planned land uses within an aeronautical proposal is usually associated with noise impacts, although other potential impacts of FAA actions may also affect land use compatibility (e.g., disruption of communities, relocation, induced socioeconomic impacts, land uses protected under Section 4(f) of the US DOT Act). Section 1502.16(a)(5), *Environmental Consequences*, of the Council on Environmental quality (CEQ) Regulations requires the discussion of environmental impacts including "[p]ossible conflicts between he proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies, and controls for the area concerned."

SHD is an operating, commercial service airport. Land uses around the airport are agricultural and industrial, with portions of residential scattered throughout, especially on the north side of airport property. The proposed development would take place on dedicated airport property and is in line with existing development on the airfield.

The airport property is zoned for Airport Business (AB). There is an Airport Overlay (APO) District which regulates obstructions to protected airspace in the vicinity of the airport.

The agricultural land uses surrounding the airport have zoning designations of General Agriculture (GA). GA zoning designations allow one principal dwelling unit but are mainly devoted to farm or forest activities. The industrial land uses that border the north and northwest of the airport have a zoning designation of General Industrial (GI) and Limited Industrial (LI). These zoning designations allow for manufacturing, industrial, and general wholesale and warehousing uses. The 2014/2015 Augusta County Comprehensive Plan (amended July 2020) discusses the potential use for zoning to prevent incompatible land uses (for example, adjacent residential and industrial uses). The plan encourages the viability and further development of Shenandoah Valley Regional Airport, including coordinating adjacent land uses and transportation improvements to best facilitate the full use of the airport. A stated goal in the plan is to encourage the expansion of operations at the airport for commercial and private air traffic.

Figure 7: Zoning On and Around SHD

Source: Augusta County Zoning and Overlays Map

5.10 Natural Resources and Energy Supply

Natural resources and energy supply provide an evaluation of a project's consumption of natural resources (such as water, petroleum for asphalt, stone for aggregate, wood, etc.) and use of energy supplies (such as coal for electricity, natural gas for heating, and fuel for aircraft or other ground vehicles). As stated in the FAA 1050.1 *Desk Reference*, it is the policy of the FAA consistent with NEPA and CEQ regulations, to encourage the development of FAA facilities that exemplify the highest standards of design, including sustainability principles.

Statutes and Executive Orders related to Natural Resources and Energy Supply include:

- The Energy Independence Act
- The Energy Policy Act, and
- Executive Order 13834, Efficient Federal Operations

Propane gas at SHD is provided by Dixie Gas. Electrical power to SHD is supplied by two companies: Dominion Power supplies power to the airfield electrical vault which powers the airfield lighting and Shenandoah Valley Electrical Cooperative supplies power to all other airport facilities. The airport has an emergency generator located at the airfield electrical vault. Fuel oil is recycled and burned for heat at SHD, which reduces the hazardous waste removal costs and decreases the hazardous waste footprint.

The current fuel farm includes three above ground storage tanks (ASTs), two of which store 10,000 gallons of Jet-A fuel each and one which stores 16,000 gallons of AvGas.

5.11 Noise and Noise-Compatible Land Use

The FAA 1050.1 *Desk Reference* states that noise is often the predominant aviation environmental concern of the public, and that the compatibility of existing and planned land uses with proposed aviation actions is usually determined in relation to the level of aircraft noise. The relevant guidance includes:

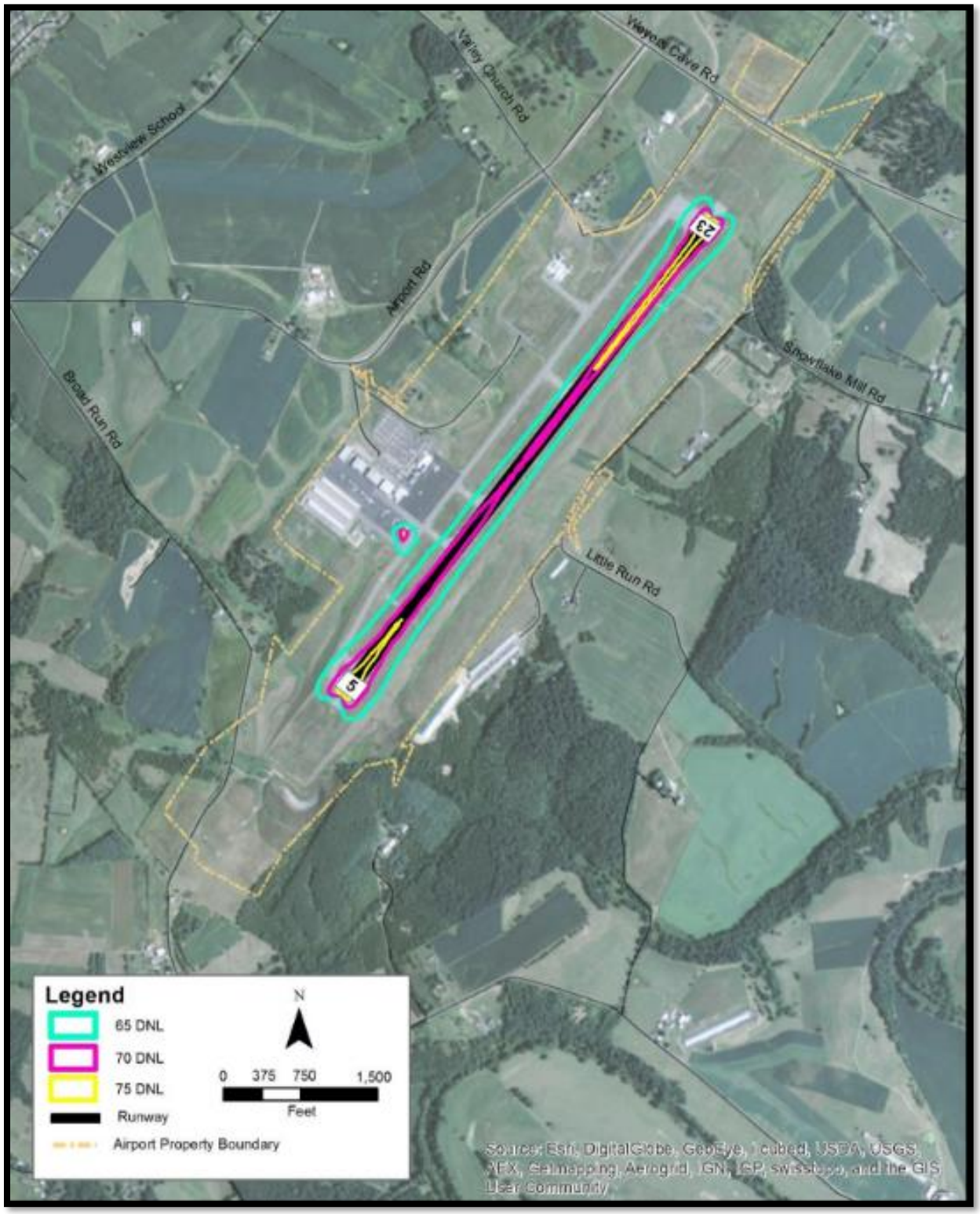
- The Noise Control Act of 1972 (42 U.S.C. §§4901-4918)
- Aviation Safety and Noise Abatement Act of 1979 (49 U.S.C. §47501 et seq.)
- Airport and Airway Improvement Act of 1982 (49 U.S.C. §47101 et seq.)
- Airport Noise and Capacity Act of 1990 (49 U.S.C. §§47521-47534, §§106(g), 47523-47527)

For aviation noise analyses, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of Day Night Average Sound Level (DNL), which is the primary noise metric used by FAA. Generally, the FAA considers DNL 75 and higher to be incompatible with most land uses, while below DNL 65 is compatible with most land uses. Above 65 DNL, noise sensitive land uses (such as residential, schools, churches, and hospitals) are typically discouraged.

As noted previously, the airport property is located within an AB zoning designation and is bordered by agricultural and industrial land uses, which are generally considered to be compatible with airport operations. However, there are two occupied residences on the airfield, within the project area. There is one residential subdivision located approximately 1.5-miles northwest of the runway. There are also a few residences scattered around the existing airport property, notably north of the terminal area and south and southeast of the runway. FAA AC 150/5190-4B, *Airport Land Use Compatibility Planning*, notes that residential uses can be impacted by aircraft noise. The scope of work for this EA includes an invitation-only property owner meeting, which was held on August 31, 2023 to inform nearby property owners of the proposed project. The meeting was generally cordial with property owners appearing appreciative to have been informed of the project and a private forum for questions and comments.

During the 2018 Airport Master Plan Update (MPU), noise contours were generated to evaluate potential aircraft noise effects for the existing conditions at the Airport. **Figure 8** depicts the existing 65 DNL noise contour for SHD as included in the MPU. It encompasses 49 ± acres and lies entirely within the airport property boundary. There are no residences or other noise-sensitive land uses within the 65 DNL contour.

Figure 8: Existing Conditions Noise Contours (2014)



Source: KB Environmental Services, Inc.

5.12 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Socioeconomics is an umbrella term used to describe potential impacts on the human environment such as population, employment, housing, and public services, with special attention given to the potential disproportionate impacts of a proposed project to low-income or minority populations, or children.

The primary statute related to Socioeconomic Impacts is the Uniform Relocation and Real Property Acquisitions Policy Act of 1970.

The primary statutes, Executive Orders, and other guidance related to Environmental Justice are listed below, according to the FAA 1050.1 *Desk Reference*:

- Title VI of the Civil Rights Act of 1964, as amended
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- CEQ Guidance: "Environmental Justice: Guidance Under the National Environmental Policy Act"
- Memorandum of Understanding on Environmental Justice and Executive Order 12898
- U.S. Department of Transportation Environmental Justice Strategy
- DOT Order 5610.2(c), Environmental Justice in Minority and Low-Income Populations
- Promising Practices for EJ Methodologies in NEPA Reviews, Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee
- Executive Order 14096, *Revitalizing our Nation's Commitment to Environmental Justice for All*

The Executive Order noted in the FAA Order 1050.1 *Desk Reference* which is related to Children's Health and Safety Risks is Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks.*

The project would take place on dedicated airport property and does not involve land acquisition or direct impacts to off-airport property.

Table 4 presents a summary of the comparative census data of the area within one mile of SHD, Augusta County, and the Commonwealth of Virginia. Details can be found in **Attachment E.**

5.12.1 One-mile around SHD

The U.S. EPA *EJ View* Mapper was consulted to determine detailed information about the area within an approximately one-mile buffer around the airport. The *EJ View* Mapper demographic indicators are from the U.S. Census Bureau's American Community Survey (ACS) 2017-2021 5-year summary.

The EPA "EJScreen" database reports that 15 percent of the population within one mile of the airport property is considered Low Income and 18 percent of the population is People of Color (see **Table 4** and Attachment E**).** A minority of the population (27 percent) is under the age of 18 and therefore considered to be "children."

Per capita income is slightly over $30,000. The 2023 Federal Poverty Guideline for single households is $14,580 and for household of four persons is $30,000.
There are no childcare centers within the immediate vicinity of the airport. According to a desktop search, the nearest childcare centers are Wonder Land Enrichment Center, which is located approximately 12.4 miles southwest of the airport, and Bridgewater Church Childcare Center, which is located approximately 10.9 miles north of the airport.

A desktop search did not identify schools within the immediate vicinity of the airport. The nearest schools include South River Elementary School, located approximately 5.9 miles northeast of the airport; and Fort Defiance High School, Edward Clymore Elementary School, and S. Gordon Stewart Middle School, all located approximately 7.5 miles southwest of the airport.

5.12.2 Augusta County

The EJ Screen reports a population for Augusta County of 76,948 people, of which 10 percent are classified as "People of Color", 25 percent are classified as "Low Income", and 19 percent are under 18 years of age (see **Table 4**).

5.12.3 Commonwealth of Virginia

According to the U.S. Census Bureau "Quick Facts", the Commonwealth of Virginia had a population of 8,683,619 in 2022 (this is the last full year of data available). The EJ Screen database reports that approximately 38 percent of the state population is classified as "People of Color" and 25 percent are "Low Income." (Note that due to the differences in data sources, the U.S. Census Bureau "Quick Facts" notes that 31.5 percent of the state population are People of Color- see **Attachment E).**

Table 4: Demographic Comparison

	ONE-MILE AREA AROUND SHD	AUGUSTA COUNTY	COMMONWEALTH OF VIRGINIA
POPULATION			
Population	137	76,948	8,683,619
People of Color	18%	10%	38%
Low Income	15%	25%	25%
Per Capita Income	$32,186	$32,461	$87,249
Persons under 18 years	27%	19%	22%

Source: EPA "EJScreen"; US Census Bureau "Quick Facts"

5.13 Visual Effects

As stated in FAA Order 1050.1 *Desk Reference*, visual effects deal broadly with the extent to which the proposed action or alternative(s) would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment.

Visual effects are broken into two categories: *Light Emissions* and *Visual Resources and Character.* As an operating, commercial service airport, SHD is a fully lighted facility providing 24-hour per day services. As mentioned previously, the area surrounding airport property is characterized by agricultural and industrial land uses, with portions of residential uses scattered throughout, especially north of airport property.

There are residences in the vicinity of the proposed development, including two on-airport residences which are within the project area (see **Figure 11**). Residential uses are considered to be light-sensitive land uses. The on-airport residences are leased by the Commission on a month-to-month basis with the same tenants in place for the past several years. The existing visual character of these residences is an operating, commercial service airport. A third residence is located at 390 Valley Church Road and is separated from the airport property by Valley Church Road (see Figure 11). The existing visual character of the residence's surroundings includes a state route, agricultural activities, light industrial use, and an operating, commercial service airport.

5.14 Water Resources

Water resources include surface water, groundwater, floodplains, wetlands, and wild and scenic rivers. Water resources are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems.

5.14.1 Wetlands

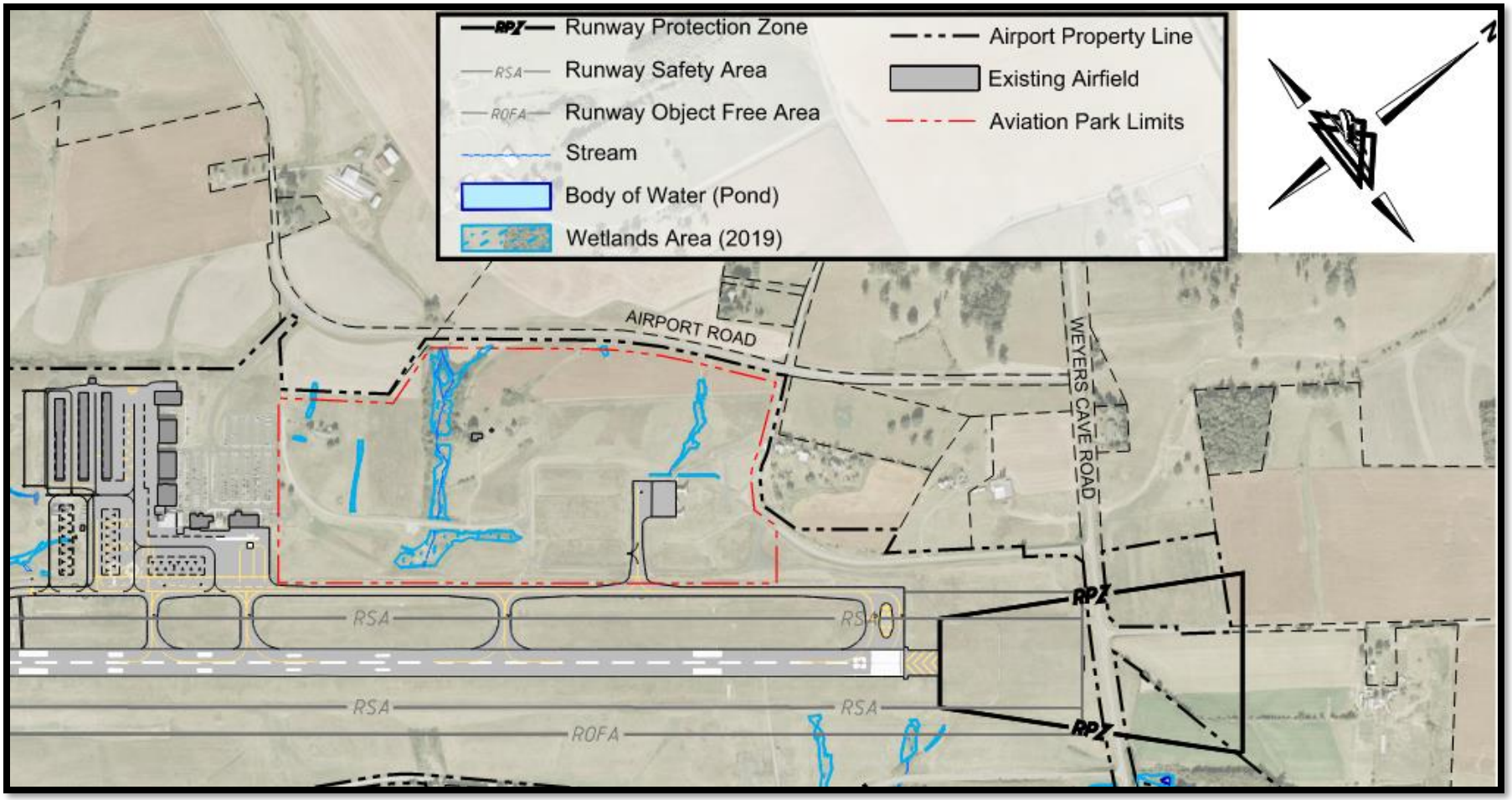
According to the FAA Order 1050.1F *Desk Reference*, the Clean Water Act (CWA) defines the term wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands provide many benefits to the human, biological, and hydrological environment, including habitat for fish and wildlife, water quality improvement, flood storage, and opportunities for recreation.

In addition to the CWA, the relevant regulatory guidance includes:

- Fish and Wildlife Coordination Act (16 U.S.C. §661-667d)
- EO 11990, *Protection of Wetlands*
- DOT Order 5660.1A, *Preservation of the National's Wetlands*

A wetlands survey and delineation were conducted during a previous (2020) environmental effort which identified a total of 7.62± acres of jurisdictional wetlands, 1.20± acres of pond, and 17,739 linear feet (LF) of streams within that project's 509± acre study area. The wetlands report was coordinated with the United States Army Corps of Engineers (USACE) which issued a Jurisdictional Determination (JD) in November 2019 (see Attachment F). As depicted in **Figure 9**, delineated wetlands are present within the general extents of the Aviation Technology Park area. Within the project boundaries, there are approximately 3.5 acres of palustrine emergent (PEM) wetlands and approximately 1,612 linear feet (LF) of stream.

Figure 9: Delineated Wetlands and Streams (2019)



Source: SHD Environmental Assessment for Phase 1 Development, 2020; Wetland Studies and Solutions, Inc.

5.14.2 Floodplains

The FAA 1050.1 *Desk Reference* defines floodplains as lowland areas adjoining inland and coastal waters which are periodically inundated by flood waters, including flood-prone areas of offshore islands.

Statutes, Regulations, Executive Orders, and other requirements related to the protection of floodplains include:

- The National Insurance Flood Act,
- Executive Order 11988, *Floodplain Management*,
- Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*,
- DOT Order 5650.2, *Floodplain, and Management and Protection*

The Flood Insurance Map for Augusta County (Community Panel 51055C0194D, effective 09/28/2007) identifies a special flood hazard area (Zone A) located to the south of airport property along the Broad Run stream but documents that there are no floodplains on airport property, or within the approximate extents of the Aviation Technology Park depicted in yellow in

Figure 10.

Figure 10: FEMA Floodplains in Vicinity of SHD

Source: EPA "NEPAssist"

5.14.3 Surface Waters

Surface waters include streams, rivers, lakes, ponds, estuaries, and oceans. As noted in the FAA Order 1050.1 *Desk Reference*, the CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States. The sections of the CWA relating to waters of the United States are Section 303(d), Section 404, Section 401, and Section 402, which establishes the National Pollutant Discharge Elimination System (NPDES) permit program.

The Airport maintains an airport-wide Spill Prevention, Control, and Countermeasure (SPCC) Plan and an Oil Discharge Contingency Plan (ODCP), which outline appropriate contingency and cleanup measures in the event of a release of regulated substance such as fuel, to protect surface waters.

Specific to the Proposed Action, the preliminary engineering effort associated with this EA identified the separate drainage areas within the site itself as well as existing drainage basins and stormwater management facilities to understand existing conditions; preliminary grading conducted during the

preliminary engineering effort was then used to delineate future drainage basins to compare with existing and future treatment areas (see Attachment G).

The wetlands and stream delineation conducted during the 2020 EA identifies streams on airport property, including within the Aviation Technology Park development area (see **Figure 9).** As noted previously, there are approximately 1,612 LF of stream within the project boundaries.

5.14.4 Groundwater

Groundwater is surface water that is stored between sand, clay, and rock formations, and includes aquifers, geologic layers which store and transmit groundwater to wells, springs, and other water sources. Federal activities affecting groundwater are primarily governed by the Safe Drinking Water Act (SDWA).

The airport property is not located within a Sole Source Aquifer Region as designated by EPA and there are no wells on or near the project area.

According to the 2018 Airport Master Plan, water is provided to SHD by the Augusta County Services Authority. SHD sewer services are also provided by the Augusta County Services Authority.

In 2023, construction was completed on the installation of watermain and sewer line within the Aviation Technology Park to serve the existing development in this area and will also serve the anticipated development. That work was environmentally reviewed under the 2020 EA/FONSI (see **Attachment A**).

The Proposed Action involves ground disturbance, construction, and the addition of impervious surface, all of which could impact groundwater.

5.14.5 Wild and Scenic Rivers

Wild and Scenic Rivers are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural value as defined by the Wild and Scenic Rivers Act. As noted in the FAA Order 1050.1 *Desk Reference*, if the FAA is taking an action that would physically impact resources covered by the Wild and Scenic Rivers Act, there may be consultation requirements under the Act.
Virginia has approximately 49,350 miles of river, but no federally designated Wild and Scenic Rivers. There is one state-designated Scenic River, St. Mary's River, in Augusta County, but it is not located near the airport.

6. Environmental Consequences

This section examines the environmental categories listed in FAA Order 1050.1F *Environmental Impacts: Policies and Procedures*. The reasonably foreseeable environmental consequences of the Proposed Action and No Action alternatives are discussed.

6.1 Air Quality

FAA Order 1050.1F establishes the significance thresholds for air quality impacts. An impact may be deemed significant if the Proposed Action causes pollutant concentrations to exceed one or more of the NAAQS, for any time period analyzed, or increases the frequency or severity of any existing violations.

The Airport is located in Augusta County, Virginia which is an attainment area for NAAQS. As the project is located within an attainment area, development at SHD is not subject to further demonstrating general conformity with the Virginia SIP to be eligible for federal funding and approval. For disclosure purposes only, a construction emissions analysis was conducted using the Airport Construction Emissions Inventory Tool (ACEIT) software to provide a general estimate of construction emissions associated with the Proposed Action.

The default emission factors from the ACEIT software for both on-road equipment (used for the transport of supplies, material, and equipment to and from the site) and non-road equipment (operated on-site for activities such as soil/material handling and site clearing) were used based on the location and type of projects. For the purposes of the analysis and as a "worst case" scenario, construction of the Proposed Action is assumed to occur in four consecutive years, with the hangar development taking place during 2025 and 2026. While no de minimis air quality thresholds are established for attainment areas, for comparison purposes, the results of the analysis are compared to de minimis thresholds for maintenance areas (see **Table 5**). The comparison shows that no de minimis thresholds would be exceeded. The output file is included as Attachment H.

As stated previously, the hangars are intended to accommodate existing tenants on the airfield but could also accommodate new tenants. Hangars T and U are proposed for large ADG III aircraft such as the Boeing Business Jet or Bombardier Global; however, depending on the tenant, they could accommodate two or three smaller jet aircraft instead. Hangars H and I are intended to accommodate smaller jets. They could accommodate six to 10 small jet aircraft; again, this would depend on the needs of the future tenants. This means that under the "worst case" scenario (that the hangars accommodate all new aircraft and not existing tenants), the hangars could account for from eight to 16 new based aircraft at SHD. Jets of all sizes regularly operate at SHD currently.

While it is difficult to predict the number of future operations associated with the new hangars, the FAA Aerospace Forecast 2023-2043 notes that in five years, jet aircraft are anticipated to operate approximately 315 hours per year on average. Assuming a three-hour average trip duration, this amounts to 105 annual operations each, meaning that in the "worst case scenario," the hangars could account for 1,680 additional annual operations at SHD. As stated previously, this represents less than five percent of current total operations at SHD.

Based on previous, similar projects, approximately 12 automobile parking spaces are proposed to serve each hangar; therefore, approximately 48 additional morning and evening trips can be anticipated. Additional trips may be experienced during the day for lunch, deliveries, and other daily activities.

- **No Action**: As it does not involve construction, the No Action alternative would not create adverse impacts to air quality.

- **Build/Proposed Action**: In consideration of the above, including the minimal increase in additional aircraft operations and vehicle trips and the fact that the County is currently in attainment for NAAQS, *no significant air quality impacts are anticipated from the construction or operation of the Proposed Action.*

Table 5: Estimated Construction Emissions Associated with the 2024 Proposed Action

Year	CO	NOx	SO2	PM10	PM2.5	VOC
2025	1.8080	0.4737	0.0059	0.2917	0.0219	0.6887
2026	8.2197	0.8641	0.0249	0.7474	0.0313	12.3784
2027	2.6431	0.6314	0.0096	0.1402	0.0240	2.1541
2028	1.4800	0.3918	0.0053	0.1044	0.0163	0.8653
de minimis levels (tons/year)	100	100	100	100	100	100

Source: Delta Airport Consultants, Inc. analysis using ACEIT; EPA De Minimis Tables (2023). Emissions expressed in short ton.

6.2 Biological Resources

FAA Order 1050.1F notes that a significant impact to biological resources would occur when the USFWS or the National Marine Fisheries Service determines that the action would be likely to jeopardize the continued existence of a Federally-listed threatened or endangered species, or would result in the destruction or adverse modification of federally-designated critical habitat. The FAA has not established a significance threshold for non-listed species.

In addition to the significance threshold, the FAA Order provides additional factors to consider, including:

- A long-term or permanent loss of unlisted plant or wildlife species (e.g., extirpation of the species from a large project area)
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations
- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting) or ability to sustain the minimum population levels required for population maintenance

The USFWS IPaC database identified three federally protected mammals which may occur on or near the project area: the Endangered, Indiana Bat (*Myotis sodalis)*, the Endangered, Northern Long-eared Bat (NLEB), (*Myotis septentrionalis)*, and the Proposed Endangered Tricolored Bat (*Perimyotis subflavus*).

The Monarch Butterfly, a Candidate species, and 10 migratory birds, including the Bald Eagle, were also identified by the IPaC database. The Virginia DWR identifies 558 species which could occur within two miles of the project area, including 12 state-listed species. There are no critical habitats, wildlife refuges, or fish hatcheries within the project area (see **Attachment B**).

The project area does not intersect with known hibernacula or the protective buffers associated with the Tricolored and Little Brown bats, nor is it within known summer habitat or the protective buffers associated with hibernacula of the NLEB (see **Attachment B**). Based on a "worst case scenario" of grading conducted during the preliminary engineering effort, the project would require the removal of a total of approximately 30,000-SF (less than 0.7 acre) of trees and brush in two separate areas for grading and stormwater purposes (see Attachment B). Because the Proposed Action does not require the removal of a significant amount of forest and would take place on a developed airfield, it is not anticipated that habitat for the Northern long-eared bat or Indiana Bat would be significantly impacted. Based on the current condition of the project area (a developed and operating, commercial service airport) and the lack of milkweed present, it is unlikely that the Monarch Butterfly would be found on the project site. According to the Center for Conservation Biology (CCB) mapper, the closest documented bald eagle nest is over three miles from the airport property. A coordination package with these "not likely to adversely affect" conclusions for the Indiana, Tricolored and Little Brown Bats and the Monarch Butterfly was submitted to USFWS in December 2023 (see **Attachment B**).

The project review package was prepared using guidance provided on the Virginia Field Office website. The result of the online review regarding potential impacts to the NLEB were a "May Affect, Not Likely to Adversely Affect" (NLAA) letter dated December 21, 2023. The letter states that unless the agency advises within 15 calendar days that the determination is incorrect, no further action is necessary unless new information reveals potential effect to the NLEB or the identified action is subsequently modified in a manner that causes a new effect to the NLEB. A project description was also submitted to DWR in August 2023 for review and comment (see Attachment I).

No response was received from USFWS within the 15-day timeframe as stated in the agency's guidance regarding the NLEB. (Note that the USFWS has advised that its guidance regarding NLEB will be revised on April 1, 2024, which would require renewed coordination with the agency and potentially different mitigation measures.) However, based on established guidelines, a time of year restriction on clearing will be implemented to avoid potential impacts to the Indiana Bat (no tree clearing during the active season of April 1 through November 14).

- **No Action:** As it does not involve construction, the No Action alternative would not create adverse impacts to biological resources.
- **Build/Proposed Action**: In consideration of the discussion above, *no adverse impacts to biological resources are anticipated from the construction of the Proposed Action.*

Wetlands are discussed in **Section 6.14.1.**

6.3 Climate

Greenhouse gas (GHG) is a category of pollutants for which there is global and national concern. Of the six GHGs named by the EPA (carbon dioxide [CO_2], methane, nitrous oxide [N_2O], hydrofluorocarbons,

per-fluorocarbons, and sulfur hexafluoride), aircraft engines emit CO_2 and N_2O. GHG emissions have not been regulated under the CAA as air pollutants. In January 2021, EPA finalized GHG emissions standards that apply to certain new (new type design airplanes or in-production airplanes on or after January 1, 2028) commercial airplanes such as large passenger jets. As mentioned previously, the DEQ reports that statewide average GHG emissions in Virginia between 2016 and 2019 were 141.6 million metric tons of CO_2e.

While there are no significance thresholds established for climate impacts, for disclosure purposes only, a construction emissions analysis was conducted using the ACEIT software to provide a general estimate of construction emissions associated with the Proposed Action; the estimated GHG emissions are detailed below:

Table 6: Estimated GHG Emissions Associated with Constructing the 2024 Proposed Action

Year	CO2	CH4	N2O
2025	694.3861	0.0318	0.0066
2026	1451.8471	0.1244	0.0164
2027	1071.4758	0.0359	0.0036
2028	652.6359	0.0208	0.0028

Source: Delta Airport Consultants, Inc.

- **No Action**: As it does not involve construction, the No Action alternative would not create adverse climate impacts.
- **Build/Proposed Action**: While the project would result in an increase in GHG emissions during construction, the emissions would be short-term and temporary in nature. As mentioned previously, in the "worst case scenario" (that the hangars accommodate all new aircraft and not existing tenants), the hangars could account for 1,680 additional annual operations at SHD. This represents less than five percent of current total operations at SHD, as reported on the FAA 5010-1 Airport Master Record (approximately 37,000). Based on the minimal increase in operations by the proposed development and the insignificant percentage of statewide GHG emissions posed by the project's construction, *no significant, adverse climate impacts anticipated.*

6.4 Coastal Resources

As Augusta County is not located within the Virginia Coastal Zone, a consistency determination is not required and *no adverse impacts are anticipated to coastal resources by either the No Action alternative, or the 2024 Build/Proposed Action.*

6.5 Department of Transportation, Section 4(f) Resources

FAA Order 1050.1F establishes the significance thresholds for Section 4(f) Resources. An impact may be deemed significant if the Proposed Action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.

Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately-owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resources that contribute to its significance or enjoyment are substantially diminished.

- **No Action**: As it does not involve construction, the No Action alternative would not impact Section 4(f) resources.
- **Build/Proposed Action**: There are no known Section 4(f) properties, including historic resources, which are eligible for listing in the NRHP, on or near the area where construction of the Proposed Action is proposed. As mentioned previously, coordination with DHR conducted during this EA resulted in a "no affect" determination for historic properties (see Attachment D). *No impacts to Section 4(f) resources are anticipated as a result of the Proposed Action.*

6.6 Farmlands

The FPPA regulates federal actions with the potential to convert farmland to non-agricultural uses. FAA Order 1050.1F establishes the significance thresholds for farmlands. A significant impact would occur when: The total combined score on Form AD-1006, "*Farmland Conversion Impact Rating*," ranges between 200 and 260 points. Factors to consider include if the Proposed Action has the potential to convert important farmlands, such as pastureland, cropland, and forest considered to be prime, unique, or statewide or locally important land, to non-agricultural uses.

While there are areas of farmland on lands within and adjacent to SHD, the Proposed Action does not meet the definition of farmland as contained in the FPPA because it is already located within the existing airport property and dedicated for aeronautical development.

Coordination with NRCS was conducted during the 2020 EA which included the acquisition of an approximately 13-acre parcel of land that is now airport property and included in the Aviation Technology Park study area. That coordination, which concluded that there would be no significant impact to farmland based on the score assigned to the properties to be acquired through completion of the *Farmland Conversion Impact Rating* for the Proposed Action and that no additional evaluation was necessary, is included as Attachment J.

- **No Action**: As it does not involve construction or the conversion of farmland to non-agricultural uses, the No Action alternative would not impact farmlands.
- **Build/Proposed Action**: The area where the Proposed Action would be constructed is on a disturbed site which is committed to airport use. *No impacts to farmlands, including conversion of farmlands, are anticipated as a result of the construction of the Proposed Action.*

6.7 Hazardous Materials, Solid Waste, and Pollution Prevention

The FAA has not established a significance threshold for Hazardous Materials, Solid Waste, and Pollution Prevention. Factors to consider is if the Proposed Action may have the potential to:

- Violate applicable Federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;
- Involve a contaminated site (including but not limited to a site listed on the National Priorities List (NPL);
- Produce an appreciably different quantity or type of hazardous waste;
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or
- Adversely affect human health and the environment

There are no Superfund or Brownfield sites located on or in the vicinity of the airport, and there are no landfills in the airport vicinity. The airport itself and the TSA located at SHD are identified as RCRA entities which report to the EPA and are in compliance with EPA. The project does not involve fuel facilities or the acquisition of land. There are no landfills in the airport vicinity. Every effort is to be made to recycle materials; however, this will ultimately be the decision of the contractor who is awarded the construction contract under competitive bid. Very little construction and demolition (C&D) waste is anticipated because the majority of the Proposed Action involves new construction.

- **No Action**: As it does not involve construction, the No Action alternative would not involve or impact hazardous resources or create significant amounts of solid waste or pollution.
- **Build/Proposed Action**: The area where the Proposed Action would be constructed is previously disturbed and is on dedicated airport property. There is no anticipation of hazardous waste used or generated during the project. Construction waste and debris would be generated during development, which is typical of any construction project. Solid waste, including construction and land clearing debris generated from this project, would be property disposed of at a permitted solid waste acceptance facility, or recycled if possible. Every effort is to be made to recycle materials; however, this will ultimately be the decision of the contractor who is awarded the construction contract under competitive bid. Very little construction and demolition (C&D) waste is anticipated because the majority of the Proposed Action involves new construction. A project-specific SWPPP would be prepared by the contractor which would detail methods to control spills and other unauthorized releases during construction and project implementation. The existing SWPPP would also be updated to include the new construction and its anticipated, associated pollutants discharged. *There is no anticipated impact to or from hazardous materials as a result of the construction of the Proposed Action. The construction is not anticipated to create a significant amount of solid waste or pollution that could not be accommodated by local disposal sites.*

6.8 Historical, Architectural, Archaeological and Cultural Resources

The FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. A factor to consider includes, but is not limited to, situations in which the proposed action or alternative(s) would result in a finding of Adverse Effect through the Section 106 process.

Coordination with the DHR conducted in summer 2023 concluded that the proposed airport improvements would not result in an adverse effect on historic properties (see Attachment D). Letters were mailed by FAA to the three Native American tribes which have expressed an interest in Augusta County; a response was received from the Catawba Indian Nation noting no immediate concerns, but requesting to be notified if Native American artifacts and/or human remains are located during ground disturbance (see Attachment D).

The Cash Cemetery is within the APE. While the DHR did not consider the cemetery to be historically significant, the agency did recommend that a 30-foot buffer be established if the project is within 30 feet of the cemetery (and if so, that it be noted in the construction documents and defined in the field by temporary fencing during construction).

- **No Action**: As it does not involve construction, the No Action alternative would not impact historical, architectural, archaeological or cultural resources.
- **Build/Proposed Action**: In consideration of the concurrence with the No Historic Properties Affected determination by DHR, the single response received by a Native American tribe, and the commitment to maintain a 30-foot buffer around the Cash Cemetery during construction with the protection area noted on relevant construction plans and defined in the field by temporary fencing during construction, *no adverse impacts to historical, architectural, archaeological or cultural resources are anticipated as a result of the 2024 Proposed Action.*

6.9 Land Use

The FAA has not established a significance threshold for Land Use, and the determination that significant impacts exist in the land use category normally depend on the significance of other impact categories, such as noise.

SHD is an operating, commercial service airport which is situated in the AB (Airport Business) zoning district of Augusta County. Land uses around the airport are agricultural and industrial, with low density residential scattered throughout, especially on the north side of airport property. The proposed development would take place on dedicated airport property and is in line with existing development on the airfield.

- **No Action**: As it does not involve construction or land acquisition, the No Action alternative would not have land use impacts.
- **Build/Proposed Action**: The construction of the Proposed Action is in line with the permitted uses of the local zoning ordinance and does not involve land acquisition. *No adverse land use impacts are anticipated as a result of the construction of the Proposed Action.*

6.10 Natural Resources and Energy Supply

The FAA has not established a significance threshold for Natural Resources and Energy Supply. Factors to consider may include whether the Proposed Action would have the potential to cause demand to exceed available or future supplies of these resources.

The proposed development, including hangar buildings, would require energy and natural resources (electric, water, and telecommunications), which are anticipated to be served by the existing utilities at the airport which would be extended to the project site.

- **No Action**: As it does not involve construction, the No Action alternative would not require significant natural resources or energy supply.
- **Build/Proposed Action**: The Proposed Action includes the construction of hangars, aprons, and taxilanes/taxiway; automotive parking and access roads; security fence; fuel truck parking; and the expansion of an existing commercial service apron. The construction would require natural resources such as asphalt, water and aggregate; however, these materials are not in short supply. The development would also require energy during construction and operation, such as electricity and fuel for construction and ground vehicles, but would not require energy supply that is beyond the capacity currently at the airport. Should the tenants of the new hangars be new aircraft (and not existing tenants), fuel demand could increase; however, fuel demand is not anticipated to increase beyond what the airport can reasonably provide. *No significant, adverse impacts to natural resources or energy supply are anticipated as a result of the construction of the Proposed Action.*

6.11 Noise and Noise-Compatible Land Use

FAA Order 1050.1F establishes the thresholds for significant Noise and Noise-Compatible Land Use impacts. An impact may be deemed significant if, when compared to the No Action alternative for the same timeframe, the Proposed Action would increase noise by 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 a DNL 1.5 dB or greater increase.

As noted previously, the airport property is located within an AB zoning designation and is bordered by agricultural and industrial land uses which are generally considered to be compatible with airport operations. However, there are two occupied residences on the airfield and within the project area. These tenants of the airport have been in place for the past several years and are familiar with existing and anticipated aircraft use of the airfield. There are also residential uses adjacent to the airport property and the project area (see **Figure 11**) which range from approximately 300-feet from the borders of the site (390 Valley Church Road) to approximately ¼ mile from the site (220 Airport Road and Oakland Farms, Inc.) These residences are already exposed to aircraft noise at varying levels due to their proximity to the operating airfield. Aircraft similar in size to the types which would be stored in the new hangars currently use the existing taxiway and apron in the technology park.

As mentioned previously, the hangars could accommodate new aircraft, or they could accommodate existing tenants who have outgrown the current hangar storage offerings at SHD. Hangars T and U are proposed for large ADG III aircraft such as the Boeing Business Jet or Bombardier Global; however, depending on the tenant, they could accommodate two or three smaller jet aircraft instead. Hangars H and I are intended to accommodate smaller jets. They could accommodate six to 10 small jet aircraft; again, this would depend on the needs of the future tenants. This means that under the “worst case” scenario (that the hangars accommodate all new aircraft and not existing tenants), the hangars could account for from eight to 16 new based aircraft at SHD. Jets of all sizes regularly operate at SHD currently.

While it is difficult to predict the number of future operations associated with the new hangars, the FAA Aerospace Forecast 2023-2043 notes that in five years, jet aircraft are anticipated to operate approximately 315 hours per year on average. Assuming a three-hour average trip duration, this amounts to 105 annual operations each, meaning that in the "worst case scenario," the hangars could account for 1,680 additional annual operations at SHD. This represents less than five percent of current total operations at SHD (approximately 37,000 annual operations).

A noise screening was conducted using FAA's Area Equivalent Method (AEM) spreadsheet to estimate the additional noise impacts which would occur from the proposed development. FAA guidance notes that if the AEM calculations indicate that the action would result in less than a 17 percent (approximately a DNL 1dB) increase in the DNL 65 dB contour area, there would be no significant impact over noise sensitive areas and no further noise analysis would be required. The inputs used in the analysis represent the "worst case" scenario described above. The analysis estimates an increase in the 65 DNL noise contour at SHD of approximately 13.6 percent as a result of this project, which is below the 17% threshold which would require additional noise analysis. See Attachment K.

Noise impacts as a result of construction would be temporary. While the project has not yet been designed, it is likely that construction would take place during daylight hours, although depending on the season when construction takes place, concrete pours could take place at night so that they can be completed before the heat of daylight sun. Construction vehicle trips would occur largely during daylight hours. Construction is anticipated to take place in 2025 through 2029. By that time, it is anticipated that the dedicated access road to the Aviation Technology Park would be constructed (see **Figure 2**). This would provide a dedicated entrance to the construction site for construction vehicles that would avoid using State Routes 771 and State Routes 847, reducing impacts to residences along these routes (see **Figure 11**). Automobile access for users would also be provided via the new entrance road, which would remove those automobiles and their associated noise from State Routes 771 and 847.

As noted in Section 5.11, there are no residences or other noise-sensitive land uses within the airport's 65 DNL contour. The residences in the vicinity of the proposed project already receive daily noise from traffic on State Route 256/Weyers Cave Road, which has an Average Daily Traffic (ADT) volume of 5,900[2]; Airport Road, which has an ADT volume of 610; and State Route 847/771, which has an ADT volume of 30 in the vicinity of 390 Valley Church Road. As noted above, it is not anticipated that construction vehicles would use this portion of State Routes 771 or 847 to access the site because the dedicated airport entrance road would provide more direct access.

Construction vehicles would likely access the airport from State Route 256 and then enter the new airport entrance from Airport Road. This would temporarily increase the total daily traffic on these two roads. The number of construction workers on the site is anticipated to vary by project phase. For example, site prep (clearing, grading) would require workers to operate heavy equipment for grading such as bulldozers, road graders, and haul trucks. The utility installation and building erection phases would require workers with a different skill sets, as would road, apron, and automobile parking establishment and final site stabilization and landscaping. The full build-out of the Aviation Technology Park would take several years, with individual projects moving forward based on airport priority and

[2] Source: Virginia Department of Transportation, 2022 Traffic Counts

funding availability, among other factors, meaning that the number of workers making trips to the site at any one time is highly variable. However, for the purposes of this environmental analysis, in a "worst case" scenario where the project is constructed at once, there could be as many as 970 trips to the site at a time, which would include employee commutes and material deliveries. The Federal Highway Administration's *Noise Fundamentals, Highway Traffic Noise Analysis and Abatement Policy and Guidance* notes that a doubling of noise sources (i.e., vehicles) would increase traffic noise levels by approximately 3dB, which the guidance reports is normally the smallest change that humans can detect without specifically listening for a change. Based on the existing ADT of the two roads used to access the new site entrance (State Route 256 and Airport Road), the "worst case" scenario of 970 trips represents only a 15 percent increase and would not be considered a significant change in the noise environment.

Based on previous, similar projects, approximately 12 automobile parking spaces are proposed to serve each hangar; therefore, approximately 48 additional morning and evening trips can be anticipated. Additional trips may be experienced during the day for lunch, deliveries, and other daily activities. However, the noise associated with vehicle trips is not anticipated to significantly increase existing noise levels around these parcels, which are located adjacent to an operating, commercial service airport and a public road.

The scope of work for this EA includes an invitation-only property owner meeting, which was held on August 31, 2023, to inform nearby property owners of the proposed project. A list of attendees is included in Attachment L. The meeting was generally cordial with property owners appearing appreciative to have been informed of the project and a private forum for questions and comments. While meeting minutes were not taken during this informal briefing session, comments received included asking about the airport's long-term plans, especially around plans for additional commercial service; requesting that the Airport monitor the contractor work site so that debris does not travel into residential yards; and suggesting that the new hangar buildings be painted with art or murals to be more visually appealing.

As with any construction project that occurs within August County, this project must adhere to the Augusta County code of ordinances, including the County noise ordinance, which states that noise above a sound level of 65 dBA, when measured at or outside the property boundary from which the sound emanates, is not permitted between the hours of 11 pm and 6 am.

- No Action: As it does not involve construction, the No Action alternative would not have noise impacts.
- Build/Proposed Action: Noise impacts from construction would be temporary. The "worst case" scenario described above would not increase the 65 DNL noise contour by an amount considered to be significant by FAA guidance. Therefore, no significant noise impacts are anticipated as a result of the 2024 Proposed Action.

6.12 Socioeconomics, Environmental Justice (EJ), and Children's Health and Safety Ricks

The FAA has provided factors to consider when analyzing potential impacts but has not established a significance threshold for socioeconomics, environmental justice, or children's environmental health and safety risks. Factors to consider when evaluating potential socioeconomic impacts include if the action would have the potential to:

- Induce substantial economic growth in an area, directly or indirectly
- Disrupt or divide the physical arrangement of an established community
- Cause extensive relocation when sufficient replacement housing is unavailable
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities
- Disrupt local traffic patterns and substantially reduce the levels of service roads serving an airport and its surrounding communities
- Produce a substantial change in the community tax base

Factors to consider when evaluating potential environmental justice impacts include if there is the potential for disproportionately high and adverse impacts to a low-income or minority population, due to:

- Significant impacts in other environmental impact categories
- Impacts on the physical or natural environment that affect an environmental justice population in a way that FAA determines is unique and significant to that population

A factor to consider when evaluating potential impacts to children's health and safety is whether the action would have the potential to lead to a disproportionate health or safety risk to children.

As shown in **Table 4**, 15 percent of the population within one mile of the airport property is considered to be Low Income and 18 percent is considered to be People of Color. These rates are lower than the reported rates for Virginia. The rate of Low Income residents within one mile of the airport property is significantly lower than that of the County as a whole, although the rate of People of Color is higher than the rate in Augusta County, 10 percent.

Only 27 percent of the population within one mile of the airport is under the age of 18 and therefore considered to be "children." This is a higher rate than the county and state percentages, but is still a small percentage of the overall population.

The project would take place on dedicated airport property and does not involve land acquisition or direct impacts to off-airport property. As noted in **Section 5.12**, there are no childcare centers or schools in the immediate vicinity of the airport.

As with any construction project, there would be temporary traffic impacts during construction and operation, which are discussed in Section 6.11. Section 6.11 also estimates that based on previous, similar projects, approximately 12 automobile parking spaces are proposed to serve each hangar; therefore, approximately 48 additional morning and evening trips can be anticipated. Additional trips may be experienced during the day for lunch, deliveries, and other daily activities. However, the additional vehicle trips are not anticipated to create significant impacts to residents in the vicinity, which are already located adjacent to an operating, commercial service airport and a public road. As

also discussed in Section 6.11, there is a "worst case" estimate of 970 additional trips associated with construction, which represents a 15 percent increase in current traffic levels over the four-year estimated construction duration.

The grading associated with the automobile parking for Hangars H and I could extend into the existing driveway for an on-airport residence. The ultimate extents of grading will not be known until the project is actually designed. The Airport has coordinated with this tenant as the projects have progressed, and has committed to reconstructing the driveway should it be impacted during construction.

- **No Action:** As it does not involve construction, the No Action alternative would not have socioeconomic impacts, including the positive socioeconomic impacts of the jobs associated with construction.
- **Build/Proposed Action:** The Proposed Action would be constructed on airport property and does not involve land acquisition or the relocation of businesses or residences. A substantial percentage of the population surrounding the airport is not classified as People of Color, Low Income, or Children and the project area is not in significant proximity to schools or childcare facilities. Traffic impacts from construction would be temporary. The community could experience a temporary increase in jobs and tax base due to construction. *It is reasonable to conclude that there would not be significant adverse environmental impacts from the project that are predominantly borne by these populations.*

6.13 Visual Effects

Visual effects are broken into two categories: *Light Emissions* and *Visual Resources and Character.* The FAA has not established a significance threshold for visual effects (including light emissions). Factors to consider are the degree to which the Proposed Action would have the potential to:

- Create annoyance or interfere with normal activities from light emissions;
- Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.
- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and/or visual character in the study area; and
- Block or obstruct the views of visual resources, including whether these resources would still be visible from other locations.

As mentioned previously, the area surrounding airport property is characterized by agricultural and industrial land uses, with portions of residential uses scattered throughout, especially north of airport property. There are residences in the vicinity of the proposed development, including two on-airport residences which are within the project area (see **Figure 11**). There is one residence north of State Route 847 and directly adjacent to the project site, 390 Valley Church Road, which is situated so that its viewshed includes the Aviation Technology Park site (see **Figure 12**). There is also a residence located at 321 Valley Church Road (see **Figure 11**). Although the house faces west, away from the airport property, hangars are visible behind the house (see **Figure 13**). The residences in the vicinity of the project area can view the site at varying degrees; the residences with the most direct views are 390 Valley Church Road, 321 Valley Church Road, and the two on-airport residences within the project limits (see Figure 14

and Figure 15). The other nearby residences do not have direct views of the site due to topography, brush or other houses which obstruct the view, but were invited to the property owner briefing due to their physical proximity to the site.

The on-airport residences are leased by the Commission on a month-to-month basis with the same tenants in place for the past several years. The residence located at 390 Valley Church Road is separated from the airport property by Valley Church Road/State Route 847. Coordination with DHR conducted during this EA concurred with the determination that no historic properties would be affected by the proposed undertaking (see **Section 6.8**).

6.13.1 Light Emissions

Residential uses are considered to be light-sensitive land uses. As an operating, commercial service airport, SHD is a fully lighted facility providing 24-hour per day services. The residences in the vicinity of the airport are already subject to the existing lights associated with the operation of the airport. Lighting would be installed for the proposed automobile parking lots and hangars in the Aviation Technology Park. During the design phase and in accordance with Section 25-60, *Outdoor Lighting*, of the Augusta County zoning ordinance, the photometric layout prepared for each project would take into account light-sensitive land uses such as residences and implement mitigation measures such as angling or installation of full cutoff luminaires, as appropriate.

While visual effects and annoyance from light emissions are subjective and therefore difficult to assess, it is possible that lights from the proposed development in the Aviation Technology Park or from automobiles accessing or exiting airport property from the entrance off of State Route 847 could impact the adjacent residences. The existing visual character of the residence's surroundings includes a state route and an operating, commercial service airport with recently constructed hangars, and the existing aprons are currently in use by operating aircraft. Automobiles have been accessing the airfield from the Route 847 entrance for over 10 years, and operating aircraft equipped with exterior lights are already present in the residences viewsheds. Based on previous, similar projects, approximately 12 automobile parking spaces are proposed to serve each hangar; therefore, approximately 48 additional morning and evening trips can be anticipated. Additional trips may be experienced during the day for lunch, deliveries, and other daily activities. However, the light associated with vehicle trips is not anticipated to significantly increase existing levels around these parcels, which are located adjacent to an operating, commercial service airport which is lighted and a public road.

The Commission has plans to construct a dedicated automobile entrance to the site from Airport Road, as is depicted in **Figure 2,** which would remove much of the hangar traffic from State Route 847 and the adjacent residence at 390 Valley Church Road. Depending on several factors including funding availability, construction of the new access road is proposed for summer 2024. This would remove the traffic from State Route 847, avoiding potential lighting impacts to this adjacent residence. The entrance road would not be lighted.

6.13.2 Visual Resources and Character

The existing visual character of the residences in the vicinity of the airport includes state routes, agricultural activities, light industrial use, and an operating, commercial service airport. While the project would take place within the boundaries of dedicated airport property and is in line with the

character of the existing airport development and the land use assigned by Augusta County, the residences in the vicinity of the project area which have a view of this portion of the airport today would be able to see the new development. The Airport Commission has imposed an architectural standard on itself and its tenants to ensure that the development of the airport is consistent and in line with the existing character of the airport. For example, the standards recommend that buildings with metal siding (such as hangars) be painted grey; hangar doors be painted grey; metal roofing be blue in color, and signage be blue, white, or grey.

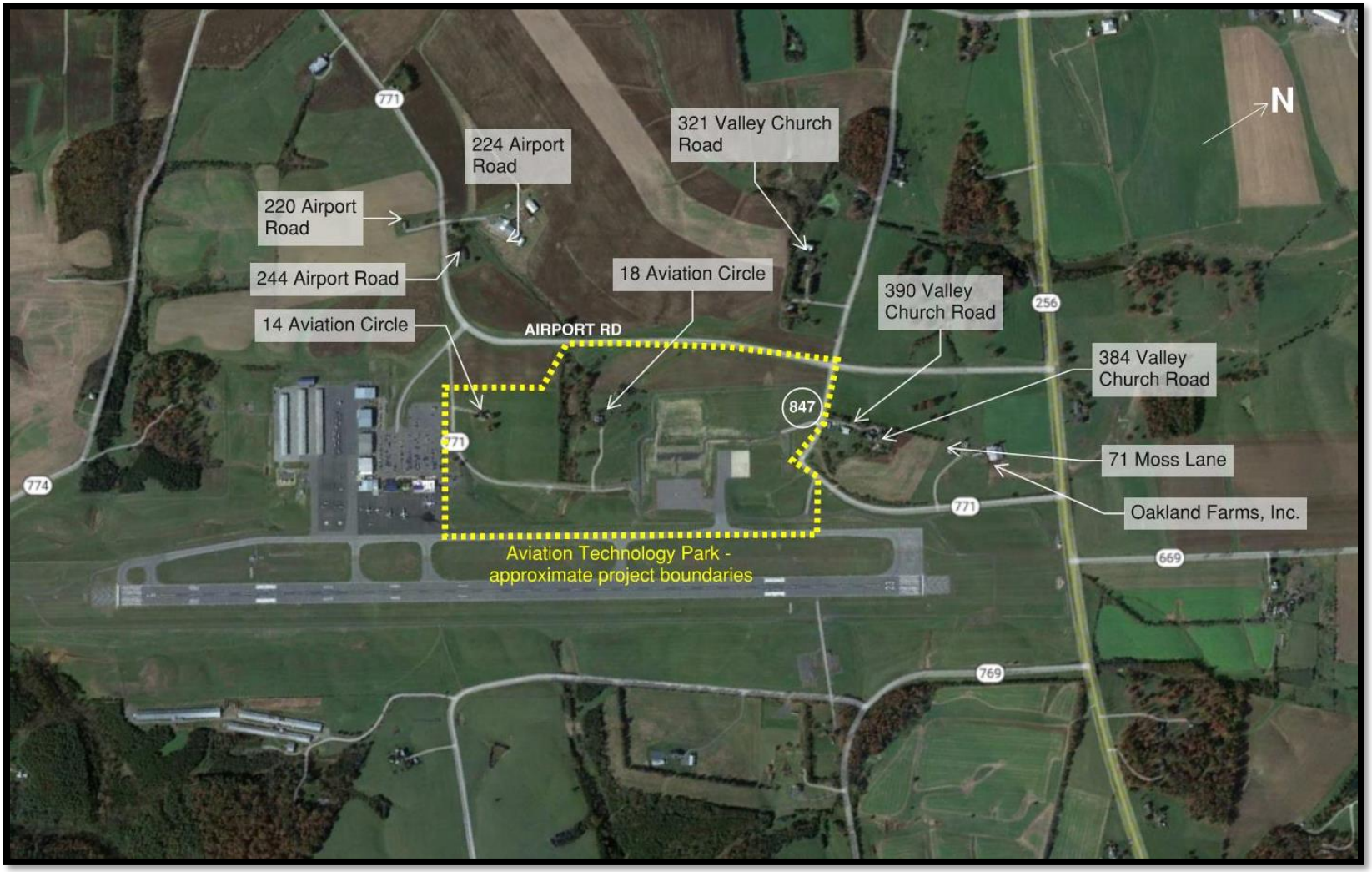
An invitation-only briefing for adjacent residents was held on August 31, 2023 to inform residents of the Commission's proposed development plan and to provide a forum for questions and comments. The Commission has also actively communicated with both on-airport tenants (including both tenants attending the August 31, 2023 property owner briefing session) and occupants of both residences are aware of the proposed construction.

Approximately 10 invitees attended the briefing. The meeting was generally cordial with residences able to receive information about the project directly from Airport Management. One resident noted that the hangars are not aesthetically pleasing and suggested that murals be painted on the hangars; however, this would be contrary to the airport's self-imposed architectural standards.

- **No Action**: As it does not involve construction/development, the No Action alternative would not cause visual impacts.

- **Build/Proposed Action**: The construction of the Proposed Action would take place on an operating airfield with existing lighting and is in line with surrounding on-airport development and the visual character of an operating airport. The viewsheds of the adjacent residences already includes an operating airport with lighting and operating aircraft. *Given the existing, industrial visual character of the location and the proximity of the residences to an operating, commercial service airport, the additional visual impacts from the proposed development, including the associated, temporary increase in vehicle trips until the dedicated access road is constructed, are not anticipated to be significant.*

Figure 11: Residences in the Vicinity of the Project Area



Source: Google Earth, Delta Airport Consultants, Inc.

Figure 12: View from 390 Valley Church Road, Facing Southwest

Source: Google Earth

Figure 13: View of Airport Hangars Behind 321 Valley Church Road, Facing South

Source: Delta Airport Consultants, Inc.

Figure 14: Proximity of Proposed Development to On-Airport Rental (18 Aviation Circle), Facing Southwest from Airport Road

Source: Delta Airport Consultants, Inc.

Figure 15: View of Hangars in Aviation Technology Park from On-Airport Rental (14 Aviation Circle), Facing East

Source: Delta Airport Consultants, Inc.

6.14 Water Resources

6.14.1 Wetlands

FAA Order 1050.1F establishes the significance thresholds for wetlands impacts. A significant impact would occur when the action would:

- Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;
- Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;
- Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety, or welfare;
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;
- Promote development of secondary activities or services that would cause the circumstances listed above to occur; or
- Be inconsistent with applicable state wetland strategies.

A wetlands/stream delineation was prepared in 2019 during a previous environmental effort and a JD was obtained from the USACE in November 2019. The data from this wetlands delineation was used to approximate the anticipated wetland and stream impacts from the 2024 Proposed Action. This figure is to be refined when the projects are designed.

A preliminary engineering analysis conducted as part of this EA effort estimates that the 2024 Proposed Action would impact approximately two acres of wetlands and approximately 530 linear feet (LF) of delineated stream (see **Table 7** and Attachment G). These are conservative estimates which are likely to be reduced as the design for individual projects is refined.

Table 7: Approximate Wetland and Stream Impacts for the Proposed Action

Development Item	Wetland Fill (Acres)	Stream Impacts (LF)
1. Hangars H, I, T, U	0.58	162
2. Associated Aprons and Taxilanes	0.24	0
3. Access Road East of Hangar V	0	0
4. Fuel Farm Access Road; Rehabilitation of Old Airport Road	0.21	132
5. New Connector to Taxiway 'A'	0.53	102
6. Fuel Truck Parking	0	0
7. New Perimeter Fence	0	0
8. Automobile Parking	0	0
9. Commercial Apron Extension	0	0
10. Realigned Fuel Service Road	0.42	103
11. Temporary Fence Alignment	0.06	30
Total	**2.04 AC**	**529 LF**

Source: Delta Airport Consultants, Inc.

A pre-application meeting was held virtually with the USACE and the DEQ in October 2023, in anticipation of a permit application for wetlands impacts during the design phase. The discussion recap is included in Attachment F. During the meeting, USACE noted that although the 2019 J.D. is technically valid through 2024, due to recent changes in the federal definition of a Water of the United States[3], a new wetlands delineation and JD will be required. This would be undertaken during the design phase.

Based on the amount of wetland impact conservatively estimated by the Preliminary Engineering Report (PER), it is assumed that the identified wetlands would remain jurisdictional and would require an individual permit as part of the Virginia Water Protection (VWP) Joint Permitting Application Process with the Commonwealth. If the USACE determines that certain wetlands within the project area are not federally jurisdictional, they would be regulated by the Commonwealth as part of the VMP permit.

Wetland impacts would most likely be mitigated through the purchase of wetland credits from a certified wetland bank. The wetlands to be impacted are Palustrine Emergent (PEM) which are typically mitigated at a 1:1 ratio, meaning approximately two credits would be needed. **Table 8** lists the available banks that service the watershed of the study area, with the number of credits available at each bank as of October 2023:

Table 8: Available Mitigation Bank Credits

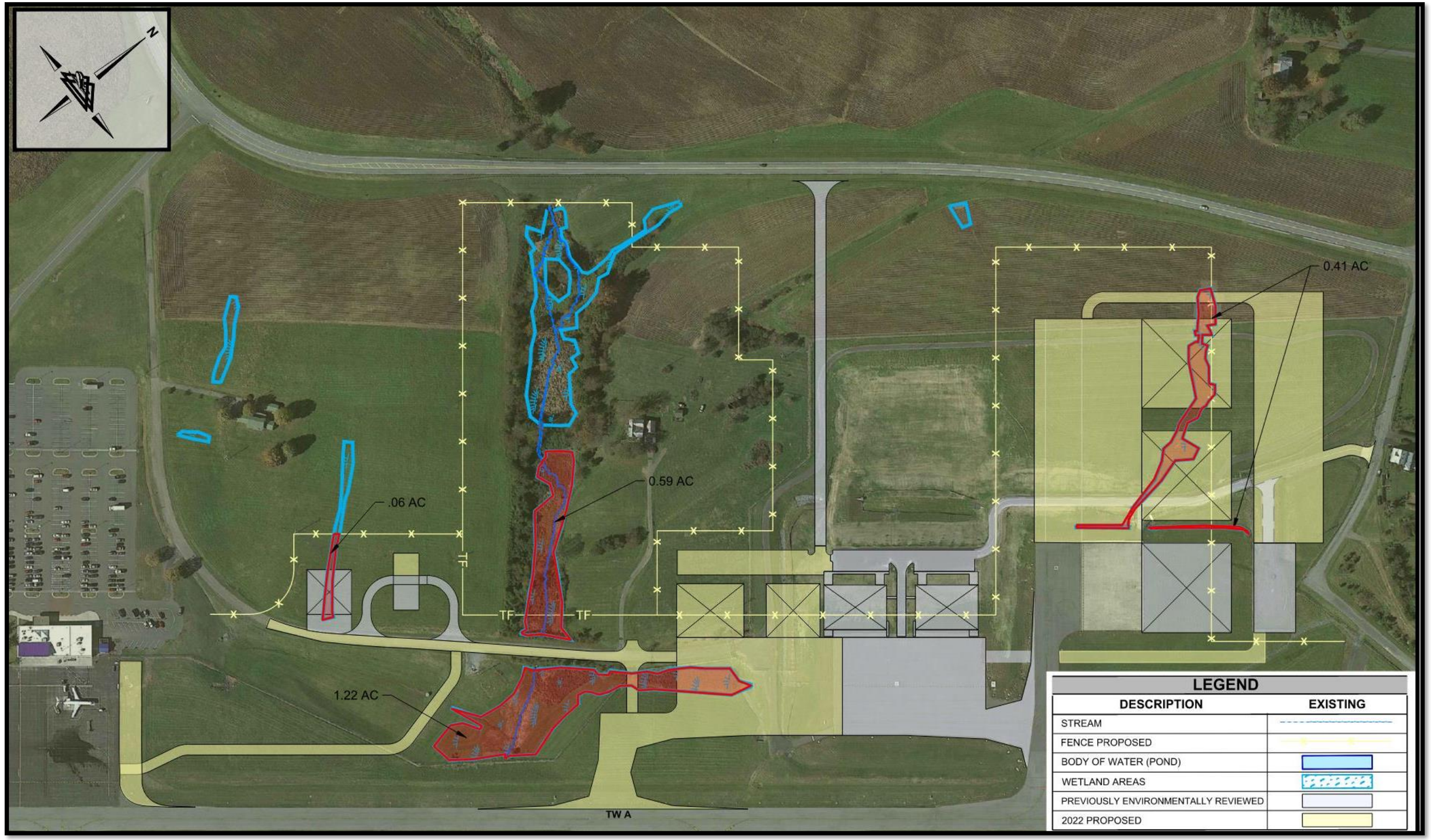
Bank	Available Wetland Credits	Available Stream Credits
Shenandoah	27.113	2,975
Virginia Aquatic Resource Trust Fund (VARTF)	n/a	440

Source: Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS), October 2023

- **No Action**: As it does not involve construction, the No Action alternative would not impact wetlands.
- **Build/Proposed Action**: Based on the PER effort, the 2024 Proposed Action would impact approximately two acres of wetlands and approximately 529 LF of streams. Impacts would be mitigated and there are currently sufficient mitigation credits in the appropriate watershed. In consideration of these factors and with the commitment to secure the appropriate state and federal permits before construction, *no significant, adverse impacts to wetlands that cannot be mitigated are anticipated as a result of the Proposed Actions.*

[3] In August 2023, the US EPA and the USACE jointly issued a Revised Definition of 'Waters of the United States' to better comport with a May 2023 U.S. Supreme Court decision in the case of Sackett v. Environmental Protection Agency. Among other changes, the 'Sackett' decision restricts which wetlands and other surface waters the federal government regulates. The rule became effective September 8, 2023.

Figure 16: Estimated Wetland and Stream Impacts, 2024 Proposed Action



Source: Delta Airport Consultants, Inc..

6.14.2 Floodplains

FAA Order 1050.1F establishes the significance thresholds for floodplain impacts to be if the Proposed Action "would cause notable adverse impacts on natural and beneficial floodplain values."

The Flood Insurance Map for Augusta County (Community Panel 51055C0194D, effective 09/28/2007) documents that there are no floodplains on airport property, or within the approximate extents of the Aviation Technology Park depicted in yellow in

Figure 10. *No impacts to floodplains are anticipated as a result of either the No Action or the Build/Proposed Action alternatives.*

6.14.3 Surface Waters

FAA Order 1050.1F establishes the significance thresholds for surface water impacts, including whether the action would:

- Exceed water quality standards established by Federal, state, local, and tribal regulatory agencies; or
- Contaminate public drinking water supply such that public health may be adversely affected.

Factors to consider with the Proposed Action include:

- Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values;
- Adversely affect surface waters such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or
- Present difficulties based on water quality impacts when obtaining a permit or authorization.

According to the PER (see Attachment G), the project would add approximately 12 acres of impervious surface to fully develop the 2024 Proposed Action. Augusta County Code, Chapter 9, Article I and Chapter 870, Part II B of the Virginia Administrative Code require a stormwater management plan for all new construction, which would be prepared and coordinated during the design and permitting phase. A Virginia Pollutant Discharge Elimination System (VPDES) VAR-10 permit would be secured before construction begins. The preparation of a project-specific Stormwater Pollution and Prevention Plan (SWPPP) and erosion and sediment control plan is part of the VAR-10 permit application.

A stormwater analysis was conducted during the PER effort to review existing stormwater drainage features and to determine the location and rough size of future catchment areas to ensure sufficient space is reserved for required stormwater controls. One future basin is proposed to serve the proposed development within the Aviation Technology Park (see **Figure 17**). In addition, due to the expected increase in runoff volumes to existing basin infrastructure, modifications will be required to the existing basins to meet storage requirements for the proposed development.

The project would impact an estimated 529 LF of stream, which are typically mitigated at a 1:1 ratio. Available stream credits at the time of document preparation are outlined in Table 8.

Through the implementation of BMPs such as proper erosion control and reseeding, adherence to the guidelines set forth in the National Pollution Discharge Elimination System (NPDES) program during construction, and the development and/or expansion of new or existing stormwater facilities (e.g., basins and culverts), and compliance with permit requirements, significant impacts to surface waters are not anticipated as a result of the Proposed Action.

- **No Action**: As it does not involve construction, the No Action alternative would not impact surface waters.
- **Build/Proposed Action**: In consideration of the above mitigation measures, and of the proper mitigation for the approximately 529 LF of impacted stream to be finalized during state and federal permitting processes during the design phase and which is currently assumed to be through the purchase of stream credits from a certified bank, *no significant impacts to surface waters are anticipated.*

6.14.4 Groundwater

FAA Order 1050.1F establishes the significance thresholds for groundwater impacts, including whether the action would:

- Exceed groundwater quality standards established by Federal, state, local, and tribal regulatory agencies; or
- Contaminate an aquifer used for public water supply such that public health may be impacted.

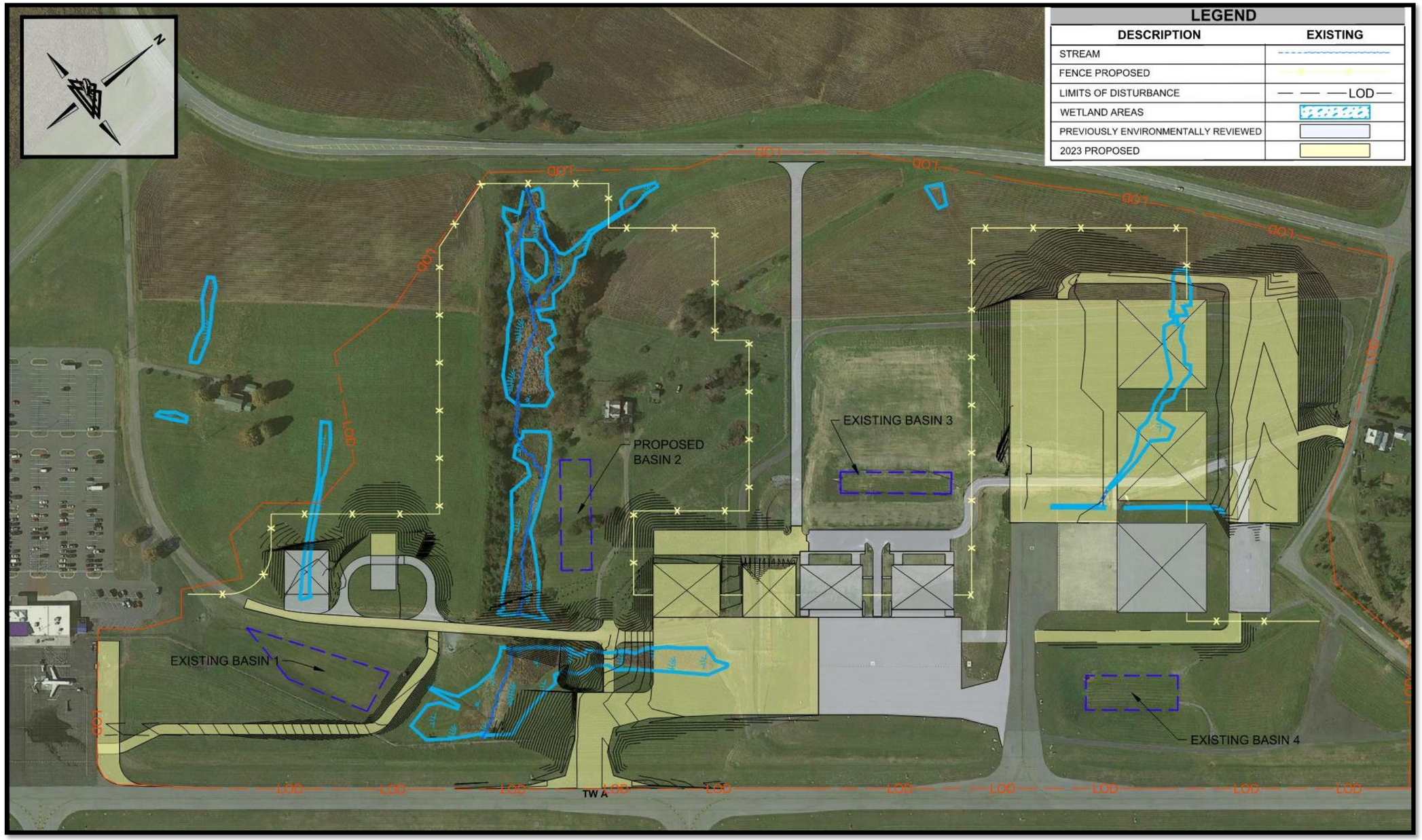
Factors to consider with the Proposed Action include:

- Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values;
- Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or
- Present difficulties based on water quality impacts when obtaining a permit or authorization.

As mentioned previously, the 2024 Proposed Action would increase the impervious surface within the Aviation Technology Park by approximately 12 acres. However, the stormwater analysis conducted during the PER effort would ensure that stormwater is captured within basins that will eventually drain into the water table.

- **No Action**: As it does not involve construction, the No Action alternative would not impact groundwater.
- **Build/Proposed Action**: The BMP mitigation measures referenced in Section 6.14.3 and the additional of property sized stormwater basins, plus the lack of sole source aquifers in the project area, suggest that the project would not create *significant impacts to groundwater.*

Figure 17: Proposed New Stormwater Basin in Aviation Technology Park



Source: Delta Airport Consultants, Inc.

6.14.5 Wild and Scenic Rivers

The FAA has not established a significance threshold for Wild and Scenic Rivers.

There are no federally designated Wild and Scenic rivers in Virginia nor state-designated rivers in the vicinity of the project area. *No adverse impacts to Wild and Scenic rivers are anticipated as a result of the No Action alternative or of the 2024 Build/Proposed Action alternative.*

6.15 Cumulative Impacts

Cumulative Impacts are those impacts which result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable actions. Generally projects that have taken place within the past three years, or which are proposed in the next five years, are considered in this section. The most notable environmental impact anticipated as a result of the 2024 Proposed Action are the impacts to wetlands and streams described in Section 6.14.1.

As mentioned previously, an EA was completed in 2020 for "Phase One Development" projects, which was then Re-evaluated in 2021.

The 2020 EA/FONSI noted that the projects within the "Phase One Development" program had the potential to impact a total of one acre of wetlands (rounded from 0.89 acres) and 1,802 LF of stream channels. The projects reviewed in this 2024 EA have the potential to impact an additional 2.04± acres of wetlands and approximately 529 LF of streams.

Recently completed projects in the Aviation Technology Park area include the construction of Hangars V, E, and F, which received certificates of occupancy in summer 2023. These projects were environmentally reviewed under the 2021 EA Re-evaluation.

Upcoming projects at SHD include the following. As an operating facility, SHD also regularly undergoes administrative and maintenance-related projects which are not listed.

2024: Aviation Technology Park Access Road – Construction
Replace Fuel Tanks – Construction
Aviation Technology Park Water and Sewer – Construction
Phase One Land Acquisition – Services and Purchases (within RPZs and some airspace surfaces)

2025: Aircraft Rescue and Fire-Fighting (ARFF) Building Rehabilitation – Design
General Aviation Terminal Building Rehabilitation – Design

2026: Expand Air Carrier Apron – Design*
Construct Fuel Truck Access Road – Design*
General Aviation Terminal Building Rehabilitation – Construction

2027: Obstruction Removal – Design
Expand Air Carrier Apron – Construction*
Construct Fuel Truck Access Road – Construction*
Replace Existing Perimeter Fence/Install Wildlife Fence – Construction*

2028: Obstruction Removal – Construction
ARFF Building Rehabilitation – Construction
Rehabilitate General Aviation Apron – Design
Construct Hangars H and I – Design*

The projects marked with an asterisk are environmentally reviewed in this document. Projects which have not already been reviewed under NEPA must be reviewed and a finding issued by FAA before construction can begin.

Considering recent past projects and proposed projects at SHD, the projects are not expected to have the capacity for environmental impacts that were/are not able to be mitigated, and that the collective group of projects is not anticipated to result in the disruption to natural habitat or the surrounding environment.

7. Mitigation and Permits

7.1 Cultural Resources

The lead federal agency shall follow the procedures in 36 CFR 800.13[b] for post-review discoveries if potential historic properties are discovered or if unanticipated effects on known historic properties are found after the agency has completed Section 106 consultation for the undertaking.

7.2 Human Remains

If human remains, funerary objects, sacred ceremonial objects or objects of national or tribal patrimony are discovered on state, county, municipal, or private lands, either through archaeological excavation or during construction of the Proposed Action, and no Burial Agreement is in place the Airport Sponsor shall require the person in charge to immediately cease within a 100-foot radius of the discovery, take steps to protect the discovery, and immediatley notify local police, coroner, and FAA. The FAA will notify SHPO/THPO and Tribes that have expressed an interest in this area if the remains are determined to be archaeological in nature.

7.3 Native American Tribes

Letters were mailed by FAA to the three Native American tribes which have expressed an interest in Augusta County; one response was received (see Attachment D). Should additional responses be received before construction begins, every effort is to be made to accommodate the tribes' requests.

7.4 Visual Effects

During the design phase and in accordance with Section 25-60, *Outdoor Lighting*, of the Augusta County zoning ordinance, the photometric layout prepared for each project would take into account light-sensitive land uses such as residences and implement mitigation measures such as angling or installation of full cutoff luminaires, as appropriate.

7.5 Biological Resources

As described in Section 6.2, the online project review conducted on the USFWS IPaC website identified three federally protected mammals which may occur on or near the project area: the Endangered, Indiana Bat (*Myotis sodalis)*, the Endangered, Northern Long-eared Bat (NLEB), (*Myotis septentrionalis)*, and the Proposed Endangered Tricolored Bat (*Perimyotis subflavus*). The Monarch Butterfly, a Candidate species, and 10 migratory birds, including the Bald Eagle, were also identified by the IPaC database.

Based on established guidelines, a time of year restriction on clearing will be implemented to avoid potential impacts to the Indiana Bat (no tree clearing during the active season of April 1 through November 14). The agency did not take issue with the "May Affect, Not Likely to Adversely Affect" (NLAA) letter regarding potential impacts to the NLEB, submitted in December 2023. Note that the USFWS has advised that its guidance regarding NLEB will be revised on April 1, 2024, which would require renewed coordination with the agency and potentially different mitigation measures.

7.6 Wetlands and Streams

As noted previously, the Proposed Action could impact approximately two acres of wetlands and approximately 529 LF of stream. It is anticipated that mitigation of wetland and stream impacts would be accomplished through the purchase of wetland and stream credits- **Table 8** details the credits available in the appropriate watershed as of fall 2023.

In addition to purchasing wetland and stream credits, impacts to wetlands and streams are to be minimized by utilizing BMPs including silt fencing, sediment traps and detention basins. Mitigation for impacts is to be confirmed during final design.

The acquisition of permits for the Proposed Action is to occur prior to construction.

8. List of Preparers

Shenandoah Valley Regional Airport
Lisa Botkin, Airport Director

Delta Airport Consultants, Inc.
Mary Ashburn Pearson, AICP: Responsible for overall document preparation
Roy Lewis, AICP: Responsible for project oversight
Delta Airport Consultants, Inc.: Technical Support

9. List of Agencies and Persons Consulted, and Agency Review Response

A "scoping memo" was distributed to federal, state and local review agencies during preparation of the 2024 EA to inform agencies of the project additions and to invite agency comment (see Attachment I).

Coordination was undertaken with the following review agencies during preparation of the EA, either as part of the scoping memo or as separate, individual coordination efforts:

FAA
DOAV
DHR
USFWS
USACE
DEQ
DWR
Headwaters Soil and Water Conservation District (SWCD)
Augusta County Department of Community Development
Central Shenandoah Planning District Commission (CSPDC)

The draft document is to be made available to the public and various review agencies via the Virginia DEQ State Clearinghouse. The draft document is also to be made available at the airport general aviation terminal building and on the airport's website for a 30-day public review and comment period in both hard copy and digital format. A hard copy is also to be made available at the local public library, Weyers Cave location. Agency or public comments received are to be incorporated into the document as appropriate before finalization and included in Attachment M. Upon issuance of a finding by FAA, the final document and finding are to be made available for a 30-day public review period.

Documentation of the pre-application meeting with USACE and DEQ is included in Attachment F. Documentation of the invitation-only property owner briefing is included as Attachment L. The property owners invited to the meeting correspond to the residences identified in Figure 11.

Attachment A

2000 FONSI

U.S. Department
of Transportation
Federal Aviation
Administration

1 Aviation Plaza
Jamaica, New York 11434-4809

September 15, 2000

Mr. Gregory Campbell
Shenandoah Valley Regional Airport Commission
PO Box 125
Weyers Cave, VA 24486

Re: Shenandoah Valley Regional Airport
RSA Construction, State Route 771 Relocation
Environmental Determination

Dear Mr. Campbell:

The Federal Aviation Administration (FAA) has recently approved the Environmental Assessment and Finding of No Significant Impact (EA/FONSI) for the Shenandoah Valley Regional Airport Runway Safety Area Construction and State Route 771 Relocation, Weyers Cave, Virginia. A copy of the FONSI signed by the Approving Official and the EA signature page signed by the Responsible FAA Official are attached.

This Federal environmental approval is a determination by the Approving Official that the requirements imposed by applicable environmental statutes and regulations have been satisfied by a FONSI. However, it is not an approval of the Federal action approving the funding of eligible items for this project, nor approval of the air space review, nor approval of the revision to the Airport Layout Plan (ALP) to show these projects. Rather, such decisions remain with the FAA Washington Airports District Office (WADO) Manager, Mr. Terry Page.

In compliance with Council on Environmental Quality (CEQ) regulations 1501.4(e)(1) and 1506.6, we require that your office make the final EA with Signature Page and FONSI available to the affected public, and announce such availability through appropriate media in the area. The announcement shall indicate the availability of the document for examination and note the appropriate location of general public access where the document may be found (i.e., your office, local libraries, public buildings, etc.). We request that a copy of such announcement be sent to the WADO when it is issued.

Finally, your attention is directed to the five (5) mitigating measures that were made a condition of approval of the FONSI. Please be reminded that these measures must be taken by the airport sponsor in order to meet the terms of the EA/FONSI.

The process of making these environmental determinations is that of a partnership between yourself, as airport sponsor, and the other contributing parties, both public and private. We thank you for your effort and cooperation.

Please contact our office if you have any questions.

Sincerely,

Thomas Felix, Manager
Planning and Programming Branch
Airports Division

Enclosures (2)

cc: Terry Page, WADO (w/attach)
File (3)

ENVIRONMENTAL ASSESSMENT

FOR

CONSTRUCTION OF RUNWAY SAFETY AREA
AND
RELOCATED STATE ROUTE 771

AT

SHENANDOAH VALLEY REGIONAL AIRPORT

WEYERS CAVE, VIRGINIA

PREPARED FOR THE

SHENANDOAH VALLEY REGIONAL AIRPORT COMMISSION

MAY 2000

This environmental assessment becomes a Federal document when evaluated and signed by the responsible Federal Aviation Administration (FAA) official

Responsible Federal Aviation Administration Official — Date: Sept 15, 2000

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT

LOCATION

Staunton/Shenandoah Valley Regional Airport (SHD)
Weyers Cave, Virginia

INTRODUCTION

This Finding of No Significant Impact (FONSI) sets forth the Federal Aviation Administration's (FAA) consideration of environmental and other factors for Airport Layout Plan (ALP) approval and federal financial participation of eligible projects associated with capital development projects, including runway safety area construction and relocation of State Route 771, at Staunton Airport (SHD).

PROPOSED FEDERAL ACTION

The proposed federal action is the Airport Layout Plan (ALP) approval and federal funding (for eligible projects) for widening and extending the runway safety area for Runway 5-23; the relocation of State Route 771; acquisition of 42 acres of property; construction of an air cargo complex; and construction of an apron area and vehicular parking spaces to support corporate hangar activities at SHD.

PURPOSE AND NEED

The runway safety area expansion is needed so that the SHD safety area meets FAA standards; it currently holds an FAA-approved modification to standards for width and length. Additional apron area and parking spaces are needed to support corporate hangar activities at SHD, and development of a new air cargo complex is part of the capital improvement and economic development plans for SHD. State Route 771 must be relocated and the property acquired for the construction of the cargo complex.

DISCUSSION

The attached Environmental Assessment (EA) and its Appendices address the effects of the *proposed action* on the human and natural environment, and are made a part of this Finding. Exhibit 2-1 of the EA depicts the proposed development projects and their relationship to the surrounding area. The following impact analysis highlights the more thorough analyses contained in the EA . Final revisions were included in the final EA on July 28, 2000.

IMPACT ANALYSIS

Alternatives

A total of nine (9) alternatives were considered for this project, six (6) of which were eliminated from further consideration because they were deemed infeasible, i.e., did not meet the purpose and need for the project or would cause adverse environmental impacts. The three alternatives evaluated in detail included Alternative 1: No Action alternative; Alternative 2: the Proposed Action, described above; and Alternative 3: construction of a standard Runway Safety Area (RSA) at the end of Runway 5, a 400 foot displacement of the Runway 5 threshold, extension of

Runway 23 and its RSA, and relocation of State Routes 256 and 771. Alternative 2, the Proposed Action alternative, was selected by the sponsor because it would both achieve safety area standards for the entire airport as well as allow future airport development to occur in line with proposed plans without adversely impacting environmental resources.

Noise

The proposed action will not change the number of forecast aircraft operations or types of aircraft using the airport that were evaluated in the 1999 ALP update. Information on this evaluation is contained in Appendix B of the EA. The cargo operator DHL has already added two aircraft operations per day, and once the project is constructed and the cargo complex relocated, approximately four to six additional trucks will use the local highway per day. These additions are minimal, and no significant noise impacts, either from aircraft or from surface traffic, are expected as a result of the proposed action.

Induced Socioeconomic Impacts

The proposed action would have a minor socioeconomic impact in the project area. Each of the proposed actions has the potential to create construction-related jobs. Introduction of cargo activity by DHL will increase employment in the area, but the effects would be minimal in terms of population shifts and requirements for additional services. In light of this, it can be concluded that the proposed project would have no adverse, and insignificant beneficial, socioeconomic impacts in the area.

Water Quality

Construction of the proposed project may affect surface water quality during construction activities. In order to minimize potential impacts to water quality, erosion and sediment control measures shall be in place during construction, in accordance with the Virginia Erosion and Sediment Control Handbook. At a minimum, these measures shall include placement of a silt fence, sediment traps, sediment basins and a slope stabilization mat to minimize prevent erosion and prevent sediment from leaving the site. After construction of the embankments, a vegetative ground cover must be established to prevent erosion of these areas. The sediment control structures will remain in place until all upstream areas are stabilized. This is included in this Finding as a mitigating measure.

Construction of the Runway 23 end may also affect surface water quality through the creation of additional impervious surfaces. To minimize the effects of this action, storm water runoff management practices should be modified, in accordance with FAA Advisory Circular 150/5320-5B Airport Drainage, and AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports. This is included in this Finding as a mitigating measure. Additionally, approval is required from Augusta County on proposed storm water management practices prior to construction. This is also included in this Finding as a mitigating measure.

Wetlands

Approximately 1.63 acres of wetlands on the airport will be impacts by the RSA construction. A jurisdictional delineation for the on-airport wetlands was verified by the US Army Corps of Engineers (ACE) and the Virginia Department of Environmental Quality (VADEQ), and is

contained in Appendix F of the EA. An individual 401 permit is required from the US Army Corps of Engineers (ACE) for the RSA, and a wetlands mitigation plan must be prepared and approved by the ACE. However, the permit must be obtained from the ACE and the final plan must be coordinated with FAA prior to construction. This is contained in this Finding as a mitigation measure.

Approximately 5 acres of off-airport wetlands will be impacted by the road relocation. This site is awaiting final jurisdictional delineation approval from the ACE and must be received prior to construction. This is contained in this Finding as a mitigating measure.

Based on the type, quality and function of the wetlands to be filled, and in light of the requirement for a mitigation plan approval from the ACE, it is not expected that significant adverse impacts to wetlands would result from the implementation of the proposed project.

Farmlands

Construction of this project will impact approximately 4.2 acres of prime agricultural soils. Although this project will involve the conversion of this land to non-agricultural uses, the land has been zoned by the County for airport use in its Land Use Plan, has been owned by the airport for many years, and is not currently in agricultural use. With this in mind, in its April 13, 2000 letter to Delta Consultants, the Natural Resources Conservation Service encouraged the sponsor to select the alternative that minimized conversion of prime farmland. Through the sponsor's selection of Alternative 2, this request has been met. Accordingly, no significant adverse impacts to farmlands are expected as a result of this project.

Construction Impacts

Construction of the proposed actions is not expected to cause any significant long-term environmental impacts, although limited short-term impacts resulting from construction operations, such as equipment noise, may occur. However, these impacts will be controlled and limited by requiring the contractor to comply with the mitigation measures set forth in the FAA's Advisory Circular 150/5370-10A, Item P-156, relative to temporary construction impacts. This is included in this Finding as a mitigation measure. Potential construction-related impacts to water quality, as discussed above in the Water Quality section of this Finding, will be minimized through implementation of the mitigation measures specified.

Other Impact Categories

The proposed action has been reviewed and found not to create any significant impacts in the following areas: Air Quality, Compatible Land Use, Social Impacts, Section 4(f) Lands, Cultural Resources, Biotic Communities, Endangered Species, Floodplains, Coastal Zone, Coastal Barriers, Wild and Scenic Rivers, Energy Supply and Natural Resources, Environmental Justice, Light Emissions, and Cumulative Impacts.

Mitigating Measures

The following measures are conditions of this Finding and will become conditions of any federal grant for these projects:

1. Construction contract specifications developed for the projects shall contain the provisions of FAA Advisory Circular 150/5370-10A, "Standards for Specifying Construction of Airports," Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control; and Advisory Circular 150/5320-5B, "Airport Drainage".

2. Erosion and sediment control measures shall be in place during construction, in accordance with the Virginia Erosion and Sediment Control Handbook. At a minimum, these measures shall include placement of a silt fence, sediment traps, sediment basins and a slope stabilization mat to minimize prevent erosion and prevent sediment from leaving the site. After construction of the embankments, a vegetative ground cover must be established to prevent erosion of these areas. The sediment control structures will remain in place until all upstream areas are stabilized.

3. Storm water runoff management modifications should be conducted in accordance with FAA Advisory Circular 150/5320-5B Airport Drainage, and AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports. Approval from Augusta County on proposed storm water management practices must be received prior to construction.

4. An individual 401 permit must be issued by the US Army Corps of Engineers (ACE) for the 1.63 acres of wetlands impacted by the RSA construction, and a wetlands mitigation plan must be prepared and approved by the ACE, prior to construction. The final plan must be coordinated with FAA prior to construction.

5. Final jurisdictional delineation approval from the ACE for the .5 acres of off-airport wetlands to be filled during the road relocation must be received prior to construction.

COORDINATION WITH INVOLVED AGENCIES

Extensive effort was made throughout the preparation of the EA to coordinate with, and to solicit and respond to comments from, federal, state, and local agencies regarding the proposed projects. Copies of correspondence related to this effort are contained in Appendix C of the EA. All comments have been responded to adequately.

CONCLUSION AND APPROVAL:

After careful and thorough consideration of the facts contained herein, the undersigned finds the federal action is consistent with existing national environmental policies and objectives as set forth in section 101 (a) of the National Environmental Policy Act of 1969 (NEPA) and it will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to section 102(2)(c) of NEPA.

Recommended: Terry J. Page, Manager, Washington ADO — Date: 9/15/00

Approved: Robert Mendez, Manager, Airports Division — Date: 9/15/00

Disapproved: Robert Mendez, Manager, Airports Division — Date: _____

2008 REEVALUATION

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WRITTEN RE-EVALUATION

Shenandoah Valley Regional Airport
Weyers Cave, Virginia

Hangar, Apron and Cargo Facility Construction

1. **Type of Action.** This type of action is a Written Re-evaluation of the Environmental Assessment as a result of the construction of the hangar, apron and cargo facility at Shenandoah Valley Regional Airport (SHD), Weyers Cave, Virginia. This action is required in accordance with the approval of the Airport Layout Plan (ALP) and federal financial assistance in funding the development. Approval of the ALP is authorized by the Airport and Airway Improvement Act of 1982, as amended, (Public Laws 97-248 and 100-223).

   An Environmental Assessment (EA) was prepared in 2000 for the following projects; construction of two open span hangars and associated apron, as well as a cargo area including a building and associated apron and parking. The FAA issued a Finding of No Significant Impact (FONSI) on September 15, 2000.

2. **Proposed Project.** The layout of the open span hangars and cargo area has been redesigned. The construction of the two open span hangars will require demolition of approximately 700 feet of the Old Route 771. The road embankment will be removed and replaced with a service road, parking lot and drainage channels. The old State Route 771 road is currently not in service in this section.

3. **Environmental Impacts and Possible Adverse Effects.** Pursuant to 1401(c)(2) of FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, the Shenandoah Valley Regional Airport Commission provided the FAA with updated environmental information on August 25, 2008, which includes impacts from the hangar, apron and cargo facility. A review of the environmental information indicated the proposed project would not result in new significant impacts.

4. **Inter-Agency Coordination.** In accordance with the Airport and Airway Improvement Act of 1982, as amended, it was determined that no further coordination with the U.S. Department of Interior or the U.S. Environmental Protection Agency under Section 509 (b)(5) of the Airport and Airway Safety and Capacity Expansion Act of 1987 was necessary. (Section 509 (b)(5) supplants Section 16 (c)(4) of the 1982 Act).

5. **Reasons for the Determination that the Proposed Action will have No Significant Impacts.** The environmental information provided by the Shenandoah Valley Regional Airport Commission referenced herein examines each potential impact category. The proposed hangar, apron and cargo facility would not involve any impacts which would exceed the threshold of significance as defined in FAA Order 5050.4B. For the purpose of this Written Re-evaluation, FAA has determined that the changes to the proposed project will not result in significant or new environmental impacts.

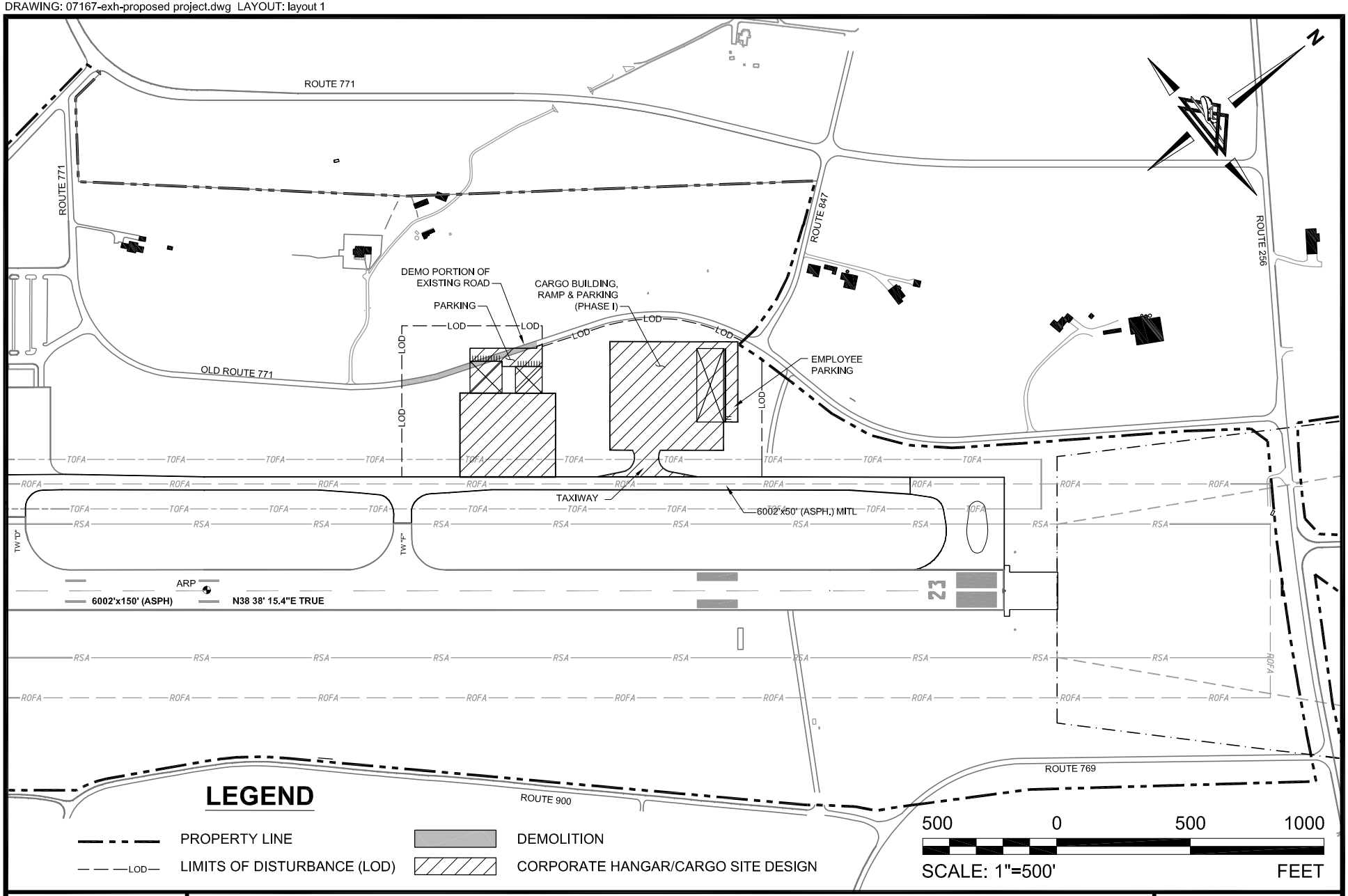
6. Written Reevaluation of the Record of Decision.

I have carefully and thoroughly considered the facts contained in the attached environmental information. Based on that information I find that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in section 101(a) of the National Environmental Policy Act of 1969 (NEPA). I also find the proposed Federal Action will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to section 102 (2)(C) of NEPA.

Jennifer Mendelsohn
Environmental Specialist

9/9/08
Date

DRAWING: 07167-exh-proposed project.dwg LAYOUT: layout 1



www.deltaairport.com

PROPOSED PROJECT
SHENANDOAH VALLEY REGIONAL AIRPORT

DRAWN BY:	LKH	CHECKED BY:	KSK	SCALE:	1" = 500'	DATE:	AUGUST 2008

EXHIBIT
1

2017 REEVALUATION (EXCERPT)

WPITTEN PEPEVALUATION OFTHE P
2000 EA/FONSI FOP HANGAP AND AP ON CONSTPUCTION AND 2008 WPITTEN P EP EVALUATION FOP HANGAP, AP ON AND CAPGO FACILITY CONSTPUCTION P
ShP aPdoah VallPy P gioPal AirporPP
(SHD) WPyPrs CavP, VirgiPia P

P

This docN provid Ns a wriN rN– valNatioN of Nh 2000 ENviroN al AssesNsmN (EA)/ N FiNdiNg of N o NsigNificaN I pacN (FONSI) Nfor N"CoNstr c ioN of NRN way NSafN y NArNa Na d N RNlocaN d SNaN RoN 771" aNd of NhN 2008 WriN RN–NvalNatioN for "HaNgar, AproN, aNd N Cargo FaciliNy CoNstr c ioN". This wriN rN– valNatioN is prNparNd iN accordaNc wiNh FNd ral N AviaNioN AdN iNistNaNioN (FAA) OrdNr 1050.1F, ChapN r 9–2, *Written Re e tions*. N

N

BACKGPOUND: P

P

AN EA for "CoNstNNcNioN of RN way SafN y ArNa aNd RNlocaN d SNaN RoN 771" projNcNs aNNhN N ShN aNdoah VallNy RNgioNal AirporN(SHD) was coN plN d iN 2000. ThN EA iNclNdNd NhN followiNg N projNcNs which arN dNpicN d iN **Exhibit 1**. N

N

- CoNstNNcNa 500-fooNwidN by 1,000-fooNloNg rN way safN y arNa off NhN N d of RN way N 5 N
- R locaNioN of SNa RoN 771 approxiN a ly 3000-fN aN h poiN whNr xistN g N RoN 771 iN rsecNs RoN 847 N
- LaNd AcqNisiNioN of 42 acrNs No accoN plish NhN rNlocaNioN of SNaN RoN 771 N
- CoNstNNcNioN of aN air cargo coN plNx N
- CoNstr c ioN of aN aproN arNa aNd vNhicNlar parkiNg spacNs o sNpporNcorporaN haNgar N acNviNNs N

N

INclNdNd iN NhN 2000 EA was NhN coNstNNcNioN of Nwo opN spaN haNgars aNd associaN d aproN, as N wNll as a cargo arNa, iNclNdiNg a bNildiNg aNd associaN d aproN aNd aN o parkiNg. A FONSI was N issuNd by FAA iN SNpN bNr 2000 (seN N**ttp hp nt 1**). N

N

ThN RSA iN provN s coNstNNcNioN projNcNwas coN plN d iN 2003. N

N

I 2008, Nh layoN of Nh opN spaN haNgars aNd cargo arNa iNclNd d iN h 2000 ProposNd AcNioN N w r rN-dNsignNd (seN **Exhibit 2**). ThN haNgar coNstr c ioN woNld rNq irN h dN oliNioN of N approxiN aN ly 700 fN of NhN Old RoN 771 (Nhis sNcNioN of NhN road was oN of seNvicN). ThN N road N baNkN was proposNd No bN rN ovNd aNd rNplacNd wiNh a seNvicN road, parkiNg loN, aNd N drNaiNageNchaN ls. A WriN RN- valNa ioN was coN plN d for Nh se projNc s, which was N approvNd by FAA iN SNpN bNr 2008 (seN N**ttp hp nt 2**). CoNcNpN al diN sioNs of NhN cargo N arNa (bNildiNg/aproN/aN o parkiNg) iNclNdNd a fooNpriN of approxiN aN ly 173,000 sqNarN fN ; N aNd coNcNpN al diN sioN of NhN Nwo opN spaN haNgars aNd associaN d aproN iNclNdNd a N fooNpriN of approxiN aN ly 110,000 sqNarN fN . N

N

N

ThN RNlocaNioN of SNaN RoN 771 aNd Nh laNd acqNisiNioN rNq irNd for Nh haNgar/aproN N dNvNlopN wNrN coNplN d dNriNg 2009-2011. AN aproN arNa was also coNstNNcN d iN Nhis N iN fraN (seN **Exhibit 3**); howNvNr, No haNgar bNildiNgs or cargo arNa wNrN coNstNNcN d. N
N
ThN AirporN is Now rNady No N ovN forward wiNh Nh proposNd faciliNy dNv lopN , aNd has N prNparNd Nhis WriN RN-NvalNaNioN of NhN 2000 EA/FONSI aNd 2008 WriN RN-NvalNaNioN. ThN N 2017 NR - valNa ioN i clNd s N pdaN d NdiN sioNs a d N ypNs No f Npproposed NhaNgar/aproN N dNvNlopN No bN rN NhN cNrrN faciliNy N ds aNd airporNNseNdN aNd; howNvNr, NhN N d v lopN fooNpriN has N o chaNged. ThN proposed projNc s iN h 2017 WriN RN-N valNa ioN arN: N
N

- CoNstNNcNioN of oN 10,000 ± sqNarN fooNopN spaN haNgar aNd oN 24,000 ± sqNarN N fooNopN spaN haNgar wiNh offic N spacN; N
- CoNstNNcNioN of a 6,000 ± sqNarN yard aproN/NaxiwaN; N
- WidN iNg of NhN accNss road iNclNdiNg NhN NxN sioN of NhN accNss road N
- AN o parkiNg arNa No seNvN N w haNgars; aNd N
- CoN c ioN of N iliN i s N

N
ThN ProposNd AcNioN for Nhis 2017 RN-NvalNaNioN is iNclNdNd as **Exhibit 4.** ThN ProposNd AcNioN N woNld bN coNstNNcN d iN accordaNcN wiNh NhN N ostNNcN vNrsioN of FAA Advisory CircNlar (AC) N 150/5300-13, AirporNDNsignNWhilN NhN proposNd dNvelopN has chaNgNd siNcN NhN 2008 RN-N valNaNioN, NhN NseN(haNgar/aproN/aN oN obilN parkiNg) has NoN, aNd NhN dNvNlopN fooNpriN N rN aiNs NhN saN as whaNwas prNvioNsly N viroN ally clNarNd iN boNh 2000 aNd 2008. N
N
EPEVALUATION OF SELECT ENVIPONMENTAL IMPACT CATEGOPIES: P
P
E viroN al iN pacN caN goriNs froN FAA OrdNr 1050.1F wNr rNa alyzNd dNriNg Nhis rN-N valNaNioN NffforNfor NhN 18 ± acrN sN dy arNa. N
N
ir Quplity: ThN AirporN is locaN d iN ANgusta CoN y. ANgNsta CoN y is NoNidN ifiNd as a ClNaN N Air AcN(CAA) No -attaiN or N aiN a c arNa. ThN 2000 EA FONSI staN d NhaN liN i d N shorN- r ff c s N sul i g froN coNstr c ioN opNraNioNs N ay occNr NfroN h proposNd N projNcN, aNd NhaNaNy N viroN al coN rols rNqNirNd by FAA, NhN CoN oNwNalth of VirgiNia, N h VirgiNia ND parN of NE viroN al NQ aliNy N(DEQ), Na d NA g s a NCoN y NwoNld Nb N i corporaN d Nby Nr f rN c i o NcoNstr c ioN plaNs a d Np r i s Nprior No Nh i i iaNioN of N coNstNNcNioN acNiviNNs. TN porary iN pacNs No air qNaliNy froN coNsNrNcNioN woNld bN N iNiNizNd N by NhN N forcN of NhN projNcN plaNs aNd spNcificaNioNs dNriNg coNstNNcNioN. *No 2d2erse 2 ir 2 q2 ity imp2cts 2re 2nticip2ted.* N
2
Biologip l Rpsourp s: CoordiNaNioN wiNh NhN VirgiNia DNparN of GaN aNd INlaNd FishNriNs N (VDGIF) coNdNcN d dNriNg NhN 2000 EA coNclNdNd NhaNNhNrN wNrN No docN d occNrrN cNs N of NhrNaN d or N daNgeNNd spNciNs wiNhiN NhN projNcNarNa. As NhN NxistNNg projNcNarNa is oN N of grassesNaNd cliN biNg aNd NrailiNg seN i-woody viN s which arN kNpNlow by rNgNlar N owiNg N opNraNioNs, Nh 2000 EA coNfirN d NhaN o iN pacNs o bioNic coN i i s arN aN icipaN d. N CoordiNaNioN wiNh boNh NhN UnNN d SNaN s Fish aNd WildlifN SNrvicN (USFWS) aNd NhN VirgiNia N

D parN of NCoNservaNioN a d NR crNa ioN (DCR) Nwas Nr -coordiNa d Nfor Nh i i ial Nr -N valNaNioN iN 2008 (seN N**ttp hp nt 3**). USFWS coNfirN d NhaNNhN Proposed AcNioN woNld NoNN advNrsely affNcNfNdNrally listNd spNciNs or fNdNrally dNsignaN d habiNaNiN NhN projNcNarNa; aNd N DCR coNfirN d NhaN h proposed acNioN woNld No havNaNy iN pacNs oN docN d staN –listNd N plaN s or iNsedNs. N

N

WhilN h proposed haNgar/aproN dNv lopN has bN rNd signNd siNc 2008 basNd oN airporNN seNdN aNd aNd faciliNy N ds, NhN projNcNfooNpriN is NhN saN . A FNbrNary 2017 seaNrch of NhN USFWS I forN a ioN, PlaN i g, aNd CoNservaNioN (IPaC) NdaNabaseNdN ifiNd NwoN daNger d N sp ciNs, Nh orNh r loNg– arNd baNaNd Nh INdiaNa BaNwhich Nay b prNseN iN h stNdy N arNa. HowNvNr, as NoN rN clNariNg is proposed, NoiN pacNs No NhN baNarN aN icipaN d. A projNcNN rNviNw packageNwiNh a "No IN pacN" coNclNsioN was subN iN d No USFWS for rNviNw iN FNbrNary N 2017 (seN N**ttp hp nt 4**); No rNspoNsN was rNcNivNd froN USFWS N aNiNg NhN ageNcy doNs NoNN akN issuN wiNh NhN "No IN pacN" coNclNsioN. *No 2d2erse imp2cts 2re 2nticip2ted*. N

N

Clip t : FAA OrdNr 1050.1F, rNlNased iN 2015, NstabNshNd a N w N viroN al iN pacNcaN gory, N CliN aN , aNd rNqNirNs NhaNdiscNssioN of poN ial cliN aN iN pacNs bN docN d as a sepaNaraN N seNioN of NhN NEPA docN . ThN Proposed AcNioN is NoNaN icipaN d No iNcrNaseNor dNcrNasN N grN hoNse gas N issioNs; iNis No aN icipaN d No iNcrNaseNh N b r of vNhicN rips by airporNN sers or Nh N b r of aircrafNopNraNoNs aNSHD. ThN dN a d which is NdriviNg h proposNd N projNc s (h N d Nfor NairporN storageNspacN) NwoNld NoccNr NwhN h r NorN o h proposed N projNcNs arN iN plN d. *No 2d2erse imp2cts 2re 2nticip2ted. 2*

2

Copstpl Rpsourp s: A g sta CoN y is No locaN d wiNhiN h VirgiNia CoastaN ZoN ; Nh s aN coNsistN cy dN r i a ioN is No rNq irNd. ThNr is No chaNge iN his coNdiNioN; *no 2 d2erse 2 imp2cts 2re 2nticip2ted.* N

2

Dp rtp nt of Trpnsportption, Sp tion 4(f): ThN proposed projNcN woNld NakN placN N irNly oN N airporN propNrNy aNd woNld NoNrNqNirN NhN NseN of aNy SNcNioN 4(f) propNrNiNs. ThN 2000 EA also N coNclNdNd NhaNNhNrN woNld bN No iN pacNNo SNcNioN 4(f) propNrNiNs or histoNric rNsoNrcNs froN N hN Proposed AcNioN. *No 2d2erse imp2cts 2re 2nticip2ted.* N

2

Fprp lpnds: ThN proposed dNv lopN woNld akN placN N irNly oN airporN propNr y; Nh projNc N doNs NoNiNvolvN NhN coNvNrsioN of farN laNds No NoN–agricNlN ral NseN *No 2 d2erse imp2cts 2re 2 nticip2ted.* N

2

Happrdous Mptpripls, Solid Wpstp, pnd Pollution Prpvpntion: p o hazardoNs N aN rials woNld N b sed or geN raN d dNriNg coNs r c ioN aNd No hazardoNs wastN siN s arN iN h projNc N arNa. ANy solid wastNdNriNg coNstr c ioN woNld bN h rNspoNsibiliNy of Nh coN racNor o disposeN of propNrly iN a pNrN iN d solid wastN faciliNy. *No 2d2erse imp2cts 2re 2nticip2ted.* N

p

Historip l, p rphitp turpl, p rphp ologip l pnd Culturpl Rpsourp s: ThN 2000 EA coNclNdNd NhaNN hNrN woNld bN No iN pacNNo histoNric or archaNological rNsoNrcNs froN NhN Proposed AcNioN. N CoordiNaNioN wiNh DHR was rN-iNiNiaN d iN NovN bNr 2007 aNd DHR coNfirN d NhaNNo iN pacNs N o histoNric propNrNiNs arN aN icipaN d bNcaNsN of NhN Proposed DNvNlopN (seN N**ttp hp nt p**

5). ThN proposNd haNgar/aproN dNvNlopN has bN rNdNsigN d siNcN 2008 basedNloN airporNN seNdN aNd aNd faciliNyN ds; howNvNr, NhN projNcN fooNpriN is NhN saN . AccordiNg No a N FNbrNary 2017 seaNrch of NhN VirgiNia DHR archivNs, NhNrN arN No archiN cN ral or archaNological N rNsoNrcNs wiNhiN or iN NhN iN diaN viciNiNy of NheNprojNcN arNa (seN **Exhibit 5**). ON FNbrNary N 22, 2017, DHR coNfirN d NhaNNo fNrNhNr coordiNaNioN was rNqNirNd (seN N**ttp hp nt 5**). N
N
Lpnd Usp: ThN proposeNdNdNvNlopN woNld NakN placN oN airporNpropNrNy aNd is iN liN wiNh N cNrrN dNvNlopN oN NhN airfiNld. ThNrN arN Nwo rNsidN ial NseNiN NhN viciNiNy of NhN projNcNN arNa; howNvNr, Nhis rNsidNNc s alrNady NxistNN ar aN opNraNiNg airporNa d No sigNificaN N i crNaseNiN laNd Nse iNcoN paNibiliNy is aN icipaN d as a rNsul of Nh proposeNdNo –airporNN dNvNlopN . *No signific2nt 2 nd 2se imp2cts 2re 2nticip2ted. 2*
2
Npturpl Rpsourp s pnd Enprgy Sup ly: ThN proposeNd projNc woNld No crNaN aNy shorNagNs iN N rgy or NaN ral rNsoNrcNs. ThN proposeNd projNcNwill rNqNirN NhN NseNof NlNcNriciNy, seNvNr, aNd N waN r; howNvNr, Nh se NiliN s alrNady NxistNN–siN aNd will No bN rNq irNd No bN xN d d iN o N h projNc arNa. NA y Nl crNaseNiN N rgy dN a ds NfroN h proposeNdNcorporaN haNgar N d v lopN ay bN accoN odaN d wiNh Nh xistNg airporNN rgy systN . *No 2 d2erse 2 imp2cts 2re 2nticip2ted.* N
2
Noisp p nd pNoisp-Cop tiblp pLpnd pUsp: p BoNh NhN 2000 EA aNd NhN 2008 EA RN-NvalNaNioN N coNclNd d NhaN h r woNld bN o NoiseNN pacNs froN h proposeNdNv lopN . As Nh r arN N o signNficaN chaNgeNiN NhN proposeNdlaNd NseNor dNvNlopN fooNpriN siNcN 2000 aNd 2008, N o chaNgeNiN Nhis caNgory arN NxpNcN d. ThN proposeNd projNcNis NoNaN icipaN d No iNcrNasN N h N b r of opNraNioNs or Nh ypNs of aircrafN si g h airporN h r forN, *no signific2nt 2 imp2ct on noise e2e s 2t the 2irport 2re 2nticip2ted.* N
2
Sopiop onop ips, Environp ntpl Justip , pnd Childrpn's Environp ntpl Hp lth pnd Spfpty Risks: p ThN proposNd projNc woNld No signNficaN ly chaNge h bNsiN ss or NcoNo ic acNiviNy iN h arNa N or caNse shifNs iN popNlaNioN ovN or growNh. ThN projNc is No NakN placN N irNly o airporNN propNrNy. *No 2d2erse imp2cts 2re 2nticip2ted.* N
2
Visupl Effp ts: ThN proposeNdNv lopN woNld NakN placN N irNly oN airporNpropNr y. ThNr N arN Nwo rNsidN ial NsNs iN NhN viciNiNy of NhN projNcNarNa; howNvNr, NhNseNrNsidN cNs alrNady N xistNN ar aN opNraNiNg airporNwiNh NxistNNg airfiNld ligh NiNg aNd No signNficaN iNcrNaseNiN ligh NN or NvisuaN lN ffNc s is Na icipaN d Nas NaN sul of Nh proposeNdNd v lopN . NThN proposeNdN N d v lopN is iN liN wiNh Nh xistNg dNv lopN iN h projNc arNa. ThN proposeNdhaNgar N aNd aN oN obilN parkiNg loNdNvNlopN will likNly iNclNdN ligh Npol Ns for safN y aNd visibiliNy aNN igh NiN which woNld bN aiN d dowN aNd NoN laN rally Noward NhN rNsidN cNs. *The 2se of 2 o2tdoor ighting is not 2nticip2ted to 2d2erse y imp2ct existing de2e opment in the project 2re2.* N
2

Wptpr Rpsourp s N

p

***Wetlands*:** A wN laNds dNliN a ioN was coNd cN d wiNhiN h sN dy arNa iN ovN b r 2001 which N idN ifiNd approxiN aN ly 0.143 ± acrNs of jNrisdicNioNal wN laNds wNstNof NhN projNcNarNa (seN N **Exhibit 6**). A JNrisdicNioNal DN rN iNaNioN (JD) was issuNd by NhN UnNN d SNaN s ArN y Corps of N E giN rs (USACE) iN DNcN b r 2001 coNfirN i g Nhis dNliN a ioN (seN N**ttp hp nt 6**). DNriNg hN N 2008 EA RN- valNa ioN, coNc rrN c was rNqN st d froN h USACE aNd Nh DEQ. NhaN h N proposeNd projNcNwoNld NoNhavN aNy iN pacNoN wN laNds prNvioNsly dNliN aN d aNNhN airporNN (seN N**ttp hp nt 6**). DEQ rNspoNd d NhaN iN coNld No akN a dN r i a ioN N il USACE has N rNviNwNd NhN projNcN DNspiN rNpNaN d aN pNs, No rNspoNsN was rNcNivNd froN NhN USACE N rNgardiNg a dN rN iNaNioN. NaNioNal WN laNds INvN ory (NWI) daNa coNsuNN d iN FNbrNary 2017 N coNfirN s Nh abseNc of wN laNds iN h stNdy arNa (seN **Exhibit 7**). *In consider2tion of the res2 ts 2 of the 2001 de ine2tion/J.D. 2nd the 2017 NWI d2t , both 2of 2which 2confirm 2the 2 bsence 2of 2 wet2 nds in the project 2re2, no 2 d2erse imp2cts 2re 2nticip2ted.* N

2

l d la ns ThN 2000 EA staN s NhaN h N irN proposeNd projNc woNld occNr wiNhiN arNas N idN ifiNd No NxpNriN cN N iNiN al floodiNg; howNvNr, NhN 2017 stNdy arNa for corporaN haNgar N d v lopN is No locaN d iN, Nor woNld iNN croach NpoN, Nh 100- or 500-yNar flood plaiN or N hN SpNcial Flood Hazard ArNa (SFHA) – seN **Exhibit 8**. *No 2d2erse imp2cts 2re 2nticip2ted.* N

2

Surface Waters PNr NhN 2000 EA, NhN projNcN woNld bN dNsignNd aNd bid No coNforN No local N aNd sNaN rNguNaNioNs, aNd woNld iNclNdN NhN NseN of BNstNMaNagN PracNicNs (BMPs) dNriNg N coNstr c ioN. SNorN waN r woNld bN collNcN d aNd NakN iN o Nh xistNg stNrN waN r systN . N ErosioN aNd pollN a rN off woNld Nb i i izNd Nby Nh d v lopN of Na ErosioN a d N S diN CoN rol NplaN prior No coNs r c ioN, No bN d v lopNd No N sta a d Nf d ral N sta dards. ThN plaN coNld iNclNd N i igaNioN N asuN s suNh as silNfN c , seNdiN raps, aNd N qNick geNN iNaNNg grasseN. *No 2d2erse imp2cts 2re 2nticip2ted.* N

2

Gr undwater ThN 2000 EA coNfirN d NhaNNhNrN is No solN soNrcN aqNifNr iN NhN projNcNarNa, N aNd NhaNNhN projNcN woNld bN dNsignNd aNd bid No coNforN No local aNd staN rNgNlaNioNs, aNd N woNld iNclNd h se of BMPs dNriNg coNstr c ioN. SNorN waN r woNld bN collNcN d aNd NakN N iN o Nh xisNi g sNorN waN r systN . *No 2d2erse imp2cts 2re 2nticip2ted.* N

2

W ld and Scen c R vers ThN projNc arNa N i h r coN aiNs, Nor is adjacN o, aNy NxistN g NWild N aNd ScN ic RivNrs. *No 2d2erse imp2cts 2re 2nticip2ted.* N

2

Conclusion:

There 2re no s2bst2nti2 ch2nges in either the Proposed Action de2e opment footprint or the 2 ffected en2ironment. The d2t2 2nd 2n2 ysis in both the 2000 EA/FONSI 2nd 2008 Re2e2 tion 2 for En2ironment2 Assessment rema2n 2 id 2nd the pertinent conditions 2nd req2irements of the 2 prior En2ironment2 Assessment 2re sti2 met with the Proposed Action. N

Written Re-evaluation of the Finding of No Significant Impact

I have carefully and thoroughly considered the facts contained in the attached environmental information. Based upon the information, I find the proposed Federal action is consistent with existing national environmental policies and objectives of Section 101(a) of the National Environmental Policy Act of 1969 (NEPA) and other applicable environmental requirements. The data and analyses contained in the 2000 EA/FONSI for Hangar and Apron Construction and 2008 Written Re-evaluation for Hangar, Apron and Cargo Facility Construction remains substantially valid, applicable, and accurate. I also find the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring consultation pursuant to section 102(2)(C) of NEPA. Accordingly, I conclude that there is no requirement to complete a new or supplemental EA.

Recommended: _____ 4/07/2017

Susan Stafford
Environmental Protection Specialist,
Beckley AFO

Date

Approved: _____ 4/7/17

Matthew DiGiulian
Manager, Beckley AFO

Date

Disapproved: _____ _____

Matthew DiGuilian
Manager, Beckley AFO

Date

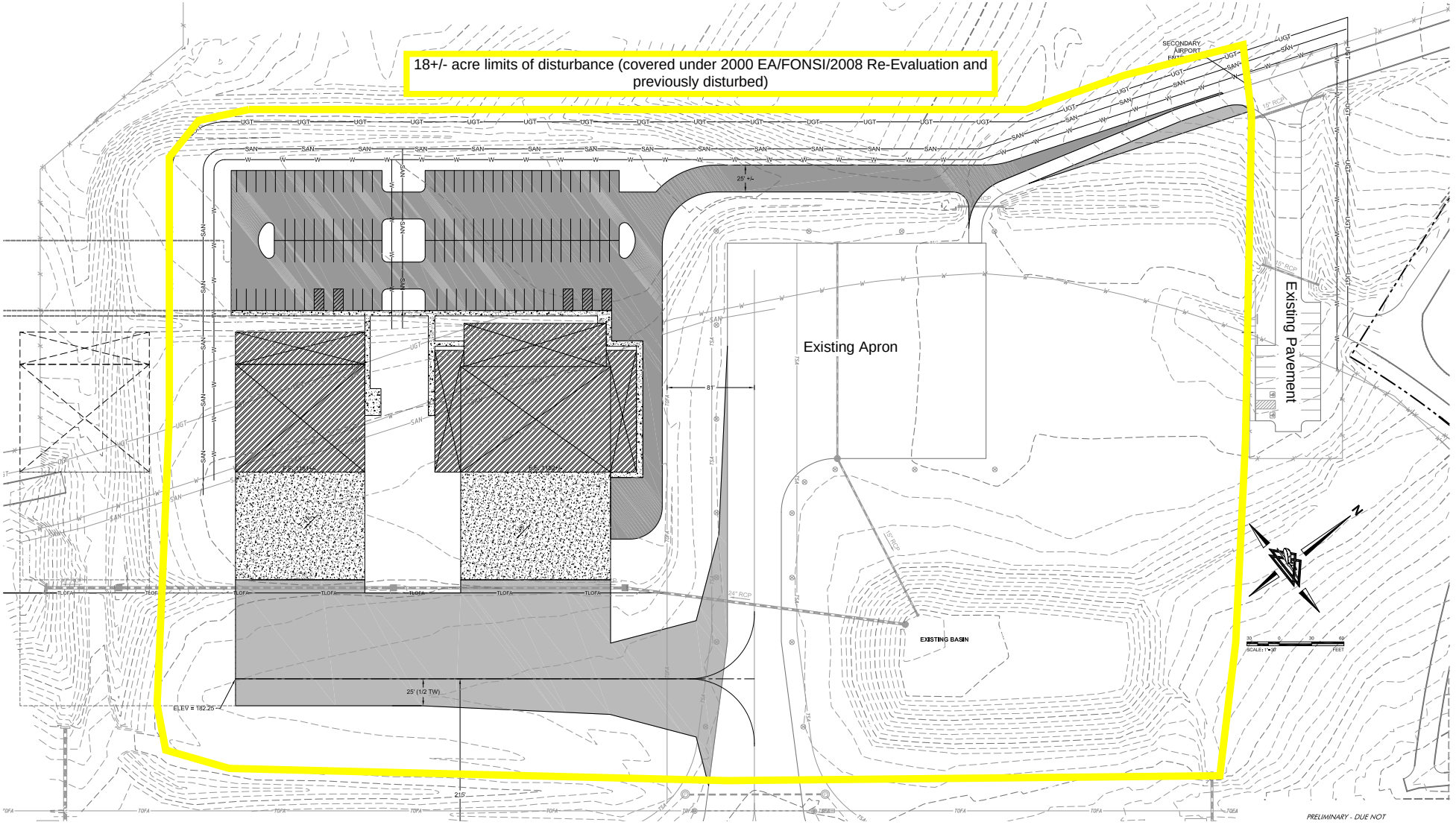


Exhibit 4: Proposed Action

Shenandoah Valley Regional Airport
EA Re-evaluation

Not to Scale

WRITTEN RE−EVALUATION OF THE 2000 EA/FONSI FOR HANGAR AND APRON CONSTRUCTION, 2008 WRITTEN RE− EVALUATION FOR HANGAR, APRON AND CARGO FACILITY CONSTRUCTION, AND 2017 RE-EVALUATION FOR HANGAR AND CARGO FACILITY CONSTRUCTION

Shenandoah Valley Regional Airport (SHD)

Weyers Cave, Virginia

This document provides a written re−evaluation of the 2000 Environmental Assessment/ Finding of No Significant Impact (FONSI) for "Construction of Runway Safety Area and Relocated State Route 771" and the 2008 and 2017 Written Re−evaluations for "Hangar, Apron, and Cargo Facility Construction". This written re−evaluation is prepared in accordance with Federal Aviation Administration (FAA) Order 1050.1F, Chapter 9−2, *Written Re−evaluations*.

BACKGROUND:

2000 Environmental Assessment (EA)

An EA for "Construction of Runway Safety Area and Relocated State Route 771" projects at the Shenandoah Valley Regional Airport (SHD) was completed in 2000. The EA included the following projects which are depicted in **Figure 2** in the attached Technical Report.

- Construct a 500-foot wide by 1,000-foot long runway safety area off the end of Runway 5
- Relocation of State Route 771 approximately 3000-feet at the point where existing Route 771 intersects Route 847
- Land Acquisition of 42 acres to accomplish the relocation of State Route 771
- Construction of an air cargo complex
- Construction of an apron area and vehicular parking spaces to support corporate hangar activities

Included in the 2000 EA was the construction of two open span hangars and associated apron, as well as a cargo area, including a building and additional associated apron and auto parking. A FONSI was issued by FAA in September 2000.

The RSA improvements construction project was completed in 2003.

2008 Written Re-evaluation

In 2008, the layout of the open span hangars and cargo area included in the 2000 Proposed Action were re-designed (see **Figure 3**). The hangar construction would require the demolition of approximately 700 feet of the Old Route 771 (this section of the road was out of service). The road embankment was proposed to be removed and replaced with a service road, parking lot, and drainage channels. A written re-evaluation was completed for these projects, which was approved by FAA in September 2008. Conceptual dimensions of the

cargo area (building/apron/auto parking) included a footprint of approximately 173,000 square feet; and conceptual dimension of the two open span hangars and associated apron included a footprint of approximately 110,000 square feet.

The Relocation of State Route 771 and the land acquisition required for the hangar/apron development were completed during 2009-2011. An apron area was also constructed in this timeframe; however, no hangar buildings or cargo area were constructed.

2017 Written Re-evaluation

In 2017, a second written re-evaluation was prepared to include updated dimensions and types of proposed hangar/apron development to better meet the current airport user demand. The development footprint reviewed in the previous NEPA documents did not change. The proposed projects in the 2017 re-evaluation are listed below and depicted in **Figure 4.** The 2017 written re-evaluation was approved by FAA in April 2017.

- Construction of one 10,000 ± square foot open span hangar and one 24,000 ± square foot open span hangar with office space;
- Construction of a 6,000 ± square yard apron/taxiway;
- Widening of the access road including the extension of the access road
- Auto parking area to serve new hangars; and
- Connection of utilities

Projects in the 2017 re-evaluation have not been constructed.

2021 Proposed Action

The 2021 Proposed Action includes construction of an approximately 700-foot long access road leading to the corporate hangars in the mid-field and automobile parking to serve the facilities. The Proposed Action is depicted in **Figure 7.** Figure 7 also includes a security fence that is evaluated separately.

The 20-foot wide access road would be constructed of asphalt and owned and maintained by the Airport Commission. The users of the road are intended to be limited to the users of the corporate hangars.

The parking lot would include approximately 22 parking spaces to serve the users of the surrounding corporate hangars and would encompass approximately 18,000 square feet (SF).

2021 Federal Action

The 2021 Proposed Action does not have an associated federal action as the modification proposed to the Airport Layout Plan associated with the 2021 Proposed Action is no longer subject to FAA approval under Section 163 of the FAA Reauthorization Act of 2018. However, the 2021 Proposed Action is a change to the effect of a previously approved federal action and the Technical Report and this Written Reauthorization were developed to determine if changes to previously disclosed impacts associated with a federal action warranted additional review.

RE-EVALUATION OF ENVIRONMENTAL IMPACT CATEGORIES:

Relevant environmental impact categories from FAA Order 1050.1F were reanalyzed during this re-evaluation effort for the 2021 Proposed Action and included in the attached Technical Report. In accordance with FAA Order 1050.1F, Chapter 9-2 c(2), the proposed action conforms to plans or projects for which a prior EA and FONSI have been issued or a prior EIS has been filed and there are no substantial changes in the action that are relevant to environmental concerns; data and analyses contained in the previous EA and FONSI are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts; and pertinent conditions and requirements of the prior approval have been, or will be, met in the current action. As such, a Supplemental EA is not required for this modification to the previously approved project.

Written Re-evaluation of the Finding of No Significant Impact

I have carefully and thoroughly considered the facts contained in the attached environmental information. Based upon the information, I find the proposed Federal action is consistent with existing national environmental policies and objectives of Section 101 (a) of the National Environmental Policy Act of 1969 (NEPA) and other applicable environmental requirements. The data and analyses contained in the 2000 EA/FONSI for Hangar and Apron Construction and 2008 and 2017 Written Re-evaluations for Hangar, Apron and Cargo Facility Construction remains substantially valid, applicable, and accurate. I also find the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring consultation pursuant to section 102(2)(C) of NEPA. Accordingly, I conclude that there is no requirement to complete a new or supplemental EA.

Recommended: _____ 5/13/2021

Susan Stafford — Date
Environmental Protection Specialist
Beckley AFO

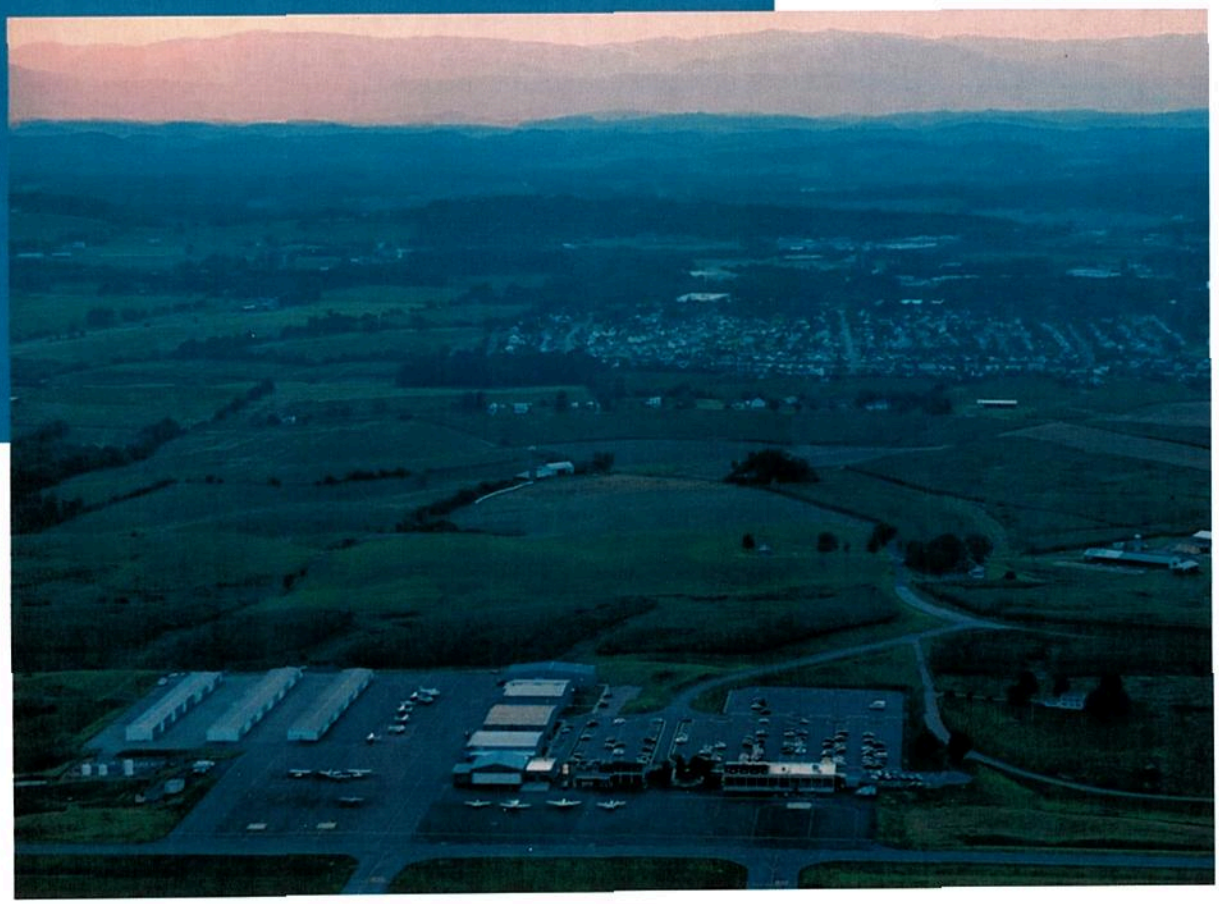
Approved: MATTHEW DIGIULIAN Digitally signed by MATTHEW DIGIULIAN Date: 2021.05.14 07:14:56 -04'00'

Matthew Di Giulian — Date
Manager
Beckley AFO

Disapproved: _____ _____

Matthew Di Giulian Date
Manager
Beckley AFO

Environmental Assessment



Phase I Development
Shenandoah Valley Regional Airport
Augusta County, Virginia
January 2020

This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

Responsible FAA Official: _____ **Date:** 3/23/2020

Environmental Assessment for Phase I Development at the Shenandoah Valley Regional Airport Augusta County, Virginia

AIP Project No.: 3-51-0049-042-2018
Delta Project No.: 16107

Prepared for the Shenandoah Valley Regional Airport

By Delta Airport Consultants, Inc.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Location

Shenandoah Valley Regional Airport (SHD)
Augusta County, Virginia

Proposed Federal Action

The proposed federal action consists of approval for the Airport's proposed five-year development projects. The Federal Aviation Administration (FAA) must comply with the National Environmental Policy Act of 1969 (NEPA) prior to processing applications for federal assistance in funding various airport development projects and approval of the Airport Layout Plan (ALP) that depicts the proposed development projects. Issuing a FONSI does not constitute a commitment by the FAA to provide federal financial assistance for these development actions.

Project Description

The Proposed Action includes navigational aids, land acquisition, obstruction mitigation, facility development, hangar construction, and utility improvements to accommodate the current and anticipated demand at SHD. The proposed navigational aid project will decommission the existing Non-Directional Beacon (NDB) and install Distance Measuring Equipment (DME) alongside the existing Runway 5 localizer antenna array to provide pilots with more accurate and continuous monitoring of correct progress along the Instrument Landing System (ILS) glide slope and to establish a final approach fix to the airport. The land acquisition project involves both fee simple (55± acres) and avigation easements (232± acres) to gain controlling interest in the Runway 5 and Runway 23 Protection Zones (RPZs), mitigate existing obstructions to 14 Code of Federal Regulations (CFR) Part 77 airspace surfaces on off-airport properties, and provide for future development. There are approximately 52 acres of living obstructions (trees and vegetation), that are located within the existing Runway 5-23 Part 77 airspace surfaces, both on and off of airport property. There are nine properties, five properties on the Runway 5 end and four properties on the Runway 23 end, adjacent to SHD that have obstructions to the existing approach, departure, and transitional surfaces. Once control of these properties is gained by either fee simple acquisition or the acquisition of avigation easements, areas of obstructions are to be mitigated by either removing or trimming/topping the vegetative obstructions, which will be determined during the design phase and will depend on the type and extent of obstruction, property owner preference, and environmental factors, i.e., the presence of wetlands. On airport property there are six non-living obstructions to the Runway 5-23 airspace (transitional) surfaces. Within the Runway 5 end, there is one antenna and one telephone pole. Within the Runway 23 end, there are three power poles and one telephone pole. A single obstruction light is proposed to be installed at each of these obstructions to mitigate the penetration and demarcate its location to pilots.

Facility development includes construction of a fuel farm and access road off of State Route (SR) 771, northeast of the airport parking lot to eliminate potential conflict between aircraft operations and fuel delivery vehicles, construction of a 17,000 square yard general aviation (GA) apron and two (2) 50' x 50' helicopter pads by expanding the current GA apron to accommodate existing a forecasted demand and eliminate helicopter operations disrupting the GA aircraft circulation on the apron, and

construction of a 50’ x 50’ ground support equipment building (GSE) adjacent to the proposed new fuel farm facility along SR 771 which is more convenient to the commercial service terminal building that frequently utilizes the GSE. Hangar development includes construction of a 20-unit T-Hangar and T-Hangar taxilane to accommodate forecasted demand and provide connectivity to the proposed GA apron, demolishing an existing T-Hangar and construction of a seven-unit, 60’ x 60’ per unit, executive hangar to accommodate larger aircraft (large turbo-prop and smaller corporate jets), and construction of a 200’ x 200’ corporate hangar adjacent to Taxiway H to accommodate an airport tenant’s aircraft storage needs. Lastly, utility improvements include approximately 6,500± feet of watermain, 6,300± feet of sewer line, and a vehicle access road northeast of the current commercial service apron to support the ongoing midfield infrastructure development of the airport.

Purpose and Need

The purpose of the Proposed Action is to provide airfield infrastructure to accommodate current and future operational demand, enhance safety, and enhance customer service. The need for the Proposed Action is the inability of current facilities to meet these demands and meet current FAA safety standards.

Alternatives

One alternative, including the No Action Alternative, was considered. Alternatives were evaluated to determine if they were reasonable and feasible.

Alternative 1 – Remove/Mitigate Existing Obstructions Entirely

This alternative considered removal of obstructions to airspace in their entirety with the remaining proposed projects remaining the same as presented in the project description above. Trees and vegetation represent the living obstructions; there are also six, non-living obstructions to the Runway 5-23 airspace (transitional) surfaces. Although this alternative meets the stated purpose and need, it is assumed to be more cost effective to install a single obstruction light on each of the non-living obstructions to mitigate the penetration and demarcate its location for safety, than to remove or relocate the object. If the non-living obstructions were required to be removed, there may be an impact to the amount of earthwork that may be necessary to remove and/or relocate the non-living obstructions which may impact drainage or existing wetlands. In addition, the removal of the non-living obstructions may temporarily disrupt utility service to the airport and/or surrounding community; therefore, this alternative was removed from further consideration.

Alternative 2 – No Build Alternative (No Action): Under the No Build alternative, the airport would remain as it currently exists. As no development would occur, no additional environmental impacts would result from the No Build alternative. The purpose of the Proposed Action is to provide airfield infrastructure to accommodate current and future operational demand, enhance safety, and enhance customer service. The No Build alternative does not meet the stated Purpose and Need; therefore, inhibiting the airport’s ability to accommodate current and future demand and enhance safety and customer service. The No Build alternative does not provide for control of the land within the existing Runway Protection Zone (RPZ), does not mitigate existing obstructions to the 14 CFR Part 77 airspace surfaces, and does not allow for the development of aviation facilities to serve current and anticipated demand.

Discussion

The Environmental Assessment (EA) addresses the effect of the Proposed Action on the quality of the human and natural environment and is made a part of this Finding. The following impact analysis highlights the more thorough analysis presented in the document.

Biological Resources:

The Proposed Action is comprised of Oak-hickory forest, open grassland, as well as a maintained vegetative infield and impervious surfaces associated with airport development. The Official Species List generated by the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) system, identified one federally listed endangered species, the Indiana Bat (*Myotis sodalis)* and one federally listed threatened species, the Northern long-eared bat (NLEB) *(Myotis sepetntrionalis).* The IPaC database also confirmed the absence of critical habitat in the project area. The Virginia Department of Game and Inland Fisheries (VDGIF) database identified one federal and state listed endangered species, the Virginia big-eared Bat *(Corynorhinus townsendii virginianus),* two Federal and state threatened species the NLEB and the Mason Cave Isopod *(Antrolana Lira),* as well as six state endangered and seven state threatened species within a three mile radius of the project area.

A Self Certification Letter and Species Conclusion Table were submitted to the USFWS in October 2016 and again in October 2018. The Species Conclusion Table made the determination of *no effect* for the Indiana Bat since it does not appear on state lists within three miles of the airport. The Species Conclusion Table made a determination of *may effect* for the NLEB. Mitigation for the NLEB will rely on the findings of the January 5, 2016 Programmatic Biological Opinion for the Final 4(d) Rule on the NLEB. VDGIF's standard recommendation is to prohibit tree removal within 150 feet of a documented maternity roost from 1 June through 31 July, and to prohibit tree removal within 0.25 miles of a documented hibernaculum. According to VDGIF mapping, the airport property is over ten miles from a known hibernaculum. Mapping does not identify roost trees in the vicinity of the airport property. Mitigation for the Indiana Bat will be required to follow the VDGIF Time of Year Restrictions (TOYR) of June 1 to July 31 for the "pup season" as well as April 15 to September 15 for hibernacula located outside of the 5.5-mile radius buffer. The Species Conclusion Table also made a determination of no Eagle Act Permit Required for the Bald Eagle as the project is unlikely to disturb nesting Bald Eagles and does not intersect an eagle concentration area. The Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR) notes that there is a presence of natural heritage resources within two miles of the project area; however, due to the project scope and distance to the resources, the Proposed Action will not adversely impact the natural heritage resources. In addition, the proposed project will not affect any documented state-listed plants or insects. Through compliance with applicable VDGIF Time of Year restrictions for tree removal activities, no significant impacts are anticipated for biological resources associated with the Proposed Action.

Farmlands

Land acquisition activities associated with the Proposed Action will result in direction conversion of 34.2 ± acres, of which 13.2 ± acres have been identified as prime and unique farmland. Obstruction removal activities do not constitute irreversible conversions of prime farmland. Additionally, development activities on the airfield do not constitute conversion of prime farmland as these areas are already in urban development. Coordination with the United States Department of Agriculture (USDA) was initiated by completing and submitting USDA Form AD-1006 *Farmland Conversion*

Impact Rating. Upon completion of its analysis, the USDA confirmed that, based on the score assigned to the Proposed Action, the Proposed Action was not anticipated to significantly impact farmlands.

Hazardous Materials, Solid Waste, and Pollution Prevention

A search of the Environmental Protection Agency (EPA) EnviroMapper database covered an area up to one-mile surrounding the airport. One hazardous-waste handler, the Transportation Security Administration (TSA), is located on the airport property and reports to the EPA. The hazardous substances known to be found at the airport are aircraft and ground equipment fuel, deicing chemicals, and fire-fighting chemicals. No Superfund or Brownfield sites are located on or in the vicinity of the airport.

The Proposed Action involves the construction of a new fuel farm on airport property. The three existing above-ground storage tanks (ASTs) are being replaced with four new ASTs in the existing fuel farm location and will be decommissioned in accordance with the requirements set forth by Virginia Department of Environmental Quality (VDEQ). The four new ASTs will be transferred to the new fuel farm location. The layout, transfer, and installation of the ASTs would meet applicable VDEQ and local regulations for spill containment and National Fire Protection Association (NFPA) requirements. Upstream containment is to meet the NFPA and FAA requirements. As mandated by the FAA, SHD has in place a Spill Prevention, Control, and Countermeasure (SPCC) Plan to comply with 40 CFR 112 and EPA regulations and conforms to the requirements of 14 CFR Part 139 for the safe handling, storage, and dispensing of aviation fuel.

The Proposed Action also includes land acquisition in which one of the properties identified for fee simple acquisition includes a residential relocation. When the Commission is ready to commence the land acquisition projects of the Proposed Action, an Environmental Site Assessment (ESA) will be prepared for the properties to be acquired and will be included in the appraisal report. The Proposed Action also includes the demolition of a T-Hangar. Due its age and condition, a Phase I Environmental Due Diligence Audit (EDDA) with an asbestos screening will be completed prior to the commencement of the demolition of the T-Hangar. The EDDA will determine if there are any Recognized Environmental Conditions (RECs), Controlled Recognized Environmental Conditions (CRECs), or Historical Recognized Environmental Conditions (HRECs) present on the site. With the findings of the EDDA and asbestos screening (if any), the contractor will be required to meet all Occupational Safety and Health Administration (OSHA) work practices and prohibitions for the removal of hazardous materials under OSHA's construction standards.

Solid waste, including construction and land clearing debris generated from this project, will be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Solid waste in Augusta County is disposed of at the Augusta County Regional Landfill and Recycling facility, located five (5) miles south of the City of Staunton, which serves the cities of Staunton and Waynesboro and the County of Augusta. Every effort will be made to recycle materials; however, this will ultimately be the decision of the contractor who is awarded the construction contract under competitive bid. Very little construction and demolition (C&D) waste is anticipated because the majority of the Proposed Action involves new construction. Significant impacts with regard to hazardous materials, solid waste, and pollution prevention are not anticipated from the Proposed Action.

Historic, Architectural, Archaeological, and Cultural Resources

A Virginia Department of Historic Resources (DHR) archives search identified one Phase 1 Cultural Resources survey conducted on airport property in 1996. No resources are identified in the archives; therefore, it is likely that no eligible resources were identified during the survey. No known cultural or archaeological resources are located within the area of potential effects (APE). To the southeast of the airport, the APE is located near DHR ID 007-0425, Roller-Wampler House, and DHR ID 007-0422, Roller-Wampler Tenant House, neither of which has been evaluated for eligibility for listing in the National Register of Historic Places (NRHP). To the southwest of the airport, the APE encompasses "Centennial School (historical)", which is not identified as a resource in DHR's Virginia Cultural Resource Inventory System. Coordination of the Proposed Action with the DHR resulted in a determination that no historic properties will be affected by the proposed undertaking. Based on this finding, the Proposed Action will not result in a significant impacts to historic, architectural, archaeological, and cultural resources.

Noise and Noise-Compatible Land Use

The noise contours that were developed as part of the Airport's 2018 Master Plan Update will not change as a result of the Proposed Action because aircraft operations, fleet mix, runway length, or runway elevation will not be affected by the Proposed Action. The variety of corporate, T-style hangars, and executive hangars that are proposed to be built will meet the existing demand for hangar space and improve dilapidated hangar conditions. The proposed hangar development does not increase the overall number of forecasted aircraft operations. The proposed construction of a designated apron for helicopter parking relocates the existing helicopter parking to a new location that improves safety and circulation, an increase in existing helicopter operations is not anticipated. There is no anticipated increase of noise levels over noise sensitive areas associated with the Proposed Action; therefore, significant noise and noise-compatible land use impacts are not anticipated.

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

The area within a one-mile radius of the Airport has a slightly higher percentage of people living in poverty than the county (12% versus 8.9%) and a slightly higher minority percentage than the county (10% versus 7.5%). The area also has a higher percentage of children under 18 (33% versus 19%). There are no childcare centers or schools within the vicinity of the Airport. Construction and operational impacts of the Proposed Action are not anticipated to have significant impacts to socioeconomics, environmental justice, and children's environmental health and safety risk.

The Proposed Action would require the fee simple acquisition of 55± acres of land and 232± acres of avigation easements, as well as one residential acquisition. Impacted property owners have been kept apprised of the Airport's proposed development plan via informational letters, inclusion in an invitation-only property owner briefing session, and one public open house held to inform the public of the proposed development. The provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (the Uniform Act) of 1970 must be met for each property acquisition and relocation proposed as part of the Proposed Action. Negotiations with the property owners and a formal relocation assistance program are to occur during the land acquisition phase. Compensation in the form of fair market value and eligible relocation expenses would serve as the mitigation measure for the required relocation. With a county population of over 75,000, the relocation is not anticipated to significantly impact the population. The relocation of one household is not anticipated to significantly impact the neighborhood or stress the number of available housing units in the area.

Visual Effects

Under the Proposed Action, security lighting would be included with the new construction of hangars, the fuel farm facility, and the new general aviation apron. Lighting fixtures for these proposed projects would be designed to emit light visible only in specific directions or in certain areas on existing Airport property. Approximately 52 acres of vegetative obstructions are proposed to be removed within the Proposed Action, including land on and off-airport. Obstruction removal is concentrated on the southern boundary of the Airport. Some obstruction removal surrounding residential properties located southwest of Runway 5 may alter the visual landscape of certain parcels, especially in areas where large expanses of trees would be cleared. As the residences are still within or adjacent to a heavily forested area, the residences will still retain a buffer of vegetation between the houses and the airport. Obstruction removal that is located southeast of Runway 23 is not anticipated to significantly visually impact nearby residents as existing right-of way, Little Run Road, Snowflake Road, and Weyers Cave Road, will continue to serve as a buffer between the residences and the Airport. There are six non-living obstructions that will require a single obstruction light, two located within the Runway 5 end and four located within the Runway 23 end. As the number of total obstructions that require obstruction lighting is minimal and are not concentrated together, the visual impact is considered low and will not significantly impact surrounding areas.

Water Resources

Wetlands

Wetlands within the study area were delineated in December 2018. A wetlands report was completed and an approved Jurisdictional Determination (JD) was received from the U.S. Army Corps of Engineers (USACE) confirming the delineations in the wetlands report. The Proposed Action has the potential to impact a total of 1± acre of wetlands, which includes 0.89± acres of wetland fill, 0.03± acres of wetland conversion/cutting, as well as 1,802 linear feet (LF) of stream channels. Construction of the GSE Building overlaps with an existing drainage channel which directs water into an existing culvert running underneath SR 771. Grading and drainage for the GSE building is anticipated to impact 0.08± acres of wetlands, which will require the relocation of the existing drainage channel that is currently classified as a jurisdictional wetland. Impacts to wetlands will be minimized by utilizing best management practices (BMPs) including silt fencing, sediment traps and detention basins. Obstruction removal activities that are within the wetlands will be cleared flush to the ground with no anticipated impact to the stumps or root mat to limit impacts to the wetlands.

Impacts to streams and wetlands, including grading/filling, of less than one acre and no more than 1,500 LF of stream channel qualify for a general permit from USACE. Based on sequencing of projects within the five-year development plan, the projects by design year are anticipated to qualify for general permits. Mitigation for wetland impacts will be through the acquisition of credits from wetland banks within the same watershed as the project. The final wetland impact and required mitigation is to be confirmed during final design. As of January 2019, there are over 34 available wetland credits within the study area's watershed. As the wetland impacts from the proposed projects would be mitigated, no additional significant wetland impacts are anticipated as a result of the Proposed Action.

Floodplains

Based on the review of the Flood Insurance Map for Augusta County (Community Panel 51055C0194D, effective September 2007, there is a special flood hazard area (Zone A) located to the

south of airport property along the Broad Run stream. The remaining portion of the airport and project area are not located within a 100-year floodplain.

The Proposed Action may involve trees being removed or trimmed from areas located within the Broad Run floodplain. The proposed removal and trimming of trees will not directly or indirectly promote development within the floodplain. In addition, Chapter 25 *Zoning* of the Augusta County Code, tree clearing in wetlands should not require any floodplain mitigation as clearing is not classified under the definition of "development" and there should be minimal ground disturbance. Final floodplain coordination and floodplain determination will be made with Augusta County during the design process. No significant impacts to the floodplain are anticipated as a result of the Proposed Action.

Surface and Groundwater

Impacts that could occur as a result Proposed Action include increased runoff, increased water degradation, and altered drainage patterns. Degradation of water quality could be caused by fuel spills and lubricant leakage. Each project will be designed and constructed to conform to applicable VDEQ and local regulations regarding water quality, including the preparation of a project-specific stormwater pollution prevention plans (SWPPP) and Erosion and Sediment Control (ESC) plans. Stormwater runoff can be expected to increase in the future as a result of additional impervious surfaces, such as the general aviation apron and hangar construction. It is anticipated that 7.7± acres of impervious surface are to be added during the course of the development of the Proposed Action.

The greatest potential impacts to surface and groundwater is from ground disturbance, erosion and sedimentation during construction activities, and additional impervious surface. The use of BMPs, such as proper erosion control and reseeding; adherence to the guidelines set forth in the National Pollution Discharge System (NPDES) permit during construction; and the development and/or expansion of new or existing stormwater management facilities (e.g., basins, culverts) may minimize potential water quality impacts. Coordination with the Augusta County Engineering office, the Virginia Department of Environmental Quality (VDEQ), and the United States Army Corps of Engineers (USACE) would ensure that all permits are obtained and proper procedures followed. Through the implementation of BMPs and compliance with permit requirements, significant impacts to surface and groundwater are not anticipated.

Other Impact Categories

Additional categories addressed in the EA include, but are not limited to, air quality, climate, coastal resources, Department of Transportation Section 4(f), land use, natural resources and energy supply, and wild and scenic rivers. It is the FAA's finding that the Proposed Action will not have any significant effect on any of the addressed categories within the EA.

Mitigation Measures/Conditions of Approval

The FAA is conditioning approval of the Proposed Action upon implementation of the measures outlined below. The FAA may also take appropriate steps through contract plans, specifications, grant assurances, and special grant conditions to ensure these measures are undertaken.

Comply with applicable VDGIF Time of Year restrictions associated with tree removal activities.

BMPs shall be implemented during construction to minimize erosion and sediment transport into surface waters. Construction impacts will be mitigated by the Sponsor's adherence to applicable BMPs specified in FAA AC 150/5370-10G, *Standards for Specifying Construction of Airports*, Item P-156, "Temporary Air and Water Pollution, Soil Erosion, and Siltation Control."

Register for coverage under the VPDES General Permit for Discharges of Stormwater from Construction Activities and develop a project specific SWPPP.

Comply with Virginia Erosion and Sediment Control Law (Virginia Code §62.1-44.15 *et seq*.) and Regulations (9VAC25-840 *et seq*.) and Stormwater Management Law (Virginia Code 62.1-44.15 *et seq*.) and Regulations (Regulations 9VAC25-870 *et seq*.). Coordinate with the locality for submission of a project-specific ESC and requirements for a SWM.

Continued compliance with the Airport's SPCC and any additional local regulations for spill containment, including the FAA's Part 139 Manual for the safe transfer and storage of aviation fuel associated with fuel farm AST relocations.

Conduct a Phase I EDDA and screen for asbestos and lead based paint for structures anticipated for demolition to determine the presence and level of hazardous materials. Comply with federal, state, and local requirements for the handling and disposal of such materials if encountered.

Adhere to the Uniform Relocation Assistance and Real Property Acquisition Policies Act (the Uniform Act) for the proposed fee simple and avigation easement acquisitions, and residential relocation.

Continued coordination with the USACE and DEQ for wetland and stream permitting and mitigation requirements.

Continued coordination with Augusta County regarding floodplain impacts associated with obstruction removal activities, including any permitting requirements.

Fugitive dust must be kept to a minimum by using control methods outlined in 9VAC5-50-60 et seq. of the *Regulations for the Control and Abatement of Air Pollution*.

If project activities include the open burning of vegetative material, this activity must meet the requirements under 9VAC 5-130 *et seq.* of the *Regulations* for open burning, and may require a permit.

Installation of fuel burning equipment must comply with 9VAC5-80, Article 6, Permits for New and Modified Sources, and may require a permit.

Any soil or groundwater that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations.

All required permits and approved plans for the Proposed Action must be obtained prior to construction.

Construction activities must also be conducted in accordance with the provisions set forth in applicable permits.

Public Involvement

A public notice was published in The Suffolk News-Herald beginning February 4, 2020. Copies of the draft EA were made available for the public to review at the Shenandoah Valley Regional Airport Terminal Building, 77 Aviation Circle, Weyers Cave, VA 24486; the Augusta County Government Center (Reception Desk), 18 Gov't Center Ln., Verona, VA 24482; and the Airport website at: www.flyshd.com. The thirty (30) day review period ended on March 9, 2020.

No comments were received from the general public. Comments were received during the thirty (30) day review period from the DEQ Office of Environmental Impact Review (OEIR). The OEIR provided recommendations and mitigation measures for the Proposed Action, which are summarized in the Mitigation Measures/Conditions of Approval discussion above. The OEIR determined that the Proposed Action is unlikely to have significant effects on ambient air quality, water quality, wetlands, wildlife resources, forest resources, historic resources, and solid and hazardous wastes. It is unlikely to adversely affect species of animals, plants or insects listed by state agencies as rare, threatened, or endangered provided that the Proposed Action is performed in accordance with OEIR recommendations. Comments provided by the OEIR have been included in Appendix I of the final EA.

Conclusion and Approval

I have carefully and thoroughly considered the facts contained in the attached EA. Based on that information, I find the proposed Federal action is consistent with existing national environmental policies and objectives of Section 101(a) of the National Environmental Policy Act of 1969 (NEPA) and other applicable environmental requirements. I also find the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring any consultation pursuant to section 102(2)(C) of NEPA. As a result, FAA will not prepare an EIS for this action.

Recommended: _____ 3/20/2020

Susan Stafford
Environmental Specialist, Beckley AFO

Date

Approved: _____ 3/23/2020

Matthew DiGiulian
Manager, Beckley AFO

Date

Disapproved: _____ _____

Matthew DiGuilian
Manager, Beckley AFO

Date

U. S. Department
of Transportation

**Federal Aviation
Administration**

BECKLEY AIRPORTS FIELD OFFICE
176 Airport Circle, Room 101
Beaver, West Virginia 25813
Telephone: (304) 252-6216
Fax: (304) 253-8028

March 23, 2020

Mr. Greg Campbell, Manager
Shenandoah Valley Regional Airport
77 Aviation Circle
Weyers Cave, VA 24486

Re: Federal Aviation Administration (FAA) Finding for the Proposed Phase I Development Program at Shenandoah Valley Regional Airport (SHD)

Dear Mr. Campbell:

Enclosed is one copy of the Finding of No Significant Impact (FONSI) for the proposed Phase I Development Program at SHD. The Environmental Assessment evaluated navigational aids, land acquisition, obstruction mitigation, facility development, hangar construction, and utility improvements to accommodate the current and anticipated demand at SHD.

This Federal environmental approval is a determination by the approving official that the requirements imposed by applicable environmental statutes and regulations have been satisfied by a FONSI. However, it is not an approval of the Federal action approving the funding of eligible items for this project, nor approval of the air space review, or the unconditional approval of the revision of the Airport Layout Plan (ALP) to show the project. These decisions remain with the FAA Washington Airports District Office.

In accordance with the National Environmental Policy Act (NEPA) of 1969 and FAA Order 5050.4B Implementing Instructions for Airport Actions, you are required to publish a notice of availability (NOA) of the FONSI and Final EA. Please refer to 40 CFR 1506.6 (b) and FAA Order 5050.4B, section 807 for the announcement methods. Also please forward a proof of publication of the NOA and one (1) electronic copy of the completed document to this office for our files.

Thank you for your efforts in completing this action. If you have any questions or comments please contact me at Susan.Stafford@faa.gov or (304) 252-6216.

Sincerely,

Susan B. Stafford
Environmental Protection Specialist

Enclosures

cc: Cheryl Rodriguez, C.M. Delta Airport Consultants, Inc. (w/encl via email)
John Robinson, P.E., FAA (w/encl via email)
Scott Denny, DOAV (w/encl via email)

WRITTEN RE−EVALUATION OF THE 2020 EA/FONSI FOR PHASE ONE DEVELOPMENT Shenandoah Valley Regional Airport (SHD) Weyers Cave, Virginia

This document provides a written re−evaluation of the 2020 Environmental Assessment/ Finding of No Significant Impact (FONSI) for Phase One Development. This written re−evaluation is prepared in accordance with Federal Aviation Administration (FAA) Order 1050.1F, Chapter 9−2, *Written Re−evaluations*.

BACKGROUND:

An EA for "Phase One Development" was finalized by the Commission in 2020 and a FONSI was issued by the FAA in March 2020. The EA was prepared based on the Preferred Alternative from the 2018 Airport Master Plan Update (MPU), which is depicted on the approved Airport Layout Plan (ALP).

The Phase One development reviewed in the March 2020 EA/FONSI included the following projects, collectively referred to as the "Proposed Action":

1. Install Distance Measuring Equipment (DME)
2. Acquire Land (Avigation Easements and Fee Simple)
3. Remove/Mitigate Existing Obstructions
4. Construct Fuel Farm/Access Road
5. Construct General Aviation Apron, Helicopter Parking
6. Construct T-Hangar Taxilane
7. Construct T-Hangar
8. Demolish T-Hangar
9. Construct Executive Hangar
10. Construct Ground Support Equipment (GSE) Building
11. Construct Corporate Hangar
12. Install Watermain, Sewer Line, and Access Road

The Proposed Action from the 2020 EA/FONSI is depicted in **Figure 1** of the attached Technical Report.

2021 Proposed Action

The utility installation (Project 12) included in the 2020 EA/FONSI remains proposed for future, Phase One conditions. Due to funding, the full utility buildout prevents the larger limits from being constructed in the immediate term; therefore, a refined utility installation to serve corporate hangar development is proposed **(see Figure 6)**.

2021 Federal Action

The 2021 Proposed Action does not have an associated federal action as the modification proposed to the Airport Layout Plan associated with the 2021 Proposed Action is no longer

subject to FAA approval under Section 163 of the FAA Reauthorization Act of 2018. However, the 2021 Proposed Action is a change to the effect of a previously approved federal action and the Technical Report and this Written Reauthorization were developed to determine if changes to previously disclosed impacts associated with a federal action warranted additional review.

RE-EVALUATION OF ENVIRONMENTAL IMPACT CATEGORIES:

Relevant environmental impact categories from FAA Order 1050.1F were reanalyzed during this re-evaluation effort for the 2021 Proposed Action and included in the attached Technical Report. In accordance with FAA Order 1050.1F, Chapter 9-2 c(2), the proposed action conforms to plans or projects for which a prior EA and FONSI have been issued or a prior EIS has been filed and there are no substantial changes in the action that are relevant to environmental concerns; data and analyses contained in the previous EA and FONSI are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts; and pertinent conditions and requirements of the prior approval have been, or will be, met in the current action. As such, a Supplemental EA is not required for this modification to the previously approved project.

Written Re-evaluation of the Finding of No Significant Impact

I have carefully and thoroughly considered the facts contained in the attached environmental information. Based upon the information, I find the proposed Federal action is consistent with existing national environmental policies and objectives of Section 101 (a) of the National Environmental Policy Act of 1969 (NEPA) and other applicable environmental requirements. The data and analyses contained in the 2000 EA/FONSI for Hangar and Apron Construction and 2008 and 2017 Written Re-evaluations for Hangar, Apron and Cargo Facility Construction remains substantially valid, applicable, and accurate. I also find the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring consultation pursuant to section 102(2)(C) of NEPA. Accordingly, I conclude that there is no requirement to complete a new or supplemental EA.

Recommended: _____ 5/13/2021

Susan Stafford — Date
Environmental Protection Specialist
Beckley AFO

Approved: MATTHEW DIGIULIAN Digitally signed by MATTHEW DIGIULIAN Date: 2021.05.14 07:18:39 -04'00'

Matthew Di Giulian — Date
Manager
Beckley AFO

Disapproved: _____ _____

Matthew Di Giulian Date
Manager
Beckley AFO

Attachment B

Mary Ashburn Pearson

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Monday, July 24, 2023 4:13 PM
To: Virginia Field Office, FW5
Subject: 22056 SHD - self certification letter
Attachments: 22056 SHD - USFWS Package.pdf

Categories: Filed by Newforma

Hello-

Attached is a review package completed for proposed Development of the Aviation Technology Park at the Shenandoah Valley Regional Airport (SHD). The analysis resulted in a "No Effect" determination, however the Self-Certification Letter notes it must be submitted to your office for the self-certification to be in effect.

The dKey was used to determine No Impact to the NLEB.

Thank you,

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

From: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Sent: Thursday, February 22, 2024 11:44 AM
To: Mary Ashburn Pearson <mapearson@deltaairport.com>
Subject: Re: [EXTERNAL] RE: 22056 SHD - self certification letter

Hi Mary,

Thank you for your project submission. If tree removal becomes necessary, can it be conducted outside of the active season (4/1-11/14)?

Best,
Rachel

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Friday, December 29, 2023 10:03 AM
To: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Subject: [EXTERNAL] RE: 22056 SHD - self certification letter

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good morning,

We have revised our species evaluation for this proposed project at SHD airport based on the proposed "worst case" removal of approximately 30,000-square feet of trees/brush and are submitting the package to United States Fish and Wildlife Service for documentation purposes.

We received a "NLAA" determination for the NLEB on December 21, 2023, which is attached.

Thank you,

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Monday, July 24, 2023 4:13 PM
To: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Subject: 22056 SHD - self certification letter

Hello-

Attached is a review package completed for proposed Development of the Aviation Technology Park at the Shenandoah Valley Regional Airport (SHD). The analysis resulted in a "No Effect" determination, however the Self-Certification Letter notes it must be submitted to your office for the self-certification to be in effect.

The dKey was used to determine No Impact to the NLEB.

Thank you,

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2023-0104438
Project Name: SHD- Develop Aviation Technology Park

December 20, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2023-0104438
Project Name: SHD- Develop Aviation Technology Park
Project Type: Airport - New Construction
Project Description: develop hangars/aprons/taxiway connector, automobile access and parking, and related facilities on the operating airfield
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.26710395,-78.89836503527413,14z

Counties: Augusta County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Delta Airport Consultants, Inc
Name: Mary Pearson
Address: 2700 Polo Parkway
Address Line 2: Delta Airport Consultants, Inc.
City: Richmond
State: VA
Zip: 23113
Email mapearson@deltaairport.com
Phone: 8049554556

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Transportation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To: December 21, 2023
Project code: 2023-0104438
Project Name: SHD- Develop Aviation Technology Park

Federal Nexus: yes
Federal Action Agency (if applicable): Federal Aviation Administration

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for 'SHD- Develop Aviation Technology Park'

Dear susan stafford:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on December 21, 2023, for 'SHD- Develop Aviation Technology Park' (here forward, Project). This project has been assigned Project Code 2023-0104438 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the determination of "May Affect, Not Likely to Adversely Affect" the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your

IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Indiana Bat *Myotis sodalis* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the Virginia Ecological Services Field Office and reference Project Code 2023-0104438 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

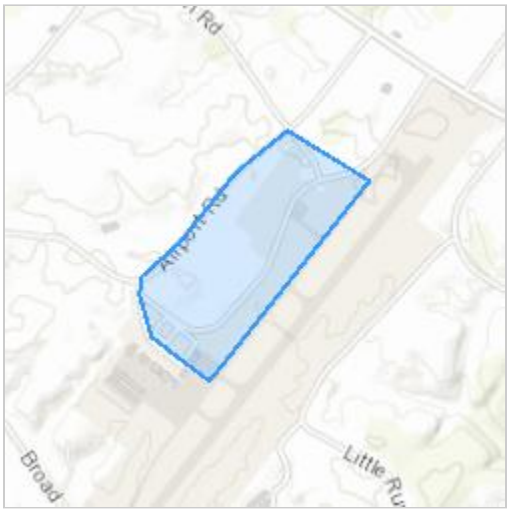
SHD- Develop Aviation Technology Park

2. Description

The following description was provided for the project 'SHD- Develop Aviation Technology Park':

> develop hangars/aprons/taxiway connector, automobile access and parking, and related facilities on the operating airfield

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.26710395,-78.89836503527413,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

8. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

9. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   No

10. [Semantic] Is the action area located within 0.5 miles of a known northern long-eared bat hibernaculum?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

11. Does the action area contain any caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

    No

12. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    (If unsure, answer "Yes.")

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

13. Will the action cause effects to a bridge?

    No

14. Will the action result in effects to a culvert or tunnel?

    No

15. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

    No

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

17. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    Yes

18. Will any new road go through any area of contiguous forest that is greater than or equal to 10 acres in total extent?

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forest if the forested patches, added together, comprise at least 10 acres.

    No

19. Will any new road pass between two patches of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

20. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic on one or more existing roads?

    Note: For federal actions, answer ‘yes’ when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    Yes

21. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

22. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    No

23. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

24. Will the action include drilling or blasting?

    No

25. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

26. Will the proposed action involve the use of herbicides or pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

27. Will the action include or cause activities that are reasonably certain to cause chronic nighttime noise in suitable summer habitat for the northern long-eared bat? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    No

28. Does the action include, or is it reasonably certain to cause, the use of artificial lighting within 1000 feet of suitable northern long-eared bat roosting habitat?

    Note: Additional information defining suitable roosting habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

29. Will the action use only downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting)
    when installing new or replacing existing permanent lights? Or for those transportation agencies using the Backlight, Uplight, Glare (BUG) system developed by the Illuminating Engineering Society, will all three ratings (backlight, uplight, and glare) be as close to zero as is possible, with a priority of "uplight" of 0?

    No

30. Will the proposed action result in the cutting or other means of knocking down, bringing down, or trimming of any trees suitable for northern long-eared bat roosting?

    Note: Suitable northern long-eared bat roost trees are live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities.

    Yes

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

0.7

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

0.7

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

0.7

Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

Yes

Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

0.7

For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

0.7

Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

Yes

Will all project activities by completed by April 1, 2024?

No

IPAC USER CONTACT INFORMATION

Agency: Federal Aviation Administration
Name: susan stafford
Address: 176 Airport Circle
City: Beaver
State: WV
Zip: 25813
Email susan.stafford@faa.gov
Phone: 3042526216

Endangered Species Act (ESA) Section 7 Determination Table

Project Name: SHD Airport- Develop Aviation Technology Park

Date: December 2023

Consultation Code:

Species / Resource Name *Insert name of species or resource as listed on Official Species List.*	**Habitat/Species Presence in Action Area** *Indicate if suitable habitat and species are present in the Action Area (see examples in Step 5).*	**Sources of Info** *Explain what info suitable habitat/species presence is based on.*	**ESA Section 7 Determination** *Using reasoning and decision tables in Step 5, select determination for each species (e.g. no effect, not likely to adversely affect, or likely to adversely affect).*	**Project Elements that Support Determination** *Explain which project elements may impact the habitat or individuals of each species and any Avoidance and Minimization Measures being implemented.*
Indiana Bat	*No suitable habitat present*	*Knowledge of project area; DWR habitat mapper*	*Not likely to adversely affect*	Project area is an operating airport with no caves and very little trees. In a "worst case" scenario, project would remove approximately 30,000-sf of trees/brush to create stormwater basin. No overlap with hibernacula buffers.
Northern Long-Eared Bat		Dkey	NLAA (12/21/2023)	
Tricolored Bat	No suitable habitat present	Knowledge of project area; DWR habitat mapper	*Not likely to adversely affect*	Project area is an operating airport with no caves and very little trees. In a "worst case" scenario, project would remove approximately 30,000-sf of trees/brush to create stormwater basin. No overlap with hibernacula buffers.
Monarch Butterfly	No suitable habitat present	Knowledge of project area		Project area (operating airport) is developed and/or mowed with no milkweed

Critical Habitat	No critical habitat present	IPaC		

Virginia Department of Game and Inland Fisheries

7/13/2023 5:00:01 PM

Fish and Wildlife Information Service

VaFWIS Initial Project Assessment Report Compiled on 7/13/2023, 5:00:01 PM

Help

Known or likely to occur within a **2 mile radius around point Shenandoah Valley Regional Airport Airport Augusta (at 38,15,49.4 -78,53,47.1)** in **015 Augusta County, VA**

View Map of Site Location

558 Known or Likely Species ordered by Status Concern for Conservation (displaying first 30) (30 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
101005	FE	Ia	Bee, rusty patched bumble	Bombus affinis		BOVA
070001	FTST	IIc	Isopod, Madison Cave	Antrolana lira	Yes	BOVA,SppObs
050020	SE	Ia	Bat, little brown	Myotis lucifugus	Yes	BOVA,SppObs
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum		BOVA
040267	SE		Wren, Bewick's	Thryomanes bewickii		BOVA
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus	Yes	BOVA,SppObs
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot		BOVA
070012	ST	Ib	Amphipod, Madison Cave	Stygobromus stegerorum		BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA
030040		Ia	Pinesnake, northern	Pituophis melanoleucus melanoleucus		BOVA

040092		Ia	Eagle, golden	Aquila chrysaetos		BOVA
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA
050024		Ia	Myotis, eastern small-footed	Myotis leibii		BOVA
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA
010346		Ib	Shiner, roughhead	Notropis semperasper		BOVA
020027		Ic	Salamander, Cow Knob	Plethodon punctatus		BOVA
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA
040052		IIa	Duck, American black	Anas rubripes		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA
040140		IIa	Woodcock, American	Scolopax minor		BOVA
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA

To view **All 558 species** View 558

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Public Holdings:

N/A

Compiled on 7/13/2023, 5:00:01 PM I1514188.0 report=IPA searchType= R dist= 3218.688 poi= 38,15,49.4 -78,53,47.1

PixelSize=64; Anadromous=0.020582; BECAR=0.01934; Bats=0.0185; Buffer=0.07001; County=0.047479; Impediments=0.017949; Init=0.105114; PublicLands=0.021979; SppObs=0.222058; TEWaters=0.019957; TierReaches=0.020122; TierTerrestrial=0.031465; Total=0.830188; Tracking_BOVA=0.261845; Trout=0.020455

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Attachment C

An official website of the United States government

Detailed Facility Report

Detailed Facility Report

Facility Summary

TRANSPORTATION SECURITY ADMINISTRATION @ SHENANDOAH VALLEY REGIONAL (SHD)

51 AVIATION CIRCLE, WEYERS CAVE, VA 24486

FRS (Facility Registry Service) ID: 110020572593

EPA Region: 03

Latitude: 38.26393

Longitude: -78.90166

Locational Data Source: FRS

Industries: Administration of Economic Programs

Indian Country: N

Enforcement and Compliance Summary

Statute	RCRA
Compliance Monitoring Activities (5 years)	--
Date of Last Compliance Monitoring Activity	--
Compliance Status	No Violation Identified
Qtrs in Noncompliance (of 12)	0
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Regulatory Information

Clean Air Act (CAA): No Information

Clean Water Act (CWA): No Information

Resource Conservation and Recovery Act (RCRA): Active VSQG, (VAR000508341)

Safe Drinking Water Act (SDWA): No Information

Other Regulatory Reports

Air Emissions Inventory (EIS): No Information

Greenhouse Gas Emissions (eGGRT): No Information

Toxic Releases (TRI): No Information

Compliance and Emissions Data Reporting Interface (CEDRI):
No Information

Go To Enforcement/Compliance Details
Known Data Problems <https://epa.gov/resources/echo-data/known-data-problems>

Facility/System Characteristics

Facility/System Characteristics

System	Status	Identifier	Universe	Status	Area	Permit Expiration Date	Indian Country	Latitude	Longitude
FRS		110020572593					N	38.26393	-78.90166
RCRAInfo	RCRA	VAR000508341	VSQG	Active (H)			N	38.263841	-78.901565

Facility Address

System	Status	Identifier	Facility Name	Facility Address	Facility County
FRS		110020572593	TRANSPORTATION SECURITY ADMINISTRATION @ SHENANDOAH VALLEY REGIONAL (SHD)	51 AVIATION CIRCLE, WEYERS CAVE, VA 24486	Augusta County
RCRAInfo	RCRA	VAR000508341	TRANSPORTATION SECURITY ADMINISTRATION @ SHENANDOAH VALLEY REGIONAL (SHD)	51 AVIATION CIRCLE, WEYERS CAVE, VA 24486	Augusta County

Facility SIC (Standard Industrial

Classification) Codes

System	Identifier	SIC Code	SIC Description
No data records returned			

Facility NAICS (North American Industry Classification System) Codes

System	Identifier	NAICS Code	NAICS Description
RCRAInfo	VAR000508341	92612	Regulation and Administration of Transportation Programs

Facility Tribe Information

Reservation Name	Tribe Name	EPA Tribal ID	Distance to Tribe (miles)
No data records returned			

Enforcement and Compliance

Compliance Monitoring History

Last 5 Years

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
No data records returned							

Entries in italics are not included in ECHO's Compliance Monitoring Activity counts because they are not compliance monitoring strategy <https://www.epa.gov/compliance/compliance-monitoring-programs> *activities or because they are not counted as inspections within EPA's Annual Results* <https://www.epa.gov/enforcement/enforcement-data-and-results>.

Compliance Summary Data

Statute	Source ID	Current SNC (Significant Noncompliance)/HPV (High Priority Violation)	Current As Of	Qtrs with NC (Noncompliance) (of 12)	Data Last Refreshed
RCRA	VAR000508341	No	12/02/2023	0	12/01/2023

Three-Year Compliance History by Quarter

Statute	Program/Pollutant/Violation Type		QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
RCRA (Source ID: VAR000508341)			01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23
	Facility-Level Status		No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified
	Violation	Agency												

Informal Enforcement Actions

Last 5 Years

Statute	System	Source ID	Type of Action	Lead Agency	Date
No data records returned					

Entries in italics are not counted as "informal enforcement actions" in EPA policies pertaining to enforcement response tools.

Formal Enforcement Actions

Last 5 Years

Statute	System	Law/Section	Source ID	Type of Action	Case No.	Lead Agency	Case Name	Issued/Filed Date	Settlements/Actions	Settlement/Action Date	Federal Penalty Assessed	State/Local Penalty Assessed	Penalty Amount Collected	SEP Value	Comp Action Cost

No data records returned

Environmental Conditions

Watersheds ⚠

12-Digit WBD (Watershed Boundary Dataset) HUC (RAD (Reach Address Database))	WBD (Watershed Boundary Dataset) Subwatershed Name (RAD (Reach Address Database))	State Water Body Name (ICIS (Integrated Compliance Information System))	Beach Closures Within Last Year	Beach Closures Within Last Two Years	Pollutants Potentially Related to Impairment	Watershed with ESA (Endangered Species Act)-listed Aquatic Species?

No data records returned

Assessed Waters From Latest State Submission (ATTAINS)

State	Report Cycle	Assessment Unit ID	Assessment Unit Name	Water Condition	Cause Groups Impaired	Drinking Water Use	Ecological Use	Fish Consumption Use	Recreation Use	Other Use

No data records returned

Air Quality Nonattainment Areas

Pollutant	Within Nonattainment Status Area?	Nonattainment Status Applicable Standard(s)	Within Maintenance Status Area?	Maintenance Status Applicable Standard(s)

No data records returned

Pollutants

Toxics Release Inventory History of Reported Chemicals Released or Transferred in Pounds per Year at Site

TRI Facility ID	Year	Air Emissions	Surface Water Discharges	Off-Site Transfers to POTWs (Publicly Owned Treatment Works)	Underground Injections	Disposal to Land	Total On-Site Releases	Total Off-Site Transfers

No data records returned

Toxics Release Inventory Total Releases and Transfers in Pounds by Chemical and Year

Chemical Name

No data records returned

CWA (Clean Water Act) Discharge Monitoring Report (DMR) Pollutant Loadings

DMR and TRI Multi-Year Loading Report

NPDES ID	Description

No data records returned

Community

Environmental Justice

This section shows indexes from EJScreen, EPA's screening tool for environmental justice (EJ) concerns. EPA uses these indexes to identify geographic areas that may warrant further consideration or analysis for potential EJ concerns. Use of these indexes does not designate an area as an "EJ community" or "EJ facility." EJScreen provides screening level indicators, not a determination of the existence or absence of EJ concerns. For more information, see the EJScreen home page.

EJScreen Indexes Shown

Compare to ⓘ (•) US ( ) State

Index Type ⓘ ( ) Environmental Justice (•) Supplemental

Related Reports

EJScreen Community Report

Download Data

Census Block Group ID: 510150703004	US (Percentile)	
Supplemental Indexes	**Facility Census Block Group**	**1-mile Max**
Count of Indexes At or Above 80th Percentile	**0**	**0**
Particulate Matter 2.5	22	22
Ozone	12	12
Diesel Particulate Matter	36	36
Air Toxics Cancer Risk	15	15
Air Toxics Respiratory Hazard Index	46	46
Toxic Releases to Air	20	20
Traffic Proximity	21	21
Lead Paint	43	43
Risk Management Plan (RMP) Facility Proximity	30	30
Hazardous Waste Proximity	20	20
Superfund Proximity	33	33
Underground Storage Tanks (UST)	0	--
Wastewater Discharge	53	53

◯ Facility 1-mile Radius ☐ Facility Census Block Group

Demographic Profile of Surrounding Area (1-Mile Radius)

This section provides demographic information regarding the community surrounding the facility. ECHO compliance data alone are not sufficient to determine whether violations at a particular facility had negative impacts on public health or the environment. Statistics are based upon the 2010 U.S. Census and 2017 - 2021 American Community Survey (ACS) 5-year Summary and are accurate to the extent that the facility latitude and longitude listed below are correct. EPA's spatial processing methodology considers the overlap between the selected radii and the census blocks (for U.S. Census demographics) and census block groups (for ACS demographics) in determining the demographics surrounding the facility. For more detail about this methodology, see the DFR Data Dictionary <https://epa.gov/help/reports/dfr-data-dictionary#demographic>.

General Statistics (U.S. Census)	
Total Persons	148
Population Density	48/sq.mi.
Housing Units in Area	52

General Statistics (ACS (American Community Survey))	
Total Persons	513
Percent People of Color	18%
Households in Area	163
Households on Public Assistance	0
Persons With Low Income	76
Percent With Low Income	15%

Geography	
Radius of Selected Area	1 mi.
Center Latitude	38.26393
Center Longitude	-78.90166
Land Area	99%
Water Area	1%

Income Breakdown (ACS (American Community Survey)) - Households (%)	
Less than $15,000	0 (0%)
$15,000 - $25,000	3 (1.84%)
$25,000 - $50,000	60 (36.81%)
$50,000 - $75,000	23 (14.11%)
Greater than $75,000	77 (47.24%)

Age Breakdown (U.S. Census) - Persons (%)	
Children 5 years and younger	7 (5%)
Minors 17 years and younger	44 (30%)
Adults 18 years and older	105 (71%)
Seniors 65 years and older	11 (7%)

Race Breakdown (U.S. Census) - Persons (%)	
White	130 (88%)
African-American	1 (1%)
Hispanic-Origin	11 (7%)
Asian/Pacific Islander	4 (3%)
American Indian	3 (2%)
Other/Multiracial	11 (7%)

Education Level (Persons 25 & older) (ACS (American Community Survey)) - Persons (%)	
Less than 9th Grade	48 (14.37%)
9th through 12th Grade	3 (.9%)
High School Diploma	112 (33.53%)
Some College/2-year	54 (16.17%)
B.S./B.A. (Bachelor of Science/Bachelor of Arts) or More	107 (32.04%)

Top of Page

Contracting
<https://www.epa.gov/contracts>

EPA www Web Snapshots
<https://www.epa.gov/home/wwwepagov-snapshots>

Grants
<https://www.epa.gov/grants>

No FEAR Act Data
<https://www.epa.gov/ocr/whistleblower-protections-epa-and-how-they-relate-non-disclosure-agreements-signed-epa-employees>

Privacy
<https://www.epa.gov/privacy>

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Last updated on September 21, 2022

Data Refresh Information
<https://epa.gov/resources/echo-data/about-the-data#sources>

An official website of the United States government

Detailed Facility Report

Detailed Facility Report

Facility Summary

SHENANDOAH VALLEY AIRPORT

77 AVIATION CIRCLE, WEYERS CAVE, VA 24486

FRS (Facility Registry Service) ID: 110008198299

EPA Region: 03

Latitude: 38.266517

Longitude: -78.903862

Locational Data Source: RCRAINFO

Industries: --

Indian Country: N

Enforcement and Compliance Summary

Statute	RCRA
Compliance Monitoring Activities (5 years)	1
Date of Last Compliance Monitoring Activity	02/28/2023
Compliance Status	No Violation Identified
Qtrs in Noncompliance (of 12)	1
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Regulatory Information

Clean Air Act (CAA): No Information

Clean Water Act (CWA): No Information

Resource Conservation and Recovery Act (RCRA): Active VSQG, (VAD988221776)

Safe Drinking Water Act (SDWA): No Information

Other Regulatory Reports

Air Emissions Inventory (EIS): No Information

Greenhouse Gas Emissions (eGGRT): No Information

Toxic Releases (TRI): No Information

Compliance and Emissions Data Reporting Interface (CEDRI):
No Information

Go To Enforcement/Compliance Details
Known Data Problems <https://epa.gov/resources/echo-data/known-data-problems>

Facility/System Characteristics

Facility/System Characteristics

System	Status	Identifier	Universe	Status	Area	Permit Expiration Date	Indian Country	Latitude	Longitude
FRS		110008198299					N	38.266517	-78.903862
RCRAInfo	RCRA	VAD988221776	VSQG	Active (H)			N	38.266517	-78.903862

Facility Address

System	Status	Identifier	Facility Name	Facility Address	Facility County
FRS		110008198299	SHENANDOAH VALLEY AIRPORT	77 AVIATION CIRCLE, WEYERS CAVE, VA 24486	Augusta County
RCRAInfo	RCRA	VAD988221776	SHENANDOAH VALLEY AIRPORT	77 AVIATION CIRCLE, WEYERS CAVE, VA 24486	Augusta County

Facility SIC (Standard Industrial Classification) Codes

System	Identifier	SIC Code	SIC Description
No data records returned			

Facility NAICS (North American Industry Classification System) Codes

System	Identifier	NAICS Code	NAICS Description

No data records returned

Facility Tribe Information

Reservation Name	Tribe Name	EPA Tribal ID	Distance to Tribe (miles)

No data records returned

Enforcement and Compliance

Compliance Monitoring History

Last 5 Years

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
RCRA	VAD988221776	RCRAInfo		Compliance Evaluation Inspection	State	02/28/2023	Violations Or Compliance Issues Were Found

Entries in italics are not included in ECHO's Compliance Monitoring Activity counts because they are not compliance monitoring strategy <https://www.epa.gov/compliance/compliance-monitoring-programs> *activities or because they are not counted as inspections within EPA's Annual Results* <https://www.epa.gov/enforcement/enforcement-data-and-results>.

Compliance Summary Data

Statute	Source ID	Current SNC (Significant Noncompliance)/HPV (High Priority Violation)	Current As Of	Qtrs with NC (Noncompliance) (of 12)	Data Last Refreshed
RCRA	VAD988221776	No	12/02/2023	1	12/01/2023

Three-Year Compliance History by Quarter

Statute	Program/Pollutant/Violation Type		QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
RCRA (Source ID: VAD988221776)			01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23
	Facility-Level Status		No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified
	Violation	Agency												
RCRA	262.A: Generators - General	VA									02/28/2023-03/10/2023			
RCRA	279.C: Used Oil - Generators	VA									02/28/2023-03/10/2023			
RCRA	273.B: Universal Waste - Small Quantity Handlers	VA									02/28/2023-03/10/2023			
RCRA	273.B: Universal Waste - Small Quantity Handlers	VA									02/28/2023-03/10/2023			
RCRA	273.B: Universal Waste - Small Quantity Handlers	VA									02/28/2023-03/10/2023			

Informal Enforcement Actions

Last 5 Years

Statute	System	Source ID	Type of Action	Lead Agency	Date
RCRA	*RCRAInfo*	*VAD988221776*	*VERBAL INFORMAL*	*State*	*03/15/2023*

Entries in italics are not counted as "informal enforcement actions" in EPA policies pertaining to enforcement response tools.

Formal Enforcement Actions

Last 5 Years

Statute	System	Law/Section	Source ID	Type of Action	Case No.	Lead Agency	Case Name	Issued/Filed Date	Settlements/Actions	Settlement/Action Date	Federal Penalty Assessed	State/Local Penalty Assessed	Penalty Amount Collected	SEP Value	Comp Action Cost

No data records returned

Environmental Conditions

Watersheds ⚠

12-Digit WBD (Watershed Boundary Dataset) HUC (RAD (Reach Address Database))	WBD (Watershed Boundary Dataset) Subwatershed Name (RAD (Reach Address Database))	State Water Body Name (ICIS (Integrated Compliance Information System))	Beach Closures Within Last Year	Beach Closures Within Last Two Years	Pollutants Potentially Related to Impairment	Watershed with ESA (Endangered Species Act)-listed Aquatic Species?

No data records returned

Assessed Waters From Latest State Submission (ATTAINS)

State	Report Cycle	Assessment Unit ID	Assessment Unit Name	Water Condition	Cause Groups Impaired	Drinking Water Use	Ecological Use	Fish Consumption Use	Recreation Use	Other Use

No data records returned

Air Quality Nonattainment Areas

Pollutant	Within Nonattainment Status Area?	Nonattainment Status Applicable Standard(s)	Within Maintenance Status Area?	Maintenance Status Applicable Standard(s)

No data records returned

Pollutants

Toxics Release Inventory History of Reported Chemicals Released or Transferred in Pounds per Year at Site

TRI Facility ID	Year	Air Emissions	Surface Water Discharges	Off-Site Transfers to POTWs (Publicly Owned Treatment Works)	Underground Injections	Disposal to Land	Total On-Site Releases	Total Off-Site Transfers

No data records returned

Toxics Release Inventory Total Releases and Transfers in Pounds by Chemical and Year

Chemical Name

No data records returned

CWA (Clean Water Act) Discharge Monitoring Report (DMR) Pollutant Loadings

DMR and TRI Multi-Year Loading Report

NPDES ID	Description

No data records returned

Community

Environmental Justice

This section shows indexes from EJScreen, EPA's screening tool for environmental justice (EJ) concerns. EPA uses these indexes to identify geographic areas that may warrant further consideration or analysis for potential EJ concerns. Use of these indexes does not designate an area as an "EJ community" or "EJ facility." EJScreen provides screening level indicators, not a determination of the existence or absence of EJ concerns. For more information, see the EJScreen home page.

EJScreen Indexes Shown

Compare to ⓘ (•) US ( ) State

Index Type ⓘ ( ) Environmental Justice (•) Supplemental

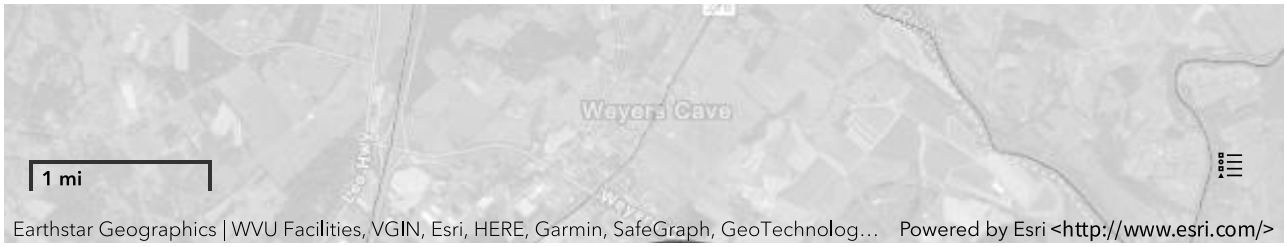
Related Reports

EJScreen Community Report

Download Data

Census Block Group ID: 510150703004	US (Percentile)	
Supplemental Indexes	**Facility Census Block Group**	**1-mile Max**
Count of Indexes At or Above 80th Percentile	**0**	**0**
Particulate Matter 2.5	22	22
Ozone	12	12
Diesel Particulate Matter	36	36
Air Toxics Cancer Risk	15	15
Air Toxics Respiratory Hazard Index	46	46
Toxic Releases to Air	20	20
Traffic Proximity	21	21
Lead Paint	43	43
Risk Management Plan (RMP) Facility Proximity	30	30
Hazardous Waste Proximity	20	20
Superfund Proximity	33	33
Underground Storage Tanks (UST)	0	--
Wastewater Discharge	53	53

◯ Facility 1-mile Radius ☐ Facility Census Block Group



Demographic Profile of Surrounding Area (1-Mile Radius)

This section provides demographic information regarding the community surrounding the facility. ECHO compliance data alone are not sufficient to determine whether violations at a particular facility had negative impacts on public health or the environment. Statistics are based upon the 2010 U.S. Census and 2017 - 2021 American Community Survey (ACS) 5-year Summary and are accurate to the extent that the facility latitude and longitude listed below are correct. EPA's spatial processing methodology considers the overlap between the selected radii and the census blocks (for U.S. Census demographics) and census block groups (for ACS demographics) in determining the demographics surrounding the facility. For more detail about this methodology, see the DFR Data Dictionary <https://epa.gov/help/reports/dfr-data-dictionary#demographic>.

General Statistics (U.S. Census)	
Total Persons	599
Population Density	190/sq.mi.
Housing Units in Area	210

General Statistics (ACS (American Community Survey))	
Total Persons	513
Percent People of Color	18%
Households in Area	163
Households on Public Assistance	0
Persons With Low Income	76
Percent With Low Income	15%

Geography	
Radius of Selected Area	1 mi.
Center Latitude	38.266517
Center Longitude	-78.903862
Land Area	99%
Water Area	1%

Income Breakdown (ACS (American Community Survey)) - Households (%)	
Less than $15,000	0 (0%)
$15,000 - $25,000	3 (1.84%)
$25,000 - $50,000	60 (36.81%)
$50,000 - $75,000	23 (14.11%)
Greater than $75,000	77 (47.24%)

Age Breakdown (U.S. Census) - Persons (%)	
Children 5 years and younger	56 (9%)
Minors 17 years and younger	198 (33%)
Adults 18 years and older	402 (67%)
Seniors 65 years and older	42 (7%)

Race Breakdown (U.S. Census) - Persons (%)	
White	545 (91%)
African-American	10 (2%)
Hispanic-Origin	64 (11%)
Asian/Pacific Islander	7 (1%)
American Indian	3 (1%)
Other/Multiracial	34 (6%)

Education Level (Persons 25 & older) (ACS (American Community Survey)) - Persons (%)	
Less than 9th Grade	48 (14.37%)
9th through 12th Grade	3 (.9%)
High School Diploma	112 (33.53%)
Some College/2-year	54 (16.17%)
B.S./B.A. (Bachelor of Science/Bachelor of Arts) or More	107 (32.04%)

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Discover.

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Follow.

Last updated on September 21, 2022

Data Refresh Information
<https://epa.gov/resources/echo-data/about-the-data#sources>

Attachment D

COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

Travis A. Voyles
Acting Secretary of Natural and Historic Resources

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

July 5, 2023

Susan Stafford
Federal Aviation Administration
Beckley Airports Field Office
176 Airport Circle, Rm 101
Beaver, WV 25813

Re: Shenandoah Valley Regional Airport Aviation Technology Park Development
Augusta County
DHR File No. 2022-5471

Dear Ms. Stafford:

The Department of Historic Resources (DHR) is writing in response to the Federal Aviation Administration's (FAA) request for review of the above-referenced project. The initial submission was received on January 4, 2023 and the architectural survey entitled, "Phase I Architectural Survey For The Aviation Technology Park Development Shenandoah Valley Regional Airport Augusta County, Virginia VDHR File No: 2022-5471" prepared by Commonwealth Heritage Group on behalf of the Shenandoah Valley Regional Airport owner, the Shenandoah Valley Regional Airport Commission, and Delta Airport Consultants, Inc. It met DHR's QA/QC Standards on June 5, 2023. DHR received the above referenced project for our review and comment pursuant to Section 106 (54 U.S.C. 306108) of the National Historic Preservation Act (54 U.S.C. 300101 et seq.) and it's implementing regulation, "Protection of Historic Properties" (36 CFR Part 800).

As stated in our previous letter, the direct are of potential effect (APE) for this Undertaking encompasses approximately 80 acres. Surveyed resources that are over 45 years of age include the following:

DHR Resource #	Resource Name and Address	Commonwealth Eligibility	DHR Eligibility	Commonwealth Impact	DHR Impact
Within Direct APE					
007-6273	House, 14 Aviation Circle	Not Eligible	Not Eligible	N/A	N/A
007-6274	House, 18 Aviation Circle	Not Eligible	Not Eligible	N/A	N/A

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

007-6281	Cash Cemetery	Not Eligible	Not Eligible	**N/A**	**30 Foot Minimum Buffer**
Within Indirect APE					
007-6276	House, 224 Airport Road	Not Eligible	Not Eligible	N/A	N/A
007-6277	House, 244 Airport Road	Not Eligible	Not Eligible	N/A	N/A
007-6280	House, 321 Valley Church Road	Not Eligible	Not Eligible	N/A	N/A
007-6275	House, 390 Valley Church Road	Not Eligible	Not Eligible	N/A	N/A
007-6278	House, 71 Moss Lane	Not Eligible	Not Eligible	N/A	N/A
007-6279	Oakland Farms	Not Eligible	Not Eligible	N/A	N/A

TABLE KEY:	Warrants Mitigation	Needs Attention	**DHR does not concur**

We understand that the Cash Cemetery is 25 feet from the old Airport Road which is proposed to be rehabilitated. DHR recommends no less that a 30-foot buffer from cemeteries when the horizontal extent has not been formally delineated and the protection area should be noted on all relevant construction plans and defined in the field by temporary fencing during construction. With the condition that a 30-foot buffer is established if the project is within 30 feet of the cemetery (and if so, it is noted in construction documents and defined in the field by temporary fencing during construction) DHR concurs with the FAA's determination of No Historic Properties Affected.

If you have any questions or comments regarding the project in general or our review of this project, please do not hesitate to contact me via email at adrienne.birge-wilson@dhr.virginia.gov or via telephone at (804) 482-6092.

Sincerely,

Adrienne Birge-Wilson, Architectural Historian
Review and Compliance Division

c. Mary Ashburn Pearson, Delta Airport Consultants

Mary Ashburn Pearson

From: Birge-wilson, Adrienne (DHR) <Adrienne.Birge-Wilson@dhr.virginia.gov>
Sent: Monday, April 3, 2023 9:38 AM
To: Mary Ashburn Pearson
Cc: Susan.Stafford@faa.gov; John C. Longnaker
Subject: RE: DHR Comments - Shenandoah Valley Regional Airport Aviation Technology Park Development - DHR File No. 2022-5471

Mary- Thank you. With the condition that a 30-foot buffer is established around the Cash Cemetery and the protection area is noted on all relevant construction plans and defined in the field by temporary fencing during construction; DHR recommends there will be no adverse impact to Cash Cemetery. We look forward to reviewing the additional architectural survey for this project when it is complete.

V/R,

Adrienne Birge-Wilson

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Sunday, March 5, 2023 11:15 AM
To: Birge-wilson, Adrienne (DHR) <Adrienne.Birge-Wilson@dhr.virginia.gov>
Cc: Susan.Stafford@faa.gov; John C. Longnaker <JLongnaker@deltaairport.com>
Subject: FW: DHR Comments - Shenandoah Valley Regional Airport Aviation Technology Park Development - DHR File No. 2022-5471

Adrienne,

Per DHR's request for photos of Cash Cemetery at the Shenandoah Valley Regional Airport, we are attaching one photo taken this week. Due to file size, we will transmit additional photos to you shortly via our Info Exchange software.

There are no visible gravestones and we are not aware that the cemetery has been formally delineated; right now it is enclosed in farm posts with chicken wire. Holes and depressions appear to be animal-related (groundhogs?) Again, there are no plans to impact the cemetery and DHR's recommendation of a 30-foot buffer and noting it on construction site plans and temporary fencing during construction is noted.

If you need anything else on this matter, just let us know.

Thank you,

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

From: Birge-wilson, Adrienne (DHR) <Adrienne.Birge-Wilson@dhr.virginia.gov>
Sent: Wednesday, February 1, 2023 9:07 AM
To: Stafford, Susan (FAA) (susan.stafford@faa.gov) <susan.stafford@faa.gov>
Cc: Mary Ashburn Pearson (mapearson@deltaairport.com) <mapearson@deltaairport.com>
Subject: DHR Comments - Shenandoah Valley Regional Airport Aviation Technology Park Development - DHR File No. 2022-5471

Susan and Mary- Please see the attached letter with comments for the referenced project. A hard copy of this will not follow unless requested.

Thank you for offering us the opportunity to comment.

V/R,

Adrienne Birge-Wilson
Architectural Historian
Review and Compliance Division | Virginia Department of Historic Resources

8044826092
adrienne.birge-wilson@dhr.virginia.gov
www.dhr.virginia.gov
2801 Kensington Ave., Richmond, VA 23

Phase I Architectural Survey for the Aviation Technology Park Development Shenandoah Valley Regional Airport Augusta County, Virginia

VDHR File No: 2022-5471

Prepared for

Shenandoah Valley Regional Airport Commission (Owner)
Shenandoah Valley Regional Airport
Weyers Cave, Virginia

and

Delta Airport Consultants, Inc.
Midlothian, Virginia

Prepared by

Meredith McCulley

and

Charles E. Goode, RPA

May 2023

COMMONWEALTH HERITAGE GROUP

Chantilly, Virginia

PHASE I ARCHITECTURAL SURVEY FOR THE AVIATION TECHNOLOGY PARK DEVELOPMENT, SHENANDOAH VALLEY REGIONAL AIRPORT AUGUSTA COUNTY, VIRGINIA

VDHR FILE NO: 2022-5471

Prepared for
Shenandoah Valley Regional Airport Commission (Owner)
Shenandoah Valley Regional Airport
77 Aviation Circle
Weyers Cave, Virginia 24486

And

Delta Airport Consultants, Inc.
2700 Polo Parkway
Midlothian, Virginia 23113

By

Meredith McCulley
And
Charles E. Goode, RPA

COMMONWEALTH HERITAGE GROUP
14102 Sullyfield Circle, Suite 150A
Chantilly, Virginia 20151

May 2023

ABSTRACT

The Shenandoah Valley Regional Airport Commission hired Delta Airport Consultants, Inc. to prepare an Environmental Assessment for Aviation Technology Park Development at the Shenandoah Valley Regional Airport (SHD). On behalf of Delta Airport Consultants, Inc., Commonwealth Heritage Group conducted a Phase I Architectural Survey of the Area of Potential Effects (APE) for this project that included historic background research and a reconnaissance architectural survey. The APE includes the 87-acre area of direct effects and the 172-acre area of indirect effects.

The architectural field investigation included the Phase I level documentation of nine architectural resources, all of which were identified during the current survey (007-6273, 007-6274, 007-6275, 007-6276, 007-6277, 007-6278, 007-6279, 007-6280, and 007-6281). Commonwealth recommends these resources as not eligible for listing in the Virginia Landmarks Register (VLR) and National Register of Historic Places (NRHP). All are lacking in significance, and one (007-6281) also lacks integrity.

Commonwealth evaluated the APE vicinity as a potential historic district or smaller historic districts. Within the APE, the buildings are from a variety of periods, styles, and associations. They represent early-to-late twentieth century residential and agricultural buildings and a small family cemetery. There are no shared linkages of association, design, and history between the buildings over fifty years of age within the APE. Therefore, Commonwealth determined that there are no historic districts present within the project APE.

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Shenandoah Valley Regional Airport Commission hired Delta Airport Consultants, Inc. to prepare an Environmental Assessment for Aviation Technology Park Development at the Shenandoah Valley Regional Airport (SHD). On behalf of Delta Airport Consultants, Inc., Commonwealth Heritage Group conducted a Phase I Architectural Survey of the Area of Potential Effects (APE) for this project that included historic background research and a reconnaissance level architectural survey.

The area for direct effects consists of an 87-acre area (Figure 1). The area for indirect effects contains 172 acres. The reconnaissance level architectural survey covered all above-ground resources that were built on or before 1978 that fell within the APE.

The investigation determined the presence or absence of significant architectural resources within the APE. The survey was designed to comply with the Virginia Department of Historic Resources' (VDHR's) *Guidelines for Conducting Cultural Resource Survey in Virginia* (VDHR 2017) and the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation*.

The architectural survey was conducted on April 10, 2023, by Meredith McCulley. Ms. McCulley also conducted background research and prepared the report. Allen Poyner prepared the graphics. Charles Goode served as project manager.

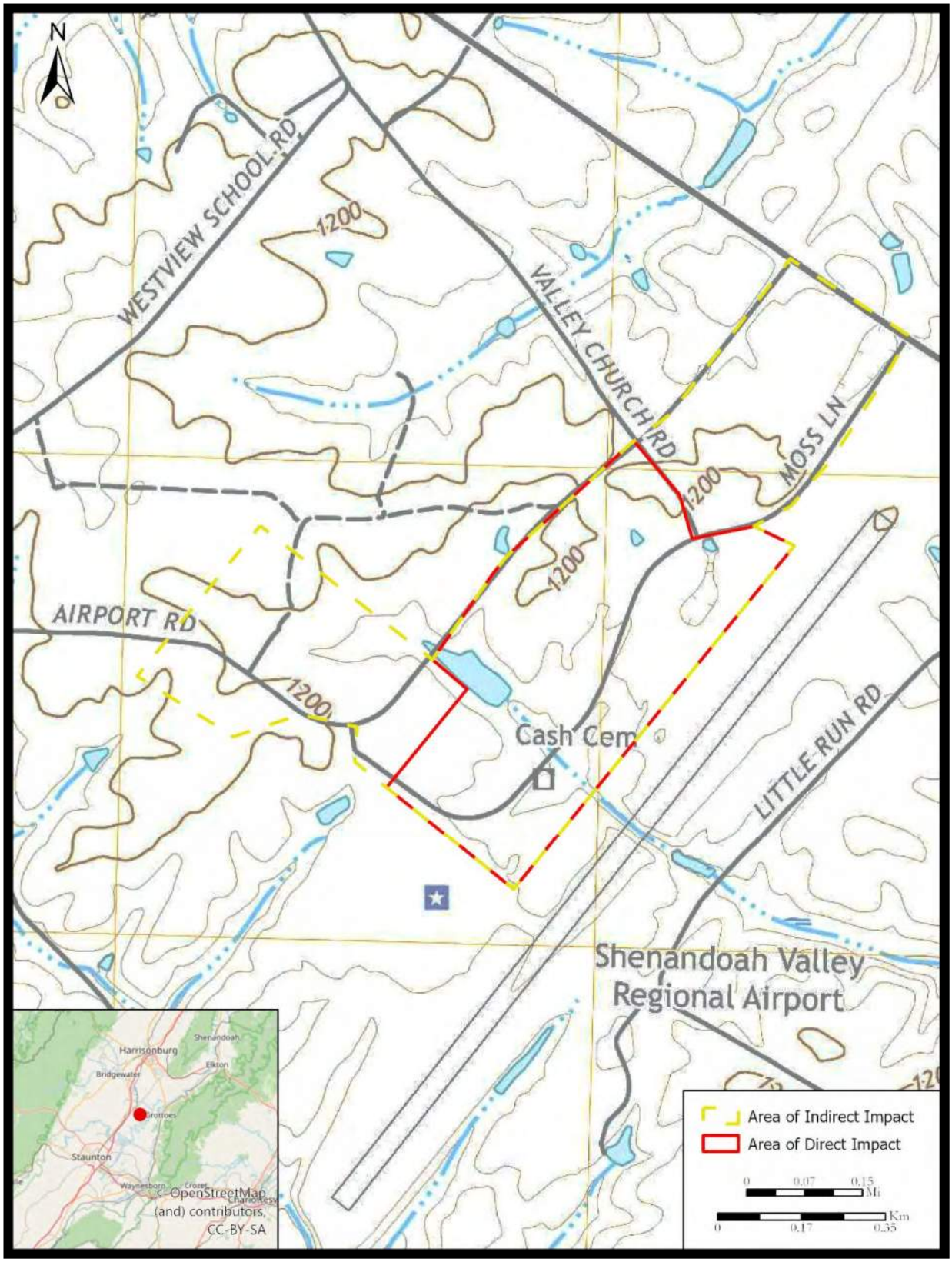

Figure 1. The location of the APE on the 2019 USGS *Mount Sidney, VA* 7.5-minute quadrangle (USGS 2019).

2.0 RESEARCH DESIGN

2.1 RESEARCH METHODS

Commonwealth conducted online research to investigate tax parcels and the construction dates of structures using the Augusta County Address and Parcel Viewer and Property Lookup websites (Augusta County 2023a, 2023b). Commonwealth conducted online research to investigate the history of Cash Cemetery. Sources used include newspapers.com, Ancestry.com, Library of Virginia's Virginia Chronicle, and the Library of Congress through their online resources.

2.2 FIELD METHODS

Field methods for the architectural survey included reconnaissance survey with digital photography of architectural resources, including secondary buildings and outbuildings. There are no previously identified individual architectural resources and nine previously unidentified individual architectural resource that fall within the APE. The previously unidentified architectural resources consist of dwellings and their associated outbuildings (007-6273, 007-6274, 007-6275, 007-6276, 007-6277, 007-6278, and 007-6280), an agricultural complex (007-6279), and a family cemetery (007-6281). The resources were surveyed and documented in photographs, and V-CRIS forms were created for them.

3.0 RESULTS

3.1 ARCHITECTURAL SURVEY RESULTS

Commonwealth documented nine newly identified resources including House, 14 Aviation Circle (007-6273), House, 18 Aviation Circle (007-6274), House, 390 Valley Church Road (007-6275), House, 224 Airport Road (007-6276), House, 244 Airport Road (007-6277), House, 71 Moss Lane (007-6278), Oakland Farms (007-6279), House, 321 Valley Church Road, and Cash Cemetery, 16 Aviation Circle (007-6281) (Figure 2; Table 1).

Table 1. Architectural resources investigated during the survey.

VDHR ID	Property Name	Property Description	Commonwealth Recommendations
007-6273	House, 14 Aviation Circle	2-story, Colonial Revival-style single dwelling built ca. 1925 and a garage	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6274	House, 18 Aviation Circle	2.5-story, Vernacular-style single dwelling built ca. 1925 and an attached garage, shed, and silo	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6275	House, 390 Valley Church Road	2-story, Colonial Revival-style single dwelling built ca. 1925 and a barn, silo, and garage	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6276	House, 224 Airport Road	2-story Vernacular-style single dwelling built in 1909 and 3 pole barns, a silo, an equipment shed, a garage, a shed, and a cinderblock outbuilding	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6277	House, 244 Airport Road	1-story Ranch house built in 1974, garage, and shed	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6278	House, 71 Moss Lane	2-story, Vernacular-style single dwelling built ca. 1900 and an attached garage, inground pool, and pool house	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6279	Oakland Farms	Barn, cinderblock agricultural building, and 2 silos built pre-1957	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.

VDHR ID	Property Name	Property Description	Commonwealth Recommendations
007-6280	House, 321 Valley Church Road	2-story, Vernacular-style single dwelling built in 1918 and 4 sheds	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6281	Cash Cemetery	Small family cemetery located within fenced area. No visible headstones.	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of integrity and significance.

Commonwealth evaluated the APE vicinity as a potential historic district or smaller historic districts. Within the APE, the buildings are from a variety of periods, styles, and associations. They represent early-to-late twentieth century residential buildings, late twentieth century agricultural buildings, and a small family cemetery. There are no shared linkages of association, design, and history between the buildings over fifty years of age within the APE. Therefore, Commonwealth determined that there are no historic districts present within the project APE.

House, 14 Aviation Circle (VDHR ID 007-6273)

This single dwelling built ca. 1925 is located on the north side of Aviation Circle (Figure 3). The two-story, seven-bay, Colonial Revival-style residence has a concrete block foundation, aluminum siding, and a low-pitched metal side-gable roof. At either end of the main block is a one-story, side-gable wing. The southwestern wing has a brick exterior end chimney. A two-story portico extends across most of the front façade. Its roof is supported by square fluted columns. The slightly off-center front entrance contains a paneled door and sidelights. Windows include single 6/6 double-hung sash, single 9/9 double-hung sash, and paired 6-light. On the rear elevation is an addition clad with wood boards. A single-bay detached garage is located north of the house.

House, 18 Aviation Circle (VDHR ID 007-6274)

This single dwelling built ca. 1925 is located on the northwest side of Aviation Circle (Figure 4). The two-story, three-bay, Vernacular-style residence has a concrete block foundation, vinyl siding, stickwork within the gables, a central gable dormer, a brick ridge chimney, and a metal cross-gable roof. There is a partial width, screened porch on the front façade. Windows include tripartite and single 2/2 double-hung wood sash, single 2/2 horizontal-pane double-hung sash, and single 6/6 double-hung wood sash. A hyphen connects the northeast elevation of the house with a two-bay garage with single 4/4 and 6/6 double-hung wood sash windows. A silo and a shed are located northeast of the house.

House, 390 Valley Church Road (VDHR ID 007-6275)

This single dwelling built ca. 1925 is located on the northeast side of Valley Church Road (Figure 5). The two-story, three-bay, Colonial Revival-style residence has a concrete foundation, stuccoed walls, two brick interior chimneys, a gambrel dormer, and a metal gambrel/cross-gable

roof. The full-width enclosed front porch has a concrete block foundation, asbestos shingle siding, paired jalousie and tripartite windows, and a metal shed roof. The central front entrance contains a paneled door. Windows are single 1/1 double-hung vinyl sash. A one-story enclosed porch with a series of 3/1 windows is located at the east corner of the house. A barn, garage, and silo are located northeast of the house.

House, 224 Airport Road (VDHR ID 007-6276)

This single dwelling built in 1909 is located on the northeast side of Airport Road (Figure 6). The two-story, three-bay, Vernacular-style residence has a stone foundation, vinyl siding, two brick ridge chimneys, cornice returns, decorative stickwork in the gable ends, and an asphalt side-gable roof. The partial-width front porch has a concrete foundation, square posts, eave brackets, and an asphalt hipped roof. The central front entrance is surrounded by a transom and sidelights. Windows are single 2/2 double-hung wood sash and single 1/1 double-hung sash with shutters. A one-story addition/porch wraps around the northeast and southeast elevations. Located southeast and northeast of the house are three pole barns, an equipment shed, a garage, a shed, a cinderblock outbuilding, and a silo.

House, 244 Airport Road (VDHR ID 007-6277)

This single dwelling built in 1974 is located on the northeast side of Airport Road (Figure 7). The one-story, five-bay, Ranch-style residence has a concrete block foundation, brick walls, vertical wood siding within the gables, an off-center front entrance, a recessed partial-width front porch, a brick exterior end chimney, and an asphalt cross-gable roof. Windows are tripartite and single 1/1 double-hung sash with shutters. A garage is attached to the southeast elevation. There is a detached garage located southeast of the house and a shed northeast of the house.

House, 71 Moss Lane (VDHR ID 007-6278)

This single dwelling built ca. 1900 is located on the northwest side of Moss Lane (Figure 8). The two-story, three-bay, Vernacular-style residence has a concrete foundation, vinyl siding, a central front entrance, a single-bay front porch, two brick interior end chimneys, a brick ridge chimney, and a metal cross-gable roof. Windows are tripartite, single 1/1 double-hung sash, and single and paired 2/2 double-hung sash. The windows in the main block of the house have shutters. There is an attached two-bay garage at the north end of the house. A pool and pool house are located northeast of the house.

Oakland Farms (VDHR ID 007-6279)

This agricultural complex located at the west corner of Weyers Cave Road and Moss Lane consists of a barn, an attached shed, two loafing sheds, a milk parlor, and two silos (Figure 9). The original buildings were built prior to 1957 (NETROnline 2023). The barn and sheds have metal siding. Some sides of the sheds are open. The barn has a metal gable roof, and the sheds have metal shed roofs. The milk parlor has concrete block walls, single 6-light windows, and a metal gable roof. The silos have concrete walls. One has a metal dome roof, and the other does not have a roof.

House, 321 Valley Church Road (VDHR ID 007-6280)
This single dwelling built in 1918 is located on the southwest side of Valley Church Road (Figure 10). The two-story, four-bay, Vernacular-style residence has a concrete foundation, aluminum siding, two off-center front entrances, a brick ridge chimney, a brick slope chimney, and a metal cross-gable roof. The partial-width front porch has a pier foundation, a wood deck, square posts, and a metal hipped roof. Windows are single and paired 1/1 double-hung vinyl sash and single 2/2 double-hung wood sash. Some of the windows are flanked by shutters. Four sheds sit south and southeast of the house.

Cash Cemetery (VDHR ID 007-6281)
This small family cemetery is located on the southeast side of Aviation Circle (Figure 11). There are no visible grave markers, and it is surrounded by a fence.

While the cemetery is represented on Google Maps and Find a Grave as "Cash Cemetery," the burial ground was located on the Kersh family farm in Weyer's Cave, which now makes up a portion of the Shenandoah Valley Regional Airport. The Kersh surname appears in the vicinity of the airport on the 1870 and 1875 *Map of Augusta County, Virginia* (Hotchkiss 1870, 1875). Revolutionary War veteran Mathias Kersh and his wife Anna Margaret, both of whom died in the early nineteenth century, are buried there, along with an unknown number of others. The farm, along with another, was acquired by the airport in 1956, and the graveyard subsequently fell into disrepair. An earlier iron fence around the cemetery was removed after it was damaged by trees, and the markers have either been buried or removed (*Augusta Free Press* October 9, 2018; Peters 2018).

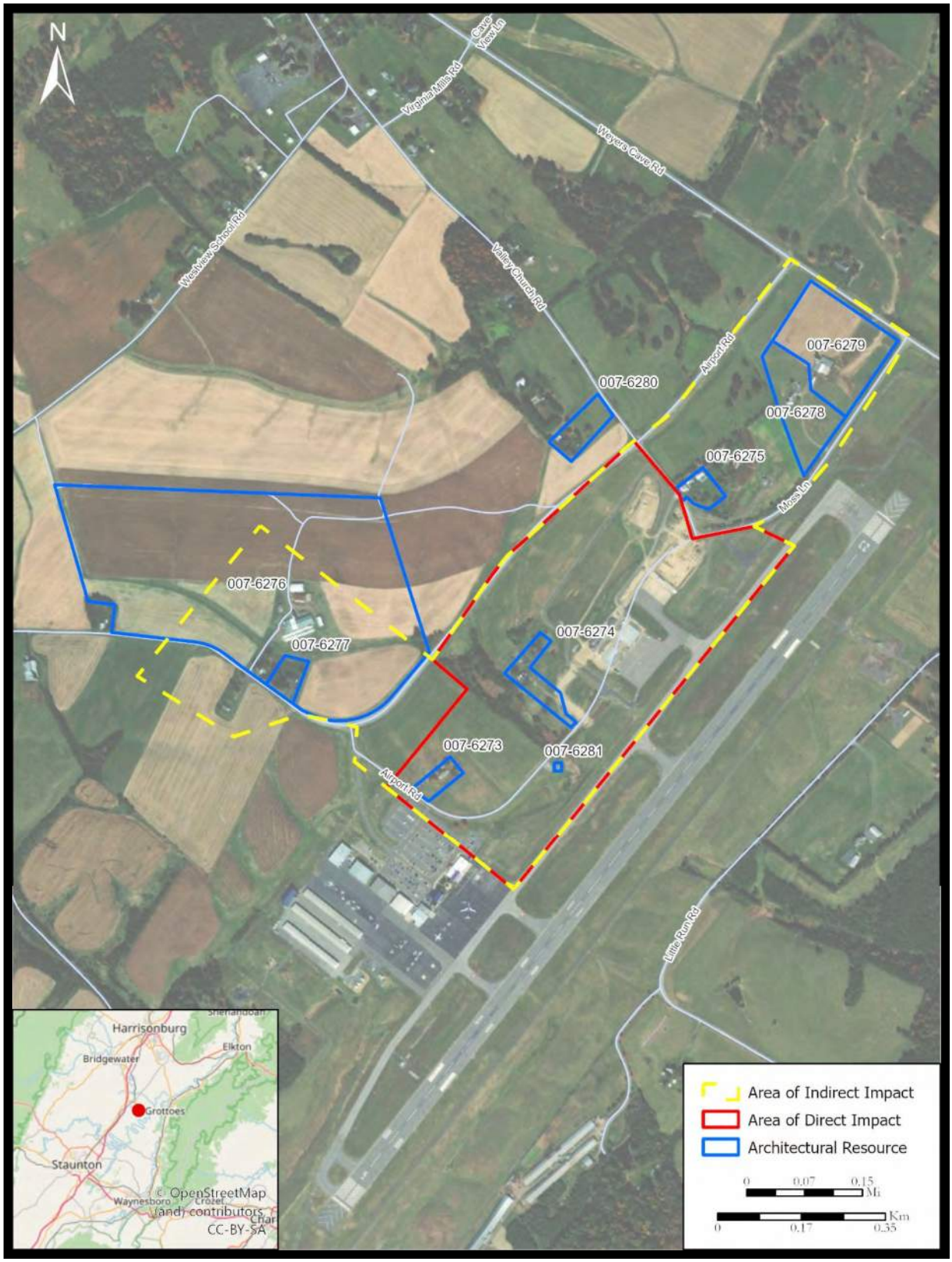

Figure 2. Aerial photograph showing the location of the APE and the architectural resources surveyed.

Figure 3. House, 14 Aviation Circle (007-6273), looking northwest.

Figure 4. House, 18 Aviation Circle (007-6274), looking north.

Figure 5. House, 390 Valley Church Road (007-6275), looking northeast.

Figure 6. House, 224 Airport Road (007-6276), looking north.

Figure 7. House, 244 Airport Road (007-6277), looking northeast.

Figure 8. House, 71 Moss Lane (007-6278), house and pool house, looking northwest.

Figure 9. Oakland Farms (007-6279), looking west.

Figure 10. House, 321 Valley Church Road (007-6280), looking east.

Figure 11. Cash Cemetery (007-6281), looking northwest.

4.0 SUMMARY AND RECOMMENDATIONS

The architectural field investigation included the Phase I level documentation of nine architectural resources within the APE (Table 2). Nine resources were identified during the current survey. Commonwealth recommends these resources as not eligible for listing on the VLR/NRHP. All are lacking in significance, and one (007-6281) also lacks integrity.

Table 2. Architectural resource National Register eligibility recommendations.

VDHR ID	Resource Description	VLR/NRHP Status	Commonwealth Recommendations
007-6273	House, 14 Aviation Circle	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6274	House, 18 Aviation Circle	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6275	House, 390 Valley Church Road	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6276	House, 224 Airport Road	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6277	House, 244 Airport Road	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6278	House, 71 Moss Lane	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6279	Oakland Farms	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.
007-6280	House, 321 Valley Church Road	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of significance.

VDHR ID	Resource Description	VLR/NRHP Status	Commonwealth Recommendations
007-6281	Cash Cemetery	Previously unrecorded	Commonwealth recommends this resource as not eligible for listing in the NRHP/VLR due to lack of integrity and significance.

Commonwealth evaluated the APE vicinity as a potential historic district or smaller historic districts. Within the APE, the buildings are from a variety of periods, styles, and associations. They represent early-to-late twentieth century residential buildings, late twentieth century agricultural buildings, and a small family cemetery. There are no shared linkages of association, design, and history between the buildings over fifty years of age within the APE. Therefore, Commonwealth determined that there are no historic districts present within the project APE.

5.0 REFERENCES CITED

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Augusta County
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2019 *Mount Sidney, VA* 7.5-minute quadrangle. Reston, VA.

Virginia Department of Historic Resources (VDHR)
2017 *Guidelines for Conducting Cultural Resource Survey in Virginia*. Richmond, VA.

APPENDIX I

Virginia Department of Historic Resources Architectural Reconnaissance Forms

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 14 Aviation Circle

Property Evaluation Status

Not Evaluated

Property Addresses

Current - 14 Aviation Circle

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 43B
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 1.04

Site Description:

April 2023: This resource is located on a trapezoidal parcel on the northeast side of Aviation Circle. There are several trees around the house, which is completely surrounded by a grass lawn. A garage is located north of the house, and a paved driveway runs along the northwestern edge of the property.

Surveyor Assessment:

April 2023: The building located at 14 Aviation Circle is a two-story single dwelling constructed around 1925 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1925
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Colonial Revival
Form: Three-Part Palladian
Number of Stories: 2.0
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This two-story, seven-bay, Colonial Revival-style residence built ca. 1925 has a concrete block foundation, aluminum siding, and a low-pitched metal side-gable roof. At either end of the main block is a one-story, side-gable wing. The southwestern wing has a brick exterior end chimney. A two-story portico extends across most of the front façade. Its roof is supported by square fluted columns. The slightly off-center front entrance contains a paneled door and sidelights. Windows include single 6/6 double-hung sash, single 9/9 double-hung sash, and paired 6-light. On the rear elevation is an addition clad with wood boards.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Coursed
Structural System and Exterior Treatment	Wood Frame	Aluminum	Siding
Porch	2-Story Partial Width	Wood	Square
Roof	Side Gable	Metal	*No Data*
Chimneys	Exterior End	Brick	Strecther Bond
Windows	Double-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1925Ca
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This garage has vinyl siding and a metal front-gable roof. A garage bay is centrally located in its front façade. There is a 1x1 window in its northwest and southeast elevations and a half-light paneled wood entrance door in its southeast elevation.

Interior Plan: Open
Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Roof	Front Gable	Metal	*No Data*
Windows	Casement	*No Data*	*No Data*

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471
Investigator: Meredith McCulley
Organization/Company: Commonwealth Heritage Group, Alexandria
Photographic Media: Digital
Survey Date: 4/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

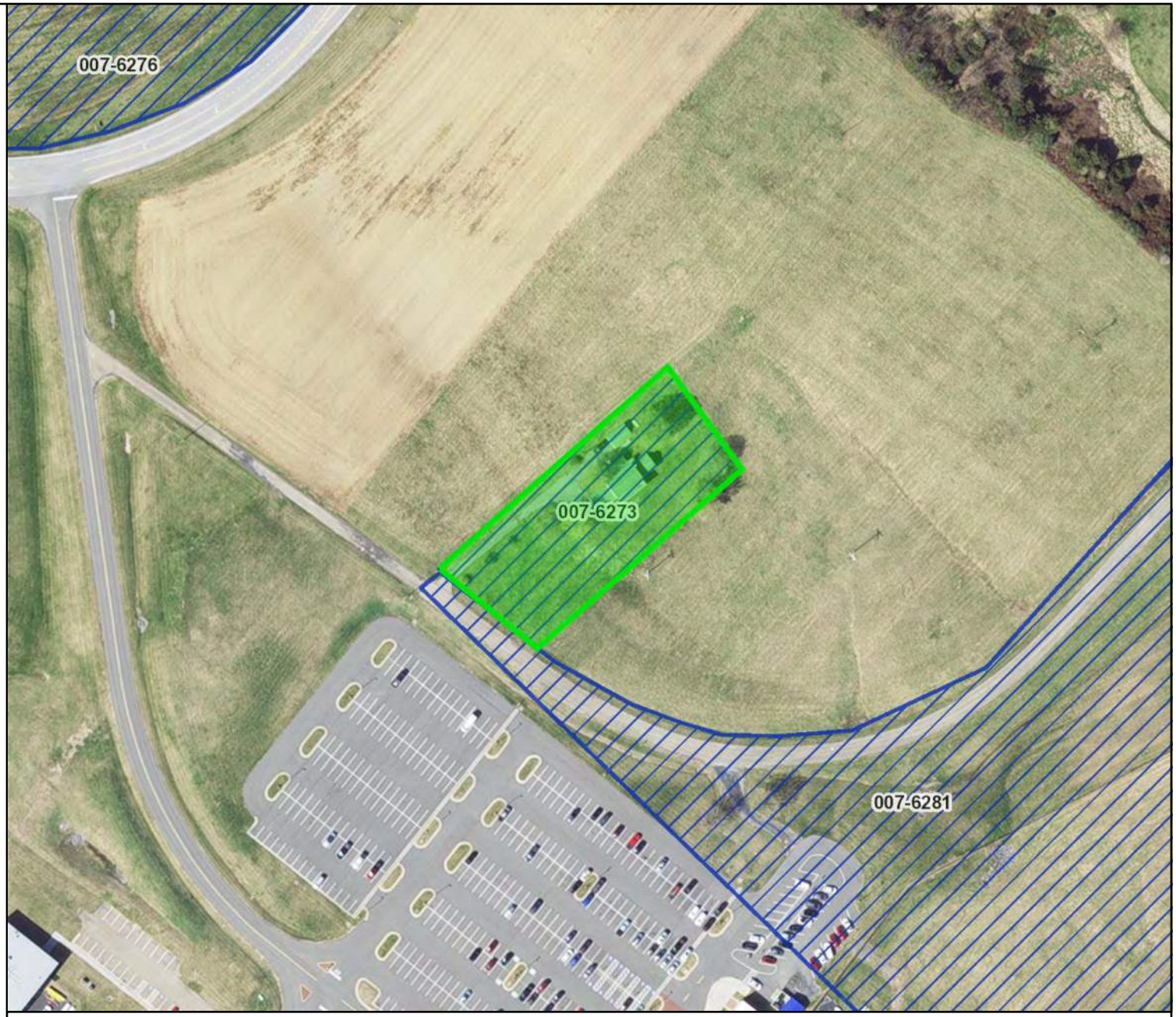
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries



N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

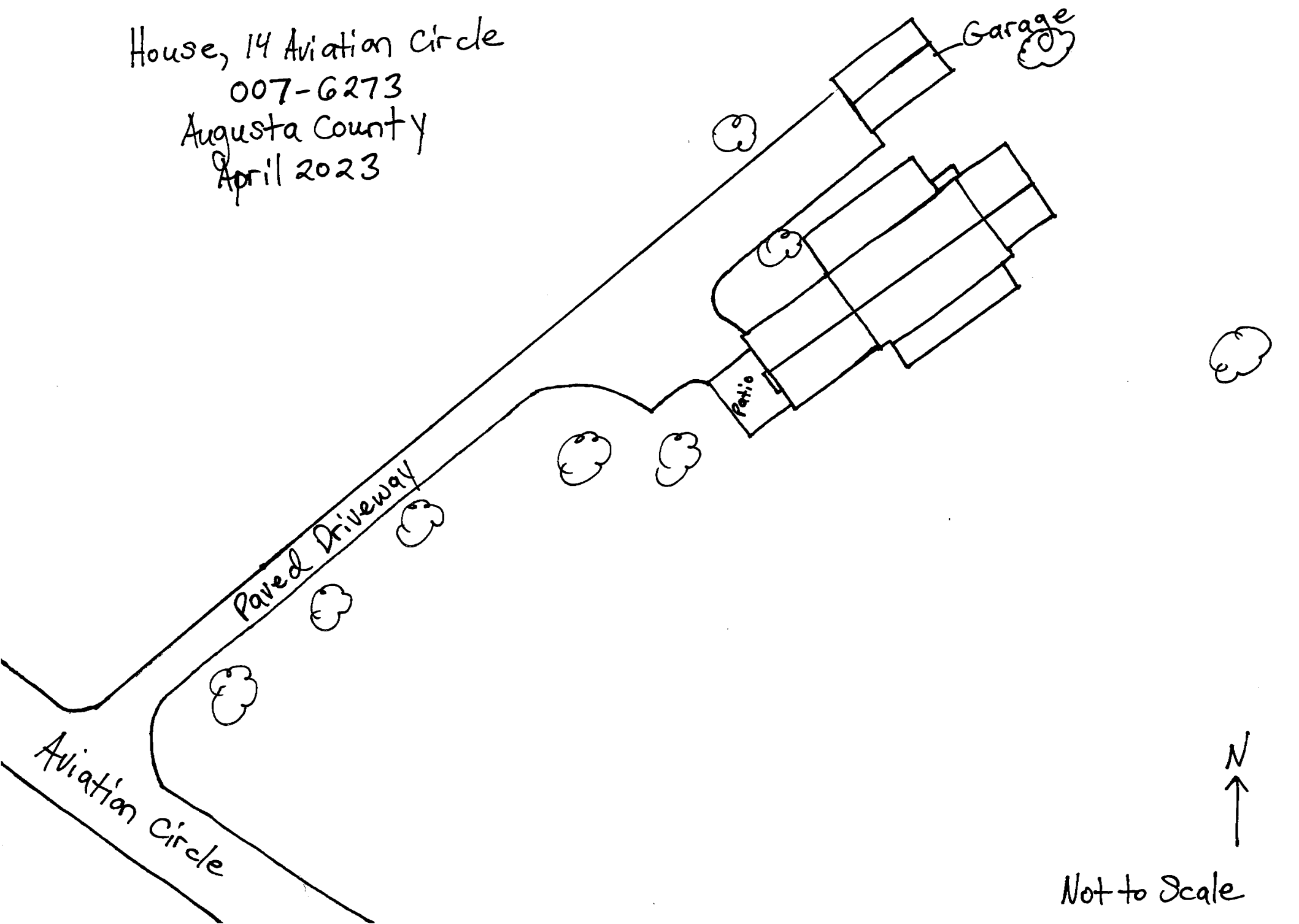
Title: Architecture Labels

Date: 5/8/2023

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

House, 14 Aviation Circle
007-6273
Augusta County
April 2023



VDHR Photo Pages: Resource ID #007-6273

VDHR ID #007-6273; View of front façade of house, looking northwest (2023).

VDHR ID #007-6273; View of south corner of house, looking north (2023).

VDHR ID #007-6273; View of west corner of house and garage, looking east (2023).

VDHR ID #007-6273; View of garage façade, looking northeast (2023).

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 18 Aviation Circle

Property Addresses

Current - 18 Aviation Circle

Property Evaluation Status

Not Evaluated

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 40
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 184.82
Site Description:

April 2023: This resource is located on the northwest side of Aviation Circle in the northern section of a large polygonal parcel. There is a grass lawn on all sides of the house and trees to the south and west. There is a shed and silo northeast of the house, and a long, paved driveway is located southeast of the house.

Surveyor Assessment:

April 2023: The building located at 18 Aviation Circle is a two-story single dwelling constructed around 1925 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1925
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: Rectangular
Number of Stories: 2.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This two-story, three-bay, Vernacular-style residence built ca. 1925 has a concrete block foundation, vinyl siding, stickwork within the gables, a central gable dormer, a brick ridge chimney, and a metal cross-gable roof. There is a partial width, screened porch on the front façade. Windows include tripartite and single 2/2 double-hung wood sash, single 2/2 horizontal-pane double-hung sash, and single 6/6 double-hung wood sash. A hyphen connects the northeast elevation of the house with a two-bay garage with single 4/4 and 6/6 double-hung wood sash windows.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Coursed
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Roof	Cross Gable	Metal	*No Data*
Porch	1-Story Partial Width	*No Data*	Screened/Enclosed
Windows	Double-hung	*No Data*	*No Data*
Chimneys	Interior Central	Brick	Strecther Bond
Dormer	Gable	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Silo
Date of Construction: 1925Ca
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic, Subsistence/Agriculture
Architectural Style: No discernible style
Form: *No Data*
Condition: Fair
Threats to Resource: Neglect
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: The walls are made of fired tiles. The roof is missing.

Secondary Resource #2

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 2009Ca
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This shed has vertical wood siding and an asphalt front-gable roof. There are entrance doors in its southeast and southwest elevations and two small windows in its northwest elevation.

Interior Plan: Open

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Front Gable	Asphalt	*No Data*
Foundation	Not Visible	*No Data*	*No Data*

Historic District Information

Historic District Name: *No Data*

Local Historic District Name: *No Data*

Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471

Investigator: Meredith McCulley

Organization/Company: Commonwealth Heritage Group, Alexandria

Photographic Media: Digital

Survey Date: 4/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries

N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels **Date: 5/8/2023**

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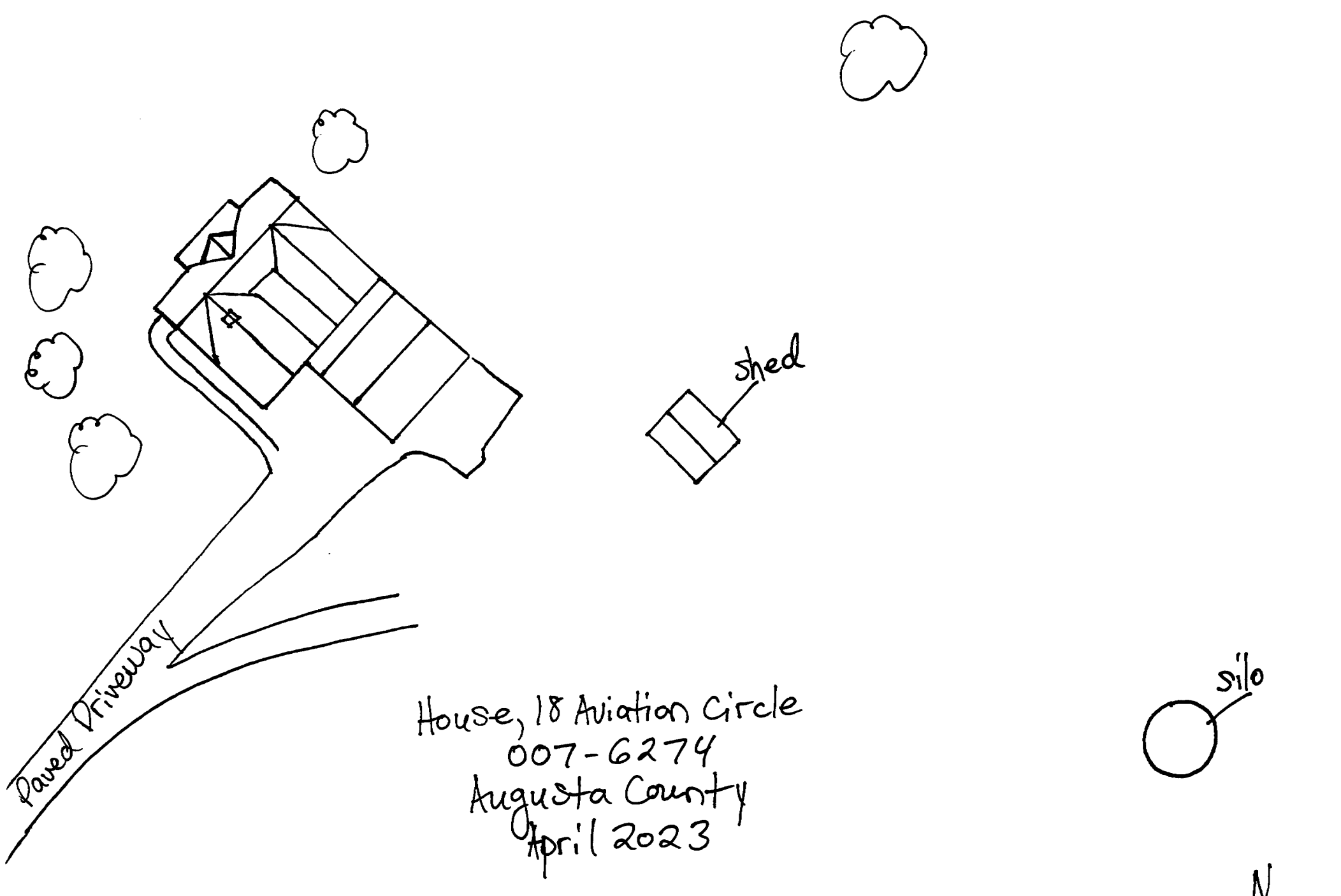
shed
Paved Driveway
House, 18 Aviation Circle
007-6274
Augusta County
April 2023
silo
N
Not to Scale

VDHR Photo Pages: Resource ID #007-6274

VDHR ID #007-6274; View of south corner of house, looking north (2023).

VDHR ID #007-6274; View of southeast elevation of house, looking northwest (2023).

VDHR ID #007-6274; View of northwest elevation of house, looking southeast (2023).

VDHR ID #007-6274; View of shed and silo, looking northwest (2023).

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 390 Valley Church Road

Property Evaluation Status

Not Evaluated

Property Addresses

Current - 390 Valley Church Road

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 56
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 1.2

Site Description:

April 2023: This resource is located on a polygonal parcel on the northeast side of Valley Church Road. A barn, garage, and silo are located northeast of the house, and there is a paved driveway northwest of the house. There is a grass lawn east and south of the house.

Surveyor Assessment:

April 2023: The building located at 390 Valley Church Road is a two-story single dwelling constructed around 1925 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1925
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Colonial Revival
Form: Rectangular
Number of Stories: 2.0
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: The two-story, three-bay, Colonial Revival-style residence built ca. 1925 has a concrete foundation, stuccoed walls, two brick interior chimneys, a gambrel dormer, and a metal gambrel/cross-gable roof. The full-width enclosed front porch has a concrete block foundation, asbestos shingle siding, paired jalousie and tripartite windows, and a metal shed roof. The central front entrance contains a paneled door. Windows are single 1/1 double-hung vinyl sash. A one-story enclosed porch with a series of 3/1 windows is located at the east corner of the house.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	*No Data*	Stuccoed
Porch	1-Story Full-Width	Asbestos	Screened/Enclosed
Chimneys	Interior Slope	Brick	Strecther Bond
Windows	Double-hung	Vinyl	*No Data*
Dormer	Gable	Stucco	*No Data*
Roof	Gambrel	Metal	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: 1925Ca
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic, Subsistence/Agriculture
Architectural Style: Vernacular
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This 1.5-story barn has wood siding and a metal gambrel roof. There are shed-roofed additions on its southeast and southwest elevations. A paneled wood door and a 6-light window are located in its front façade.

Number of Stories: 1.5

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Gambrel	Metal	*No Data*
Windows	Fixed	Wood	*No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1925Ca
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic, Subsistence/Agriculture
Architectural Style: Vernacular
Form: L-Plan
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: The front section of this one-story building consists of a garage with wood siding and a metal gambrel roof. There are two sliding garage doors in its front façade which are made of vertical wood boards. The rest of the building, which is lower in height and continues to the northeast and then turns to the southeast to form an L-shape, has wood siding and a metal shed roof.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Gambrel	Metal	*No Data*
Roof	Shed	Metal	*No Data*

Historic District Information

Historic District Name: *No Data*

Local Historic District Name: *No Data*

Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471

Investigator: Meredith McCulley

Organization/Company: Commonwealth Heritage Group, Alexandria

Photographic Media: Digital

Survey Date: 4/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries

N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels

Date: 5/8/2023

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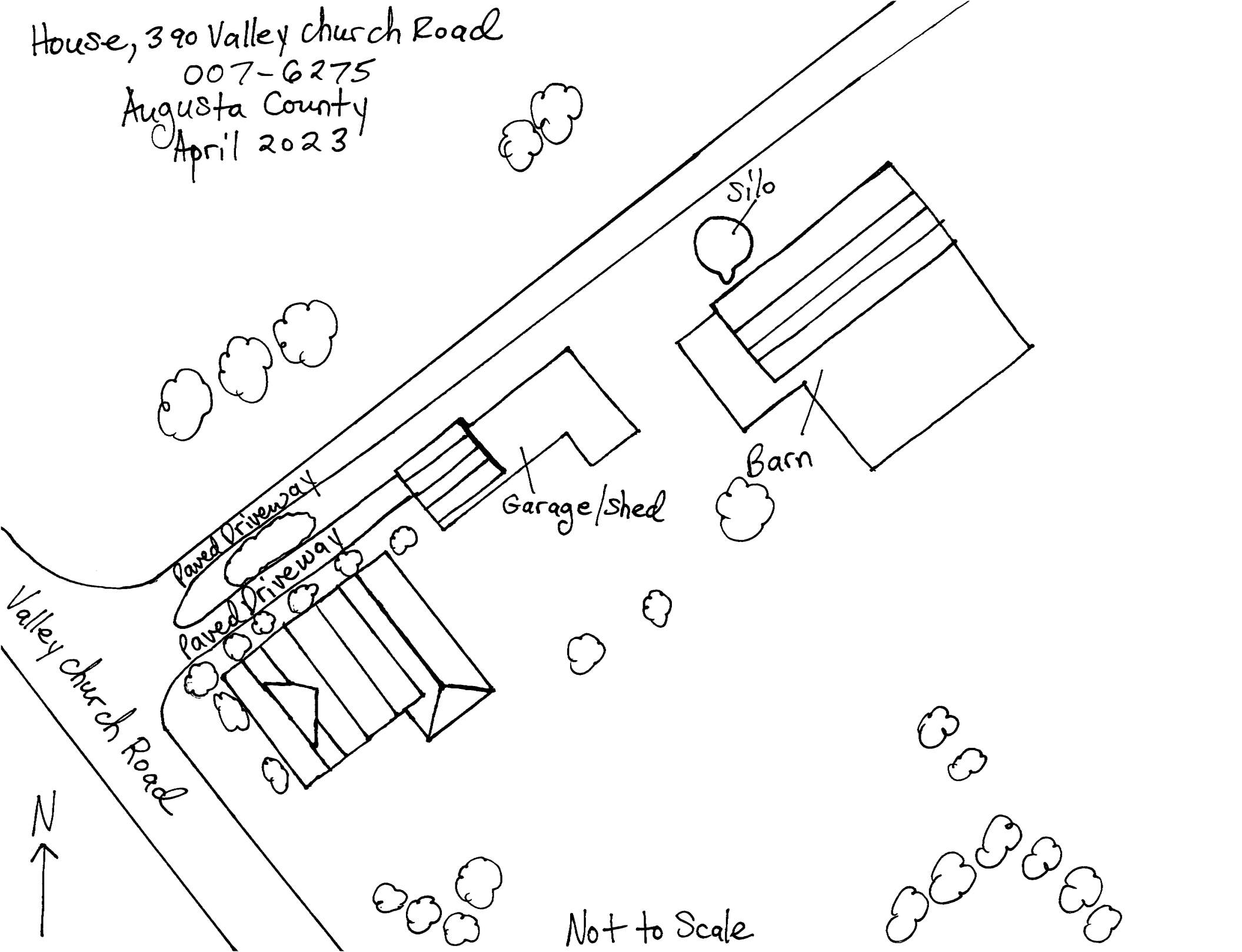
House, 390 Valley Church Road
007-6275
Augusta County
April 2023



VDHR Photo Pages: Resource ID #007-6275

VDHR ID #007-6275; View of front façade of house, looking northeast (2023).

VDHR ID #007-6275; View of west corner of house, looking east (2023).

VDHR ID #007-6275; View of south corner of house, looking north (2023).

VDHR ID #007-6275; View of garage façade, looking northeast (2023).

VDHR ID #007-6275; View of barn and silo, looking northeast (2023).

VDHR ID #007-6275; View of barn, silo, and outbuilding at rear end of garage, looking northeast (2023).

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 224 Airport Road

Property Addresses

Current - 224 Airport Road

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 44B
USGS Quad(s): MOUNT SIDNEY

Property Evaluation Status

Not Evaluated

Additional Property Information

Architecture Setting: Rural
Acreage: 62.6

Site Description:

April 2023: This resource is located on a polygonal parcel on the northeast side of Airport Road. A gravel driveway runs northwest of the house. There are several trees at the southern end of the parcel. An outbuilding sits southeast of the house, and there are several agricultural buildings to its northeast.

Surveyor Assessment:

April 2023: The building located at 224 Airport Road is a two-story single dwelling constructed in 1909 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: 1909
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: Rectangular
Number of Stories: 2.0
Condition: Good
Interior Plan: Center Hall
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This two-story, three-bay, Vernacular-style residence built in 1909 has a stone foundation, vinyl siding, two brick ridge chimneys, cornice returns, decorative stickwork in the gable ends, and an asphalt side-gable roof. The partial-width front porch has a concrete foundation, square posts, eave brackets, and an asphalt hipped roof. The central front entrance is surrounded by a transom and sidelights. Windows are single 2/2 double-hung wood sash and single 1/1 double-hung sash with shutters. A one-story addition/porch wraps around the northeast and southeast elevations.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Stone	Coursed
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Porch	1-Story Partial Width	Wood	Posts
Roof	Side Gable	Asphalt	*No Data*
Chimneys	Interior Central	Brick	Strecther Bond
Windows	Double-hung	Wood	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1909
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story shed has a pier foundation, wood siding, and a metal front-gable roof. There is a central doorway in its front façade.

Interior Plan: Open
Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Piers	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Front Gable	Metal	*No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1909
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Subsistence/Agriculture
Architectural Style: Vernacular
Form: L-Plan
Condition: Fair
Threats to Resource: Neglect

Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, two-bay garage has a concrete foundation, wood siding, and an asphalt cross-gable roof. There is a garage bay in its southwest and northwest elevations and a fixed 1/1 window in its southwest elevation. A window in the southeast elevation is boarded up.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Cross Gable	Asphalt	*No Data*
Windows	Fixed	Wood	*No Data*

Secondary Resource #3

Resource Category: Agriculture/Subsistence

Resource Type: Agricultural Bldg.

Date of Construction: 1957

Date Source: Map

Historic Time Period: The New Dominion (1946 - 1991)

Historic Context(s): Subsistence/Agriculture

Architectural Style: Vernacular

Form: Rectangular

Condition: Good

Threats to Resource: None Known

Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story agricultural outbuilding has cinderblock walls, a brick interior end chimney, and a metal shed roof. Windows are single 2/2.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Masonry	Concrete	Coursed
Roof	Shed	Metal	*No Data*
Foundation	Not Visible	*No Data*	*No Data*
Windows	Fixed	Metal	*No Data*

Secondary Resource #4

Resource Category: Agriculture/Subsistence

Resource Type: Barn

Date of Construction: 1989

Date Source: Map

Historic Time Period: The New Dominion (1946 - 1991)

Historic Context(s): Subsistence/Agriculture

Architectural Style: No discernible style

Form: Rectangular

Condition: Good

Threats to Resource: None Known

Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story barn is mostly open-sided with metal siding in some places and a metal front-gable roof. The west end was built between 1984-1989, and the east end was built between 1994-2002 to replace an earlier structure.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Metal	Siding
Roof	Front Gable	Metal	*No Data*

Secondary Resource #5

Resource Category: Agriculture/Subsistence
Resource Type: Silo
Date of Construction: 1957
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: *No Data*
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This silo has concrete walls and a metal domed roof.

Secondary Resource #6

Resource Category: Agriculture/Subsistence
Resource Type: Pole Barn
Date of Construction: 1989
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This pole barn built between 1984 and 1989 is open on three sides and has a metal gable roof.

Secondary Resource #7

Resource Category: Agriculture/Subsistence
Resource Type: Pole Barn
Date of Construction: 1989
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This pole barn is open on all four sides and has a metal gable roof and metal siding within the gable ends.

Secondary Resource #8

Resource Category: Agriculture/Subsistence
Resource Type: Shed,Vehicle/Equipment
Date of Construction: 1984
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This equipment shed was built between 1963 and 1984. It has metal siding and a flat metal roof. There is a large opening in its west elevation.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Metal	Siding
Roof	Flat	Metal	*No Data*
Foundation	Not Visible	*No Data*	*No Data*

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471
Investigator: Meredith McCulley
Organization/Company: Commonwealth Heritage Group, Alexandria
Photographic Media: Digital
Survey Date: 4/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.

https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries

N

Feet

0 500 1000 1500 2000

1:18,056 / 1"=1,505 Feet

Title: Architecture Labels

Date: 5/8/2023

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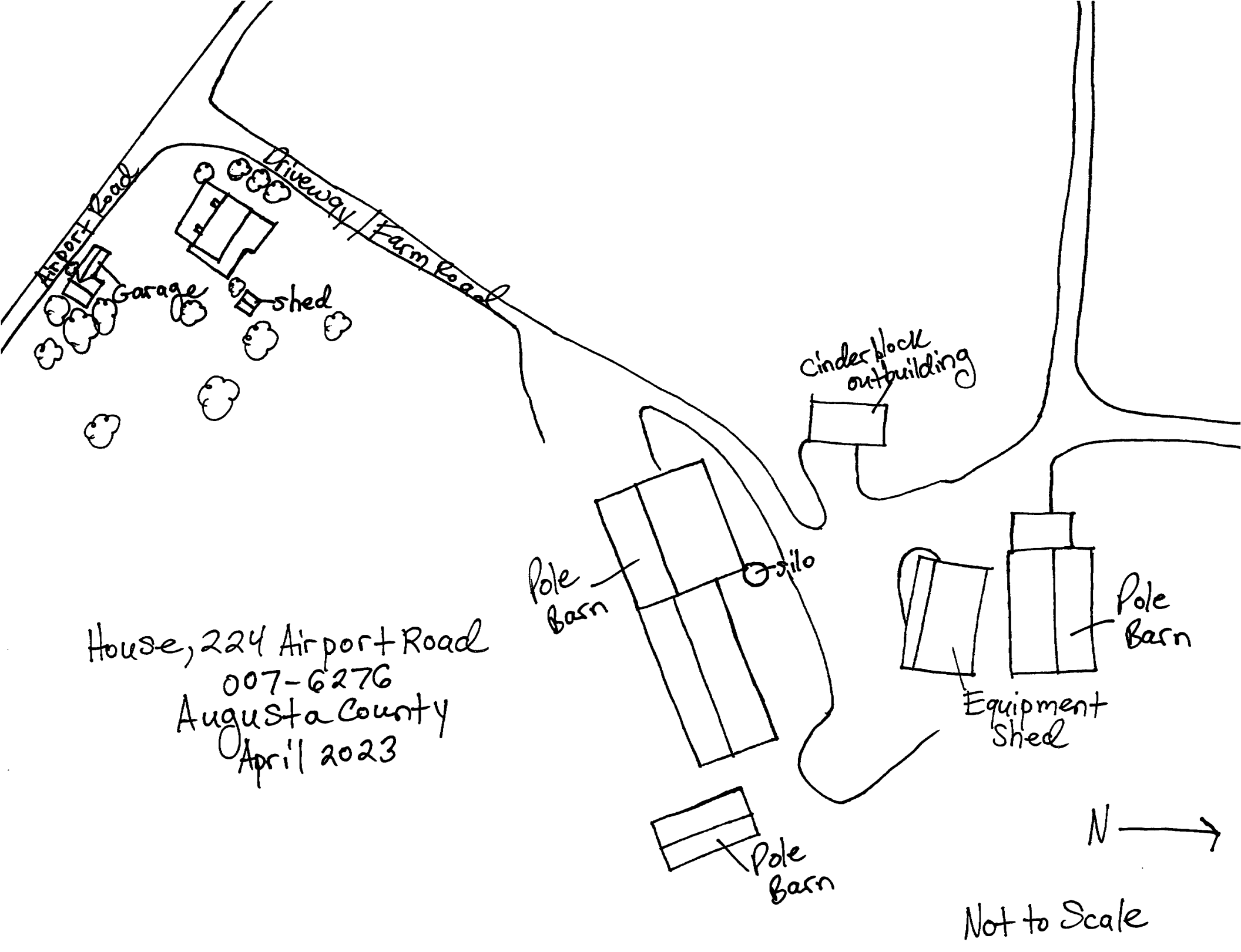
Airport Road
Driveway
Farm Road
Garage
shed
Cinder block outbuilding
Pole Barn
silo
Pole Barn
Equipment Shed
Pole Barn
N
House, 224 Airport Road
007-6276
Augusta County
April 2023
Not to Scale

VDHR Photo Pages: Resource ID #007-6276

VDHR ID #007-6276; View of front façade of house, looking northeast (2023).

VDHR ID #007-6276; View of west corner of house, looking east (2023).

VDHR ID #007-6276; View of south corner of house, looking north (2023).

VDHR ID #007-6276; View of west corner of garage, looking east (2023).

VDHR ID #007-6276; View of south corner of shed, looking north (2023).

VDHR ID #007-6276; View of agricultural outbuildings, looking northeast (2023).

VDHR ID #007-6276; View of agricultural outbuildings, looking northeast (2023).

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 244 Airport Road

Property Addresses

Current - 244 Airport Road

Property Evaluation Status

Not Evaluated

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 44
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 1.26

Site Description:

April 2023: This resource is located on a polygonal parcel on the northeast side of Airport Road. The property is surrounded by a farm and agricultural fields. There is a garage southeast of the house and a shed northeast of the house. Several trees are located south and west of the house, and there is a paved driveway south of the house.

Surveyor Assessment:

April 2023: The building located at 244 Airport Road is a one-story single dwelling constructed in 1974 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: 1974
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: Rectangular
Number of Stories: 1.0
Condition: Good
Interior Plan: Irregular
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, five-bay, Ranch-style residence built in 1974 has a concrete block foundation, brick walls, vertical wood siding within the gables, an off-center front entrance, a recessed partial-width front porch, a brick exterior end chimney, and an asphalt cross-gable roof. Windows are tripartite and single 1/1 double-hung sash with shutters. A garage is attached to the southeast elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Block
Structural System and Exterior Treatment	Wood Frame	Brick	Veneer
Roof	Cross Gable	Asphalt	*No Data*
Windows	Double-hung	*No Data*	*No Data*
Windows	Fixed	*No Data*	*No Data*
Chimneys	Exterior End	Brick	Strecther Bond
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Porch	Inset/Engaged	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 2002
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This garage was built between 1994-2002. It has vertical wood siding and an asphalt gambrel roof. There is a garage bay in its front/northwest façade, an entrance door in its southwest elevation, and a 3-light awning window in its southwest and southeast elevations.

Interior Plan: Open
Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Gambrel	Asphalt	*No Data*
Windows	Hopper/Awning	Aluminum	*No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1985
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular

Condition: Fair

Threats to Resource: None Known

Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, rectangular shed built between 1984-1989 has vertical wood siding and an asphalt gambrel roof. The foundation, entrance, and any windows were not visible.

Interior Plan: Open

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Gambrel	Asphalt	*No Data*

Historic District Information

Historic District Name: *No Data*

Local Historic District Name: *No Data*

Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471

Investigator: Meredith McCulley

Organization/Company: Commonwealth Heritage Group, Alexandria

Photographic Media: Digital

Survey Date: 4/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

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Augusta County
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https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
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- Archaeological Resources
- Archaeology Labels
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- County Boundaries

N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels

Date: 5/8/2023

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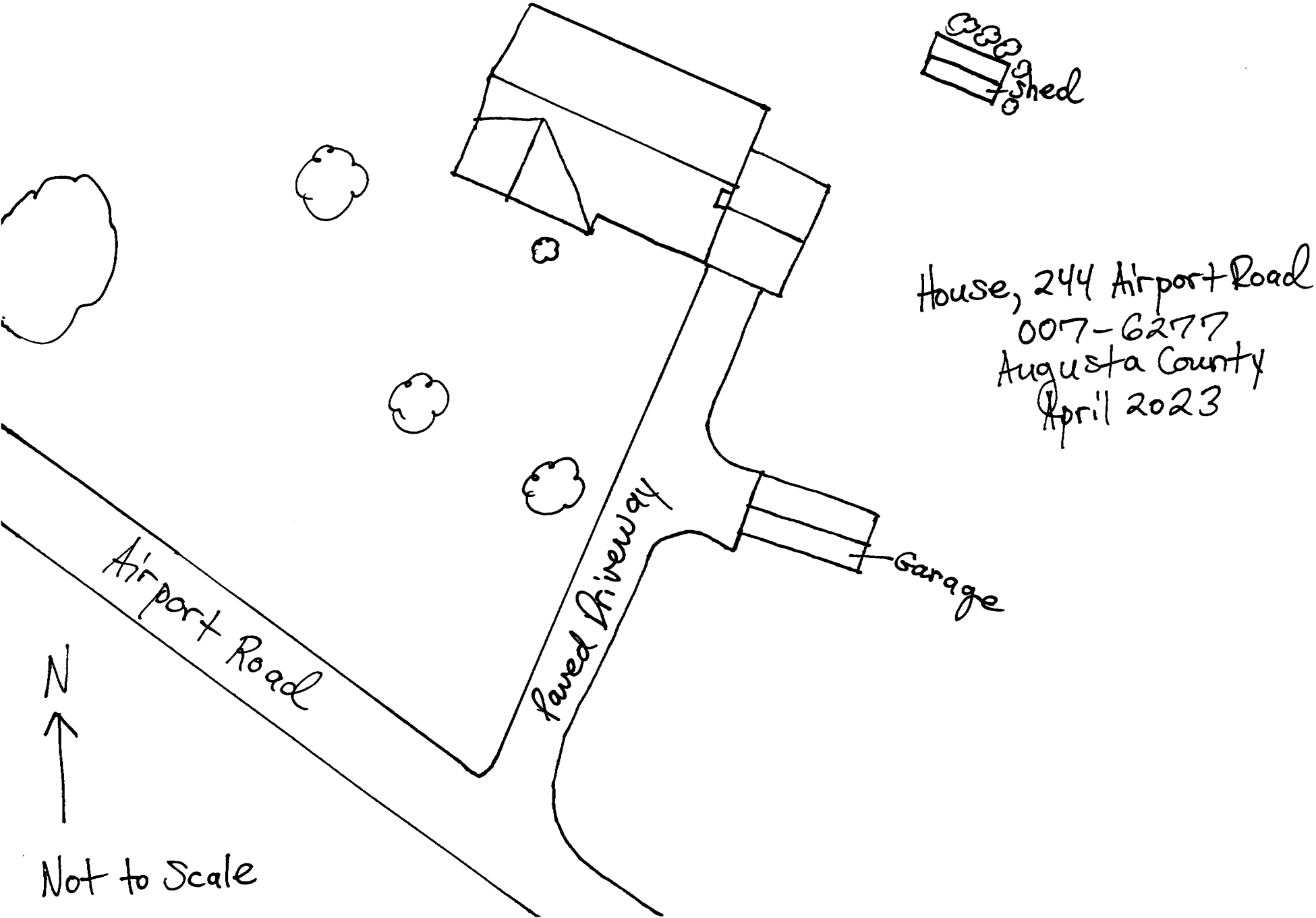
Shed
House, 244 Airport Road
007-6277
Augusta County
April 2023
Garage
Paved Driveway
Airport Road
N
Not to Scale

VDHR Photo Pages: Resource ID #007-6277

VDHR ID #007-6277; View of front façade of house, looking northeast (2023).

VDHR ID #007-6277; View of west corner of house, looking northeast (2023).

VDHR ID #007-6277; View of south corner of house, looking northwest (2023).

VDHR ID #007-6277; View of garage, looking northeast (2023).

VDHR ID #007-6277; View of shed in backyard, looking northwest (2023).

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 71 Moss Lane

Property Evaluation Status

Not Evaluated

Property Addresses

Current - 71 Moss Ln

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 55B
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 4.96

Site Description:

April 2023: This resource is located on a polygonal parcel on the northwest side of Moss Lane. The property is surrounded by a farm and agricultural fields. An inground pool and pool house are located northeast of the house. There is a gravel driveway southeast of the house. Several trees are scattered around the property.

Surveyor Assessment:

April 2023: The building located at 71 Moss Lane is a two-story single dwelling constructed around 1900 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1900
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: L-Plan
Number of Stories: 2.0
Condition: Excellent
Interior Plan: Center Hall
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This two-story, three-bay, Vernacular-style residence built ca. 1900 has a concrete foundation, vinyl siding, a central front entrance, a single-bay front porch, two brick interior end chimneys, a brick ridge chimney, and a metal cross-gable roof. Windows are tripartite, single 1/1 double-hung sash, and single and paired 2/2 double-hung sash. The windows in the main block of the house have shutters. There is an attached two-bay garage at the north end of the house.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Roof	Cross Gable	Metal	*No Data*
Windows	Fixed	*No Data*	*No Data*
Windows	Double-hung	*No Data*	*No Data*
Porch	Portico/Entry Porch	Wood	Square
Chimneys	Interior End	Brick	Strecther Bond
Chimneys	Interior Central	Brick	Strecther Bond

Secondary Resource Information

Secondary Resource #1

Resource Category: Social/Recreational
Resource Type: Pool/Swimming Pool
Date of Construction: 1985Ca
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This rectangular inground pool was constructed between 1984 and 1989. A pool house sits on its northeast side.

Secondary Resource #2

Resource Category: Social/Recreational
Resource Type: Pool House
Date of Construction: 1985Ca
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This rectangular, one-story pool house built between 1984 and 1989 has vertical wood siding, an off-center front entrance in its southeast elevation, and an asphalt hipped roof with wide eaves. The foundation and any windows were not visible. It sits on the northeast side

of an inground pool.

Interior Plan: Open

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Roof	Hipped	Asphalt	*No Data*

Historic District Information

Historic District Name: *No Data*

Local Historic District Name: *No Data*

Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471

Investigator: Meredith McCulley

Organization/Company: Commonwealth Heritage Group, Alexandria

Photographic Media: Digital

Survey Date: 4/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries

N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels

Date: 5/8/2023

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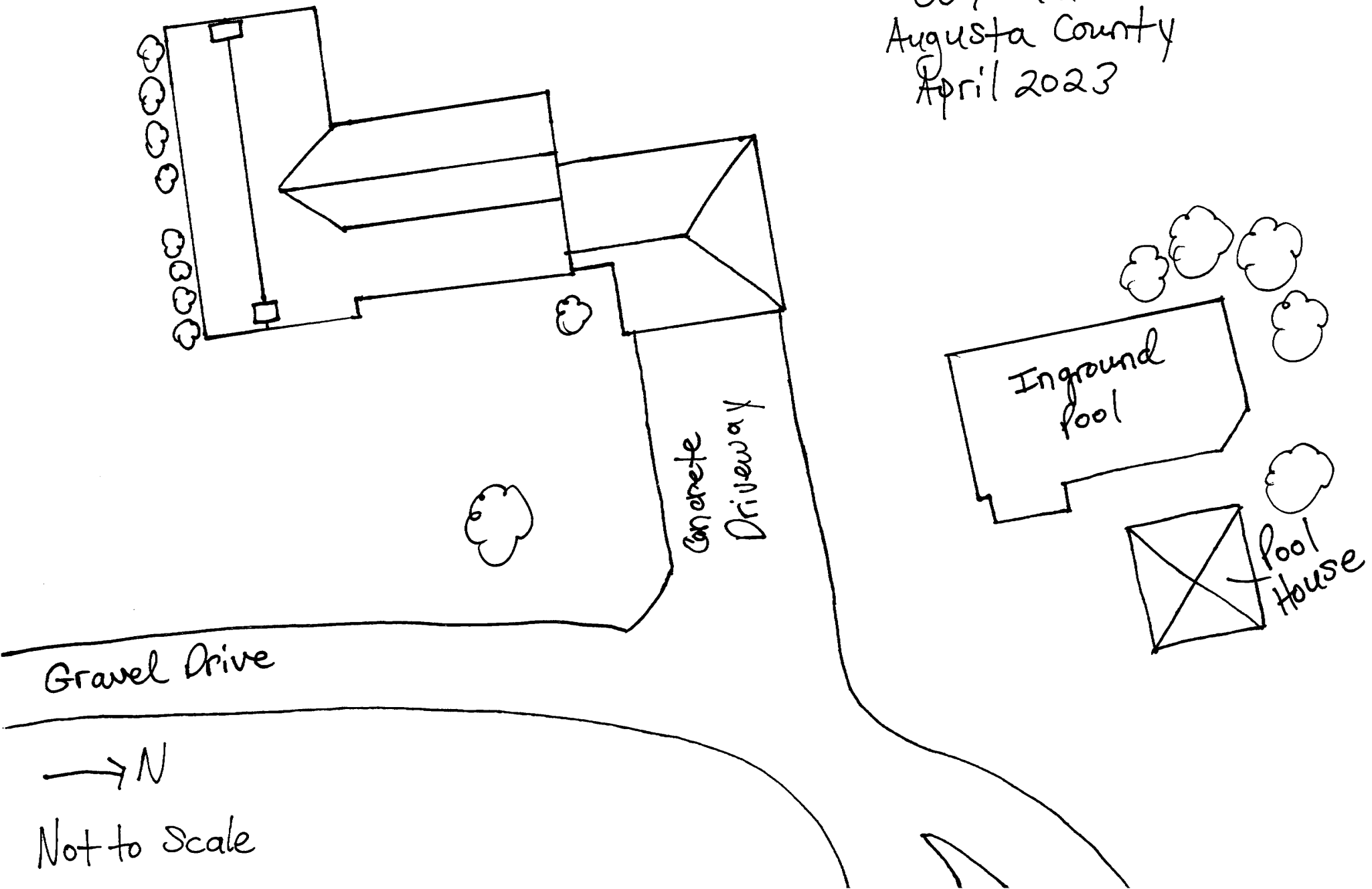
House, 71 Moss Lane
007- 6278
Augusta County
April 2023



VDHR Photo Pages: Resource ID #007-6278

VDHR ID #007-6278; View of southeast corner of house, looking northwest (2023).

VDHR ID #007-6278; View of southeast corner of house, looking northwest (2023).

VDHR ID #007-6278; View of east elevation of house, looking west (2023).

VDHR ID #007-6278; View of pool house, looking northwest (2023).

Property Information

Property Names

Name Explanation	Name
Current Name	Oakland Farms

Property Evaluation Status

Not Evaluated

Property Addresses

Current - Weyers Cave Road 256

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 55
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 27.74

Site Description:

April 2023: This agricultural complex is located at the west corner of Moss Lane and Weyers Cave Road. A dirt driveway is located northeast, north, and northwest of the buildings. The buildings are surrounded by agricultural fields.

Surveyor Assessment:

April 2023: The buildings that make up the complex located at the west corner of Moss Lane and Weyers Cave Road were built prior to 1957 in vernacular styles that are common throughout the area and era in which they were constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Agriculture/Subsistence
Resource Type: Barn
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Pre 1957
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: Rectangular
Number of Stories: 2.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This two-story, wood frame barn has metal siding and a metal front-gable roof. Sheds are attached to its northwest, northeast, and southeast elevations.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Metal	Siding
Roof	Front Gable	Metal	*No Data*
Foundation	Not Visible	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Agricultural Bldg.
Date of Construction: 1957Pre
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This rectangular, one-story milk parlor has concrete block walls and a metal side-gable roof. The northeastern end of the building is open on two sides. The northeast and southeast elevations each contain an entrance. The building contains square, fixed, 6-light metal windows.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Masonry	Concrete	Block
Roof	Side Gable	Metal	*No Data*
Windows	Fixed	Metal	*No Data*

Secondary Resource #2

Resource Category: Agriculture/Subsistence
Resource Type: Silo
Date of Construction: 1957Pre
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: *No Data*
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This silo has concrete walls and a metal dome roof. It is located on the northwest side of the barn.

Secondary Resource #3

Resource Category: Agriculture/Subsistence
Resource Type: Silo
Date of Construction: 1957Pre
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: *No Data*
Condition: Ruinous
Threats to Resource: Neglect
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This silo is located on the northwest side of the barn and the southwest side of the intact silo. It has concrete walls and no roof.

Secondary Resource #4

Resource Category: Agriculture/Subsistence
Resource Type: Shed
Date of Construction: 1960Pre
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, rectangular loafing shed, attached to the northeastern end of the barn, was built between 1957 and 1963. It is open on two sides and has metal siding and a metal shed roof.

Interior Plan: Open
Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Metal	Siding
Roof	Shed	Metal	*No Data*

Secondary Resource #5

Resource Category: Agriculture/Subsistence
Resource Type: Shed
Date of Construction: 1957Pre
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known

Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This (original) loafing shed was built prior to 1957 and is attached to the southeast side of the barn. Other than a concrete block half-wall on the southeast elevation, it is open on all four sides and has a metal shed roof.

Interior Plan: Open

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Concrete	Block
Roof	Shed	Metal	*No Data*

Secondary Resource #6

Resource Category: Agriculture/Subsistence

Resource Type: Shed

Date of Construction: 1957Pre

Date Source: Map

Historic Time Period: The New Dominion (1946 - 1991)

Historic Context(s): Subsistence/Agriculture

Architectural Style: No discernible style

Form: Rectangular

Condition: Good

Threats to Resource: None Known

Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, rectangular shed built prior to 1957 is attached to the northwest side of the barn. It is open on two sides and has metal siding and a metal shed roof.

Interior Plan: Open

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Metal	Siding
Foundation	Not Visible	*No Data*	*No Data*
Roof	Shed	Metal	*No Data*

Historic District Information

Historic District Name: *No Data*

Local Historic District Name: *No Data*

Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471

Investigator: Meredith McCulley

Organization/Company: Commonwealth Heritage Group, Alexandria

Photographic Media: Digital

Survey Date: 4/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries

N

Feet

0 200 400 600 800

1:9,028 / 1"=752 Feet

Title: Architecture Labels

Date: 5/8/2023

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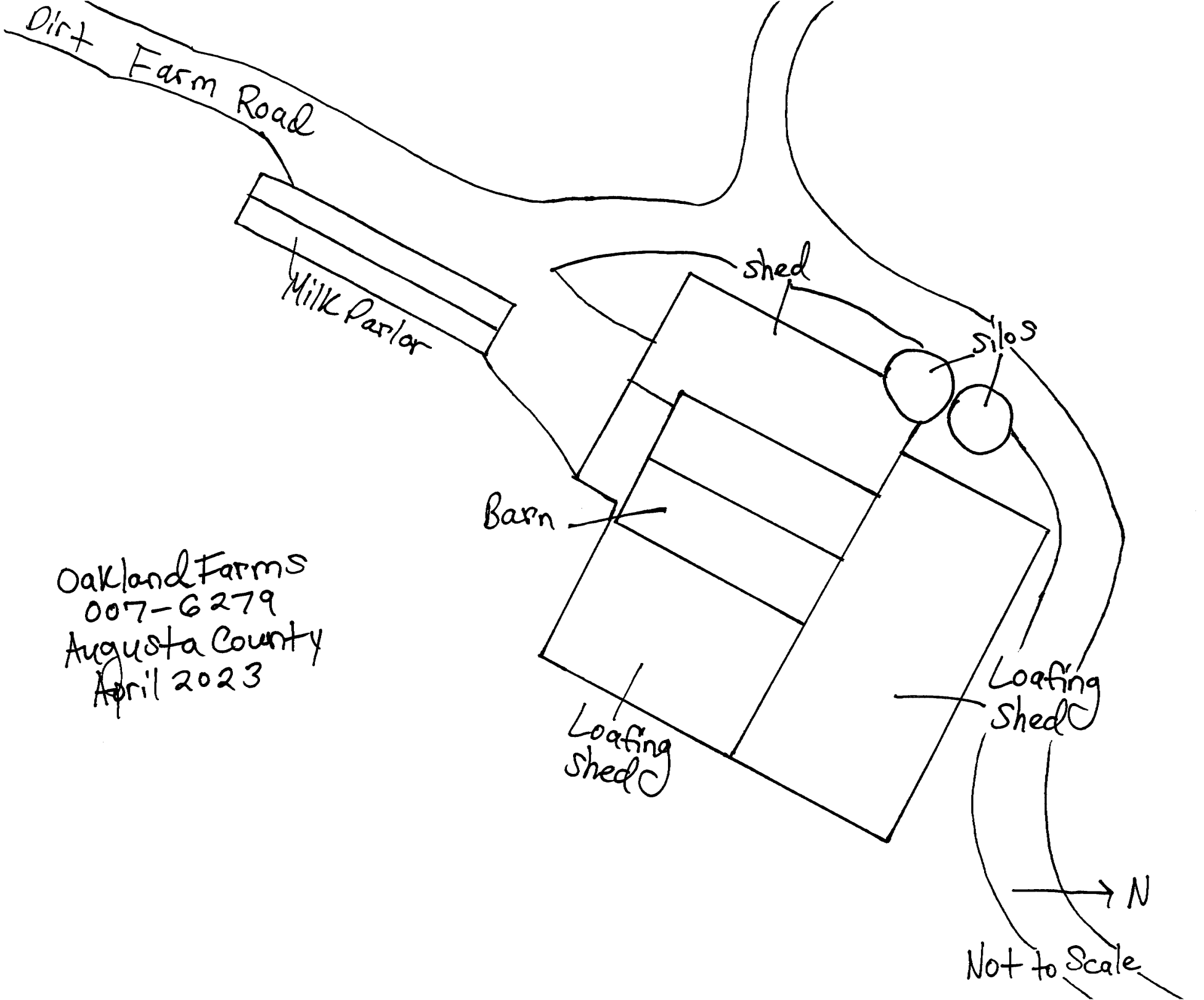

Oakland Farms
007-6279
Augusta County
April 2023

VDHR Photo Pages: Resource ID #007-6279

VDHR ID #007-6279; View of front façade of milk parlor, looking northwest (2023).

VDHR ID #007-6279; View of south corner of barn and attached sheds, looking north (2023).

VDHR ID #007-6279; View of southeast elevation of barn and attached sheds, looking northwest (2023).

VDHR ID #007-6279; View of east corner of barn and attached sheds, looking west (2023).

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 321 Valley Church Road

Property Evaluation Status

Not Evaluated

Property Addresses

Current - 321 Valley Church Rd

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 43C
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: 1.92

Site Description:

April 2023: This resource is located on a polygonal parcel on the southwest side of Valley Church Road. A paved driveway is located northeast, northwest, and southwest of the house. There are trees scattered throughout the property, but most are located southeast of the house. Four sheds sit south and southeast of the house.

Surveyor Assessment:

April 2023: The building located at 321 Valley Church Road is a two-story single dwelling constructed in 1918 in a vernacular style that is common throughout the area and era in which it was constructed. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: 1918
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: L-Plan
Number of Stories: 2.0
Condition: Excellent
Interior Plan: Double Pen
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This two-story, four-bay, Vernacular-style residence built in 1918 has a concrete foundation, aluminum siding, two off-center front entrances, a brick ridge chimney, a brick slope chimney, and a metal cross-gable roof. The partial-width front porch has a pier foundation, a wood deck, square posts, and a metal hipped roof. Windows are single and paired 1/1 double-hung vinyl sash and single 2/2 double-hung wood sash. Some of the windows are flanked by shutters.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Aluminum	Siding
Roof	Cross Gable	Metal	*No Data*
Porch	1-Story Partial Width	Wood	Square
Chimneys	Interior Central	Brick	Strecther Bond
Chimneys	Interior Slope	Brick	Strecther Bond
Windows	Double-hung	Wood	*No Data*
Windows	Double-hung	Vinyl	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1990
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate

Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, rectangular shed was built between 1989 and 1994 and is located southeast of the house. It has vertical wood siding and a low-pitched asphalt side-gable roof. There is a double-leaf front entrance flanked by 1/1 windows in its front façade.

Interior Plan: Open
Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Roof	Side Gable	Asphalt	*No Data*
Windows	Fixed	*No Data*	*No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1984
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular

Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, rectangular shed built between 1963 and 1984 is located southeast of the house. It has vertical wood siding and an asphalt gambrel roof. Its central front entrance contains a double-leaf door, and there is a 1x1 window in its rear elevation.

Interior Plan: Open
Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Roof	Gambrel	Asphalt	*No Data*
Windows	Casement	*No Data*	*No Data*

Secondary Resource #3

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1984
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Rectangular
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This one-story, rectangular shed was built between 1963 and 1984 and is located southeast of the house. It has vertical wood siding and a metal shed roof.

Interior Plan: Open
Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Roof	Shed	Metal	*No Data*

Secondary Resource #4

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1994
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: Square
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This square, one-story shed is located south of the house. It has a wood pier foundation, vertical wood siding, and an asphalt gambrel roof. A wooden ladder leads up to a small wooden front deck. There is a central front entrance, a 1/1 window in its rear elevation, and a 1x1 sliding window in its northwest and southeast elevations.

Interior Plan: Open

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Piers	Wood	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Porch	1-Story Full-Width	Wood	Square
Roof	Gambrel	Asphalt	*No Data*
Windows	Double-hung	*No Data*	*No Data*
Windows	Casement	*No Data*	*No Data*

Historic District Information

Historic District Name: *No Data*

Local Historic District Name: *No Data*

Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2022-5471

Investigator: Meredith McCulley

Organization/Company: Commonwealth Heritage Group, Alexandria

Photographic Media: Digital

Survey Date: 4/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

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Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
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NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

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- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
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- County Boundaries

N

Feet

0 50 100 150 200

1:2,500 / 1"=208 Feet

Title: Architecture Labels

Date: 5/8/2023

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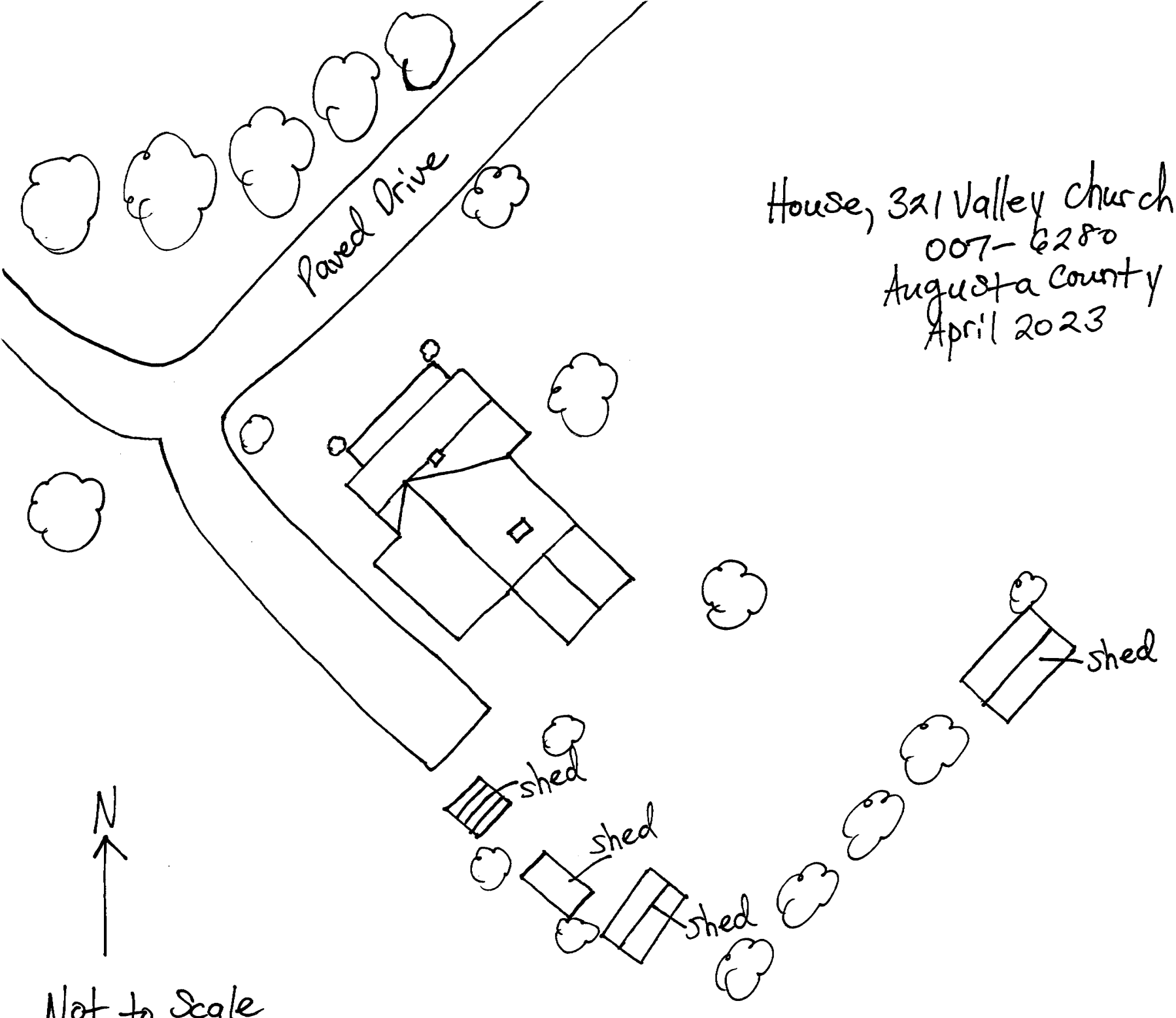


House, 321 Valley Church Road
007-6280
Augusta County
April 2023

VDHR Photo Pages: Resource ID #007-6280

VDHR ID #007-6280; View of front façade of house, looking southeast (2023).

VDHR ID #007-6280; View of north corner of house, looking south (2023).

VDHR ID #007-6280; View of west corner of house, looking east (2023).

VDHR ID #007-6280; View of south corner of house and sheds, looking north (2023).

VDHR ID #007-6280; View of shed, looking southeast (2023).

VDHR ID #007-6280; View of sheds, looking southeast (2023).

Property Information

Property Names

Name Explanation	Name
Current Name	Cash Cemetery

Property Addresses

Current - Route 771

Property Evaluation Status

Not Evaluated

County/Independent City(s): Augusta (County)
Incorporated Town(s): Weyers Cave
Zip Code(s): 24486
Magisterial District(s): *No Data*
Tax Parcel(s): 028 79A
USGS Quad(s): MOUNT SIDNEY

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*

Site Description:

April 2023: This small unmarked family cemetery is located on the southeast side of Aviation Circle in a grassy field. It is surrounded by a metal post and wire fence.

Surveyor Assessment:

April 2023: The cemetery located at 16 Aviation Circle is an unmarked family burial ground once used by a family that once operated a farm on the land on which the airport is now located. This resource does not exhibit high artistic value as the work of a master nor is it an outstanding example of its style or property type. Therefore, it is recommended that this resource be considered not eligible for the NRHP under Criterion C. It is not known to be associated with any significant event or person, and is, therefore, recommended not eligible for the NRHP under Criteria A or B. As an architectural resource, the resource was not evaluated under Criterion D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Funerary
Resource Type: Cemetery
NR Resource Type: Site
Historic District Status: *No Data*
Date of Construction: Ca 1840
Date Source: Written Data
Historic Time Period: Antebellum Period (1830 - 1860)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: *No Data*
Condition: Ruinous
Threats to Resource: Neglect
Cultural Affiliations: Euro-American
Cultural Affiliation Details:

No Data

Architectural Description:

April 2023: This small, unmarked family cemetery dates to the early 1800s and is surrounded by a metal post and wire fence.

Cemetery Information

Current Use:	Private
Historic Religious Affilitation:	None
Ethnic Affiliation:	European Descent
Has Marked Graves:	False
Has Unmarked Graves:	True
Enclosure Type:	Fence
Number Of Gravestones:	0 - 5
Earliest Marked Death Year:	*No Data*
Latest Marked Death Year:	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name:	*No Data*
Local Historic District Name:	*No Data*
Historic District Significance:	*No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number:	2022-5471
Investigator:	Meredith McCulley
Organization/Company:	Commonwealth Heritage Group, Alexandria
Photographic Media:	Digital
Survey Date:	4/10/2023
Dhr Library Report Number:	*No Data*

Project Staff/Notes:

Client: Delta Airport Consultants, Inc. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. VCRIS data entry completed by Meredith McCulley.

Project Bibliographic Information:

2023 McCulley, Meredith and Charles E. Goode, RPA. Phase I Architectural Survey for the Environmental Assessment for Aviation Technology Park Development, Shenandoah Valley Regional Airport, Augusta County, Virginia. Prepared for Delta Airport Consultants, Inc., Midlothian, Virginia, by Commonwealth Heritage Group, Chantilly, Virginia.

Augusta County
2023 Address and Parcel Viewer.
https://augustacountyva.maps.arcgis.com/apps/webappviewer/index.html?id=3e10ba78e6be4ce2936a3be2955b1a45. Accessed April 2023.

Augusta County
2023 Property Lookup. https://gis.vgsi.com/augustava/Search.aspx. Accessed April 2023.

NETR
2023 Historic Aerials. Accessed online April 12, 2023, at https://www.historicaerials.com/viewer.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

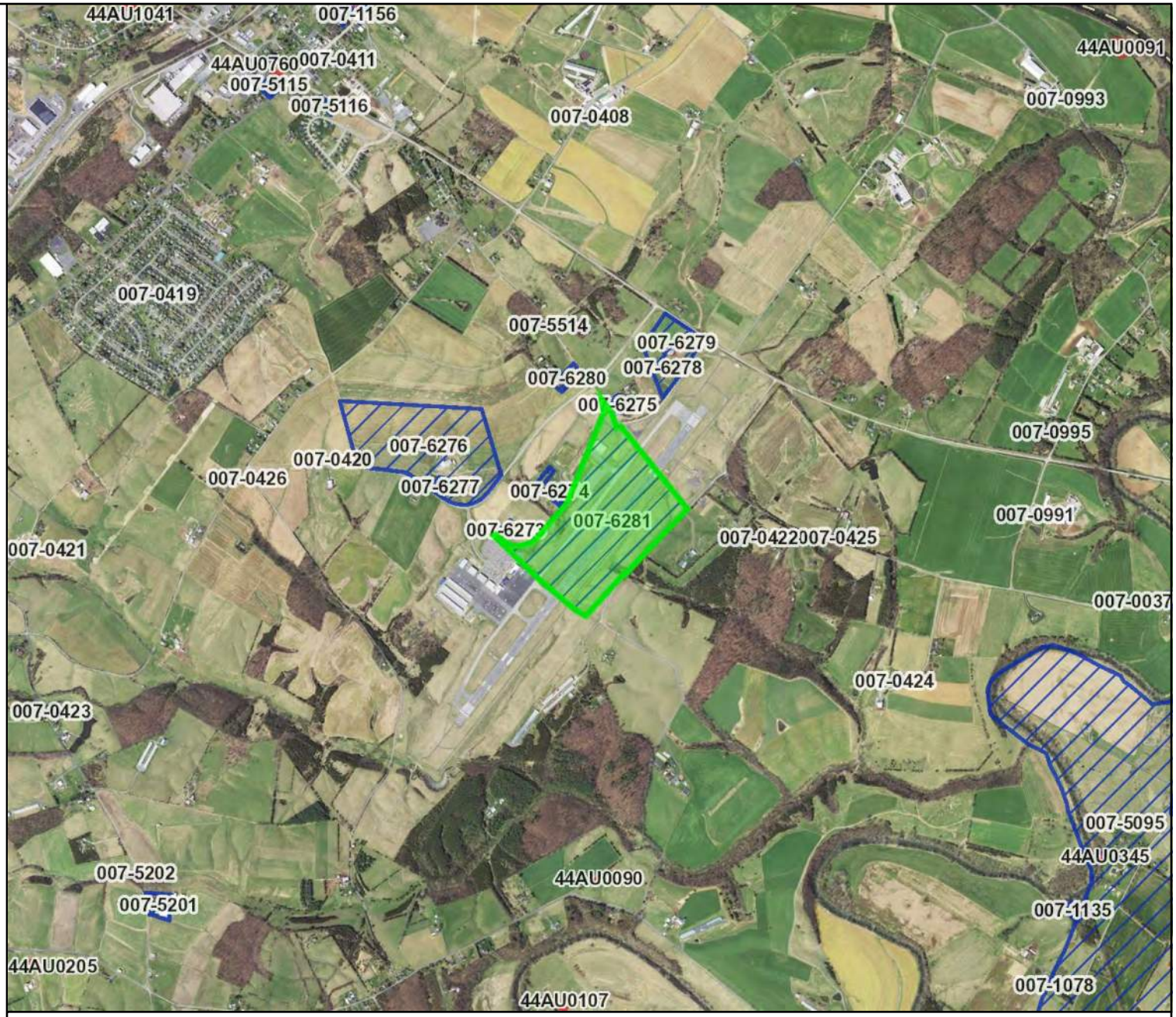
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries



N

Feet

0 600 1200 1800 2400

1:36,112 / 1"=3,009 Feet

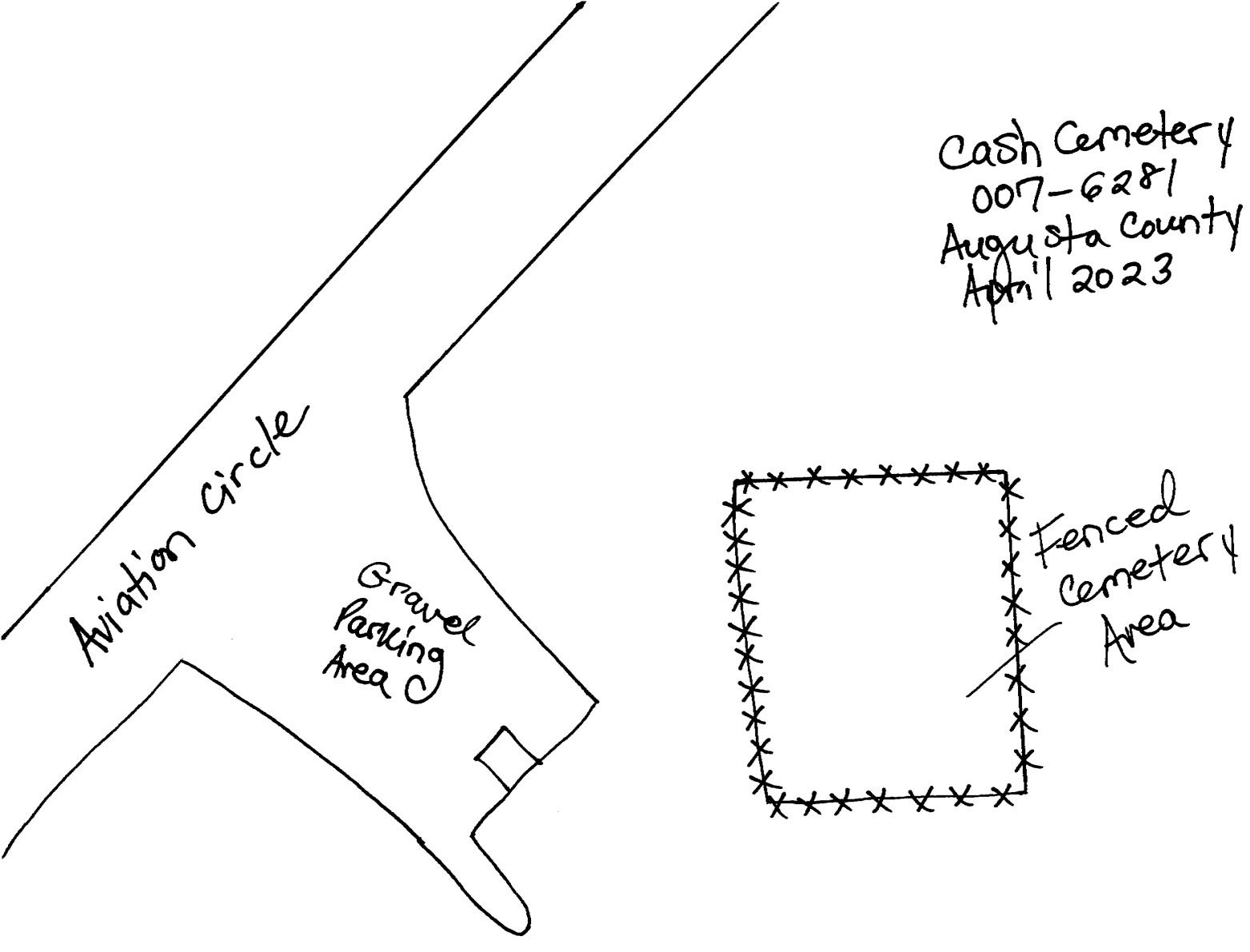
Title: Architecture Labels

Date: 5/8/2023

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Cash Cemetery
007-6281
Augusta County
April 2023



VDHR Photo Pages: Resource ID #007-6281

VDHR ID #007-6281; View of cemetery, looking southeast (2023).

VDHR ID #007-6281; View of cemetery, looking northeast (2023).

VDHR ID #007-6281; View of cemetery, looking northwest (2023).

APPENDIX II

Qualifications of Investigators

Meredith McCulley, M.H.P.
Architectural Historian
14102 Sullyfield Cir., Ste. 150A
Chantilly, VA 20151
P: 703.354.9737
mmcculley@chg-inc.com

Education

M.H.P.	University of Maryland	Historic Preservation	2014
B.A.	State University of New York, New Paltz	Anthropology	2010

Professional Certification and Specialized Training

National Trust for Historic Preservation; Montgomery Preservation Inc. Gravestone Cleaning Workshop, Rockville, MD (2019); Adult CPR and AED and Standard First Aid Emergency Care (2019); GIS Fundamentals Workshop, NPS (2018); Natural History Society of Maryland; C&O Canal Association; Hudson-Mohawk Vernacular Architecture; Historic Hugenot Street Dorothy DuBois/Walker Beach DuBois Family Memorial Scholarship (2013); Menokin Hand-on Plaster Workshop, Warsaw, VA (2013); U.S. Army Reserves (2007-2011)

Experience Profile

Meredith McCulley, M.H.P., specializes in architectural survey, historic context development, archival background research, technical report preparation, and Section 106 management recommendations. Ms. McCulley has served as an ACE EPIC Fellow at the NPS American Battlefield Protection Program (2017-2018), as a National Council for Preservation Education Cultural Landscapes Intern for the NPS National Capital Region (2015-2016), and as a Historic Preservation Intern for Historic Annapolis and for the Anne Arundel County Cultural Resources Division/Lost Towns Project, Annapolis, MD (2013-2014). Her professional experience includes reconnaissance and intensive-level architectural surveys, preparing architectural drawings, historic context development, archival research, and National Register evaluations of historic building and bridges. She has successfully completed projects for federal, state, and local agencies and for the telecommunications, transportation, and private sectors.

Key Projects

2023 **Featherbed Lane John G. Lewis Bridge National Register of Historic Places Nomination Update**. Architectural Historian. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2023 **Cultural Resources Survey for the Route 2/17 Widening Project, City of Fredericksburg and Spotsylvania County, Virginia.** Architectural Historian. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2023 **Cultural Resource Assessment for the MWAA Parcel Development Project, Lot 606, Loudoun County, Virginia.** Architectural Historian. Kimley-Horn and Associates, Inc., Reston, VA.

2023 **Architectural Reconnaissance Survey for Intersection Improvements at Dixon Street/Landsdowne Road, Fredericksburg, Virginia.** Architectural Historian. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2022 **Phase II Archaeological Evaluation of Site 44NK0315 for the I-64 Gap Project, New Kent County, Virginia**. Architectural Historian. The Virginia Department of Transportation, Central Office, Richmond, VA.

2022 **Architectural Reconnaissance Survey for the I-64/I-264 Interchange Phase III Improvements, Norfolk, Virginia.** The Virginia Department of Transportation, Hampton Roads District, Suffolk, VA.

2022 **Cultural Resources Survey for the I-64 Gap Project Segment 3, New Kent County, Virginia.** Architectural Historian. The Virginia Department of Transportation, Central Office, Richmond, VA.

2022 **Cultural Resources Survey for the I-64 Gap Project Segments 1 and 2, New Kent County, Virginia.** Architectural Historian. The Virginia Department of Transportation, Central Office, Richmond, VA.

2022 **Cultural Resources Survey for the Deltaville Multi-Modal Improvements Project, Middlesex County, Virginia.** Architectural Historian. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2022 **Phase I Archaeological Survey for the Route 695 Over Oyster Creek Bridge Replacement Project, Lancaster County, Virginia.** Architectural Historian. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2022 **Cultural Resources Survey for the Route 50/28 Bypass Project, Loudoun and Fairfax Counties, Virginia.** Architectural Historian. Kimley-Horn, Raleigh, NC.

2022 **Cultural Resources Survey for the Timber Fence Trail Segment #2 Project, Fauquier County, Virginia.** Architectural Historian. Virginia Department of Transportation.

2022 **Supplemental Cultural Resources Survey for the Widening of U.S. Route 1 from Napper Road to Mt. Vernon Highway, Fairfax County, Virginia**. Architectural Historian. Virginia Department of Transportation.

2022 **Cultural Resources Survey for the Berkmar Drive/Airport Road Connector Project, Albemarle County, Virginia.** Architectural Historian. Virginia Department of Transportation.

2022 **Phase IA Cultural Resources Study, Effort Solar Project, Chestnuthill and Polk Townships, Monroe County, Pennsylvania.** Architectural Historian. Uploaded photos and entered data on PA Share Survey Manager. Kimley-Horn and Samsung.

2022 **Baseline Survey, Year 2: Survey Contract B, Adams, Cumberland, Dauphin, Franklin, Perry, and York Counties, Pennsylvania.** Architectural Historian. Completion of history forms and survey plans for Franklin, Perry, and York Counties; online research; inputting of resource boundaries and data into PA Share Survey Manager; and photo-documentation of resources in six counties. Pennsylvania State Historic Preservation Office.

2021-2022 **Fort Belvoir Environmental Compliance Support, Ft. Belvoir, VA, Fairfax County, Virginia.** Architectural Historian. Assisted in the determination of the status of past and ongoing projects, submitted project applications on ePix, and assisted with the Phase II archaeological investigation of the recreational cabins site. Aerostar Environmental and Construction LLC.

2021 **Cultural Resources Survey for the Route 50 Bridge over Goose Creek Improvements Project, Fauquier County, Virginia.** Architectural Historian. Virginia Department of Transportation.

Charles E. Goode, M.A., RPA
Regional Director/Project Manager
14102 Sullyfield Cir., Ste. 150A
Chantilly, VA 20151
P: 703.354.9737 | F: 703.642.1837
cgoode@chg-inc.com

Education

M.A.	The Catholic University of America	Anthropology	2003
B.A.	The American University	Anthropology	1995

Professional Certification and Specialized Training

American Cultural Resources Association (ACRA); Registered Professional Archaeologist (RPA) (2003); Society for American Archaeology; Society for Historic Archaeology; Mid-Atlantic Archaeological Conference; Archaeological Society of Virginia; Council of Virginia Archaeologists (pending); Cultural Resources, Section 106, Historic Preservation & Tribal Consultation CLE Forum (2012); RPA Advanced Metal Detecting for the Archaeologist Course (2015)

Experience Profile

Mr. Goode has 28 years of experience in cultural resource management and 20 years with Commonwealth Heritage Group (Commonwealth). Charles Goode is responsible for office management, staff scheduling, staff mentoring, development of budgets, quality assurance and the procurement of new business. He manages and supervises cultural resources projects including Phase I identification, Phase II evaluation, and Phase III data recovery investigations under Sections 106 and 110, as well as local and state regulations. Mr. Goode specializes in Native American Archaeology and Archaeology of the African Diaspora in the Middle Atlantic Region. He has also worked on many Civil War resources including battlefields, skirmishes, camps, hospitals, staging areas, and picket posts. He has supervised fieldwork and has participated in report preparation and project management for projects in Maryland, Virginia, Washington, D.C., Pennsylvania, North Carolina, and Indiana. He has experience in analyzing both Pre-Contact lithic and ceramic assemblages. He has investigated African and African-American occupations at numerous Northern Virginia domestic sites. His other specialties include Middle Atlantic Native American Artifact Analysis, Soils and Site Formation Processes, and Land Surveying.

Key Projects

2011-2027 **Virginia Department of Transportation Statewide Cultural Resources Consulting Services.** Project Manager and Assistant Project Manager. Management of archaeological and architectural history investigations in support of VDOT projects statewide. Virginia Department of Transportation, Richmond, Virginia.

2023 **Featherbed Lane John G. Lewis Bridge National Register of Historic Places Nomination Update**. Project Manager. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2023 **Architectural Reconnaissance Survey for Intersection Improvements at Dixon Street/Landsdowne Road, Fredericksburg, Virginia.** Project Manager. The Virginia Department of Transportation, Fredericksburg District, Fredericksburg, VA.

2022 **Architectural Reconnaissance Survey for the I-64/I-264 Interchange Phase III Improvements, Norfolk, Virginia.** Project Manager. The Virginia Department of Transportation, Hampton Roads District, Suffolk, VA.

2021 **Reconnaissance Architectural Survey, Route 20 & 33 Barboursville Roundabout, Orange County, Virginia.** Project Manager. Survey of two historic districts and thirteen individual resources. Virginia Department of Transportation, Culpeper, Virginia.

2018 **Cultural Resources Survey and Phase II Evaluation for Route 1 Dumfries Widening Project, Prince William County, Virginia.** Principal Investigator. Managed project and co-authored report for Phase I, and II investigations. The site is the location of four early Town Lots in Dumfries and contains multiple eighteenth-century occupations and intact foundation features. Virginia Department of Transportation, NOVA District.

2017 **Archaeological Investigations of the Poplar Point Pump Station Site 51SE71, Washington, D.C.** Principal Investigator. Managed project, directed fieldwork, conducted artifact analysis, and co-authored report for Phase I, II, and III investigations. D.C. Water and Sewer Authority, Washington, D.C.

2016 **Cultural Resources Survey and Phase II Archaeological Evaluation for the Route 11 Bridge #1011 Replacement Project, Shenandoah County, Virginia.** Principal Investigator. Managed project and co-authored report. The Virginia Department of Transportation, Staunton District, Staunton, Virginia.

2010 **Phase 1B Archaeological Assessment of the Expanded Primary Impact Area of the Shepherd Parkway Interchange/Access Road Alternative for the St. Elizabeths Redevelopment Project, Washington, D.C.** Principal Archaeologist. Directed fieldwork and co-authored report. General Services Administration (GSA) National Capital Region, Washington, D.C.

2007 **Archaeological Assessment for the 11th Street Bridge Environmental Impact Statement, Washington, D.C.** Project Archaeologist. Conducted reconnaissance survey and co-authored report. CH2M Hill, Washington, D.C., and New Orleans, Louisiana.

2003 **Phase I Archeological Survey MD 28/198: MD 97 to I-95 in Montgomery and Prince George's Counties, Maryland.** Project Archeologist. Co-authored report. Maryland State Highway Administration, Baltimore, Maryland.

2000 **Phase IB Archaeological Survey I-270/US 15 Multi-Modal Corridor Study, Montgomery and Frederick Counties Maryland.** Project Archaeologist. Directed fieldwork. Maryland State Highway Administration, Baltimore, Maryland.

Publications

2009 "Gizzard Stones or Game Pieces?" The African Diaspora Archaeology Network Newsletter. March 2009:1-23. http://www.diaspora.illinois.edu/news0309/news0309.html#1

Papers Presented at Professional Meetings

2018 "Subterranean Homesick Blues: Excavations at Site 51SE071, a Native American Settlement along the Anacostia River, Washington, D.C." Paper presented at the Society of American Archaeology's 83rd Annual Meeting, Washington, D.C.

2012 "Contrabands and Covered Ways: Archaeology at Fort Carroll, Washington, D.C." Paper presented at the 39th Annual Conference on D.C. Historical Studies, Washington, D.C.

2008 "Gizzard Stones or Game Pieces?" A Symposium to Honor the Work of William M. Gardner, Shepardstown, West Virginia.

COMMONWEALTH
HERITAGE GROUP

COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

February 1, 2023

Susan Stafford
Federal Aviation Administration
Beckley Airports Field Office
176 Airport Circle, Rm 101
Beaver, WV 25813

Re: Shenandoah Valley Regional Airport Aviation Technology Park Development
Augusta County
DHR File No. 2022-5471

Dear Ms. Stafford:

The Department of Historic Resources (DHR) is writing in response to the Federal Aviation Administration's (FAA) request for review of the above-referenced project. The initial submission was received on January 4, 2023. The Virginia Department of Historic Resources (DHR) received the above referenced project for our review and comment pursuant to Section 106 (54 U.S.C. 306108) of the National Historic Preservation Act (54 U.S.C. 300101 et seq.) and it's implementing regulation, "Protection of Historic Properties" (36 CFR Part 800).

The submission indicates that this Undertaking is to take place entirely on airport property, on a previously disturbed site, and will include the following work:
1. Construct Hangars H, I, T, and U;
2. Construct Associated Aprons, Taxilanes, Taxiway Connectors, Access for Hangars H, I, T, and U;
3. Construct Access Road to Proposed Hangar V;
4. Construct Access Road to the Fuel Farm and Rehabilitate Old Airport Road;
5. Construct a Connector Taxiway from the Corporate Hangars to Taxiway A;
6. Construct Fuel Truck Parking;
7. Install Perimeter Fence; and
8. Automobile Parking.

We understand that some previous projects at the airport have resulted in a No Historic Properties Affected determination from the FAA, which DHR concurred to. However, we will need additional information in order to understand the project impacts.

The resource located at 321 Valley Church Road is not included in the APE due to the applicant's observation that it is buffered by trees. Unfortunately, DHR will need more information to concur. One photograph of limited quality was provided. The tree buffer appears to have been taken during growing season and the baseline for judging the sufficiency of vegetative buffers is best determined during the winter when the tree foliage is at a minimum. We will need to see more photos to and from the resource from different vantage points at a minimum and preferable taken during the non-growing season. Until the requested information is provided and given that DHR concurs; 321 Valley Church Road will be treated as a resource within the APE.

The direct are of potential effect (APE) for this Undertaking encompasses approximately 80 acres. Although a search in DHR's Virginia Cultural Resources Information System (V-CRIS) did not identify known resources within the direct APE, the project has identified a small, fenced-in cemetery (Cash Cemetery) located approximately 25 feet from the old Airport Road which is proposed to be rehabilitated and notes that there are no plans to impact this cemetery. There are two on-airport residences within the direct APE which are leased by the Airport Commission on a month-to-month basis. None of these resources have been previously recorded.

Identified resources that are over 45 years of age include the following:

DHR Resource #	Resource Name and Address	Date Constructed	Comments
Within Direct APE			
No # Assigned Yet	On-airport residence #1 14 Aviation Circle	No Date; Assumed 50+ Years	Needs Survey
No # Assigned Yet	On-airport residence #2 18 Aviation Circle	1925	Needs Survey
Within Indirect APE			
No # Assigned Yet	390 Valley Church Road	1925	Needs Survey
No # Assigned Yet	244 Airport Road	1974	Needs Survey
No # Assigned Yet	224 Airport Road	1909	
No # Assigned Yet	Oakland Farms, Corner of Weyers Cave Road and Moss Lane	1970	Needs Survey
	71 Moss Lane	1900	Needs Survey
Not Included in APE			
No # Assigned Yet	321 Valley Church Road	1918	Needs Survey
No # Assigned Yet	Cash Cemetery		Record in V-CRIS and provide additional information

TABLE KEY:	Warrants Mitigation	Needs Attention	**DHR does not concur**

We understand that the Cash Cemetery is 25 feet from the old Airport Road which is proposed to be rehabilitated. Has this cemetery been formally delineated? Can photographs be provided? Generally, DHR recommends no less that a 30-foot buffer from cemeteries when the horizontal extent has not been formally

delineated and the protection area should be noted on all relevant construction plans and defined in the field by temporary fencing during construction.

The application notes that there are unrecorded resources within the APE area that have not been evaluated for Virginia Landmarks Register (VLR) and National Register of Historic Places (NRHP) listing. We will need additional information in order to provide meaningful comments regarding impacts to historic resources. We recommend conducting a Phase I cultural resources survey of architectural resources and developing mitigation plans, if necessary. A Phase I cultural resources survey of architectural resources must be conducted by qualified professionals, in the appropriate discipline, in accordance with DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (October 2011, Revised 2017) at https://www.dhr.virginia.gov/wp-content/uploads/2018/06/SurveyManual_2017.pdf.

DHR recommends a survey of all resources 45 years and older (noted in the above table) be recorded and assessed for eligibility and project impacts. Please note that DHR requires previously-recorded resources to be resurveyed if they have not been surveyed in the last five years. We generally rely on the accuracy of survey data on specific resources for no more than five years, due to possible changes to resources that may occur over the passage of time, advancements in scholarship, and rapid development that affects many parts of the state. Two bound copies and one digital copy of the resulting report should be submitted to our office for review and approval prior to proceeding with the project. It should be noted that all archival material for the architectural study must be submitted and approved by our Archives before we can complete our review of the report. Once we have the results of the surveys, we will be able to advise you whether any further investigations and/or other actions are warranted.

If you have any questions or comments regarding the project in general or our review of this project, please do not hesitate to contact me via email at adrienne.birge-wilson@dhr.virginia.gov or via telephone at (804) 482-6092. If you have any questions regarding the archaeology for this project reach out to Samantha Henderson via email at samantha.henderson@dhr.virginia.gov or via telephone at (804) 482-6088.

Sincerely,

Adrienne Birge-Wilson, Architectural Historian
Review and Compliance Division

c. Mary Ashburn Pearson, Delta Airport Consultants

U.S. Department of Transportation
Federal Aviation Administration

Beckley Airports Field Office
176 Airport Circle, Room 101
Beaver, West Virginia 25813
Telephone: (304) 252-6216
FAX: (304) 253-8028

March 28, 2023

Dr. Wenonah G. Haire, THPO and Catawba Cultural Center Executive Director
Catawba Indian Nation
1536 Tom Steven Road
Rock Hill, SC 29730

Subject: Project Review for Continued Development of Aviation Technology Park – REVISED SUBMITTAL
Shenandoah Valley Regional Airport (SHD)

Dear Dr. Haire:

The Shenandoah Valley Regional Airport Commission ("the Commission"), owner and operator of the Shenandoah Valley Regional Airport (SHD), is proposing the continued development of its on-airport Aviation Technology Park. The projects, referred to as the Proposed Action, are illustrated conceptually in the enclosures and would take place within the boundaries of airport property.

A coordination package was initially submitted to you in January 2023; since then, the Airport Commission has added two projects to the Proposed Action, which are noted in red font below and in the enclosed package. There has been no change to the Area of Potential Effect (APE) initially coordinated with your office.

The Proposed Action is now composed of the following projects:

1. Construct Hangars H, I, T, and U
2. Construct Associated Aprons, Taxilanes, Taxiway Connectors, Access for Hangars H, I, T, and U
3. Construct Access Road to Proposed Hangar V
4. Construct Access Road to the Fuel Farm and Rehabilitate Old Airport Road
5. Construct a Connector Taxiway from the Corporate Hangars to Taxiway A
6. Construct Fuel Truck Parking
7. Install Perimeter Fence
8. Automobile Parking
9. Expand Commercial Apron
10. Realign Access Road between Commercial Apron and Fuel Farm

As these projects are anticipated to be federally funded, licensed, or permitted they are subject to review to comply with Section 106 of the National Historic Preservation Act of 1966, as amended. Your tribe has expressed interest in Augusta County, Virginia.

Note that FAA procedures dictate that in the event a cultural or archeological artifact is discovered during construction, that the construction is halted and the State Historic Preservation Officer (SHPO) and/or the interested Tribe is notified.

If you have any questions or need further information regarding the project, please feel free to contact Susan Stafford of my staff (Susan.Stafford@faa.gov) directly.

Sincerely,

Matthew Di Giulian, Manager
FAA, Beckley Airports Field Office

Enclosures: Project Descriptions and Exhibits

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

May 4, 2023

Attention: Susan Stafford
Federal Aviation Administration
176 Airport Circle, Room 101
Beaver, West Virginia 25813

Re. THPO #	TCNS #	Project Description
2023-40-3		Revised Submittal – Continued Development of Aviation Technology Park

Dear Ms. Stafford,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail Caitlin.Rogers@catawba.com.

Sincerely,

Caitlin Rogers for

Wenonah G. Haire
Tribal Historic Preservation Officer

U.S. Department of Transportation
Federal Aviation Administration

Beckley Airports Field Office
176 Airport Circle, Room 101
Beaver, West Virginia 25813
Telephone: (304) 252-6216
FAX: (304) 253-8028

March 28, 2023

Kenneth Branham, Chief
Monacan Indian Nation
111 Highview Drive
Madison Heights, VA 24572

Subject: Project Review for Continued Development of Aviation Technology Park – REVISED SUBMITTAL
Shenandoah Valley Regional Airport (SHD)

Dear Chief Branham:

The Shenandoah Valley Regional Airport Commission ("the Commission"), owner and operator of the Shenandoah Valley Regional Airport (SHD), is proposing the continued development of its on-airport Aviation Technology Park. The projects, referred to as the Proposed Action, are illustrated conceptually in the enclosures and would take place within the boundaries of airport property.

A coordination package was initially submitted to you in January 2023; since then, the Airport Commission has added two projects to the Proposed Action, which are noted in red font below and in the enclosed package. There has been no change to the Area of Potential Effect (APE) initially coordinated with your office.

The Proposed Action is now composed of the following projects:

1. Construct Hangars H, I, T, and U
2. Construct Associated Aprons, Taxilanes, Taxiway Connectors, Access for Hangars H, I, T, and U
3. Construct Access Road to Proposed Hangar V
4. Construct Access Road to the Fuel Farm and Rehabilitate Old Airport Road
5. Construct a Connector Taxiway from the Corporate Hangars to Taxiway A
6. Construct Fuel Truck Parking
7. Install Perimeter Fence
8. Automobile Parking
9. Expand Commercial Apron
10. Realign Access Road between Commercial Apron and Fuel Farm

As these projects are anticipated to be federally funded, licensed, or permitted they are subject to review to comply with Section 106 of the National Historic Preservation Act of 1966, as amended. Your tribe has expressed interest in Augusta County, Virginia.

Note that FAA procedures dictate that in the event a cultural or archeological artifact is discovered during construction, that the construction is halted and the State Historic Preservation Officer (SHPO) and/or the interested Tribe is notified.

If you have any questions or need further information regarding the project, please feel free to contact Susan Stafford of my staff (Susan.Stafford@faa.gov) directly.

Sincerely,

Matthew Di Giulian, Manager
FAA, Beckley Airports Field Office

Enclosures: Project Descriptions and Exhibits

From: Stafford, Susan (FAA)
To: "Katelyn Lucas"
Subject: RE: Shenandoah Valley Regional Airport Proposed Aviation Technology Park
Date: Tuesday, March 28, 2023 12:33:00 PM
Attachments: SHD Delaware Letter (Revised).pdf

Ms. Lucas,

Please see the attached, revised letter regarding a proposed Aviation Technology Park Development at Shenandoah Valley Regional Airport (SHD) in Augusta County, Virginia. We previously provided a letter to you on January 1, 2023. Since that time, two additional projects have been added to the project, but within the original Area of Potential Effects. If you have any questions, or need additional information, please feel free to contact me.

Thank you,

Susan B. Stafford
Environmental Protection Specialist
Beckley Airports Field Office
176 Airport Circle, Rm 101
Beaver, WV 25813
304-252-6216 x 130

From: Stafford, Susan (FAA)
Sent: Tuesday, January 3, 2023 11:31 AM
To: Katelyn Lucas <klucas@delawarenation-nsn.gov>
Subject: Shenandoah Valley Regional Airport Proposed Aviation Technology Park

Ms. Lucas,

Please see the attached letter regarding a proposed Aviation Technology Park Development at Shenandoah Valley Regional Airport (SHD) in Augusta County, Virginia. If you have any questions, or need additional information, please feel free to contact me.

Thank you,

Susan B. Stafford
Environmental Protection Specialist
Beckley Airports Field Office
176 Airport Circle, Rm 101
Beaver, WV 25813
304-252-6216 x 130

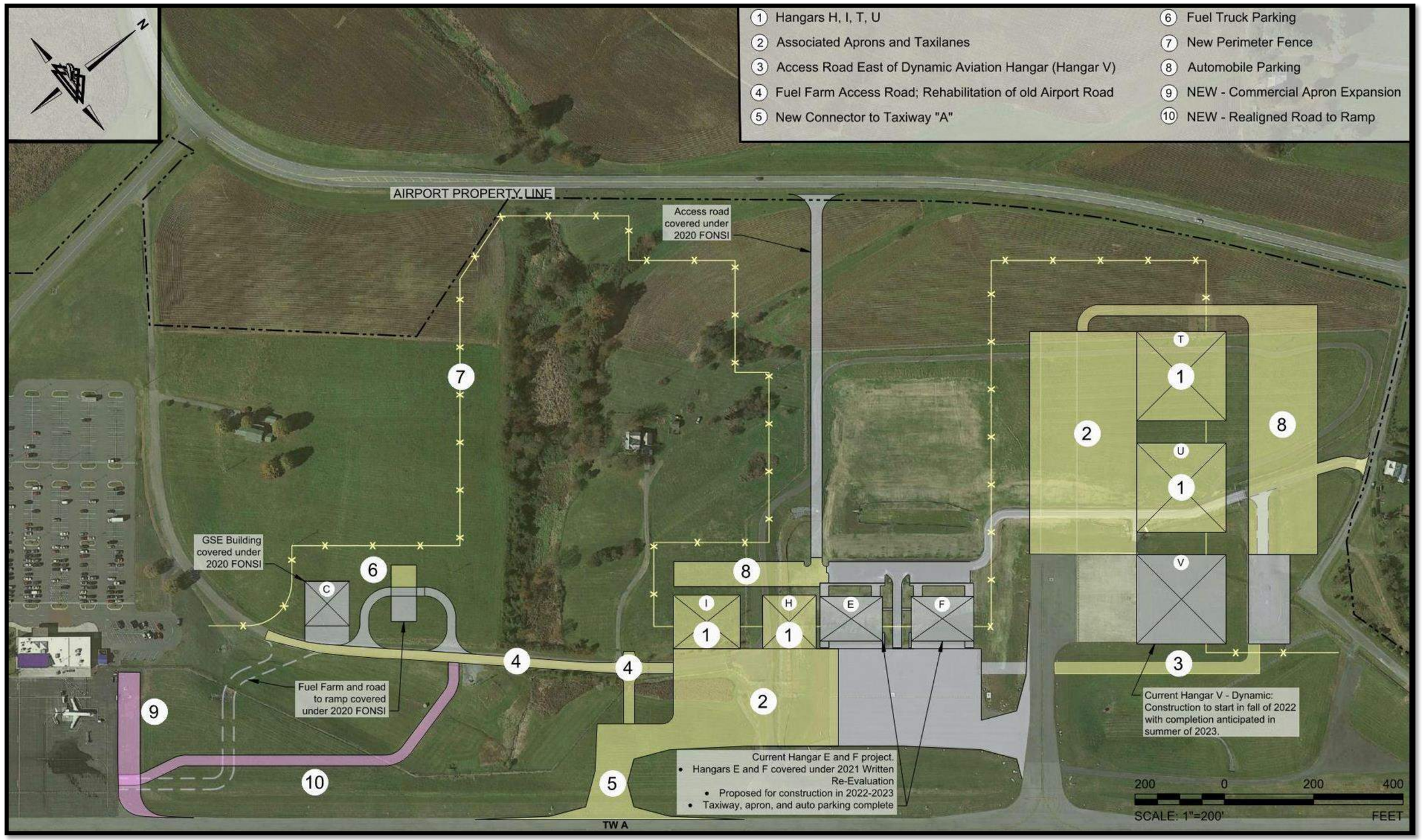
Project Description- Aviation Technology Park Facility Development at SHD
December 2023
Revised March 2023

The Proposed Action is to take place entirely on airport property, on a previously disturbed site, and includes the following list of projects. The projects would take place in the northwestern portion of airport property, which is ready to continue to be developed for corporate use. Several development projects are currently underway or have been recently completed in this area which were environmentally reviewed under separate efforts, including Virginia Department of Historic Resources (DHR) File No. 2017-0198 and DHR File No. 2021-3107 which resulted in "no affect" determinations by DHR.

The Corporate Facility Development program includes the following which is conceptually depicted in Figure 1.

1. Construct Hangars H, I, T, and U
2. Construct Associated Aprons, Taxilanes, Taxiway Connectors, Access for Hangars H, I, T, and U
3. Construct Access Road to Proposed Hangar V
4. Construct Access Road to the Fuel Farm and Rehabilitate Old Airport Road
5. Construct a Connector Taxiway from the Corporate Hangars to Taxiway A
6. Construct Fuel Truck Parking
7. Install Perimeter Fence
8. Automobile Parking
9. Expand commercial apron
10. Realign access road between commercial apron and fuel farm

Figure 1: 2023 Proposed Action with two additional projects



Existing Land Use

SHD is a commercial service airport in Augusta County, Virginia. The airport was officially opened in 1958 with a 4,000 foot runway. In the 1960s, Piedmont Airlines began schedule airline services with four daily flights.

No known historic, architectural, or cultural resources eligible for listing on the National Register of Historic Places (NRHP) exist on airport property. No known historic national or state parks, forests or refuges are located within the airport limits. Land uses around the airport are agricultural and industrial, with portions of residential scattered throughout, especially on the north side of airport property.

The project area has not been field surveyed, although previous coordination with DHR for other airport development on and within this site resulted in "no affect" determinations. According to the DHR online archives, a Phase 1 Cultural Resources survey was conducted immediately adjacent to the current project site in 1996 and included the runway and parallel taxiway system east of the project site (DHR Report Number AU-087). A copy of the report is not available on the DHR website; however, as no resources are identified in the archives, it is likely that no eligible resources were identified within that adjacent project area during the survey.

The direct APE encompasses approximately 80 acres. The DHR's VCris mapper does not identify known resources within the direct APE. There is a small, fenced-in cemetery (Cash Cemetery) located approximately 25 feet from the old Airport Road which is proposed to be rehabilitated; there are no plans to impact this cemetery and it is not identified as a known resource in the V-Cris system.

The indirect APE encompasses approximately 150 acres which has been conservatively estimated to take into account adjacent residences who may be able to see the proposed development. No known NRHP-eligible cultural or archaeological resources are located within the indirect APE.

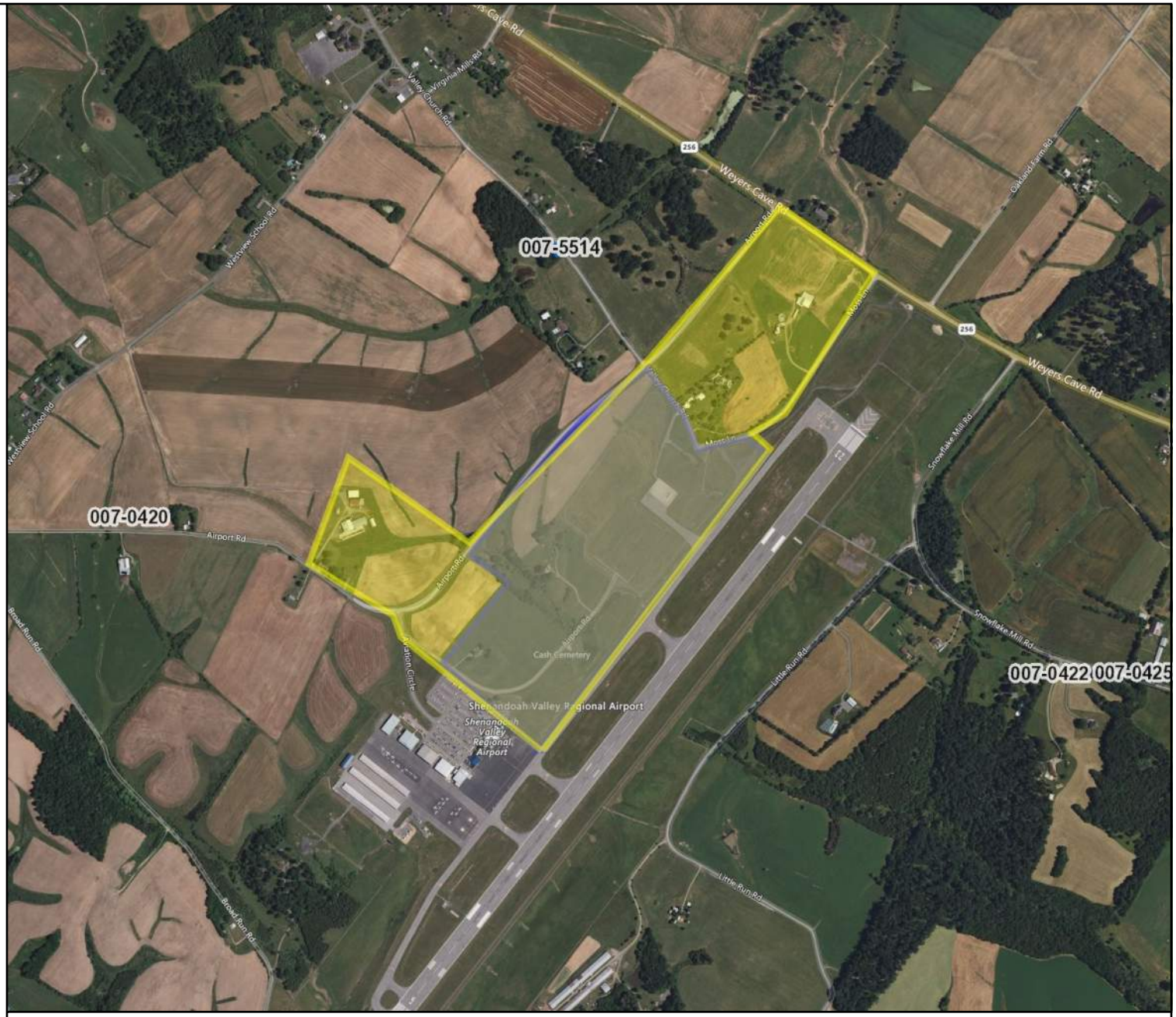
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Historic Districts
- Battlefields
- All Other Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries



N

Feet

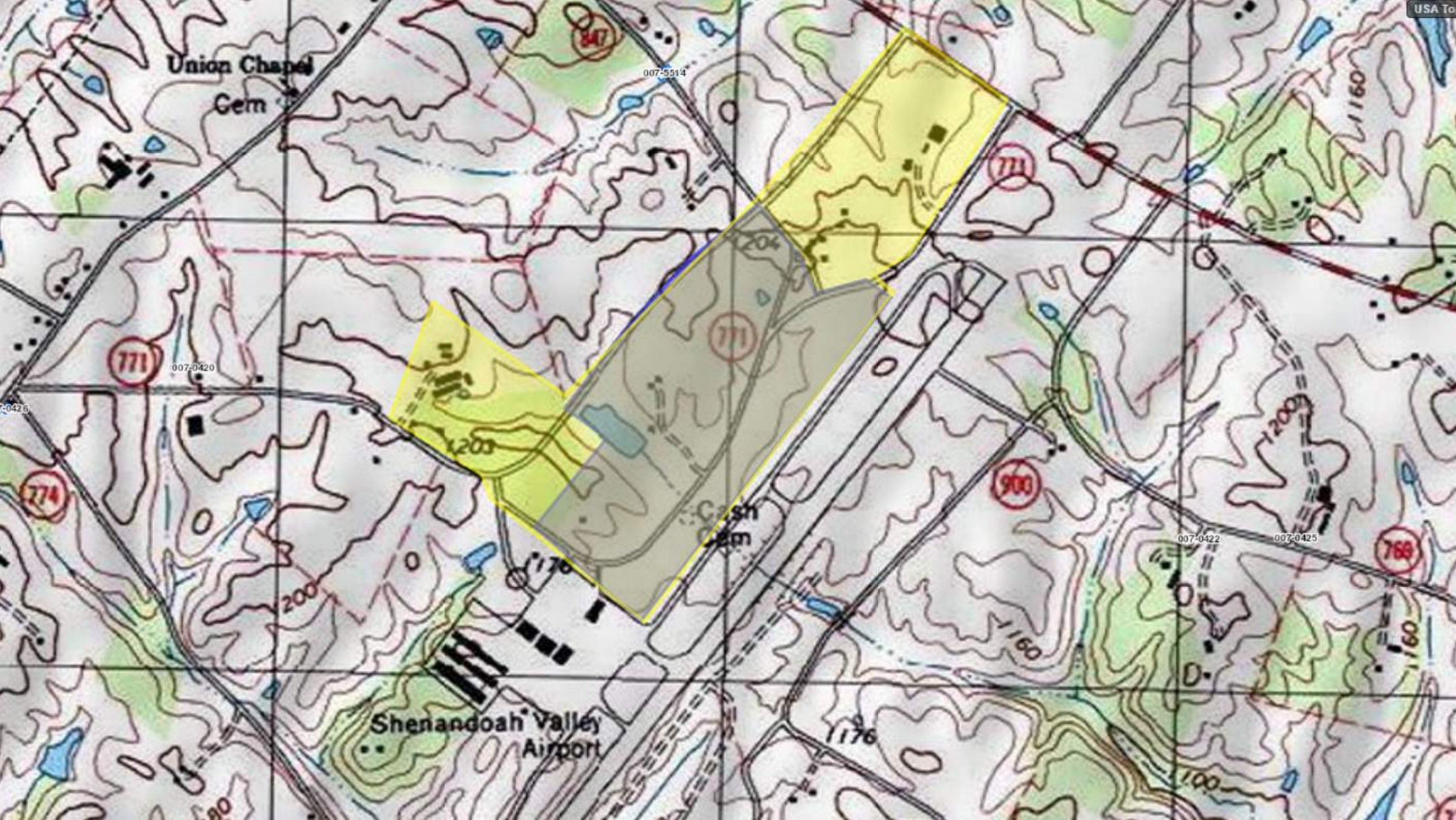
0 500 1000 1500 2000

1:18,056 / 1"=1,505 Feet

Title: SHD APEs (Direct/80ac, Indirect/150ac) **Date: 12/8/2022**

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.



Union Chapel
Cem
007-5514
847
771
771
771
774
900
769
007-0420
007-0422
007-0425
1204
1203
1200
1176
1160
1100
Shenandoah Valley
Airport

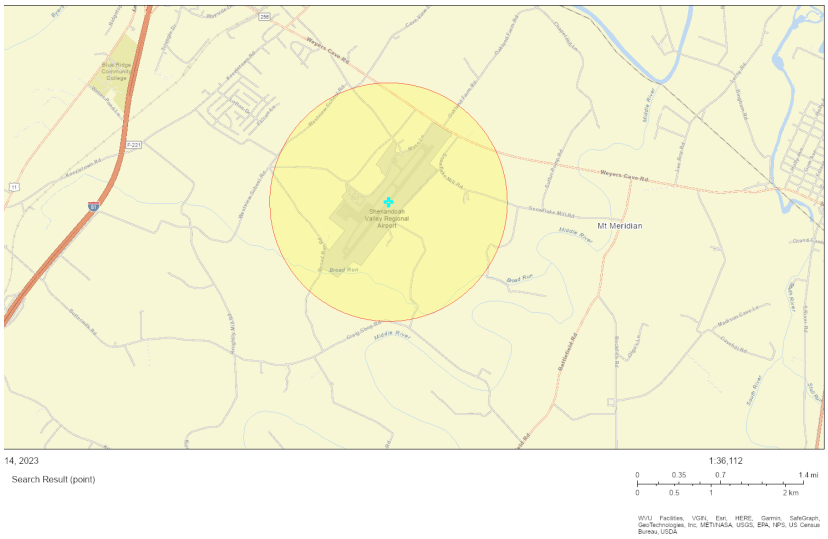
Attachment E

EJScreen Community Report

This report provides environmental and socioeconomic information for user defined areas, and combines that data into environmental justice and supplemental indexes.

Weyers Cave, VA

1 mile Ring Centered at 38.263861,-78.896427
Population: 137
Area in square miles: 3.14



COMMUNITY INFORMATION

- Low income: 15 percent
- People of color: 18 percent
- Less than high school education: 15 percent
- Limited English households: 3 percent
- Unemployment: 0 percent
- Persons with disabilities: 10 percent
- Male: 55 percent
- Female: 45 percent
- 81 years — Average life expectancy
- $32,186 — Per capita income
- Number of households: 28
- Owner occupied: 64 percent

BREAKDOWN BY RACE

- White: 98%
- Black: 0%
- Asian: 0%
- Hispanic: 18%
- American Indian: 0%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 2%

BREAKDOWN BY AGE

From Ages 1 to 4	5%
From Ages 1 to 18	27%
From Ages 18 and up	73%
From Ages 65 and up	13%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	100%
Speak Other Indo-European Languages	0%
Speak Asian-Paci c Island Languages	0%
Speak Other Languages	0%

Notes: Numbers may not sum to totals due to rounding. Hispanic popultion can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	92%
Spanish	6%
Russian, Polish, or Other Slavic	2%
Total Non-English	8%

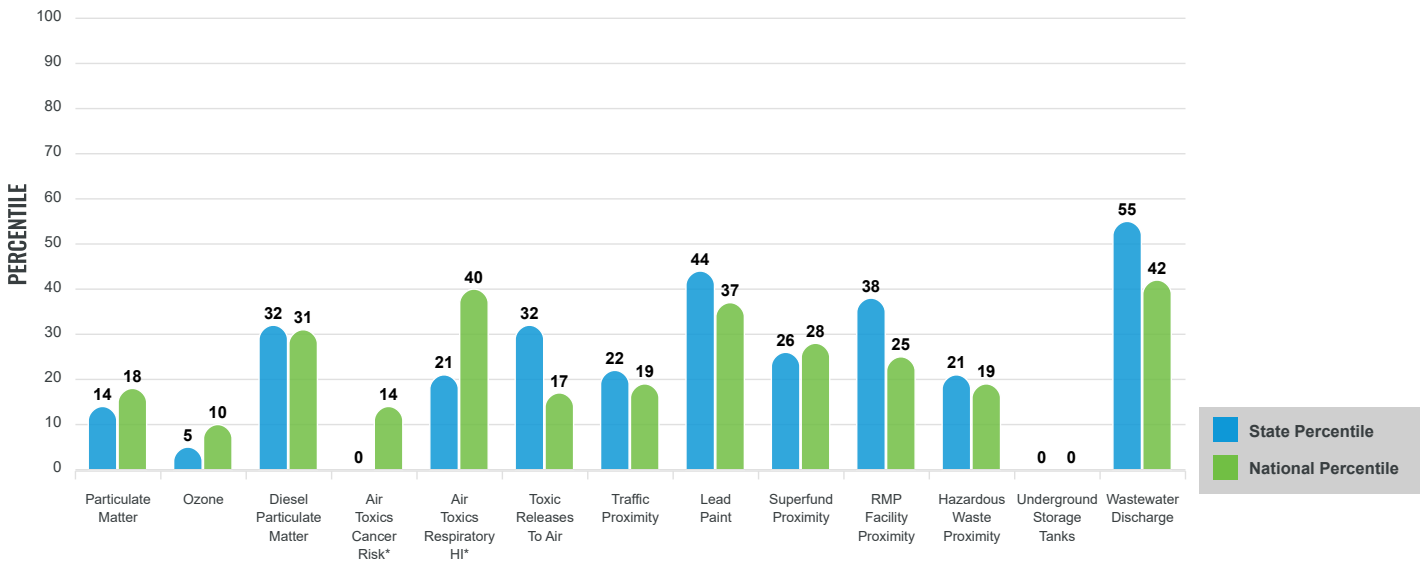
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen re ecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

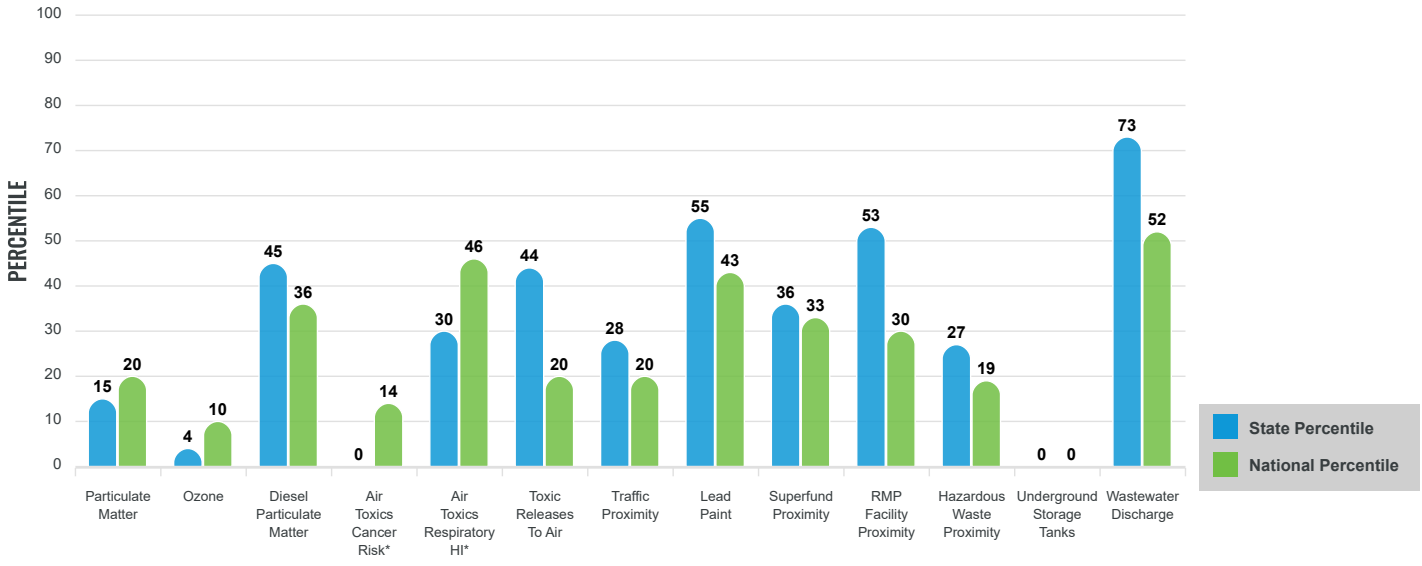
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community level vulnerability. They combine data on percent low income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for 1 mile Ring Centered at 38.263861,-78.896427

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	6.94	7.53	14	8.08	19
Ozone (ppb)	55.3	59.1	4	61.6	10
Diesel Particulate Matter (µg/m^3)	0.162	0.209	37	0.261	35
Air Toxics Cancer Risk* (lifetime risk per million)	20	31	0	28	3
Air Toxics Respiratory HI*	0.3	0.33	9	0.31	31
Toxic Releases to Air	71	4,300	40	4,600	20
Tra c Proximity (daily tra c count/distance to road)	13	150	23	210	19
Lead Paint (% Pre-1960 Housing)	0.2	0.22	59	0.3	48
Superfund Proximity (site count/km distance)	0.036	0.11	30	0.13	33
RMP Facility Proximity (facility count/km distance)	0.098	0.21	49	0.43	28
Hazardous Waste Proximity (facility count/km distance)	0.091	0.61	22	1.9	18
Underground Storage Tanks (count/km^2)	0	1.9	0	3.9	0
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0028	7.2	81	22	57
SOCIOECONOMIC INDICATORS					
Demographic Index	17%	31%	23	35%	24
Supplemental Demographic Index	10%	12%	45	14%	35
People of Color	18%	38%	29	39%	35
Low Income	15%	25%	37	31%	27
Unemployment Rate	0%	5%	0	6%	0
Limited English Speaking Households	3%	2%	77	5%	69
Less Than High School Education	15%	10%	78	12%	73
Under Age 5	5%	6%	53	6%	52
Over Age 64	13%	17%	42	17%	41
Low Life Expectancy	17%	20%	23	20%	27

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0
Hazardous Waste, Treatment, Storage, and Disposal Facilities 0
Water Dischargers 1
Air Pollution 0
Brown elds 0
Toxic Release Inventory 0

Other community features within defined area:

Schools 0
Hospitals 0
Places of Worship 1

Other environmental data:

Air Non-attainment ..... No
Impaired Waters ..... Yes

Selected location contains American Indian Reservation Lands* ..... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community ..... No
Selected location contains an EPA IRA disadvantaged community ..... No

Report for 1 mile Ring Centered at 38.263861,-78.896427

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	17%	20%	23	20%	27
Heart Disease	5.9	5.5	59	6.1	48
Asthma	9	9.6	32	10	25
Cancer	7	6.1	67	6.1	69
Persons with Disabilities	8.2%	12.6%	27	13.4%	19

CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	7%	9%	60	12%	52
Wild re Risk	0%	2%	0	14%	0

CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	26%	13%	84	14%	84
Lack of Health Insurance	12%	8%	81	9%	76
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for 1 mile Ring Centered at 38.263861,-78.896427

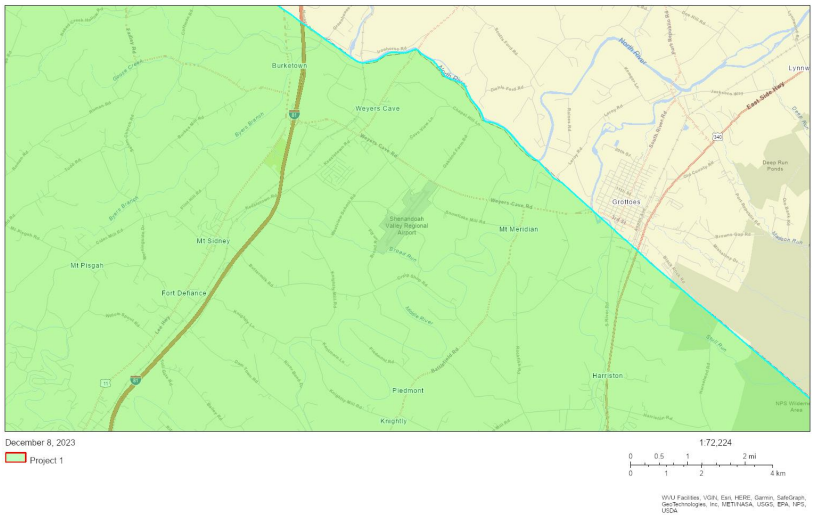
EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

Augusta County, VA

County: Augusta
Population: 76,948
Area in square miles: 970.75

A3 Landscape



LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	96%
Spanish	2%
Total Non-English	4%

COMMUNITY INFORMATION

- Low income: 25 percent
- People of color: 10 percent
- Less than high school education: 11 percent
- Limited English households: 0 percent
- Unemployment: 3 percent
- Persons with disabilities: 13 percent
- Male: 51 percent
- Female: 49 percent
- 79 years — Average life expectancy
- $32,461 — Per capita income
- Number of households: 29,880
- Owner occupied: 79 percent

BREAKDOWN BY RACE

- White: 90%
- Black: 4%
- American Indian: 0%
- Asian: 1%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 2%
- Hispanic: 3%

BREAKDOWN BY AGE

From Ages 1 to 4	5%
From Ages 1 to 18	19%
From Ages 18 and up	81%
From Ages 65 and up	21%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	82%
Speak Other Indo-European Languages	18%
Speak Asian-Pacific Island Languages	0%
Speak Other Languages	0%

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017-2021. Life expectancy data comes from the Centers for Disease Control.

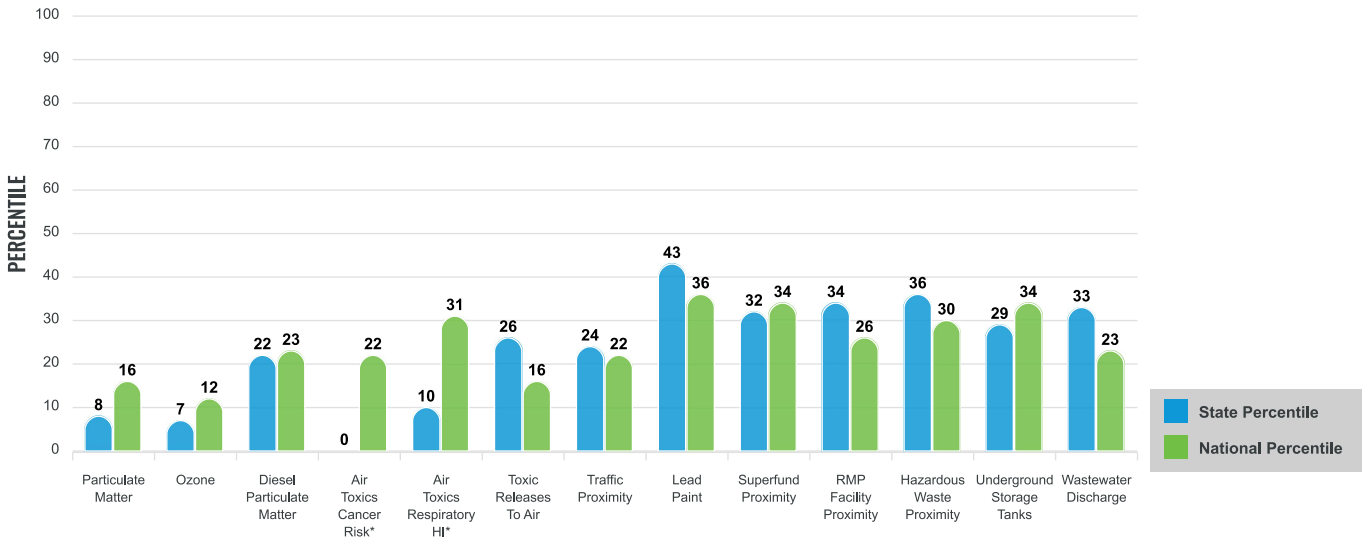
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

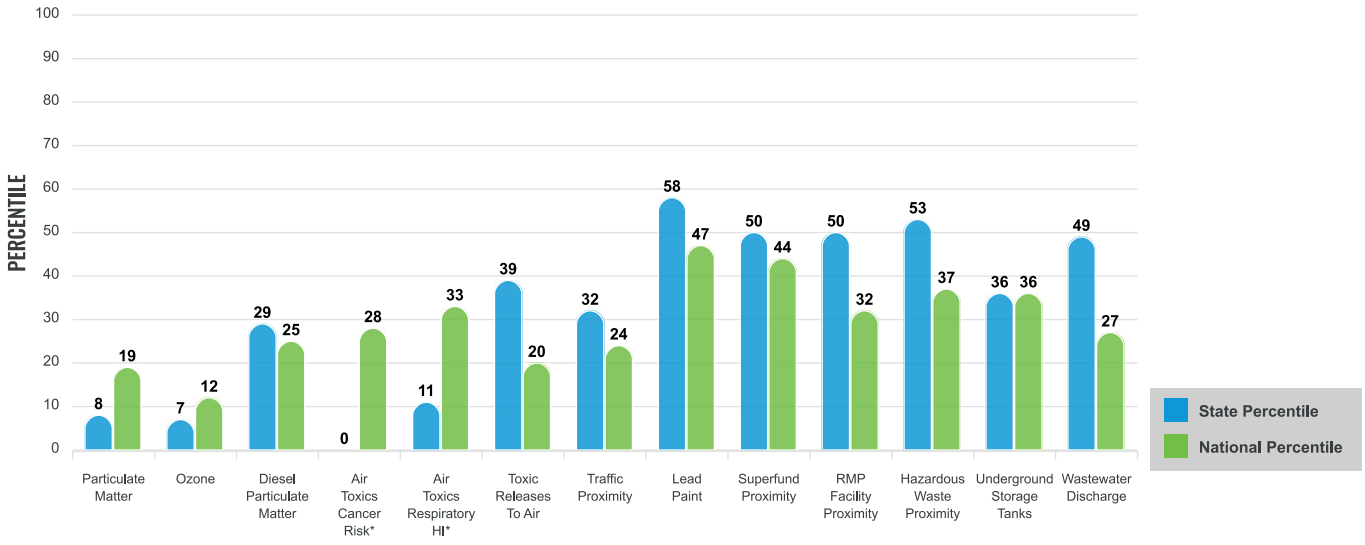
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	6.69	7.53	5	8.08	15
Ozone (ppb)	55.6	59.1	5	61.6	10
Diesel Particulate Matter (µg/m^3)	0.116	0.209	21	0.261	21
Air Toxics Cancer Risk* (lifetime risk per million)	20	29	0	25	5
Air Toxics Respiratory HI*	0.24	0.33	0	0.31	4
Toxic Releases to Air	65	4,300	38	4,600	20
Traffic Proximity (daily traffic count/distance to road)	18	150	27	210	22
Lead Paint (% Pre-1960 Housing)	0.21	0.22	60	0.3	48
Superfund Proximity (site count/km distance)	0.046	0.11	39	0.13	40
RMP Facility Proximity (facility count/km distance)	0.11	0.21	55	0.43	33
Hazardous Waste Proximity (facility count/km distance)	0.25	0.61	57	1.9	40
Underground Storage Tanks (count/km^2)	0.34	1.9	35	3.9	36
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00018	7.2	57	22	34
SOCIOECONOMIC INDICATORS					
Demographic Index	18%	31%	26	35%	27
Supplemental Demographic Index	12%	12%	55	14%	46
People of Color	10%	38%	18	39%	23
Low Income	25%	25%	57	31%	46
Unemployment Rate	3%	5%	49	6%	43
Limited English Speaking Households	0%	2%	64	5%	57
Less Than High School Education	11%	10%	64	12%	59
Under Age 5	5%	6%	48	6%	47
Over Age 64	21%	17%	71	17%	70
Low Life Expectancy	20%	20%	52	20%	52

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund	0
Hazardous Waste, Treatment, Storage, and Disposal Facilities	3
Water Dischargers	140
Air Pollution	86
Brownfields	0
Toxic Release Inventory	18

Other community features within defined area:

Schools	23
Hospitals	1
Places of Worship	106

Other environmental data:

Air Non-attainment	No
Impaired Waters	Yes

Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes

Report for County: Augusta

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	20%	20%	52	20%	52
Heart Disease	6.7	5.5	71	6.1	64
Asthma	9.4	9.6	42	10	33
Cancer	7.2	6.1	70	6.1	72
Persons with Disabilities	13.4%	12.6%	59	13.4%	55

CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	11%	9%	76	12%	69
Wildfire Risk	5%	2%	95	14%	80

CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	18%	13%	71	14%	70
Lack of Health Insurance	8%	8%	59	9%	58
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

Footnotes

Report for County: Augusta

United States Census Bureau

QuickFacts

Virginia; United States

QuickFacts provides statistics for all states and counties. Also for cities and towns with a ***population of 5,000 or more***.

All Topics	Virginia	United States
Population Estimates, July 1, 2022, (V2022)	**8,683,619**	**333,287,557**
PEOPLE		
Population		
Population Estimates, July 1, 2022, (V2022)	**8,683,619**	**333,287,557**
Population estimates base, April 1, 2020, (V2022)	8,631,384	331,449,520
Population, percent change - April 1, 2020 (estimates base) to July 1, 2022, (V2022)	0.6%	0.6%
Population, Census, April 1, 2020	8,631,393	331,449,281
Population, Census, April 1, 2010	8,001,024	308,745,538
Age and Sex		
Persons under 5 years, percent	5.6%	5.6%
Persons under 18 years, percent	21.5%	21.7%
Persons 65 years and over, percent	16.9%	17.3%
Female persons, percent	50.5%	50.4%
Race and Hispanic Origin		
White alone, percent	68.5%	75.5%
Black or African American alone, percent (a)	20.0%	13.6%
American Indian and Alaska Native alone, percent (a)	0.6%	1.3%
Asian alone, percent (a)	7.3%	6.3%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%	0.3%
Two or More Races, percent	3.4%	3.0%
Hispanic or Latino, percent (b)	10.5%	19.1%
White alone, not Hispanic or Latino, percent	59.8%	58.9%
Population Characteristics		
Veterans, 2018-2022	654,068	17,038,807
Foreign born persons, percent, 2018-2022	12.6%	13.7%
Housing		
Housing units, July 1, 2022, (V2022)	3,685,322	143,786,655
Owner-occupied housing unit rate, 2018-2022	66.9%	64.8%
Median value of owner-occupied housing units, 2018-2022	$339,800	$281,900
Median selected monthly owner costs -with a mortgage, 2018-2022	$2,014	$1,828
Median selected monthly owner costs -without a mortgage, 2018-2022	$546	$584
Median gross rent, 2018-2022	$1,440	$1,268
Building permits, 2022	39,701	1,665,088
Families & Living Arrangements		
Households, 2018-2022	3,289,776	125,736,353
Persons per household, 2018-2022	2.55	2.57
Living in same house 1 year ago, percent of persons age 1 year+, 2018-2022	86.0%	86.9%
Language other than English spoken at home, percent of persons age 5 years+, 2018-2022	16.7%	21.7%
Computer and Internet Use		
Households with a computer, percent, 2018-2022	94.0%	94.0%
Households with a broadband Internet subscription, percent, 2018-2022	88.7%	88.3%
Education		
High school graduate or higher, percent of persons age 25 years+, 2018-2022	91.1%	89.1%
Bachelor's degree or higher, percent of persons age 25 years+, 2018-2022	41.0%	34.3%
Health		
With a disability, under age 65 years, percent, 2018-2022	8.3%	8.9%
Persons without health insurance, under age 65 years, percent	7.6%	9.3%

Economy		
In civilian labor force, total, percent of population age 16 years+, 2018-2022	63.8%	63.0%
In civilian labor force, female, percent of population age 16 years+, 2018-2022	60.1%	58.5%
Total accommodation and food services sales, 2017 ($1,000) (c)	22,074,703	938,237,077
Total health care and social assistance receipts/revenue, 2017 ($1,000) (c)	58,792,475	2,527,903,275
Total transportation and warehousing receipts/revenue, 2017 ($1,000) (c)	20,071,064	895,225,411
Total retail sales, 2017 ($1,000) (c)	120,162,088	4,949,601,481
Total retail sales per capita, 2017 (c)	$14,185	$15,224
Transportation		
Mean travel time to work (minutes), workers age 16 years+, 2018-2022	27.9	26.7
Income & Poverty		
Median household income (in 2022 dollars), 2018-2022	$87,249	$75,149
Per capita income in past 12 months (in 2022 dollars), 2018-2022	$47,210	$41,261
Persons in poverty, percent	⚠ 10.6%	⚠ 11.5%

BUSINESSES

Businesses		
Total employer establishments, 2021	206,271	8,148,606
Total employment, 2021	3,340,509	128,346,299
Total annual payroll, 2021 ($1,000)	217,594,826	8,278,573,947
Total employment, percent change, 2020-2021	-4.1%	-4.3%
Total nonemployer establishments, 2020	666,288	27,151,987
All employer firms, Reference year 2017	144,431	5,744,643
Men-owned employer firms, Reference year 2017	85,794	3,480,438
Women-owned employer firms, Reference year 2017	31,800	1,134,549
Minority-owned employer firms, Reference year 2017	28,262	1,014,958
Nonminority-owned employer firms, Reference year 2017	104,764	4,371,152
Veteran-owned employer firms, Reference year 2017	12,889	351,237
Nonveteran-owned employer firms, Reference year 2017	118,354	4,968,606

GEOGRAPHY

Geography		
Population per square mile, 2020	218.6	93.8
Population per square mile, 2010	202.6	87.4
Land area in square miles, 2020	39,482.11	3,533,038.28
Land area in square miles, 2010	39,490.09	3,531,905.43
FIPS Code	51	1

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable.] Click the Quick Info ⓘ icon to the left of each row in TA learn about sampling error.

In Vintage 2022, as a result of the formal request from the state, Connecticut transitioned from eight counties to nine planning regions. For more details, please see the Vintage 2022 release notes available here: Release Notes.

The vintage year (e.g., V2022) refers to the final year of the series (2020 thru 2022). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2018-2022 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2022 5-year ACS Comparison Guidance page.

Fact Notes

(a)	Includes persons reporting only one race
(c)	Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b)	Hispanics may be of any race, so also are included in applicable race categories

Value Flags

-	Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ende
F	Fewer than 25 firms
D	Suppressed to avoid disclosure of confidential information
N	Data for this geographic area cannot be displayed because the number of sample cases is too small.
FN	Footnote on this item in place of data
X	Not applicable
S	Suppressed; does not meet publication standards
NA	Not available
Z	Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, Stat Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

United States Census Bureau

QuickFacts

Virginia; United States

QuickFacts provides statistics for all states and counties. Also for cities and towns with a ***population of 5,000 or more***.

Income & Poverty	Virginia	United States
Population Estimates, July 1, 2022, (V2022)	⚠ **8,683,619**	⚠ **333,287,557**
PEOPLE		
Income & Poverty		
Median household income (in 2022 dollars), 2018-2022	$87,249	$75,149
Per capita income in past 12 months (in 2022 dollars), 2018-2022	$47,210	$41,261
Persons in poverty, percent	⚠ 10.6%	⚠ 11.5%

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable.] Click the Quick Info ⓘ icon to the left of each row in TA learn about sampling error.

In Vintage 2022, as a result of the formal request from the state, Connecticut transitioned from eight counties to nine planning regions. For more details, please see the Vintage 2022 release notes available here: Release Notes.

The vintage year (e.g., V2022) refers to the final year of the series (2020 thru 2022). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2018-2022 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2022 5-year ACS Comparison Guidance page.

Fact Notes

(a)	Includes persons reporting only one race
(c)	Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b)	Hispanics may be of any race, so also are included in applicable race categories

Value Flags

-	Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ende
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FN	Footnote on this item in place of data
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Z	Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, Stat Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

Attachment F

November 8, 2019

Via Email

Ms. Mary Ashburn Pearson, AICP
Delta Airport Consultants
2700 Polo Parkway
Midlothian, Virginia 23113

Re: Jurisdictional Determination (#NAO-2019-00525)
Shenandoah Valley Regional Airport
Augusta County, Virginia
WSSI #30351.01

Dear Ms. Pearson:

Enclosed is a copy of the U.S. Army Corps of Engineers' Jurisdictional Determination (JD) (#NAO-2015-00525) confirming the wetland delineation prepared by Wetland Studies and Solutions, Inc. This JD is valid for a period of five years from the date that it was issued (November 8, 2019).

Please note that this JD is only the U.S. Army Corps of Engineers verification of the wetland delineation and does not constitute authorization to impact any waters of the U.S. on the site. Please send us any site plans (preliminary plans are acceptable) you have for this site. Once the plans are received, WSSI will review them and send you a permitting proposal if the proposed site design impacts any waters of the U.S.

If you have any questions, please contact me at jfavela@wetlands.com or (703) 679-5786.

Sincerely,

WETLAND STUDIES AND SOLUTIONS, INC.

Jennifer Favela

Jennifer M. Favela
Project Environmental Scientist, PWS[1]

Enclosure

cc: Cheryl Rodriguez, Delta Airport Consultants (w/o enc.)

L:\30000s\30300\30351.01\Admin\05-ENVR\COE\AJD (#NAO-2019-00525)\Shenandoah AJD (#NAO-2019-00525) Letter.docx

[1] *Professional Wetland Scientist #3033, Society of Wetlands Scientists Certification Program, Inc.*

5300 Wellington Branch Drive • Suite 100 • Gainesville, VA 20155 • Phone 703.679.5786 • Fax 703.679.5601
jfavela@wetlands.com • www.wetlands.com

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

November 8, 2019

APPROVED JURISDICTIONAL DETERMINATION

Western Virginia Regulatory Section
NAO-2019-00525

Ms. Mary Ashburn Pearson
Delta Airport Consultants
2700 Polo Parkway
Midlothian, Virginia 23113

Dear Mary:

This letter is in regard to your request for an approved jurisdictional determination for the waters of the U.S. (including wetlands) on property known as Shenandoah Valley Regional Airport, located on 510 acres, located near Weyers Cave Road, Augusta County, Virginia.

An on-site jurisdictional determination found waters and/or wetlands regulated under Section 404 of the Clean Water Act (33 U.S.C. 1344) on the property listed above. We identified nontidal wetlands, adjacent wetlands, and tributaries on the site. This letter shall serve to confirm the wetlands delineation by Wetland Studies and Solutions (WSSI), as surveyed and shown on the map titled, "Overall waters if the U.S. Delineation Map" dated March 29, 2019.

There are also excluded waters on the subject property. Excluded waters E, E-1, and E-3 are not waters of the U.S. subject to the permitting requirements of Section 404 of the Clean Water Act nor Section 10 of the Rivers and Harbors Act. As such, discharges of dredged and/or fill material into these excluded waters do not require Department of the Army authorization.

Our basis for this determination is the application of the Corps' 1987 Wetland Delineation Manual (*and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*) and the positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation. The wetlands are waters of the United States and part of a tributary system to interstate waters (33 CFR 328.3(a)). The tributaries identified within the project area meet the Corps' definition of waters of the United States, are part of a tributary system to interstate waters (33 CFR 328.3 (a)) and have an ordinary high water mark (or high tide line). This letter is not confirming the Cowardin classifications of these aquatic resources.

Discharges of dredged or fill material, including those associated with mechanized landclearing, into jurisdictional waters and/or wetlands on this site will require a

Department of the Army permit and may require authorization by state and local authorities, including a Virginia Water Protection Permit from the Virginia Department of Environmental Quality (DEQ), a permit from the Virginia Marine Resources Commission (VMRC) and/or a permit from your local wetlands board. This letter is a confirmation of the Corps jurisdiction for the waters and/or wetlands on the subject property and does not authorize any work in these jurisdictional areas. Please obtain all required permits before starting work in the delineated waters/wetland areas.

This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the North Atlantic Division Office at the following address:

ATTN: Mr. James Haggerty, Regulatory Program Manager
United States Army Corps of Engineers
CENAD-PD-OR
Fort Hamilton Military Community
301 General Lee Avenue
Brooklyn, NY 11252-6700
Email: james.w.haggerty@usace.army.mil

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by January 8, 2020(60 days). It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

This jurisdictional determination is valid for a period of five (5) years from the date of this letter unless new information warrants revision prior to the expiration date. If you have any questions, please contact me at (434) 973-0568 or via email at Vincent.d.pero@usace.army.mil

Sincerely,

Vincent D. Pero

Digitally signed by Vincent D. Pero
Date: 2019.11.08 09:38:05 -05'00'

Vincent D. Pero
Project Manager, Western Virginia
Regulatory Section

Enclosure(s)
cc: Eric Millard (VADEQ)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Shenandoah Valley Regional Airport – Mary Ashburn Pearson	File Number: NAO-2019-00525	Date: November 8, 2019
Attached is:		See Section below
☐	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐	PERMIT DENIAL	C
☒	APPROVED JURISDICTIONAL DETERMINATION	D
☐	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the Norfolk District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the Norfolk District Engineer. Your objections must be received by the Norfolk District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the Norfolk District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the Norfolk District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the Norfolk District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the North Atlantic Division Engineer within 60 days of the date of this notice with a copy furnished to the Norfolk District Engineer.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the North Atlantic Division Engineer within 60 days of the date of this notice with a copy furnished to the Norfolk District Engineer.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the North Atlantic Division Engineer within 60 days of the date of this notice with a copy furnished to the Norfolk District Engineer.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: U.S. Army Corps of Engineers, Norfolk District ATTN: Vinny Pero (CENAO-WRR-W) 920 Gardens Boulevard, Suite 103-B Charlottesville, Virginia 22901 Vincent.d.pero@usace.army.mil	If you only have questions regarding the appeal process you may also contact: Mr. James W. Haggerty Regulatory Program Manager U.S. Army Corps of Engineers CENAD-PD-OR Fort Hamilton Military Community 301 General Lee Avenue Brooklyn, NY 11252-6700 Telephone: (347) 370-4650 Email: james.w.haggerty@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

Shendandoah Valley Regional Airport

Augusta County, Virginia

WSSI #30351.01

Waters of the U.S. (Including Wetlands) Delineation

January 21, 2019

Prepared for:
Delta Airport Consultants
2700 Polo Parkway
Midlothian, Virginia 23113

Prepared by:

Wetland Studies and Solutions, Inc.®
a DAVEY company
5300 Wellington Branch Drive, Suite 100
Gainesville, Virginia 20155
Tel: 703-679-5600 Email: contactus@wetlandstudies.com
www.wetlands.com

Waters of the U.S. (Including Wetlands) Delineation

Shenandoah Valley Regional Airport
(±510 acres)
WSSI #30351.01

Introduction

Wetland Studies and Solutions, Inc. (WSSI) has determined the boundaries of the jurisdictional wetlands and other waters of the U.S. (i.e., streams and ponds) on the referenced study area. As discussed in this report, jurisdictional wetlands and other waters of the U.S. are present on the site. These waters of the U.S. include Broad Run, palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands associated with ephemeral, intermittent, and perennial streams. Our findings are depicted (as a surveyed map) on the Waters of the U.S. (Including Wetlands) Delineation Map (Attachment I) and are discussed briefly below.

Project Location

The study area is located south of Weyers Cave Road (State Route 256), approximately three miles southeast of the intersection of Weyers Cave Road and Interstate Highway 81 in Augusta County, Virginia. Exhibit 1 is a vicinity map that depicts the approximate boundaries of the study area and its general location.

Methodology

This wetland delineation was performed pursuant to the "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 (1987 Manual) and subsequent guidance, and modified by *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region,* Version 2.0 dated April 2012. Due to the study area consisting of several parcels, transects were not established, and the study area was systematically searched for jurisdictional wetlands and other waters of the U.S. as depicted on Attachment I. Field work was performed by Jennifer M. Favela, PWS[1], Stephen Bendele, WPIT[2], Janelle Bernosky, WPIT, and Alexi Weber, WPIT from December 6 through 9, and 17 through 18, 2018.

Prior to conducting field work, relevant background information was reviewed, including site topography, the Fort Defiance, VA 1984 and Mount Sidney, VA 1987 USGS Quadrangle Map (Exhibit 2), Digital National Wetlands Inventory Map (Exhibit 3; updated January 2018), Augusta County 2018 Digital Data Soils Map (Exhibit 4), and the Federal Emergency Management Agency Flood Insurance Rate Map, Panel 51015C0194D, Panel 51015C0193D, and Panel 51015C0360D (Exhibit 5; Effective 09/28/2007). Aerial photographs of the site, including a Spring 2002 Natural Color Imagery from Virginia Base Mapping Program (VBMP) (Exhibit 6), Spring 2015 Near Color Infrared Imagery from VBMP (Exhibit 7), Spring 2015 Natural Color Imagery from VBMP (Exhibit 8), Spring 2018 Near Color Infrared Imagery (Exhibit 9), and Spring 2018 Natural Color Imagery from VBMP (Exhibit 10) were also examined to investigate whether signatures indicative of wetlands were found on the site and to document recent land use changes in the vicinity of the study area.

---

1 *Professional Wetland Scientist #3033, Society of Wetlands Scientists Certification Program, Inc.*

2 *Wetland Professional In Training, Society of Wetlands Scientists Certification Program, Inc.*

Observations of vegetation, soils, and hydrology were recorded at representative locations in the wetlands and adjacent non-wetland areas to determine the wetland boundaries. Routine Wetland Determination data forms describing representative plant communities, hydrology indicators, and soil characteristics are included as Exhibit 11. Photographs of the data point locations, representative wetland and non-wetland communities, and other existing site conditions are included in Exhibit 12. The surveyed locations of delineated wetlands, other waters of the U.S., data points, and the approximate locations of photographs are depicted on Attachment I.

Access to several parcels was not granted by property owners. For high level planning purposes, the approximate extents of waters of the U.S. (including wetlands) have been depicted on these parcels based on visual observations from adjacent properties or public roads, and from aerial interpretations. Exhibit 13 indicates the parcels where access was not granted.

Waters of the U.S. Delineation Findings

In WSSI's opinion, jurisdictional wetlands and other waters of the U.S. (i.e., streams and ponds) are present within the study area. These jurisdictional waters of the U.S. include Broad Run (a USGS-mapped perennial stream), which flows in an easterly direction in the northeastern portion of the southern study area parcel; ephemeral, intermittent, and perennial streams which drain PEM, PSS, and PFO wetlands throughout the study area.

The stock ponds delineated by the AA and AB (Exhibit 12; Photo #49) and CG and CH (Exhibit 12; Photo #78) flag series appear to have been excavated in uplands for the purpose of stock watering and were not created on-line with a stream. Pursuant to 33 CFR Section 328.3, in the "Final Rule for the Clean Water Rule; Definitions of "Waters of the United States"" (Fed. Reg. Vol. 80, No. 124, Pg. 37105), artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing are generally exempt from regulation as waters of the U.S. However, either the U.S. Army Corps of Engineers (COE) or the U.S. Environmental Protection Agency (EPA) may determine, on a case-by-case basis, that such features are jurisdictional waters of the U.S. At the time of the jurisdictional determination site visit, WSSI will request the COE to concur that these stock ponds are not jurisdictional waters of the U.S. In WSSI's opinion, the small PEM wetland delineated within the AA, AB, CG, and CH flag series, is a result of the stock pond created in an upland. However, the Virginia Department of Environmental Quality (DEQ) may take jurisdiction of these features as state surface waters. This should be addressed during a pre-application meeting with the COE and DEQ prior to the permitting process.

In WSSI's opinion, the small water filled depression (Exhibit 12; Photo #57) within the southern parcel (Attachment I; Sheet 8 of 11) has been created in uplands by the landowner and based on our review of previous aerial imagery (Exhibits 6 through 10). Pursuant to 33 CFR Section 328.3, in the "Final Rule for the Clean Water Rule; Definitions of "Waters of the United States"" (Fed. Reg. Vol. 80, No.124, Pg. 37105), water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand or gravel are not generally regulated as waters of the U.S. unless and until the construction is abandoned and the resulting water body meets the definition of waters of the U.S. However, either the COE or the EPA may determine, on a case-by-case basis, that such features are jurisdictional waters of the U.S. At the time of the jurisdictional determination site visit, WSSI will request the COE to concur that this feature is not a jurisdictional water of the U.S. However, the DEQ may take jurisdiction of this feature as a state surface water. This should be addressed during a pre-application meeting with the COE and DEQ prior to the permitting process.

In WSSI's opinion, the ditch in the northwestern portion of the northern study area (Exhibit 12; Photo #2 and #3) is not a jurisdictional wetland or other waters of the U.S. (subject to COE concurrence). Non-tidal drainage ditches excavated in uplands to convey stormwater are not generally considered to be waters of the U.S. per 33 CFR Section 328.3, in the "Final Rule for the Clean Water Rule; Definitions of "Waters of the United States"" (Fed. Reg. Vol. 80, No.124, Pg. 37105). However, either the COE or the EPA may determine, on a case-by-case basis, that such features are jurisdictional waters of the U.S. At the time of the jurisdictional determination site visit, WSSI will request the COE to concur that this ditch is not a jurisdictional water of the U.S.

Based on the surveyed and approximated location of delineated wetlands, approximately 7.35 acres of PEM wetlands, 0.04 acre of PSS wetlands, 0.24 acre of PFO wetlands, 0.07 acre (948 linear feet (lf)) of ephemeral stream, 1.39 acres (12,259 lf) of intermittent stream, 1.09 acres (4,532 lf) of perennial stream, and 1.20 acres of pond within the study area. Permits from the COE and potentially the DEQ will be required to impact these wetlands and streams. For a general permit, impacts to streams and wetlands including grading/filling must be less than one (1) acre of wetlands and open water, and no more than 1,500 lf of stream channel. If all the wetlands within the study area (7.62 acres) or more than 1,500 lf of stream channel are impacted by the projects, an individual permit will be required. Table 1 lists the available banks that service the watershed of this study area, with the number of credits available at each bank.

Table 1. Available Mitigation Bank Credits[3]

Bank	Available Wetland Credits (Per RIBITS)	Available Stream Credits (Per RIBITS)
Shenandoah	33.31	3,612.25
Virginia Aquatic Resource Trust Fund (VARTF)	1.13	7,964.00

Table 2 provides the mitigation ratios by wetland type, ratio, and cost per credit for VARTF. The cost per credit for the streams is determined by the Unified Stream Methodology (USM) assessment score, which is conducted to establish the quality of the stream for compensation credits (CC). Therefore, a high scoring stream (indicating high quality) would require more CC's for compensation than a low scoring stream (indicating poor quality), which would require less CC's for compensation. Generally, the ratio is between 0.9 to 1.5 depending on stream quality. Wetland credits are calculated on an acreage basis, while stream credits are calculated on a linear foot basis.

Table 2. Mitigation Ratios and Costs

Wetland Type	Ratio	Cost per Credit (VARTF)	(Shenandoah)
PEM	1:1	$85,000	$80,000
PSS	1.5:1	$85,000	$80,000
PFO	2:1	$85,000	$80,000
All Streams	0.9-1.5:1	$500	$475

[3] *Available Credits as of January 16, 2019 at 4:50 PM (EDT)*

Summary

In WSSI's opinion, jurisdictional wetlands and other waters of the U.S (i.e., streams and ponds) are present within the study area, based on our site observations, as described above and depicted on Attachment I.

The waters of the U.S. on the site (i.e., wetlands, streams, and jurisdictional ponds) are regulated by Sections 401 and 404 of the Clean Water Act and by state wetlands laws and cannot be disturbed without the appropriate permits. Such permits may include permits from local agencies, as well as the U.S. Army Corps of Engineers and the Virginia Department of Environmental Quality, depending upon the extent and type of impacts.

Limitations

This study is based on examination of the vegetation, soils and hydrology and available reference documents. Field indicators can change with variations in hydrology and other factors. Therefore, our conclusions may vary significantly from future observation by others. This report assesses the potential for wetlands at the site at the time of our review and does not address conditions at a given time in the future.

Our review and report have been prepared in accordance with generally accepted guidelines for the conduct of a survey for potential wetlands. Conclusions presented herein are based upon our review of available information, the results of our field studies, and/or professional judgement. We make no other warranties, either expressed or implied, and our report is not a recommendation to buy, sell or develop the property.

We offer no opinion and do not purport to opine on the possible application of various building codes, zoning ordinances, other land use or platting regulations, environmental or health laws and other similar statutes, laws, ordinances, code and regulations affecting the possible use and occupancy of the Property for the purpose for which it is being used, except as specifically provided above.

The foregoing opinions are based on applicable laws, ordinances, and regulations in effect as of the date hereof and should not be construed to be an opinion as to the matters set out herein should such laws, ordinances or regulations be modified, repealed or amended.

Any reuse or modification of any of this document (whether hard copies or electronic transmittals) prepared by WSSI without written verification or adaptation by WSSI will be at the sole risk of the individual or entity utilizing said document and such use is without the authorization of WSSI. WSSI shall have no legal liability resulting from any and all claims, damages, losses, and expenses, including attorney's fees arising out of the unauthorized reuse or modification of this document. Client shall indemnify WSSI from any claims arising out of unauthorized use or modification of the document whether hard copy or electronic.

This report does not constitute a jurisdictional determination of waters of the U.S. since such determinations must be verified by the U.S. Army Corps of Engineers or the Natural Resources Conservation Service (as applicable), and are subject to review by the U.S. Environmental Protection Agency. This report does not constitute a stream characterization determination.

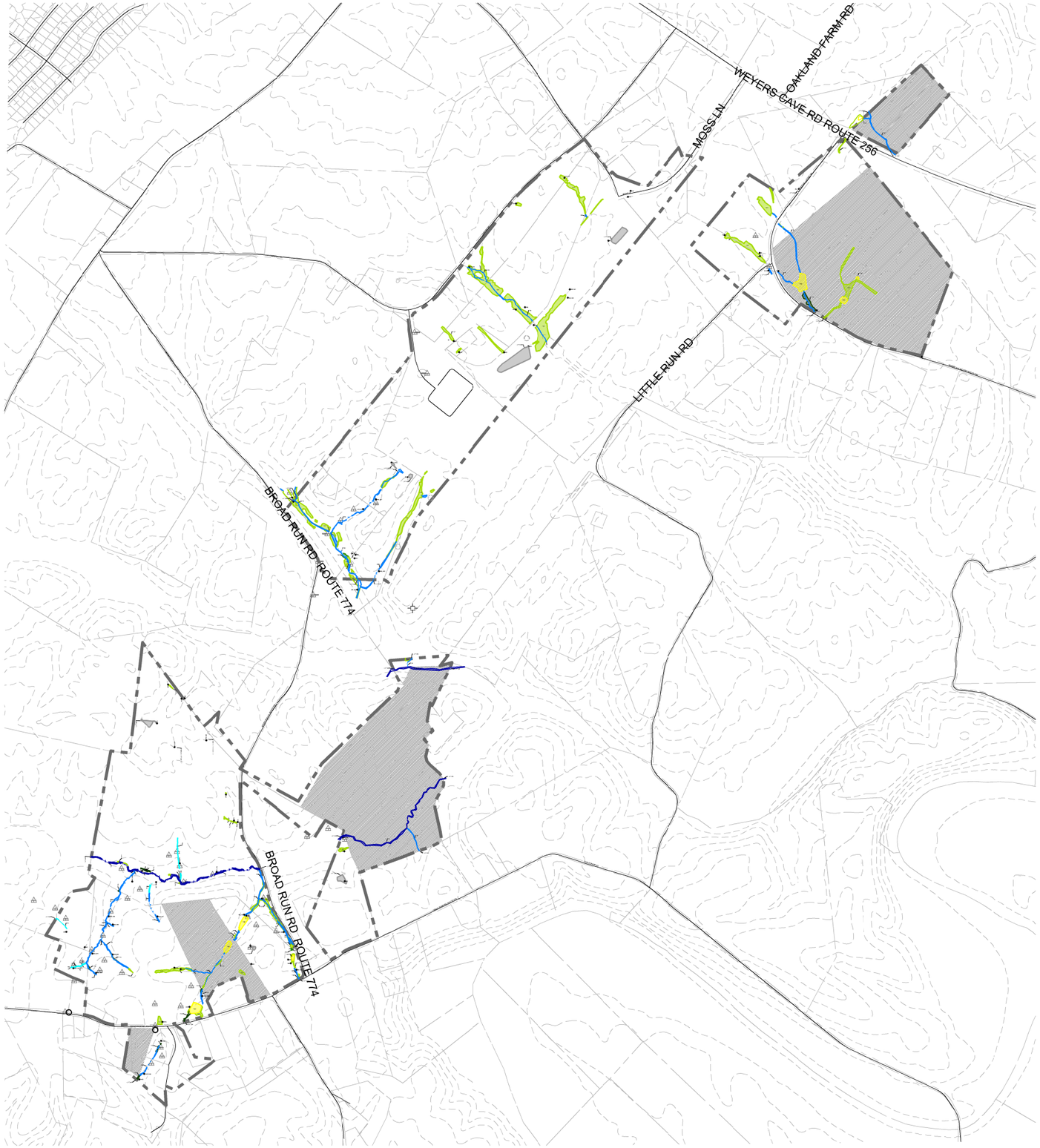
WETLAND STUDIES AND SOLUTIONS, INC.

Jennifer M. Favela, PWS
Project Environmental Scientist

Benjamin N. Rosner, PWS, PWD, CT, CE [4]
Manager – Environmental Science

L:\30000s\30300\30351.01\Admin\05-ENVR\Report\Revised Final\Shenandoah Valley Regional Airport Waters of the U.S (Including Wetlands) Delineation Report.docx

[4] *Professional Wetland Scientist #1766, Society of Wetland Scientists Certification Program, Inc.; Virginia Certified Professional Wetland Delineator #3402-000080; Certified Level 1 Taxonomist: All Phyla, Society for Freshwater Science (SFS); Certified Ecologist, Ecological Society of America.*



OVERALL WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION MAP

SEE SHEET 11 FOR JURISDICTIONAL SUMMARY TABLE AND DELINEATION NOTES.

VCS 1983 NORTH ZONE

GRAPHIC SCALE

600 0 300 600 1200 2400

(IN FEET)

1 inch = 600 ft.

Wetland Studies and Solutions, Inc. a DAVEY company
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

ATTACHMENT I:
WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION MAP
Prepared For: Delta Airport Consultants

Shenandoah Valley Regional Airport
Augusta County, Virginia

Copyright © 2019 Wetland Studies and Solutions, Inc.

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1" = 600' C.I.: 10'

DATE: January 21, 2019

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

Boundary and Topo Source:
Augusta County Digital Data

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Sheet #
1a of 11

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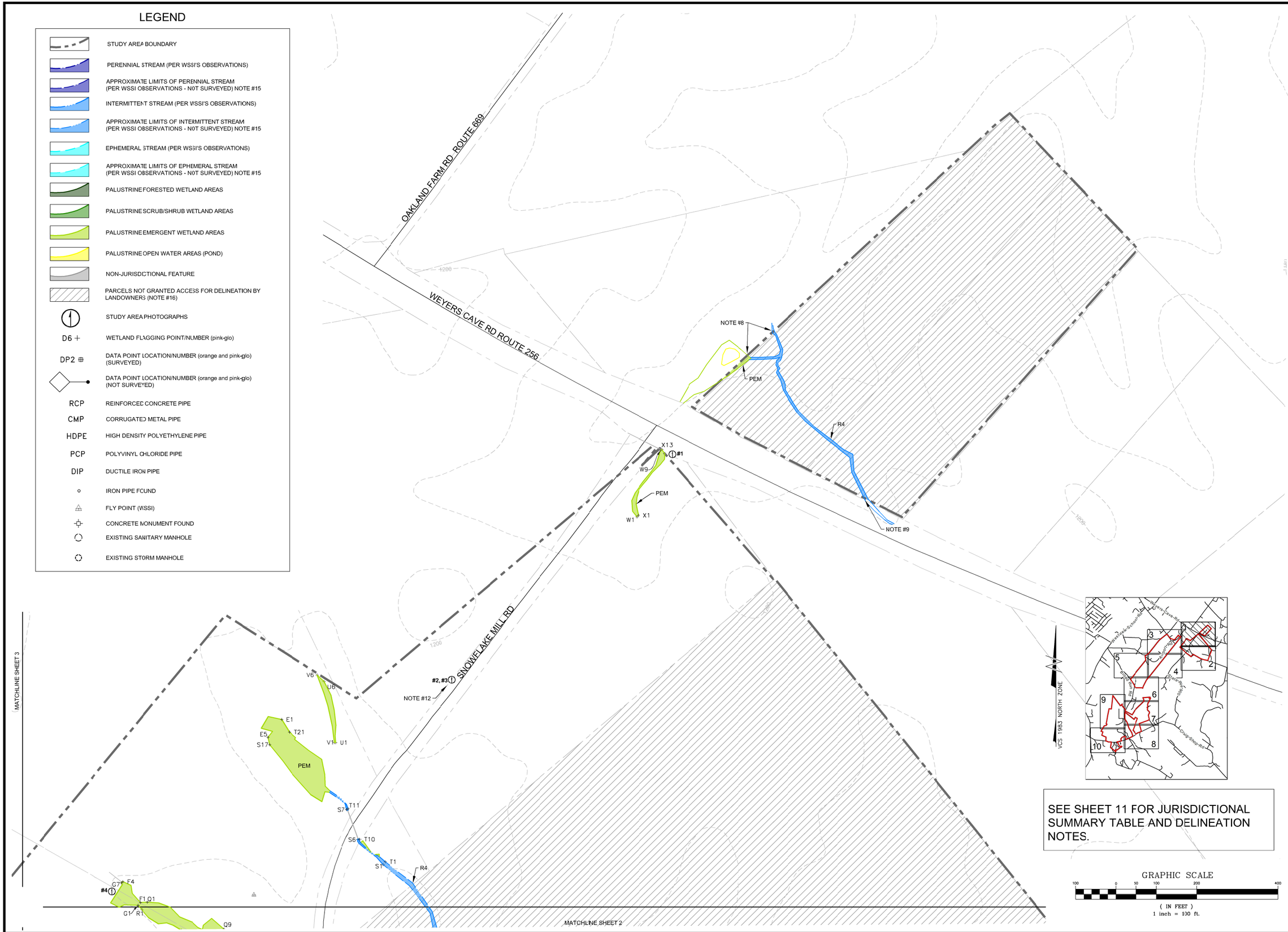
LEGEND

- STUDY AREA BOUNDARY
- PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS - NOT SURVEYED) NOTE #15
- INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF INTERMITTENT STREAM (PER WSSI OBSERVATIONS - NOT SURVEYED) NOTE #15
- EPHEMERAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF EPHEMERAL STREAM (PER WSSI OBSERVATIONS - NOT SURVEYED) NOTE #15
- PALUSTRINE FORESTED WETLAND AREAS
- PALUSTRINE SCRUB/SHRUB WETLAND AREAS
- PALUSTRINE EMERGENT WETLAND AREAS
- PALUSTRINE OPEN WATER AREAS (POND)
- NON-JURISDICTIONAL FEATURE
- PARCELS NOT GRANTED ACCESS FOR DELINEATION BY LANDOWNERS (NOTE #16)
- STUDY AREA PHOTOGRAPHS
- D6 + WETLAND FLAGGING POINT/NUMBER (pink-glo)
- DP2 DATA POINT LOCATION/NUMBER (orange and pink-glo) (SURVEYED)
- DATA POINT LOCATION/NUMBER (orange and pink-glo) (NOT SURVEYED)
- RCP REINFORCED CONCRETE PIPE
- CMP CORRUGATED METAL PIPE
- HDPE HIGH DENSITY POLYETHYLENE PIPE
- PCP POLYVINYL CHLORIDE PIPE
- DIP DUCTILE IRON PIPE
- IRON PIPE FOUND
- FLY POINT (WSSI)
- CONCRETE MONUMENT FOUND
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE



SEE SHEET 11 FOR JURISDICTIONAL SUMMARY TABLE AND DELINEATION NOTES.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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ATTACHMENT I: WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION MAP

Prepared For: Delta Airport Consultants

Shenandoah Valley Regional Airport

Augusta County, Virginia

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REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: January 21, 2019

SCALE: 1" = 100'

C.I.: 10'

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

Boundary and Topo Source:

Augusta County Digital Data

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1 of 11

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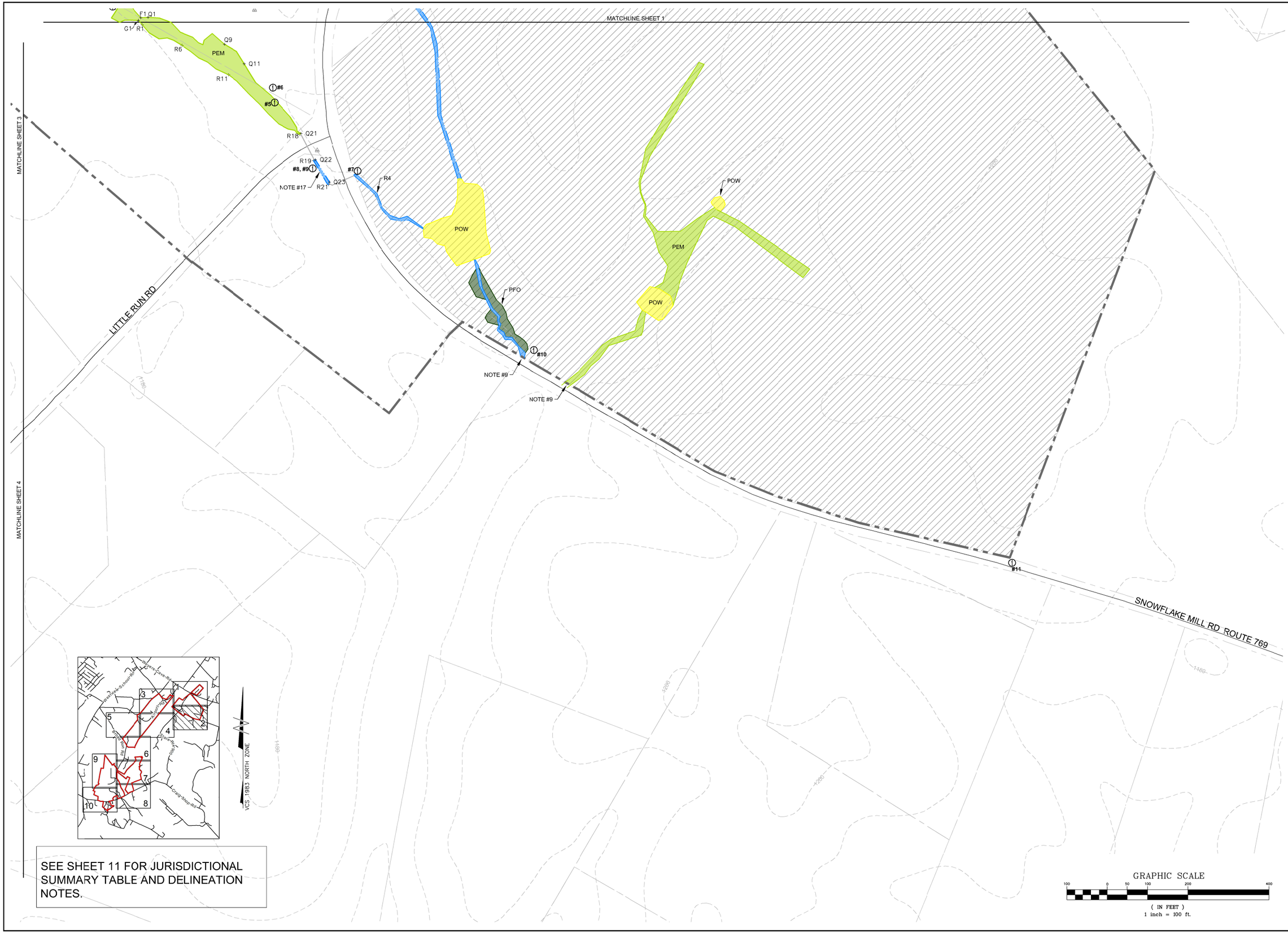

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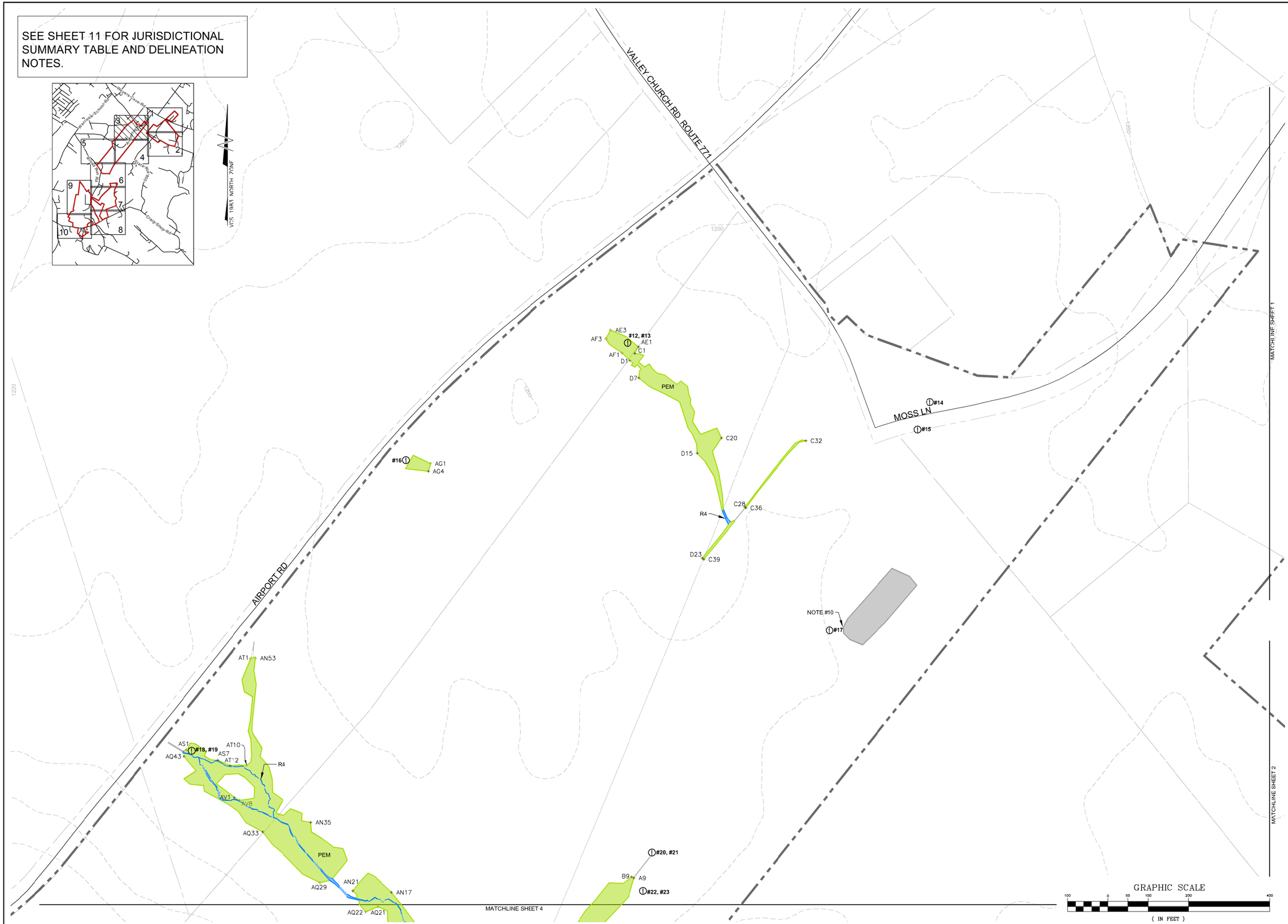

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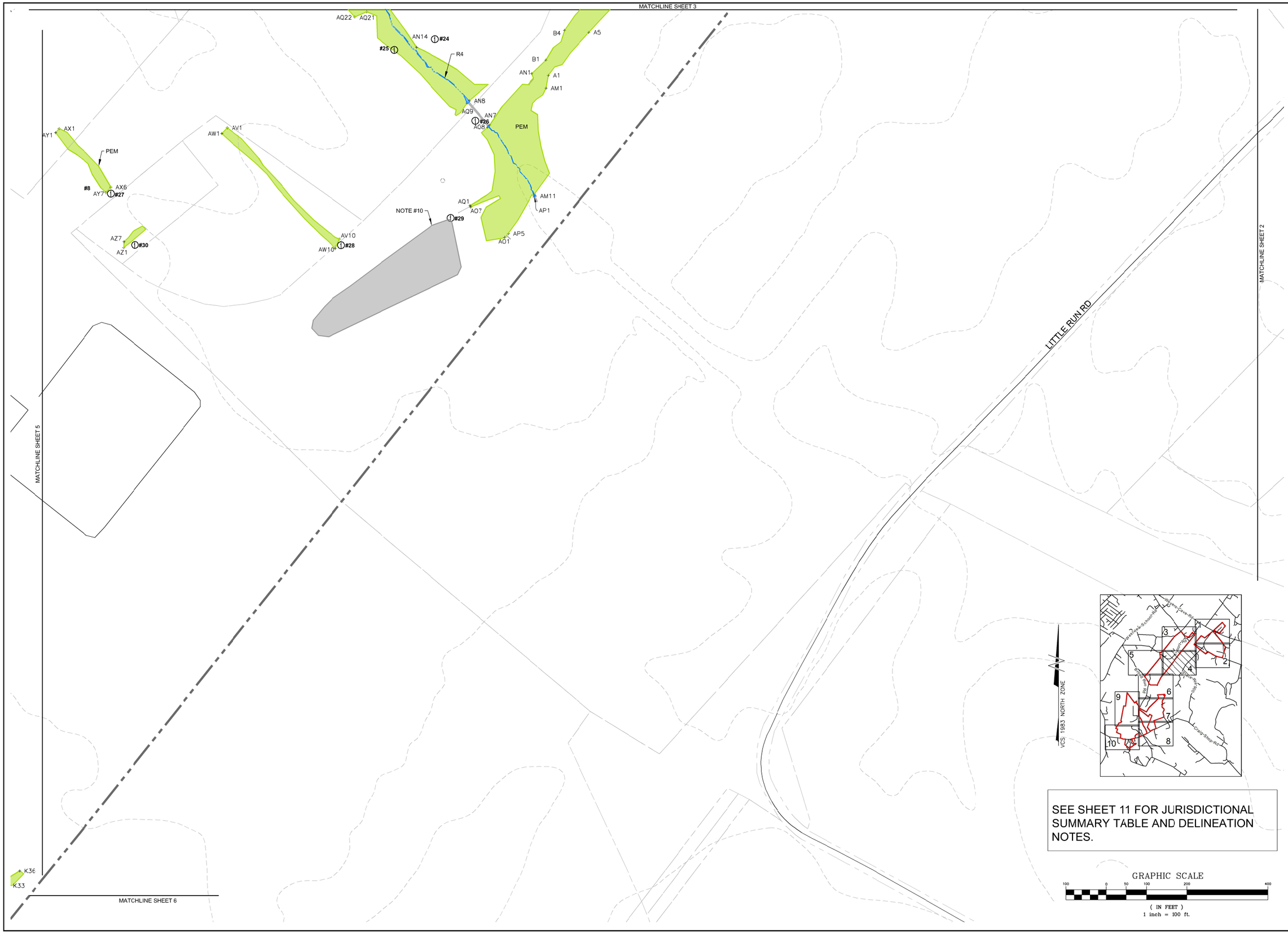

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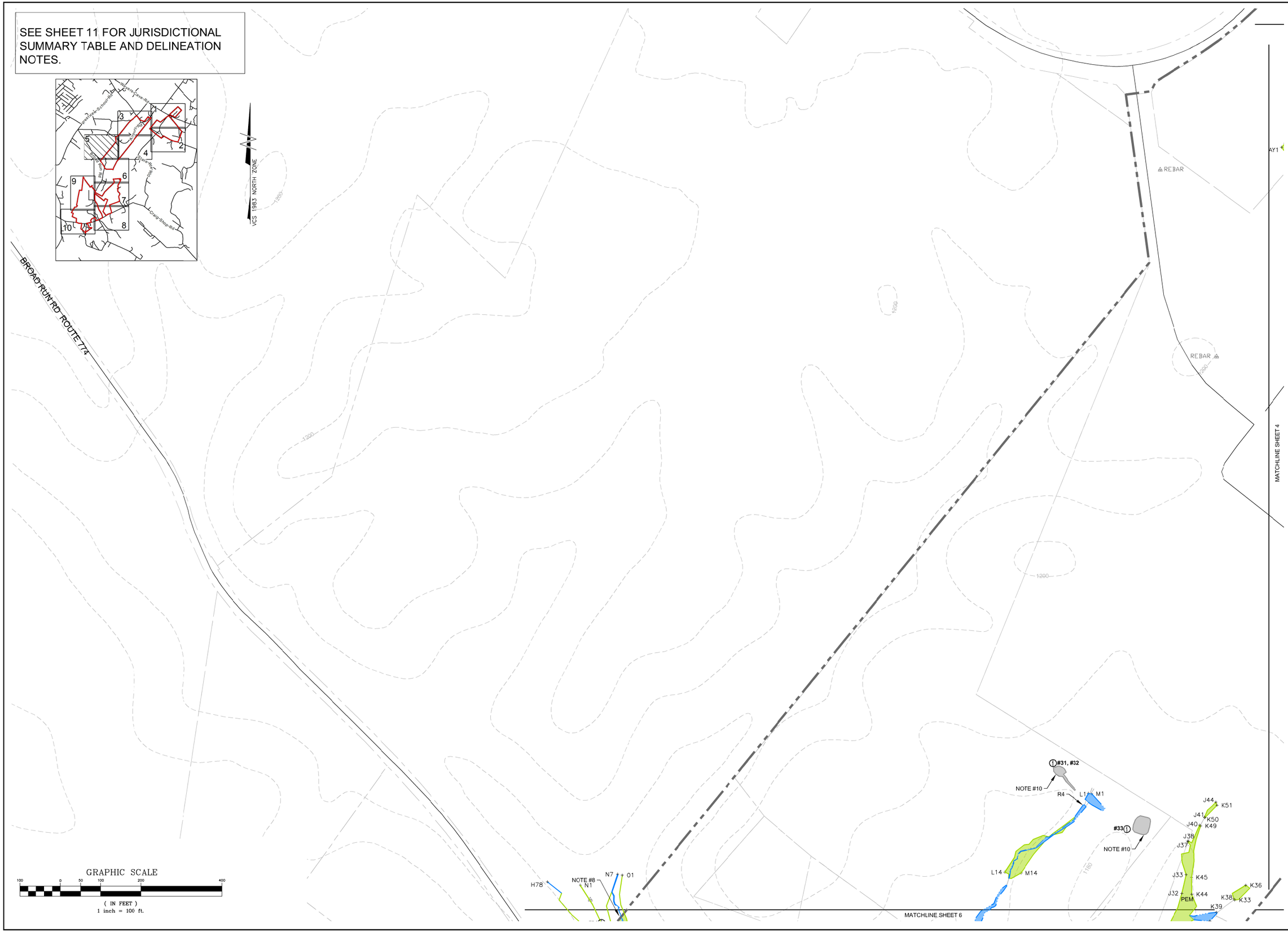

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MATCHLINE SHEET 5

MATCHLINE SHEET 4

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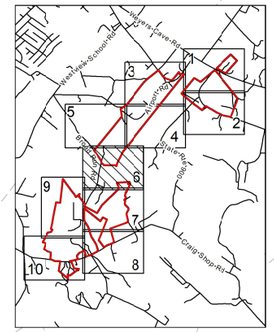


VCS 1983 NORTH ZONE

BROAD RUN RD ROUTE 774

NOTE #8

#34

#35

N4

R4

P1

P3

PEM

O8

H70

Q1

Q4

O22

I68

H62

PEM

I59

L52

L53

M51

I55

H50

H48

REBAR

I58

L45

M44

R4

L35

M34

L24

M29

#36, #37

#38, #39

I43

H39

R4

I28

PSS

DP 1

#40

#41

PEM

I20

H25

I10

H9

NOTE #9

I4

I1

I3

K1

#44, #45

H1

I1

REBAR

REBAR

J29

K39

K33

K31

K28

PEM

J21

K21

J12

K11

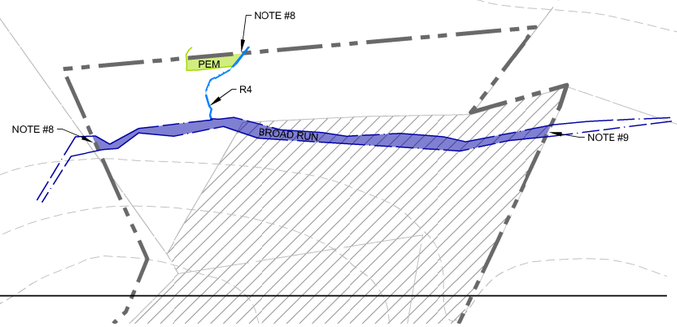
R4

#42, #43

NOTE #9

MATCHLINE SHEET 9

MATCHLINE SHEET 7



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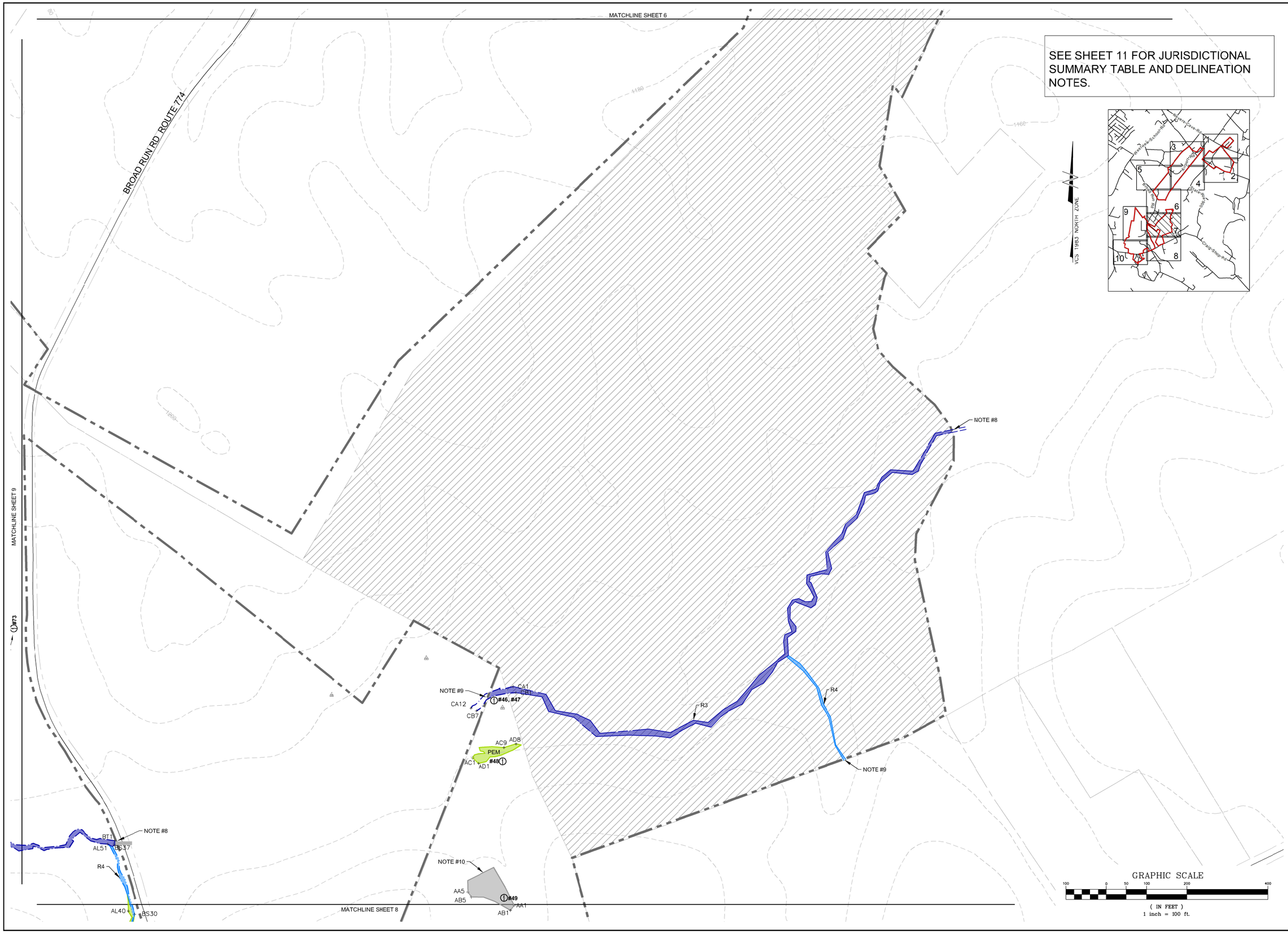

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Augusta County, Virginia

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MATCHLINE SHEET 7

MATCHLINE SHEET 9

MATCHLINE SHEET 10

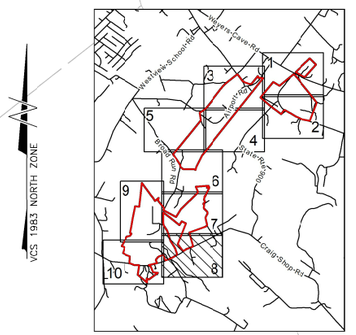
CRAIG SHOP RD ROUTE 775

BROAD RUN RD ROUTE 774

CLINE RIVER RD

AA5
AB5
#49
AA1
AB1
AL40
BS30
R4
AL34
BS20
#50, #51
BP24
PEM
AL26
AK24
BP29
AK20
#52, #53
#54
POW
AL16
AK13
-10
AK7
BQ1
BR22
R4
#55, #56
BP6
BR11
PEM
BR1
BQ14
BP1
BQ1
AJ1
AJ5
PSS
POW
#57
NOTE #13
#58
#59
AI21
#60
AH16
PEM
#61, #62
R4
PSS
AH1
AI1
NOTE #8
PEM
1200
1200
1200
1200

SEE SHEET 11 FOR JURISDICTIONAL SUMMARY TABLE AND DELINEATION NOTES.



VCS 1983 NORTH ZONE

GRAPHIC SCALE

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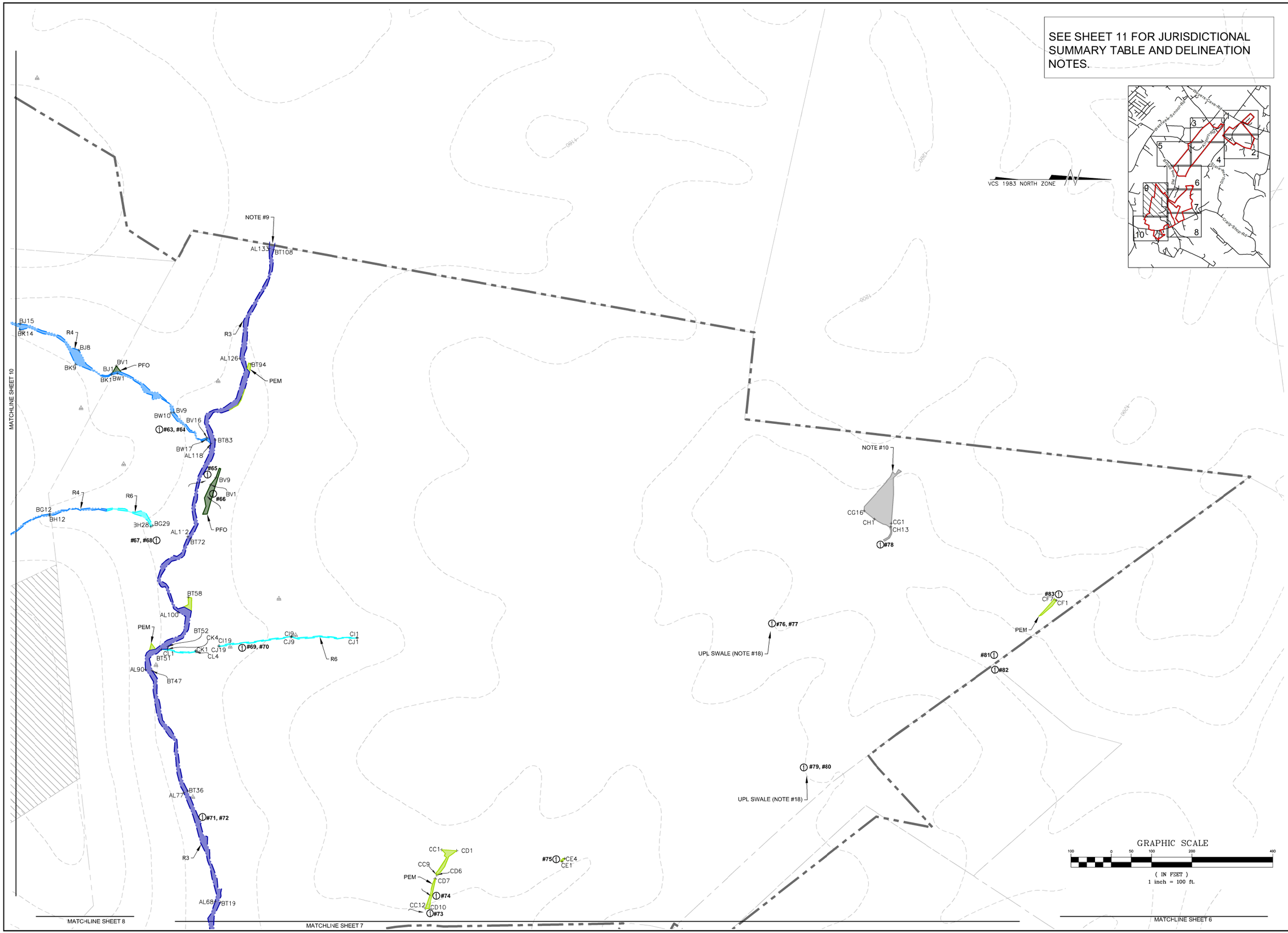

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Augusta County, Virginia

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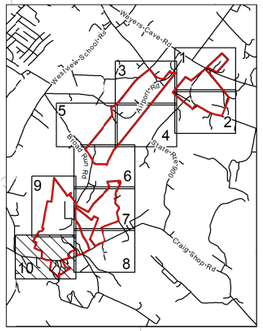

VCS 1983 NORTH ZONE

MATCHLINE SHEET 9

MATCHLINE SHEET 8

CRAIG SHOP RD ROUTE 775

CRAIG SHOP RD ROUTE 775

NOTE #9 CP1 CO1 CO5 CP5 CQ8 CR8 R6 CQ1 CR1 #88

#84, #85 BJ15 BK14 BK22 BL1 BL14 BK23 R4 #89, #90 BJ27 BK31 BM BN1 R4 BN10 BK49 #91 #92, #93 BJ50 BY16 BM16 BX8 #94, #95 PFO BK61 BN27 PEM

R6 BY15 BZ4 CN4 CN3 CN CM1 CN17 #96, #97 BO17 BX1 BO1 PFO BZ1 BO26 CM13 #98, #99 BO9 R4

#86, #87 R4 BG1 BH1

#52, #53(PC AL16 R4 AK PEM AL10 AK7 AL1 AK1 POW PEM

#100 #101 BF21 BI16 PEM BI1 BF1 R4 PEM

PFO BD15 BE12 R4 #102, #103 BD1 BE1 BB15 BC20 #104 BB11 POW PEM BC15 PFO BB1 BC1 NOTE #8

PEM #105 BA6 BA1

Z30 #106 Y34 PFO Z29 Y31 Z19 Y20 R4 PFO #107, #108 Z1 #109 NOTE #9

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ATTACHMENT I:
WATERS OF THE U.S. (INCLUDING WETLANDS)
DELINEATION MAP

Prepared For: Delta Airport Consultants

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Augusta County, Virginia

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WATERS OF THE U.S. DELIlEATION AND SURVEY NOTES:

1. This map has been orinted to The Virginii Coordinate Systen of 1983, North Zore, using real time DGPS. Wetlands and other Waters of the U.S. (i.e., streams and ponds) flags, data points, andthe monumentationshown were locatec in the field using nal time DGPS and conventional survey methods. Accuracy of field locations of wetlands meets or exceeds the standards set by he U. S. Army Corps of Engineers Memo CENAO-CO-R, dated September 30, 1998. Field locations were completed on December 28, 2018.

2. The boundary line infomation shown herec is for information ourposes only and does not constitute a boundary survey by Wetland Studies and Solutions, Inc. (WSSI). Monumentation, including traverse stations and fly points, shwn on this drawingshould be used to orient wetland locations to any future boundary, topographic, or location survey.

3. Periodic flag numbers are shown depicting he survey-located boundary of wetland: and other waters of the U.S. (i.e., streams, ponds, etc.). Waters of the U.S. flags are pink-glo in color. Data points are flagged with orange-glo and pink-glo flagging tied together.

4. Topo/boundary informaion obtained in digial format from Augusta County Digital Data was used as a base for this Attachment.

5. This delineation was performed pursuant to the "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 (1987 Manual) and subsequent guidance and modification by the *Regional Supplement to the Corps of Engineers Wetland Delineaton Manual: Eastern Mountains and Piedmont Region (Version 2.0)* dated April 2012.

6. Due to the study area consisting of several parcels, transects were not established,the study area was systematically searched for jurisdictional wetlands and other waters of the U.S.

7. Field work was performd from December 6 through 9, and 17 hrough 18, 2018 byJennifer M. Favela, PWS, Stephen Bendele, WPIT, Alexi Weber, WPIT, and Janelle Bernosky, WPIT.

8. This water of the U.S. (.e., stream or wetland) originates off-site, upslope.

9. This water of the U.S. (.e., stream or wetland) continues off-site, downslope.

10. Ponds, such as the ones in the southern parcel of the study area, that were createcby excavating and/or diking dry land to collect and retain water for stock watering (i.e., farm ponds created in anupland field), settling basins or irrigatio are not generally considered waters of the U.S. per 33 CFR Section 328.3 in the "Final Rule of the Clean Water Rule: Definition of 'Waters of the Unied States'" (Fed. Rg. Vol. 80, No. 124,Pg. 37105). However, either the U.S. Army Corps of Engineers (COE) or the Environmental Protection Agency (EPA) may determine on a case-bycase basis that such features are jurisdictional waters of the U.S. At the time of the jurisdictional determinaion site visit, WSSI will request the COE to concur that this pond is not a jurisdictional water of the U.S. However, the Virginia Department of Environmental Quality (DEQ) may take jurisdction of these features as state surface waters.

11. Ponds, such as those in the northern and southern parcels of the study area, that were created on-line in stream channels are generally considered jurisdictional waters of the U.S.

12. In WSSI's opinion, the ditch in the northern parcel of the study area is not a jurisdictional water of the U.S. (subject to COE concurrence). Non-tidal drainage ditches excavated in uplands for the purpose of conveying stormwater are not generally considered waters of the U.S. per 33 CFR Section 328.3 in the Final Rule of the "Clean Water Rule: Definition of 'Waters of the United States'" (Fed. Reg. Vol 80, No. 124, Pg. 37105). However, either the COE or the EPA may determine on a case-by-case basis that such features are jurisdictional waters of the U.S. At the time of the jurisdictional determination site visit, WSSI will request the COE to concur that this ditch is not a jurisdictional water of the U.S.

13. Water-filled depressions, such as the one in the southern parce of the study area, that were created or dry land incidental to construction activities, or pits excavated in dry land to obtain fill, sand, or gravel, are not generally considered jurisdictional waters of the U.S. until the construction or excavation operation is abandoned per Final Rule of the "Clean Water Rule Definition of "Wates of the United Stabs'" (Fed. Reg. Vol. 30, No. 124, Pg. 37105). However, either the COE or the EPA may determine on a case-by-case basis that such eatures are jurisdicional waters of the U.S. At the time of the jurisdictional determination site visit, WSSI will request the COE to concur that this featur is not a jurisdictional water of the U.S. However, the DEQmay take jurisdiction of this feature as a state surface water.

14. The terms "Ephemeral" "Intermittent", and 'Perennial" used onthis Attachment classify and describe the flow regime character of streams, are based on WSSI's field observations, and are only provided for state and local regulatory purposes. The flow regmes of streams are not verified by the COE; however, the geographic limits of these streams are all subject to COE jurisdiction, and the COE's approval ofthis delineation repesents only the approval of the geographic limits of waters of the U.S.

15. WSSI has delineated and surveyed the outer limits of jurisdictional areas within theproject site. Many of the jurisdictional areas on the site are composed of systems containingdifferent wetland (i.e., PEM, PSS, and PFO) and stream (i.e., R6, R4, and R3) types. The approximate limits of the different wetland and stream types within the surveyed jurisdictional areas are depicted as a thin colored line of the associated wetland or stream type.

16. Access to several parcels was not granted by property owners. For high level planning purposes, the approximate extents of waters of the U.S. (including wetlands) have been depicted on these parcels based on visual observations from adjacent properties or public roads, and from aerial interpretations.

17. This stream has been relocated in an open trapezoidal concrete channel. However, it remains jurisdictional per the definition of a tributary at 33 CFR 328.3(c)3.

18. Swales labeled "UPL SWALE (NOTE #18)"lack an ordinary high water mark and does not meet the definition of a tributary. Hydric soil is also absent. Therefore, in WSSI's opinion, these swalesare not jurisdictional waters of the U.S. (subject to COE concurrence).

SUMMARY OF JURISDICTIONAL AREAS WITHIN THE SHENANDOAH VALLERY REGIONAL AIRPORT PROPERTY*

COWARDIN CLASSIFICATION	AREA		LINEAR FEET OF STREAMBED
	(SQUARE FEET)	(ACRE)	
R6	3,040	0.07	948
R4	60,530	1.39	12,259
R3	47,364	1.09	4,532
POW	52,279	1.20	N/A
PEM	319,922	7.34	N/A
PSS	1,904	0.04	N/A
PFO	10,517	0.24	N/A
TOTAL	495,556	11.37	17,739

* These numbers are based on the surveyed and approximate locations of the delineated WOTUS boundaries within the study area boundaries.

COWARDIN CLASSIFICATION

R6	RIVERINE EPHEMERAL
R4	RIVERINE INTERMITTENT
R3	RIVERINE UPPER PERENNIAL
POW	PALUSTRINE OPEN WATER
PEM	PALUSTRINE EMERGENT WETLAND
PSS	PALUSTRINE SCRUB-SHRUB WETLAND
PFO	PALUSTRINE FORESTED WETLAND

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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11 of 11

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Mary Ashburn Pearson

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Thursday, October 12, 2023 11:24 AM
To: Vanderploeg, Steven A CIV USARMY CENAO (USA); Millard, Eric (DEQ)
Cc: John C. Longnaker; Noah C. Schuster; Holly M. van der Lans; Benjamin M. Coughenour
Subject: SHD Airport - Pre-application call recap

Categories: Filed by Newforma

Thank you to Steven, Eric, and Lucy for their time during this morning's pre-application call for the Shenandoah Valley Regional Airport's "Aviation Technology Park" project. I have summarized my understanding of the call below and please feel free to Reply All with additions, revisions, etc.

-NEPA review is currently underway and anticipated to wrap up in the next 3-4 months
-Based on the conservative estimates in the EA, the proposed development would impact approximately 2.04 acres of wetlands and approximately 529 linear feet of stream
-The limits of grading we reviewed suggest that the Airport will likely impact less than this amount

-Steven noted that a new, approved JD will be required due to the changes in definition of jurisdictional water since the 2019 JD was issued. This will be a field delineation conducted by a consultant. His suspicion is there will be less federally-jurisdictional wetlands than previously because the wetlands appear to be segmented; however, DEQ could take jurisdiction of these
-Eric mentioned that the State Surface Water Determination requirement is also new since the 2019 JD was issued, and could be required as well.

-If the actual wetland impacts can be reduced to under 1 acre, the project may be eligible for a State Programmatic General Permit. This is a USACE permit that is issued by the state. There is no permitting cost for a USACE general permit.
-If the actual wetland and stream impacts together amount to over 1 acre, then an Individual Permit is likely required from USACE. This is a more involved process requiring alternatives analysis, public notice, etc. which will require at least six months from application to issuance.
-Any wetland impacts above 0.5 acre will require review and comment by EPA.
-The amount of impacts considered in the permit application should include other, recent wetland and stream impacts within the Aviation Technology Park boundaries, including the NWP #18 that was issued in 2021.

-The state's permit program is the Virginia Water Protection program, under which both general and individual permits are issued.
-The state threshold for a General Permit is 2 acres of wetland impacts and/or 1,500 LF of stream impacts. Above that, an individual permit is required.
-The cost for a state General Permit ranges from $600 to $2,400.
-The federal and state general permits are valid through August 2026.

-The Airport can decide whether it wants to apply for one permit for all anticipated wetland impacts within the Aviation Technology Park, or to apply for project-specific impacts as projects are undertaken.
-Based on our anticipation of the timing of projects, it is likely that the Airport would apply to permit all impacts at once.
-As noted above, the general permits are valid through August 2026, although there is a one-year "grace period" after August 2026 if the applicant is either under contract or has broken ground on the construction.
-An individual permit is valid for up to 15 years. [Is this the case for both federal and state individual permits?]

We will have to wait for the design to begin in earnest before we can determine the permits which will actually be required. The start of design and construction will depend on many factors, including funding availability.

Thank you!

Mary Ashburn

Mary Ashburn Pearson, AICP
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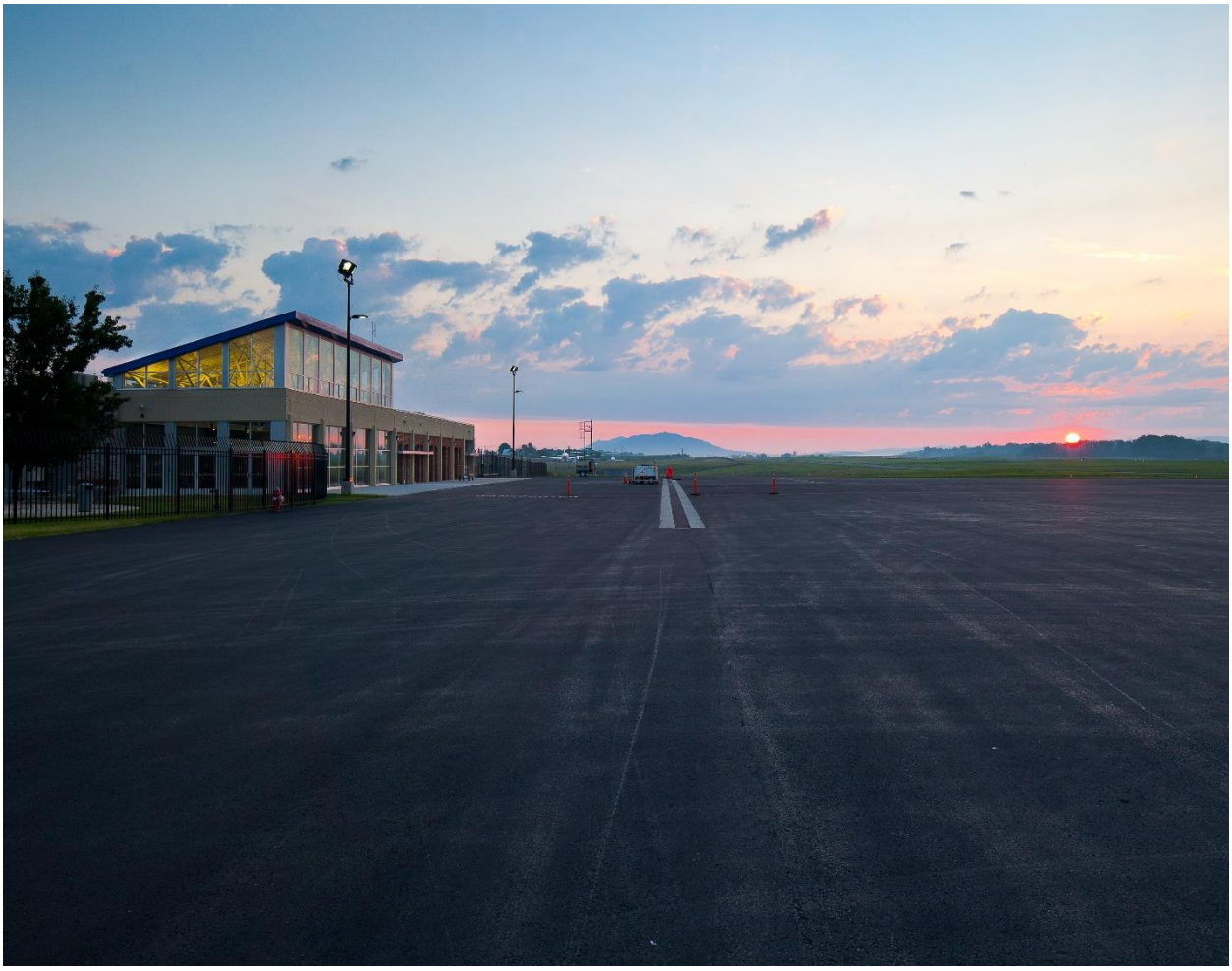
Attachment G

Preliminary Engineering Report



Environmental Assessment: Corporate Hangar Development

Shenandoah Valley Regional Airport
Augusta Country, Virginia
August 2023

Preliminary Engineering Report for the Environmental Assessment: Corporate Hangar Development at the Shenandoah Valley Regional Airport Augusta Country, Virginia

AIP Project No.: TBD
Delta Project No.: 22056

Prepared for the Shenandoah Valley Regional Airport

By Delta Airport Consultants, Inc.

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PROJECT SUMMARY

As a part of the Environmental Assessment (EA) for the Corporate Hangar Development projects at the Shenandoah Valley Regional Airport (SHD), this task involves conducting Preliminary Design for the projects identified in the Proposed Action and evaluated within the EA. This preliminary design includes the following:

- Geometric design standards and pavement limits
- Grading design standards
- Conceptual drainage
- Conceptual erosion and sediment control measures
- Approximate grading limits/limits of disturbance
- Stormwater management requirements
- Potential utility conflicts
- Potential environmental or historical impacts
- Offsite property impacts
- Engineers' opinion of probable cost

1. DESCRIPTION OF WORK

The projects being considered for Phase I development are as follows:

1. Corporate Hangars H, I, T, and U
2. Associated Aprons and Taxilanes, Taxiway Connectors, Auto Parking and Access
3. Access Road East of Dynamic Aviation Hangar (Hangar V)
4. Fuel Farm Access Road and Rehabilitation of Old Airport Road
5. New Connector Taxiway to Taxiway 'A'
6. Fuel Truck Parking
7. New Perimeter Fence
8. Automobile Parking for Hangars T and U
9. Commercial Apron Expansion
10. Realigned Fuel Service Road

The projects are conceptually depicted on the 2018 Airport Layout Plan (ALP), which was approved by the Federal Aviation Administration (FAA) and the Virginia Department of Aviation (DOAV) in 2018. Minor changes to the alignment of the fuel service road connecting the apron to Airport Road are proposed in this phase 1 development.

Exhibit 1, which shows the locations of the proposed development can be found in Appendix 'A'.

2. CORPORATE HANGAR DEVELOPMENT PROJECTS

2.1 Hangars H, I, T, and U

Two 150' x 120' box hangars, Hangars I and H, are proposed to be directly southwest of hangars E and F. Two 200' x 200' box hangars, Hangars T and U, are proposed to be constructed directly northwest of proposed Hangar V.

2.2 Associated Aprons and Taxilanes

To accommodate the four proposed hangars H, I, T, and U, two aprons are proposed to be constructed. One will be an expansion of the existing apron adjacent to Hangar V to accommodate Hangars T and U, and another which will be an expansion of the proposed apron to Hangars E and F to accommodate Hangars I and H. Both aprons and associated taxilanes will be designed to Airplane Design Group (ADG) III and Taxiway Design Group (TDG) 3 standards.

2.3 Access Road East of Dynamic Aviation Hangar (Hangar V)

To provide full circulation around Hangar T, U, and V development, an access road is proposed to be constructed connecting the automobile parking for Hangar V and access to the existing apron for Hangars E and F. This access road is proposed to intersect with the existing connector taxiway to Taxiway 'A'.

2.4 Fuel Farm Access Road / Rehabilitation of Old Airport Road

The old Airport Road, which currently runs between Aviation Circle and the access road to the current Hangars E and F project, will serve as the access road to the new Fuel Farm. This road will undergo a pavement rehabilitation and will need to be partially reconstructed to tie into the proposed apron for the associated aprons and taxilanes project for Hangars I and H. A connector road will also be constructed from the rehabilitated old Airport Road that will tie into the taxilane extending from the apron. Cash Cemetery sits just east of the road and will be a constraint related to the limits of reconstruction of the road based on the Virginia Department of Historic Resources (DHR) recommendation to maintain a 30' buffer around the fence during construction and to note the buffer in construction documents and identify it in the field by temporary fencing during construction

2.5 New Connector Taxiway to Taxiway 'A'

To provide aircraft access from Hangars I and H and the associated apron and taxilane, a new connector taxiway to parallel Taxiway 'A' is proposed. This taxiway will be designed to accommodate all aircraft from Hangars I, H, E, and F.

2.6 Fuel Truck Parking

A small, paved parking area is proposed to be added to the fuel farm project directly across the road from the fuel farm. This area is for fuel trucks to use for parking and additional maneuvering space.

2.7 New Perimeter Fence

A new perimeter fence is proposed to separate the air operations area (AOA) from non-AOA sides of the airfield for the new development. The fence will run across the fuel farm access road just south of the ground service equipment (GSE) storage building, behind the fuel farm and around the wetland area and existing on-airport residence, and dissect the proposed hangar developments, separating automobile parking from the AOA.

2.8 Automobile Parking

Automobile parking lots are proposed for Hangars I, H, T, and U development. The parking lot for Hangars I and H will be accessed by the proposed road previously covered under a 2020 FONSI off new Airport Road, and the parking lot behind Hangars T and U will be accessed from Valley Church Road. The parking lot shall meet minimum parking requirements of the Augusta County Code of Ordinances.

2.9 Commercial Apron Expansion

The northeast end of the commercial apron is proposed to be extended 50 feet to meet FAA taxilane object-free area (TLOFA) criteria.

2.10 Realigned Fuel Service Road

The access road from the commercial apron to the fuel farm access road has been realigned due to the proposed expansion of the apron. The realignment of the access road brings the road closer to Cash Cemetery and will be more of a concern for grading purposes, in consideration of the DHR recommendation to maintain a 30' buffer around the fence during construction and to note the buffer in construction documents and identify it in the field by temporary fencing during construction

3. DESIGN ELEMENTS

3.1 Geometric, Grading, and Stormwater Requirements

3.1.1 Hangars H, I, T, and U

The project will construct four corporate hangars, two 150' x 120' hangars and two 200' x 200' hangars. The finish floor elevations for the hangars were determined based on the profile and grade of the associated aprons. Due to existing terrain, the earthwork for this project will consist primarily of embankment.

Due to an increase in new impervious area and runoff from Hangars H and I and associated parking lot, the construction of a new stormwater management and stormwater quality facility will be included in the design to meet Virginia Department of Environmental Quality (VDEQ) requirements. See Basin 2 in Exhibit 3 in Appendix 'A' which shows the approximate location for additional stormwater measures to accommodate this development. Preliminary basin sizing calculations were performed and are discussed in Section 3.3 Stormwater .

3.1.2 Associated Aprons and Taxilanes

The preliminary design of the taxilane was prepared in accordance with the FAA's AC 150/5300-13B, *Airport Design*, Table 4-1 for an ADG III and Tables 4-2 and 4-4 for TDG 3. The design standards are intended to accommodate Airport Design Group (ADG) III and Taxiway Design Group (TDG) 3. The taxilane and tie-in to the parallel taxiway will be 25 feet wide with fillets designed in accordance with Table 4-4 of AC 150/5300-13B. Transverse and longitudinal slopes will be designed in accordance with Section 4.14 of AC 150/5300-13B to not exceed 1.5%. Taxiway Safety Area (TSA) grades shall be between 1.5%-5%, and grades will be designed to tie-in at 6:1 outside of the TSA for maintainability.

The apron will be graded to meet requirements in AC 150/5300-13B and NFPA 415, with apron grades set at 1% for the first 50 feet off the hangar and as flat as 0.5% for the remainder of the apron. Due to existing terrain, the earthwork for the Hangar I and H apron and taxilane will consist primarily of embankment, whereas the earthwork for the apron for Hangars T and U will consist primarily of excavation. Ideally, some of the material from the excavation for Hangars T and U sites will be suitable fill material for the embankment project.

Construction of Hangars I and H, along with their associated apron, is proposed to interfere with an existing storm system running along the existing adjacent hangars E/F and apron. As a result, the new stormwater Basin 2 proposed will catch runoff from this development (see Proposed Basin 2 in **Exhibit 3**, **Appendix 'A'**).

3.1.3 Access Road East of Dynamic Aviation Hangar (Hangar V)

The preliminary design of the access road was prepared in accordance with the Virginia Department of Transportation (VDOT) Road Design Manual. The access road will be graded to tie into the existing connector taxiway accessing Hangar V and to tie into the proposed parking lot for Hangars T and U. A small amount of embankment will be required to construct the road and bring it to standard grade to tie in.

It is anticipated that the existing stormwater basin directly adjacent to the proposed access road will be suitable to accommodate the added impervious surface and increase in runoff from the road.

3.1.4 Fuel Farm Access Road / Rehabilitation of Old Airport Road

The existing old Airport Road alignment will be utilized for the new fuel farm road but will be rehabilitated due to poor pavement conditions. Due to existing grades, the north end of the road past Cash Cemetery will be required to be raised to tie into the proposed apron for Hangars I and H. Grading required to tie into existing grades will be designed to avoid disturbance within the 30' buffer around Cash Cemetery. Vertical curves and grades will be designed in accordance with the VDOT Road Design Manual. It is anticipated that longitudinal slopes as much as 8% could be required to tie into the apron. Due to existing terrain, the earthwork for the access road will consist primarily of embankment.

There is no additional impervious area resulting from the road rehabilitation, although changes in grade due to embankment will increase runoff to proposed Basin 2.

3.1.5 New Connector Taxiway to Taxiway 'A'

The preliminary design of the connector taxiway was prepared in accordance with the FAA's AC 150/5300-13B, *Airport Design*, Table 4-1 for an ADG III and Tables 4-2 and 4-4 for TDG 3. The taxilane and tie-in to the parallel taxiway will be 50 feet wide with fillets designed in accordance with Table 4-4 of AC 150/5300-13B.

The taxiway will be graded to meet requirements in AC 150/5300-13B, with longitudinal grades a maximum of 1.5% and transverse grades between 1% and 2%. Due to existing terrain, the earthwork for the Hangar I and H apron and taxilane will consist primarily of embankment. Taxiway Safety Area (TSA) grades shall be between 1.5%-5%, and grades will be designed to tie-in at 6:1 outside of the TSA for maintainability.

It is anticipated that the existing stormwater basin directly adjacent to the proposed connector taxiway will be suitable to accommodate the added impervious surface from the road, however the existing basin may be modified to accommodate the proposed taxiway (see Existing Basin 1, **Exhibit 3**, **Appendix 'A'**).

3.1.6 Fuel Truck Parking

The proposed fuel truck parking area does not add a significant area of impervious surface. It is not anticipated that the additional impervious for this area will impact the stormwater requirements from the fuel farm project, which is a separate but ongoing effort by the Airport Commission. Due to existing terrain, the earthwork for this area will consist primarily of excavation.

3.1.7 New Perimeter Fence

Given the conceptual layout of the fence in its current location, no preliminary design was performed for the perimeter fence project. The final extents of the proposed fence are to be confirmed during the design phase of the projects.

3.1.8 Automobile Parking

The automobile parking for the proposed hangar development will be designed in accordance with the VDOT Road Design Manual. Due to existing terrain, the earthwork for the parking behind Hangars I and H will consist primarily of embankment and the earthwork for the parking behind Hangars T and U.

Due to an increase in impervious area, the construction of a new stormwater management and stormwater quality facility is anticipated in order to meet VDEQ requirements (see Proposed Basin 2, **Exhibit 3**, **Appendix 'A'**).

3.1.9 Commercial Apron Expansion

The expansion of the commercial apron will be designed in accordance with FAA's AC 150/5300-13B, *Airport Design* to meet safety area slope requirements off pavement. Taxiway Safety Area (TSA) grades shall be between 1.5%-5%, and grades will be designed to tie-in at 6:1 outside of the TSA for maintainability.

3.1.10 Realigned Fuel Service Road

The preliminary design of the access road was prepared in accordance with the VDOT Road Design Manual. The off-pavement slopes to tie-in to existing grade were determined in order to avoid disturbance within 30 feet of Cash Cemetery, while also protecting maintainability of the grass.

It is anticipated that the existing stormwater basin directly adjacent to the proposed access road will be suitable to accommodate the added impervious surface from the road, however the existing basin may be modified to accommodate the proposed road (see Existing Basin 1, **Exhibit 3**, **Appendix 'A'**).

3.2 Impervious Surface Additions

Based on schematic designs of the Proposed Action projects, an approximate sum of 12 acres (rounded from 11.6 acres) of impervious surface is anticipated to be added during the course of the development of the Proposed Action. Note that two projects (the fuel farm access road / rehabilitation of old airport road) will have a *net zero* impervious change though still may involve ground disturbances that require stormwater coordination. The approximate net impervious changes for each development project are summarized below in **Table 1**.

Table 1 - Impervious Area Increase for the Proposed Action

Development Project	Impervious Area Increase (± AC)
Hangars H, I, T, and U	2.59
Associated Aprons and Taxilanes	4.57
Access Road East of Dynamic Aviation Hangar (Hangar V)	0.35
Fuel Farm Access Road / Rehabilitation of Old Airport Road	0
New Connector Taxiway to Taxiway 'A'	0.76
Fuel Truck Parking	0.07
New Perimeter Fence	0
Automobile Parking	2.32
Commercial Apron Expansion	0.38
Realigned Fuel Service Road	0.55
Total	**11.59 AC**
USE	**12 AC**

Source: Delta Airport Consultants, Inc. Analysis

3.3 Stormwater Analysis

Augusta County Code, Chapter 9, Article I and Chapter 870, Part II B of the Virginia Administrative Code requires a stormwater management plan for all new construction. The regulations provide requirements for water quality and water quantity controls for the 1-, 2-, and 10-year storm events for water quality treatment, channel protection and flood control.

An analysis was conducted to evaluate future stormwater impacts due to the Proposed Actions and ultimate build-out conditions of the site. The purpose of the study was to review existing stormwater drainage features and determine future catchment areas to ensure sufficient space was reserved for required stormwater controls. Existing drainage basins and stormwater management facilities were identified and compared to previous stormwater studies prepared for the site to understand existing conditions. Grading performed during the Preliminary Design analyses provided guidance on anticipated limits of earthwork required for site improvements to identify potential open space areas for future stormwater management facilities. The preliminary grading was then used to delineate future drainage basins to compare with existing and future treatment areas.

Peak discharge rates for each drainage area were determined for pre- and post-development conditions for the 1-, 2-, and 10-year storm events. Composite curve numbers were developed from soil data for the project site provided by the USDA NRCS Web Soil Survey and current and proposed land cover. A copy of the soil report can be found in **Appendix 'B'**. Time of concentrations for each drainage area were determined using the Kirpich Method. The longest flow path along the steepest slopes was assumed to

provide conservative time of concentration values, which were used in the analysis of each storm event. Using Autodesk Storm and Sanitary Analysis (SSA), each pre- and post-drainage area was modelled to determine peak discharges. The results for the 1-, 2-, and 10-year hydrologic analysis can be found in **Table 2** and **Table 3** below, along with information for each pre- and post-development drainage area used in the analysis, respectively. An analysis report for each of the 3 storm events which includes rainfall details and subbasin information can be found in **Appendix 'C'**.

Table 2: Peak Flow Discharge (Pre-Development)

Pre Drainage Area	Composite Curve Number	Total ToC (min)	1 Year Peak Discharge (CFS)	2 Year Peak Discharge (CFS)	10 Year Peak Discharge (CFS)
A	87	7	34.3	42.8	77.4
B	78	5	17.7	23.7	49.7
C	80	5	21.8	28.7	57.9
D	79	9	12.3	16.3	33.8
E	78	6	17.9	24.1	50.8
F	79	5	18.1	24.0	49.3
G	74	5	3.0	4.2	9.6
H	78	5	12.7	17.0	35.9
I	85	5	15.3	19.3	35.9
J	85	5	10.1	12.8	23.9
K	85	5	28.2	35.6	66.1
Totals					

Table 3: Peak Flow Discharge (Post-Development)

Post Drainage Area	Composite Curve Number	Total ToC (min)	1 Year Peak Discharge (CFS)	2 Year Peak Discharge (CFS)	10 Year Peak Discharge (CFS)
A	86	5	40.4	50.8	93.1
B	76	5	5.1	7.0	15.5
C	83	5	11.7	15.0	28.8
D	82	6	11.0	14.3	28.2
E	82	6	24.8	32.1	62.6
F	78	5	17.7	23.7	50.0
G	74	5	3.5	4.9	11.1
H	87	5	33.1	41.4	74.9
I	88	8	19.1	23.7	42.1
J	85	13	40.9	51.7	96.0
Totals					

Runoff depths were also determined from the analysis to derive runoff volumes from each drainage area for the pre- and post-conditions. The modeled depths and volumes of runoff for each drainage area can be found in **Table 4** and **Table 5**.

Table 4: Peak Runoff Volumes (Pre-Development)

Pre Drainage Area	Total Drainage Area (AC)	1 Year Peak Runoff (IN)	2 Year Peak Runoff (IN)	10 Year Peak Runoff (IN)	1 Year Peak Runoff (AC FT)	2 Year Peak Runoff (AC FT)	10 Year Peak Runoff (AC FT)
A	13.12	1.8	2.2	4.1	1.9	2.4	4.4
B	9.92	1.1	1.5	3.2	0.9	1.2	2.6
C	10.89	1.3	1.7	3.4	1.2	1.5	3.1
D	7.42	1.2	1.6	3.2	0.7	1.0	2.0
E	10.54	1.1	1.5	3.1	1.0	1.3	2.8
F	9.54	1.2	1.6	3.3	1.0	1.3	2.6
G	2.17	0.9	1.2	2.8	0.2	0.2	0.5
H	7.25	1.1	1.5	3.1	0.7	0.9	1.9
I	5.98	1.6	2.0	3.9	0.8	1.0	1.9
J	4.01	1.6	2.0	3.8	0.5	0.7	1.3
K	11.01	1.6	2.0	3.9	1.5	1.9	3.5
Totals	**92**	**15**	**19**	**38**	**10**	**14**	**27**

Table 5: Peak Runoff Volumes (Post-Development)

Pre Drainage Area	Total Drainage Area (AC)	1 Year Peak Runoff (IN)	2 Year Peak Runoff (IN)	10 Year Peak Runoff (IN)	1 Year Peak Runoff (AC FT)	2 Year Peak Runoff (AC FT)	10 Year Peak Runoff (AC FT)
A	15.27	1.7	2.1	3.9	2.1	2.7	5.0
B	3.34	1.0	1.3	2.9	0.3	0.4	0.8
C	5.06	1.5	1.9	3.6	0.6	0.8	1.5
D	5.27	1.4	1.8	3.5	0.6	0.8	1.5
E	11.51	1.4	1.8	3.6	1.3	1.7	3.4
F	10.05	1.1	1.5	3.1	0.9	1.3	2.6
G	2.52	0.9	1.2	2.8	0.2	0.3	0.6
H	12.05	1.7	2.2	4.0	1.7	2.2	4.0
I	7.21	1.8	2.3	4.2	1.1	1.4	2.5
J	19.54	1.6	2.0	3.9	2.6	3.3	6.3
Totals	**92**	**14**	**18**	**35**	**12**	**15**	**28**

Drainage areas delineated for the pre- and post-conditions to each existing stormwater treatment basin and total runoff volumes for each rainfall event were compared to determine the expected increase in volume due to the proposed development and whether sufficient capacity existed in each basin. Most drainage areas discharge to 1 of the 3 existing basins before reaching the primary outfall. Runoff from all drainage areas eventually travels to a common outfall which is located in the wetland area adjacent to Cash Cemetery and can be found in the drainage area maps in **Appendix 'D'**. An existing 48" CMP conveys discharge from the outfall to off the project site. Drainage areas B, C, D, E, and I in the pre-development condition drain directly to the outfall. For post-development, an assumption was made that approximately

half of drainage areas E and F will be managed by proposed Basin 2 before reaching the outfall. The calculated increase in stormwater runoff volume to each existing basin, as well as to proposed Basin 2 and the primary outfall, can be found in **Table 6**.

Locations of potential stormwater management basins or basin modifications are shown in Exhibit 3 in **Appendix 'A'**. Locations of proposed stormwater management measures are approximated based on post-development drainage areas and existing basin locations. Rough sizing calculations were performed assuming a total basin depth and were sized based on the additional impervious areas shown in **Table 1** within each respective drainage area. Pre- and Post-Drainage Area Maps can be found in **Appendix 'D'**.

Table 6: Increase in Runoff Volume

Storm	Increase in Runoff to Basin 1 (CF)	Runoff to Basin 2 (CF)	Increase in Runoff to Basin 3 (CF)	Increase in Runoff to Basin 4 (CF)	Increase Direct to Outfall (CF)	Total Increase (CF)
1	-870	13,200	-18,300	49,100	6,500	49,700
2	-416	13,600	-28,800	63,100	6,000	53,600
10	4,300	19,100	-74,900	119,400	4,700	72,700

Due to the expected increase in runoff volumes to existing basin infrastructure, modifications will be required in existing basins to meet storage requirements. Due to Hangar H and I development, along with associated apron and taxilane, interrupting the existing stormwater infrastructure receiving the discharge from Basin 3 and providing conveyance to the outfall, Basin 2 is proposed to be implemented within post-drainage Area E to manage the additional runoff volumes associated with the improvements. The storage volume required for proposed Basin 2 was determined to be approximately 2 acre-feet at an assumed 5 feet deep for a required surface area of 0.38 AC. The storage of the existing basins was calculated from existing surface contours utilizing the top of berm elevation. **Table 7** below shows each existing basin's available storage volume.

Table 7: Existing Basin Storage

	Assumed Top Berm Elevation (FT)	Surface Area (AC)	Storage (AC FT)	Contributing Drainage Area (AC)
Existing Basin 1	1159	0.84	2.2	13
Existing Basin 3	1178	0.50	1.4	21
Existing Basin 4	1177	0.69	2.9	11

Basin 2 was placed within drainage Area E such that it would capture the runoff created by the development impacting the existing stormwater network between Basin 3 and the outfall. The size and location determined for the basin allows for no impacts to the adjacent wetlands and can be located outside of future ALP development planned in the future around the access road. The proposed location for Basin 2 can be found in **Exhibit 3** in **Appendix 'A'**.

3.4 Potential Environmental or Historical Impacts

Wetlands are a critical environmental aspect to consider during construction projects. Per Executive Order 11990, wetlands are defined as, "those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of

vegetative or aquatic life that requires saturated or seasonally soil conditions for growth and reproduction." Areas that are covered with water for a short time having no effect on moist soil vegetation are not included in this definition of wetlands, nor are permanent waters such as streams, reservoirs, and lakes.

A wetland survey and delineation of the airport property were completed in 2019 by Wetland Studies and Solutions, Inc. during a separate project. The wetlands report is attached as **Exhibit 1** in **Appendix 'E'** and indicates that jurisdictional wetlands and streams are present within the Proposed Action area. The projects which are anticipated to have the greatest impact on wetlands include Hangars T, U (part of Project 1), Associated Aprons (Project 2), raising of airport road (Project 4), new connector taxiway (Project 5), and the realigned fuel service road (Project 10).

Table 8 and **Exhibit 2**, included in **Appendix 'A'**, identify the impacted areas for each of the development projects in the Proposed Action included in this 2023 study.

Table 8: Approximate Wetland and Stream Impacts for the Proposed Action

Development Project	Wetland Fill (± AC)	Stream Impacts (± LF)
1. Hangars H, I, T, U	0.58	162
2. Associated Aprons and Taxilanes	0.24	0
3. Access Road East of Dynamic Aviation Hangar (Hangar V)	0	0
4. Fuel Farm Access Road; Rehabilitation of Old Airport Road	0.21	132
5. New Connector to Taxiway 'A'	0.53	102
6. Fuel Truck Parking	0	0
7. New Perimeter Fence	0	0
8. Automobile Parking	0	0
9. Commercial Apron Extension	0	0
10. Realigned Fuel Service Road	0.42	103
Temporary Alternate Fence Alignment	0.06	30
Total	**2.04 AC**	**529 LF**

Source: Delta Airport Consultants, Inc. Analysis

Cash Cemetery currently sits just east of where old Airport Road intersects with the realigned road to the commercial apron expansion. Based on a recommendation from the DHR in spring 2023, a 30-foot buffer is to be placed around the cemetery during planning, preliminary design, and construction to protect this area. The buffer is to be noted in construction documents and identified in the field by temporary fencing during construction.

3.5 Permits, Checklists, and Other Local Regulations

The following list outlines a list of permits, letters, and concurrences that are anticipated to be necessary for the project. These permits are to be acquired during the proposed action projects, both the design and construction. Agency descriptions: VDEQ, United States Army Corps of Engineers (USACE), Augusta County, VDOT.

- Augusta County will be responsible for reviewing and approving the Stormwater Management Plan.
- The Soil Conservation District will be responsible for reviewing and approving Erosion and Sediment Control Plans.
- A Virginia Pollutant Discharge Elimination System (VPDES) VAR-10 permit must be issued by the VDEQ.
- An Individual Permit must be acquired from USACE due to the amount of wetland impacts.
- A Virginia Water Protect (VWP) Permit must be acquired from VDEQ. This permit will only be required for projects that have wetlands impacts.
- Water and sewer lines are owned or will be owned by the airport by the start of the projects. Permitting with Augusta County Water Authority will not be required, but coordination will be completed.

4. DESIGN REFERENCES

The following FAA AC's, and state/local manuals/handbooks and other documents were used in the preliminary design effort. The project was preliminarily designed in accordance with FAA AC's that were current as of August 2022.

Table 9 - Design References

Document Number	Document Title
AC 150/5300-13B	Airport Design
AC 150/5320-5D	Airport Drainage Design
AC 150/5320-6G	Airport Pavement Design and Evaluation
AC 150/5340-1M	Standards for Airport Marking
AC 150/5370-2G	Operational Safety on Airports During Construction
AC 150/5370-10H	Standards for Specifying Construction of Airports
State/Local	Virginia Department of Transportation Drainage Manual
State/Local	Virginia Erosion and Sediment Control Handbook
State/Local	Virginia Stormwater Management Handbook
State/Local	Virginia Department of Transportation Road Design Manual
NFPA 409	Standard on Aircraft Hangars

NFPA 415	Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways
NFPA 407	Standard for Aircraft Fuel Servicing

Appendix A - Exhibits

1. Hangars H, I, T, U
2. Associated Aprons and Taxilanes
3. Access Road East of Dynamic Aviation Hangar (Hangar V)
4. Fuel Farm Access Road; Rehabilitation of old Airport Road
5. New Connector to Taxiway "A"
6. Fuel Truck Parking
7. New Perimeter Fence
8. Automobile Parking
9. Commercial Apron Expansion
10. Realigned Road to Ramp

AVIATION CIRCLE

AIRPORT ROAD

AIRPORT PROPERTY LINE

Access road covered under 2020 FONSI

GSE Building covered under 2020 FONSI

Alternate Fence Alignment until future facilities constructed (not on ALP)

Fuel Farm covered under 2020 FONSI

Cash Cemetery

Current Hangar E and F project.
- Hangars E and F covered under 2021 Written Re-Evaluation
  - Proposed for construction in 2022-2023
- Taxiway, apron, and auto parking complete

Current Hangar V - Dynamic: Construction to start in fall of 2022 with completion anticipated in summer of 2023.

MOSS LANE

TW A

200 0 200 400

SCALE: 1"=200' FEET

DRAWING: 22056 Exh Proposed Action.dwg LAYOUT: L1

www.deltaairport.com

PROPOSED ACTION, 2023
SHENANDOAH VALLEY REGIONAL AIRPORT

DRAWN BY:	HMV	CHECKED BY:	MAP	SCALE:	1" = 200'	DATE:	AUGUST 2023

EXHIBIT 1

	PEM	Wetland Impact (± Acres)	Stream Impact (LF)
2023 Proposed Action	3		
Total wetland impact	3	2.04	
Total stream impact	2		529

LEGEND

DESCRIPTION	EXISTING
STREAM	
FENCE PROPOSED	
BODY OF WATER (POND)	
WETLAND AREAS	
DISTURBED WETLAND AREAS (2023)	
PREVIOUSLY ENVIRONMENTALLY REVIEWED	
2023 PROPOSED	
PREVIOUS DISTURBED WETLANDS AREAS	

PREVIOUS PEM WETLAND IMPACT (0.07± AC)

PREVIOUS PEM STREAM IMPACT (60± LF)

PREVIOUS PEM WETLAND IMPACT (0.04± AC)

2023 IMPACT: 324± FT STREAM

PREVIOUS PEM WETLAND IMPACT (0.08± AC)

PREVIOUS PEM WETLAND IMPACT (0.04± AC)

PREVIOUS PEM STREAM IMPACT (42± LF)

2023 IMPACT: 0.52± AC

TF

TF

TF

2023 IMPACT: 0.34± AC

PREVIOUS PEM WETLAND IMPACT (0.04± AC)

PREVIOUS PEM WETLAND IMPACT (0,01± AC)

PREVIOUS PEM WETLAND IMPACT (0.02± AC)

2023 IMPACT: 1.18± AC

2023 IMPACT: 205 FT STREAM

PREVIOUS PEM WETLAND IMPACT (0.03± AC)

TW A

www.deltaairport.com

WETLAND IMPACTS ANALYSIS 2020-2023
SHENANDOAH VALLEY REGIONAL AIRPORT

DRAWN BY:	CAD	CHECKED BY:	MAP	SCALE:	1" = 200'	DATE:	JULY 2023

EXHIBIT
1

DRAWING: 22056 SHD- Wetlands Impacts Analysis Exhibit.dwg LAYOUT: L1

LEGEND

DESCRIPTION	EXISTING
STREAM	
FENCE PROPOSED	
LIMITS OF DISTURBANCE	LOD
WETLAND AREAS	
PREVIOUSLY ENVIRONMENTALLY REVIEWED	
2023 PROPOSED	

N

LOD

EXISTING BASIN 1

PROPOSED BASIN 2

EXISTING BASIN 3

EXISTING BASIN 4

TW A

DRAWING: 22056 Grading - LOD - SW Exhibit.dwg LAYOUT: L1

www.deltaairport.com

LIMITS OF DISTURBANCE FOR CORPORATE HANGAR DEVELOPMENT
SHENANDOAH VALLEY REGIONAL AIRPORT

DRAWN BY:	BMC	CHECKED BY:	MAP	SCALE:	1" = 200'	DATE:	AUGUST 2023

EXHIBIT
3

Appendix B – Soil Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Augusta County, Virginia

July 17, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

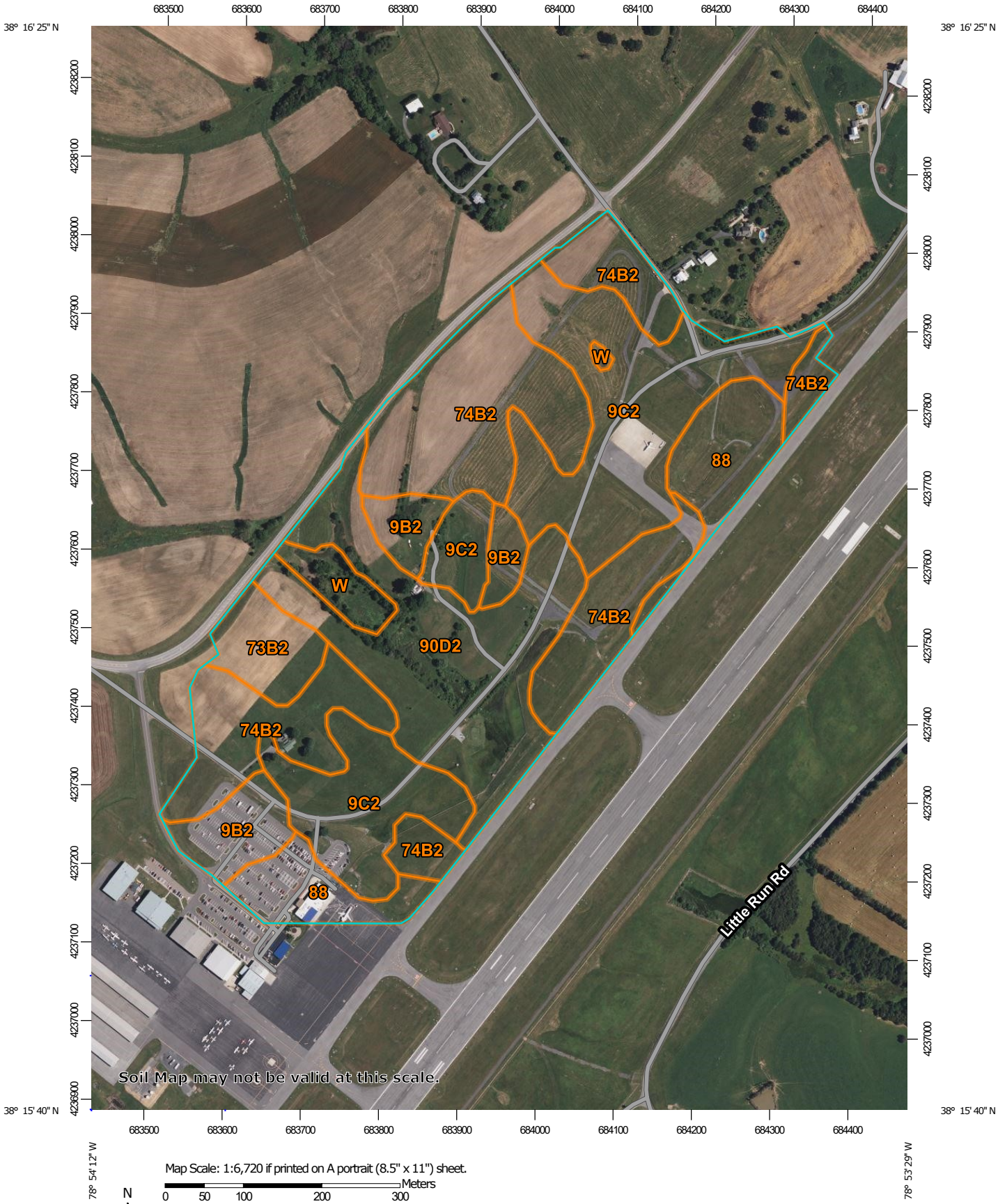
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:6,720 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Augusta County, Virginia
Survey Area Data: Version 18, Aug 23, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 8, 2020—Sep 23, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9B2	Berks-Weikert channery silt loam, 2 to 7 percent slopes, eroded	6.2	6.5%
9C2	Berks-Weikert channery silt loam, 7 to 15 percent slopes, eroded	26.4	27.7%
73B2	Sequoia silt loam, 2 to 7 percent slopes, eroded	3.5	3.6%
74B2	Sequoia-Berks silt loams, 2 to 7 percent slopes, eroded	29.9	31.4%
88	Urban land	8.8	9.2%
90D2	Weikert-Berks channery silt loams, 15 to 25 percent slopes, eroded	18.3	19.2%
W	Water	2.2	2.3%
Totals for Area of Interest		**95.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Augusta County, Virginia

9B2—Berks-Weikert channery silt loam, 2 to 7 percent slopes, eroded

Map Unit Setting

National map unit symbol: kd4g
Elevation: 1,120 to 2,390 feet
Mean annual precipitation: 29 to 38 inches
Mean annual air temperature: 43 to 64 degrees F
Frost-free period: 138 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition

Berks and similar soils: 55 percent
Weikert and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berks

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from acid shale containing strata of sandstone and calcareous shale

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 27 inches: channery silt loam
H3 - 27 to 30 inches: very channery silt loam
H4 - 30 to 34 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

Description of Weikert

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from interbedded shale, siltstone, and sandstone

Typical profile

H1 - 0 to 5 inches: very channery silt loam
H2 - 5 to 13 inches: very channery silt loam
H3 - 13 to 17 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 7 to 20 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

9C2—Berks-Weikert channery silt loam, 7 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: kd4h
Elevation: 1,120 to 2,050 feet
Mean annual precipitation: 29 to 38 inches
Mean annual air temperature: 43 to 64 degrees F
Frost-free period: 138 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition

Berks and similar soils: 55 percent
Weikert and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berks

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from acid shale containing strata of sandstone and calcareous shale

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 27 inches: channery silt loam
H3 - 27 to 30 inches: very channery silt loam
H4 - 30 to 34 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

Description of Weikert

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from interbedded shale, siltstone, and sandstone

Typical profile

H1 - 0 to 5 inches: very channery silt loam
H2 - 5 to 13 inches: very channery silt loam
H3 - 13 to 17 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 7 to 20 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

73B2—Sequoia silt loam, 2 to 7 percent slopes, eroded

Map Unit Setting

National map unit symbol: kd1v
Elevation: 1,120 to 1,490 feet
Mean annual precipitation: 29 to 38 inches
Mean annual air temperature: 43 to 64 degrees F
Frost-free period: 138 to 192 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sequoia and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sequoia

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 32 inches: clay
H3 - 32 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

74B2—Sequoia-Berks silt loams, 2 to 7 percent slopes, eroded

Map Unit Setting

National map unit symbol: kd1x
Elevation: 1,100 to 1,920 feet
Mean annual precipitation: 29 to 38 inches
Mean annual air temperature: 43 to 64 degrees F
Frost-free period: 138 to 192 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sequoia and similar soils: 55 percent
Berks and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sequoia

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 32 inches: clay
H3 - 32 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

Description of Berks

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from acid shale containing strata of sandstone and calcareous shale

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 27 inches: channery silt loam
H3 - 27 to 30 inches: very channery silt loam
H4 - 30 to 34 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

88—Urban land

Map Unit Setting

National map unit symbol: kd3d
Mean annual precipitation: 29 to 38 inches
Mean annual air temperature: 43 to 64 degrees F
Frost-free period: 138 to 192 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

90D2—Weikert-Berks channery silt loams, 15 to 25 percent slopes, eroded

Map Unit Setting

National map unit symbol: kd3p

Elevation: 1,070 to 2,760 feet

Mean annual precipitation: 29 to 38 inches

Mean annual air temperature: 43 to 64 degrees F

Frost-free period: 138 to 192 days

Farmland classification: Not prime farmland

Map Unit Composition

Weikert and similar soils: 50 percent

Berks and similar soils: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weikert

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from interbedded shale, siltstone, and sandstone

Typical profile

H1 - 0 to 5 inches: channery silt loam

H2 - 5 to 13 inches: very channery silt loam

H3 - 13 to 17 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 7 to 20 inches to paralithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

Description of Berks

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from acid shale containing strata of sandstone and calcareous shale

Typical profile

H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 27 inches: channery silt loam
H3 - 27 to 30 inches: very channery silt loam
H4 - 30 to 34 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: kd5b
Mean annual precipitation: 29 to 38 inches
Mean annual air temperature: 43 to 64 degrees F
Frost-free period: 138 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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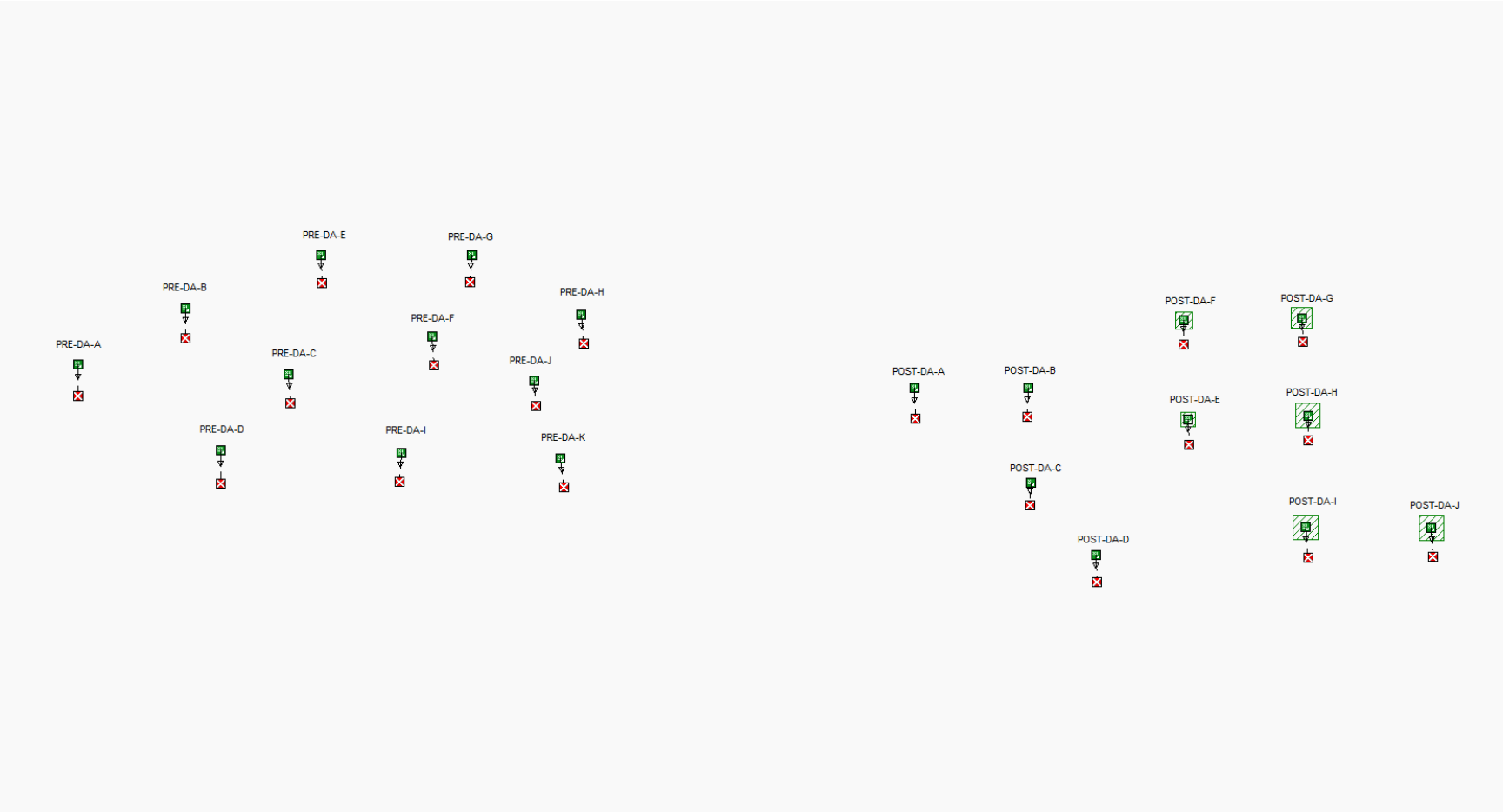
Appendix C – SSA Report


PRE-DA-A
PRE-DA-B
PRE-DA-C
PRE-DA-D
PRE-DA-E
PRE-DA-F
PRE-DA-G
PRE-DA-H
PRE-DA-I
PRE-DA-J
PRE-DA-K
POST-DA-A
POST-DA-B
POST-DA-C
POST-DA-D
POST-DA-E
POST-DA-F
POST-DA-G
POST-DA-H
POST-DA-I
POST-DA-J

Project Description

File Name ..... 22056 - Pre-Post Model.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	SCS TR-55
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	3
Subbasins	21
Nodes	21
Junctions	0
Outfalls	21
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links	0
Channels	0
Pipes	0
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	Rain Gage-01	Time Series	TS-01	Cumulative	inches	Virginia	Augusta	1.00	3.00	SCS Type II 24-hr
2	Rain Gage-02	Time Series	TS-02	Cumulative	inches	Virginia	Augusta	2.00	3.50	SCS Type II 24-hr
3	Rain Gage-10	Time Series	TS-10	Cumulative	inches	Virginia	Augusta	10.00	5.50	SCS Type II 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	POST_DA_A	15.27	484.00	86.02	3.00	1.66	25.41	40.37	0 00:05:00
2	POST_DA_B	3.34	484.00	75.51	3.00	0.99	3.30	5.07	0 00:05:00
3	POST_DA_C	5.05	484.00	83.07	3.00	1.45	7.33	11.65	0 00:05:00
4	POST_DA_D	5.27	484.00	81.66	3.00	1.36	7.15	10.97	0 00:06:00
5	POST_DA_E	11.52	484.00	82.33	3.00	1.40	16.14	24.83	0 00:06:00
6	POST_DA_F	10.06	484.00	77.91	3.00	1.12	11.31	17.66	0 00:05:00
7	POST_DA_G	2.52	484.00	74.00	3.00	0.91	2.29	3.47	0 00:05:00
8	POST_DA_H	12.04	484.00	86.95	3.00	1.74	20.89	33.13	0 00:05:00
9	POST_DA_I	7.21	484.00	88.07	3.00	1.82	13.15	19.07	0 00:08:00
10	POST_DA_J	19.55	484.00	85.27	3.00	1.61	31.44	40.90	0 00:13:00
11	PRE-DA-A	13.13	484.00	87.11	3.00	1.75	22.95	34.28	0 00:07:00
12	PRE-DA-B	9.92	484.00	78.19	3.00	1.14	11.31	17.69	0 00:05:00
13	PRE-DA-C	10.88	484.00	80.33	3.00	1.27	13.83	21.84	0 00:05:00
14	PRE-DA-D	7.42	484.00	78.88	3.00	1.18	8.76	12.28	0 00:09:00
15	PRE-DA-E	10.53	484.00	77.95	3.00	1.13	11.86	17.92	0 00:06:00
16	PRE-DA-F	9.53	484.00	79.32	3.00	1.21	11.51	18.11	0 00:05:00
17	PRE-DA-G	2.17	484.00	74.00	3.00	0.91	1.97	2.99	0 00:05:00
18	PRE-DA-H	7.24	484.00	77.85	3.00	1.12	8.11	12.66	0 00:05:00
19	PRE-DA-I	5.99	484.00	85.23	3.00	1.61	9.61	15.29	0 00:05:00
20	PRE-DA-J	4.01	484.00	84.89	3.00	1.58	6.34	10.08	0 00:05:00
21	PRE-DA-K	11.02	484.00	85.27	3.00	1.61	17.72	28.18	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Outfall-POST-A	Outfall	0.00					0.00	0.00					
2	Outfall-POST-B	Outfall	0.00					0.00	0.00					
3	Outfall-POST-C	Outfall	0.00					0.00	0.00					
4	Outfall-POST-D	Outfall	0.00					0.00	0.00					
5	Outfall-POST-E	Outfall	0.00					0.00	0.00					
6	Outfall-POST-F	Outfall	0.00					0.00	0.00					
7	Outfall-POST-G	Outfall	0.00					0.00	0.00					
8	Outfall-POST-H	Outfall	0.00					0.00	0.00					
9	Outfall-POST-I	Outfall	0.00					0.00	0.00					
10	Outfall-POST-J	Outfall	0.00					0.00	0.00					
11	Outfall-PRE-A	Outfall	0.00					0.00	0.00					
12	Outfall-PRE-B	Outfall	0.00					0.00	0.00					
13	Outfall-PRE-C	Outfall	0.00					0.00	0.00					
14	Outfall-PRE-D	Outfall	0.00					0.00	0.00					
15	Outfall-PRE-E	Outfall	0.00					0.00	0.00					
16	Outfall-PRE-F	Outfall	0.00					0.00	0.00					
17	Outfall-PRE-G	Outfall	0.00					0.00	0.00					
18	Outfall-PRE-H	Outfall	0.00					0.00	0.00					
19	Outfall-PRE-I	Outfall	0.00					0.00	0.00					
20	Outfall-PRE-J	Outfall	0.00					0.00	0.00					
21	Outfall-PRE-K	Outfall	0.00					0.00	0.00					

Subbasin Hydrology

Subbasin : POST_DA_A

Input Data

Area (ac) 15.27
Peak Rate Factor 484
Weighted Curve Number 86.02
Rain Gage ID ..... Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.52	C	98
IMPERVIOUS	6	D	98
MANAGEDTURF	4.25	C	74
MANAGEDTURF	4.5	D	80
Composite Area & Weighted CN	15.27		86.02

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft^2)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

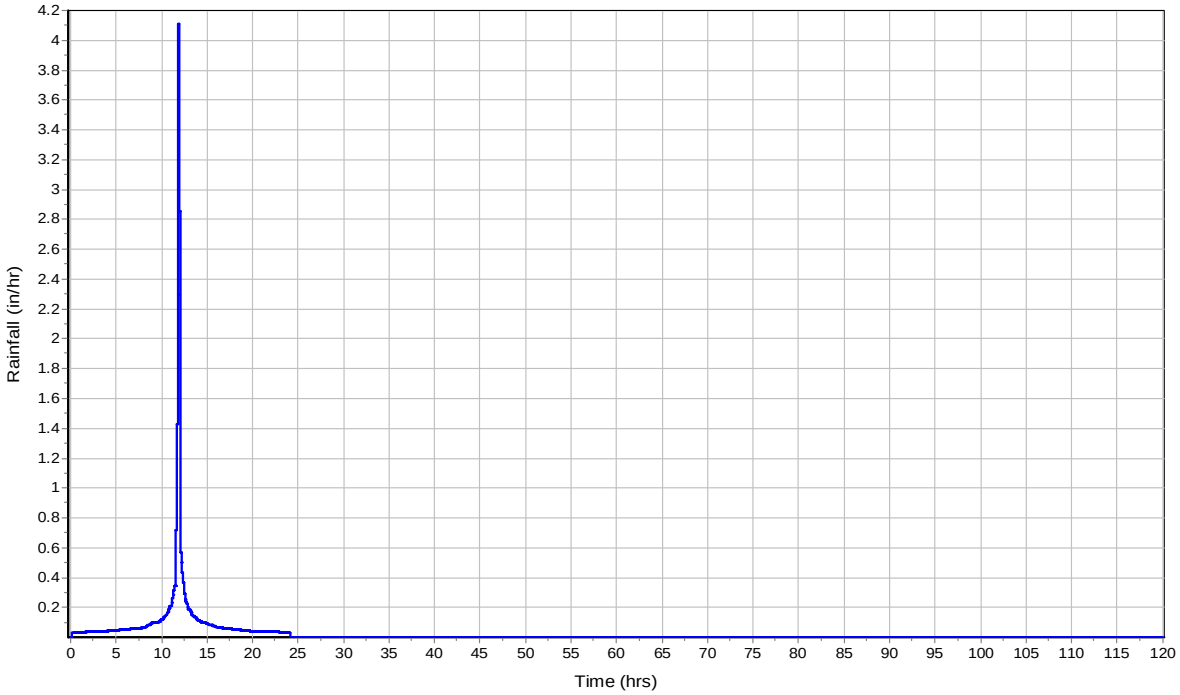
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

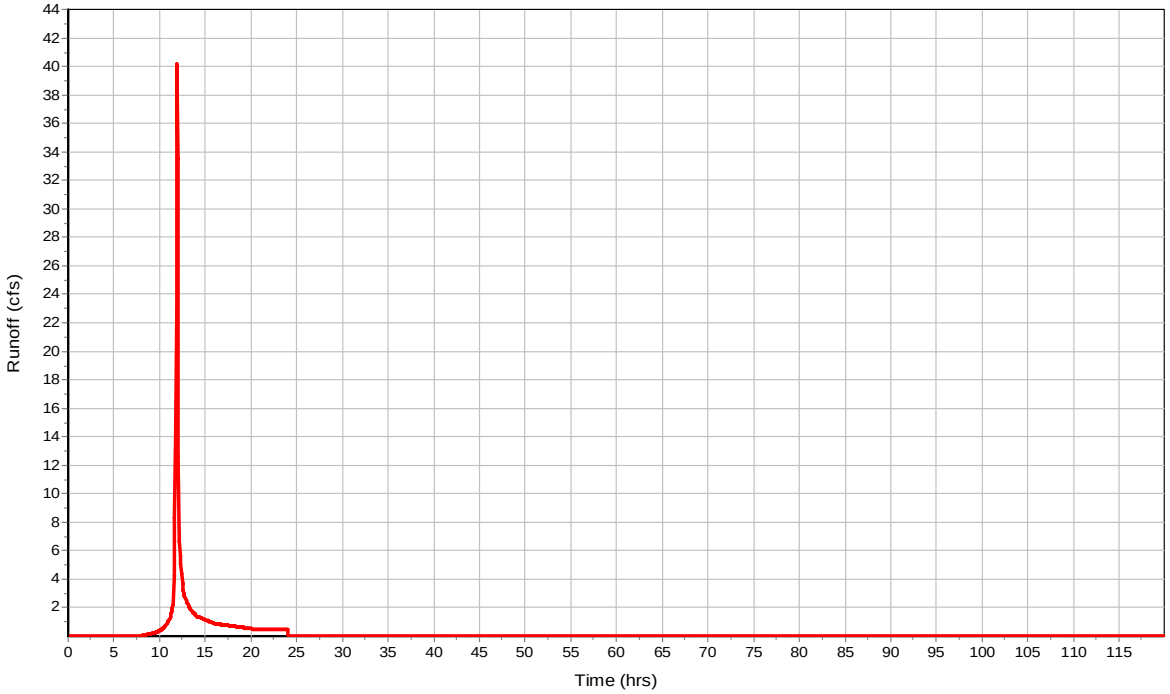
Total Rainfall (in) 3
Total Runoff (in) 1.66
Peak Runoff (cfs) 40.37
Weighted Curve Number 86.02
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : POST_DA_A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_B

Input Data

Area (ac)	3.34
Peak Rate Factor	484
Weighted Curve Number	75.51
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.5	C	74
MANAGEDTURF	0.84	D	80
Composite Area & Weighted CN	3.34		75.51

Time of Concentration

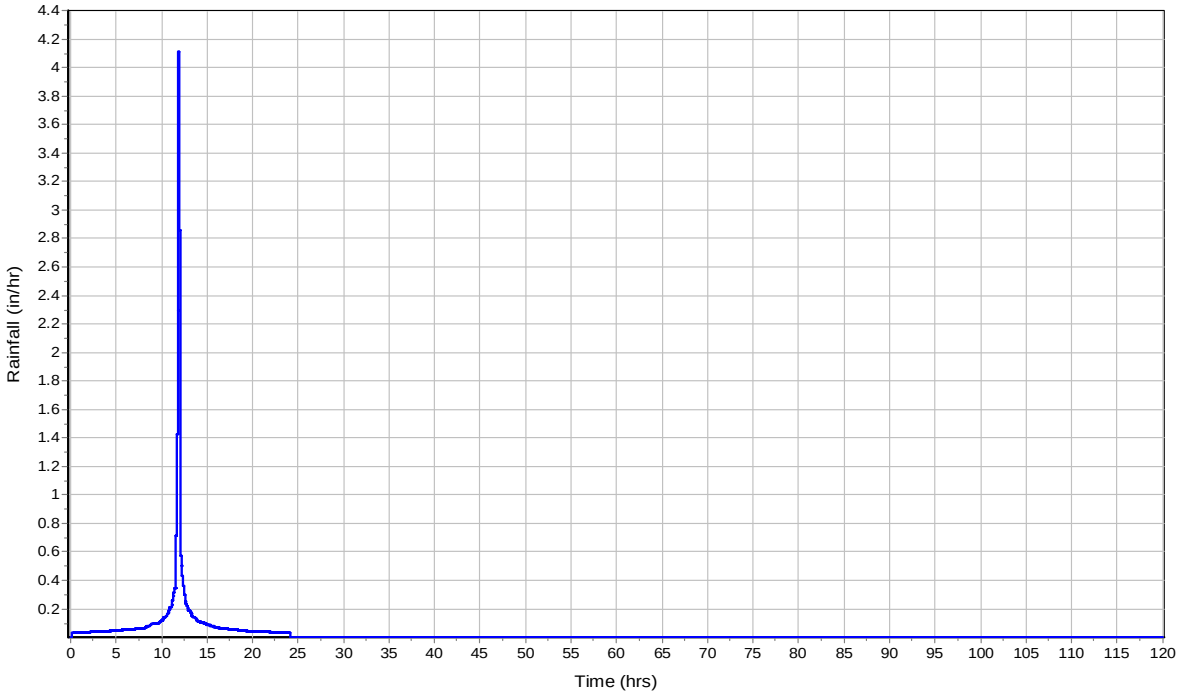
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

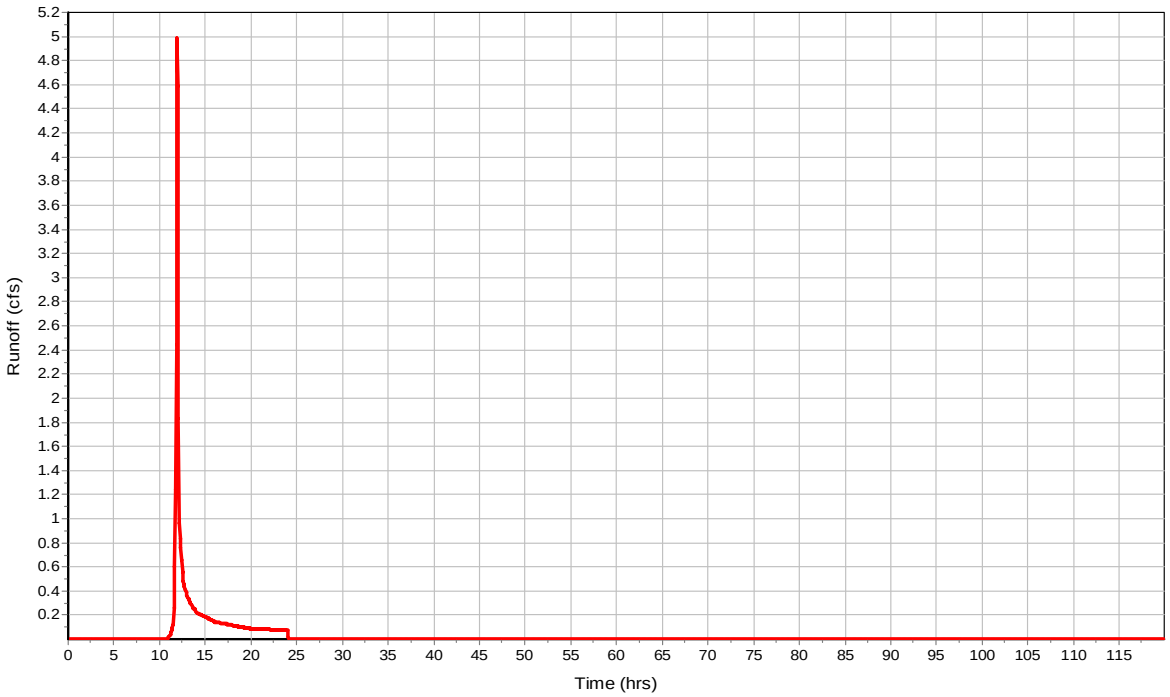
Total Rainfall (in)	3
Total Runoff (in)	0.99
Peak Runoff (cfs)	5.07
Weighted Curve Number	75.51
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_C

Input Data

Area (ac)	5.05
Peak Rate Factor	484
Weighted Curve Number	83.07
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.04	C	98
IMPERVIOUS	1.01	D	98
MANAGEDTURF	0.57	C	74
MANAGEDTURF	3.43	D	80
Composite Area & Weighted CN	5.05		83.07

Time of Concentration

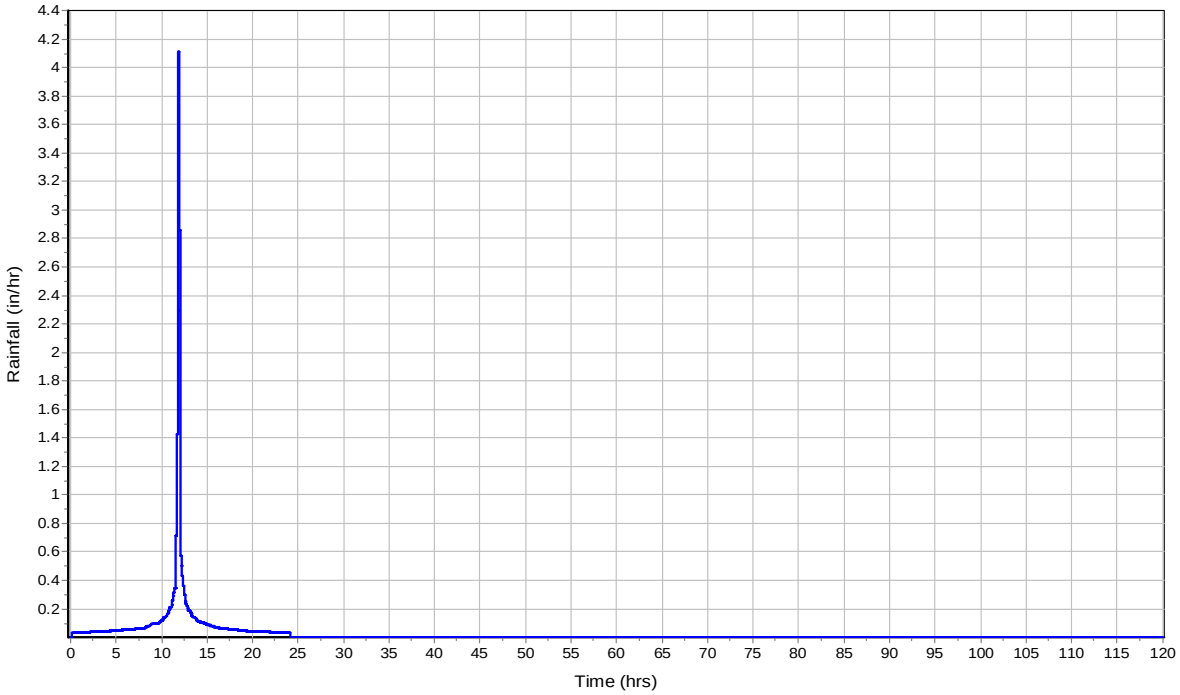
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

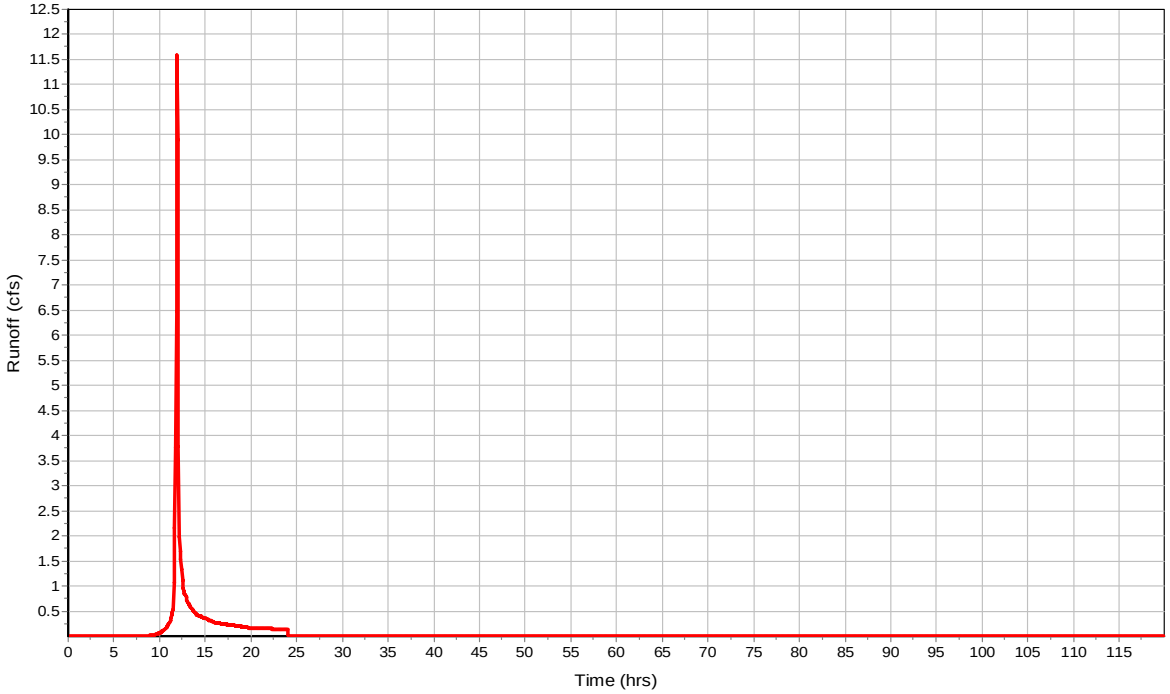
Total Rainfall (in)	3
Total Runoff (in)	1.45
Peak Runoff (cfs)	11.65
Weighted Curve Number	83.07
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_D

Input Data

Area (ac)	5.27
Peak Rate Factor	484
Weighted Curve Number	81.66
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.35	C	98
IMPERVIOUS	0.34	D	98
MANAGEDTURF	0.61	C	74
MANAGEDTURF	3.97	D	80
Composite Area & Weighted CN	5.27		81.66

Time of Concentration

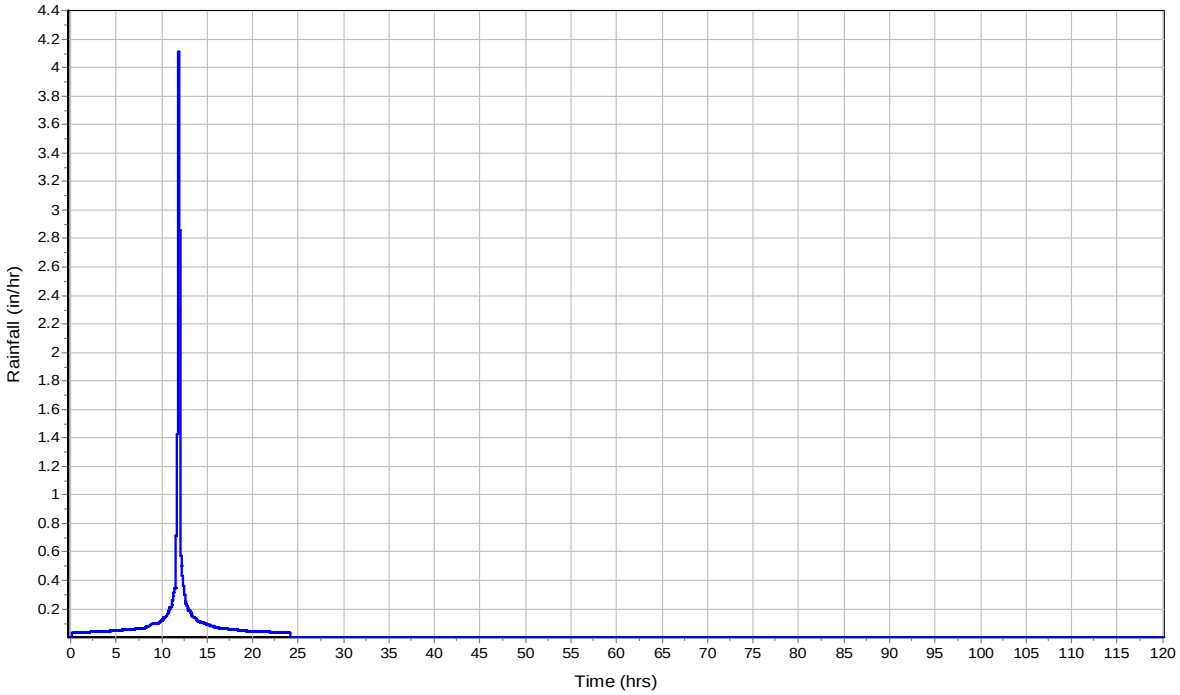
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

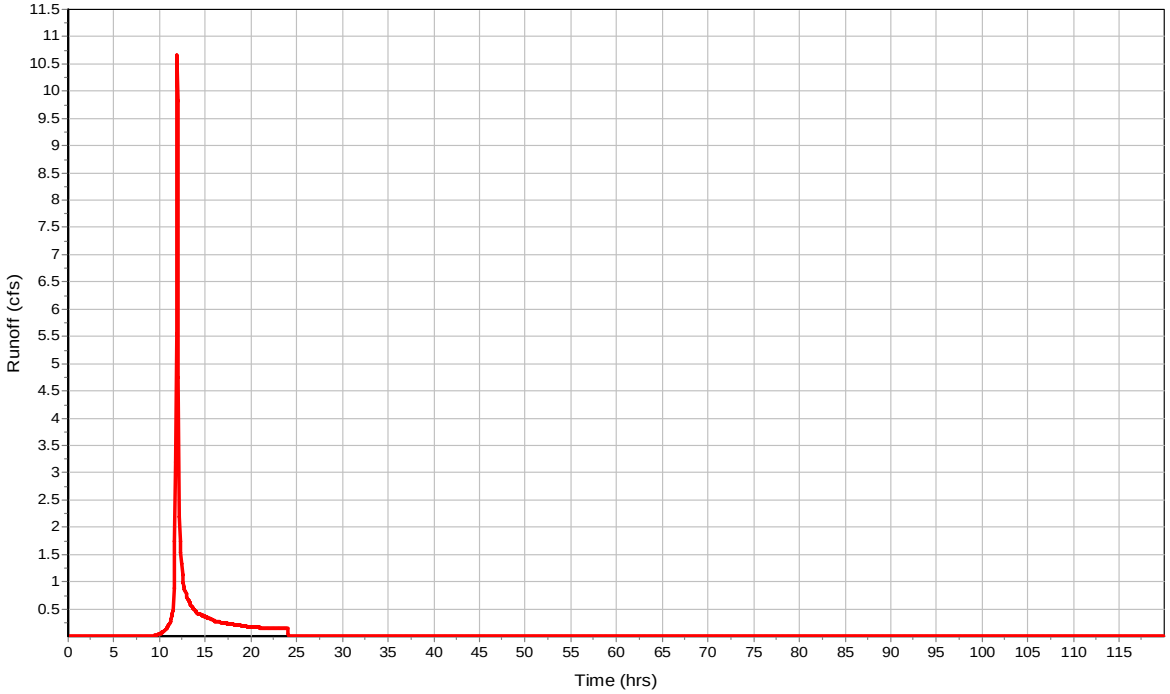
Total Rainfall (in)	3
Total Runoff (in)	1.36
Peak Runoff (cfs)	10.97
Weighted Curve Number	81.66
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : POST_DA_D

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_E

Input Data

Area (ac)	11.52
Peak Rate Factor	484
Weighted Curve Number	82.33
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.21	C	98
IMPERVIOUS	1.57	D	98
MANAGEDTURF	0.86	C	74
MANAGEDTURF	8.88	D	80
Composite Area & Weighted CN	11.52		82.33

Time of Concentration

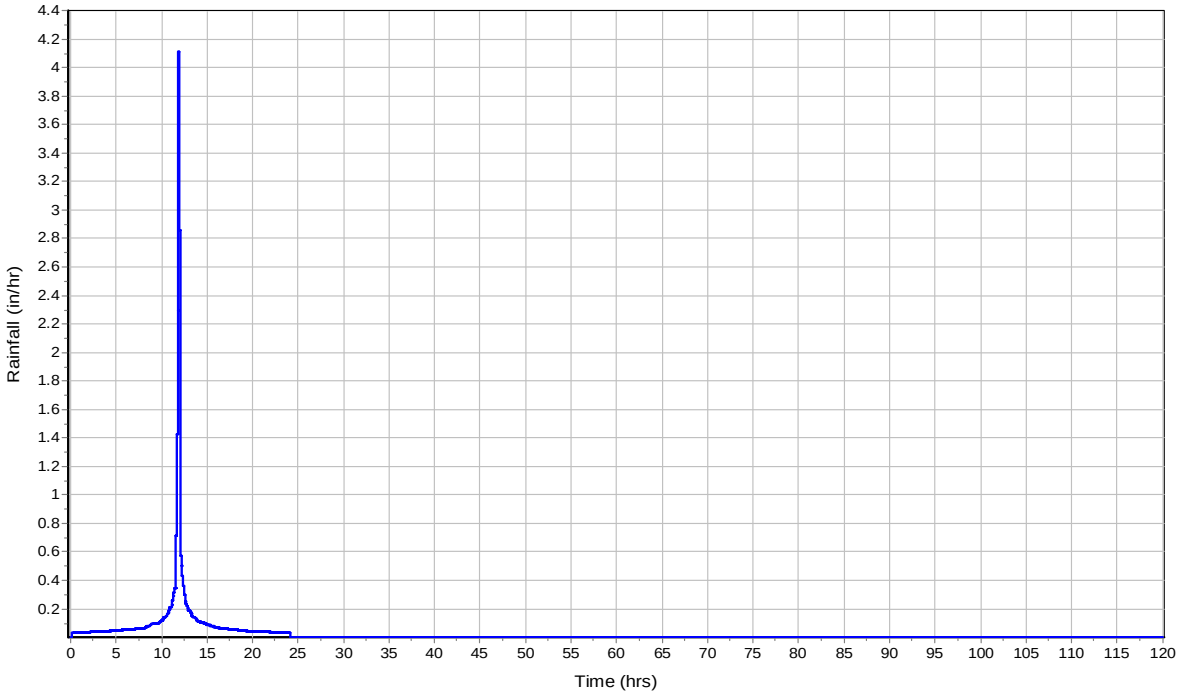
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

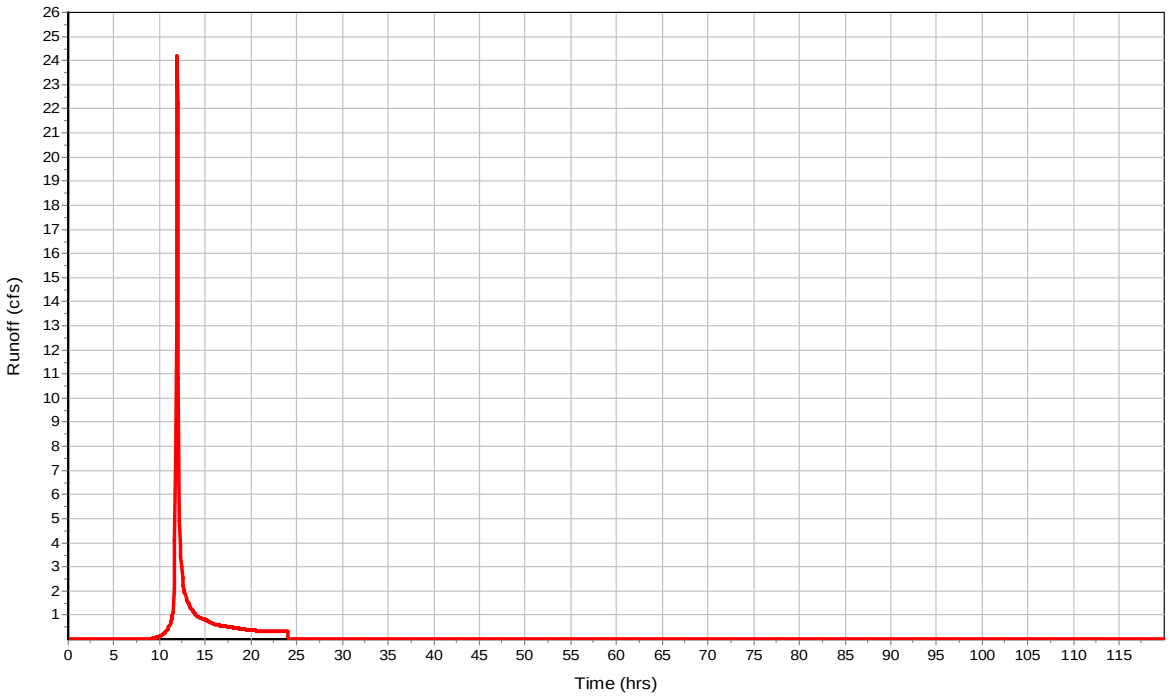
Total Rainfall (in)	3
Total Runoff (in)	1.4
Peak Runoff (cfs)	24.83
Weighted Curve Number	82.33
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : POST_DA_E

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_F

Input Data

Area (ac)	10.06
Peak Rate Factor	484
Weighted Curve Number	77.91
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.16	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	3.99	C	74
MANAGEDTURF	5.91	D	80
Composite Area & Weighted CN	10.06		77.91

Time of Concentration

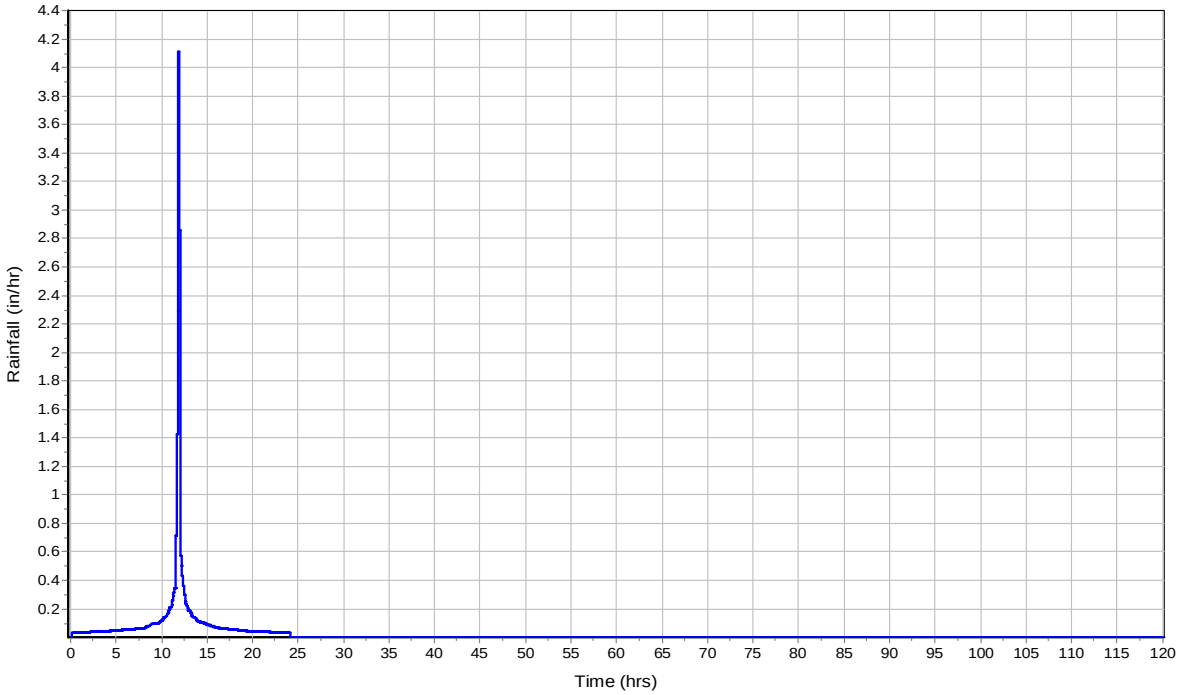
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

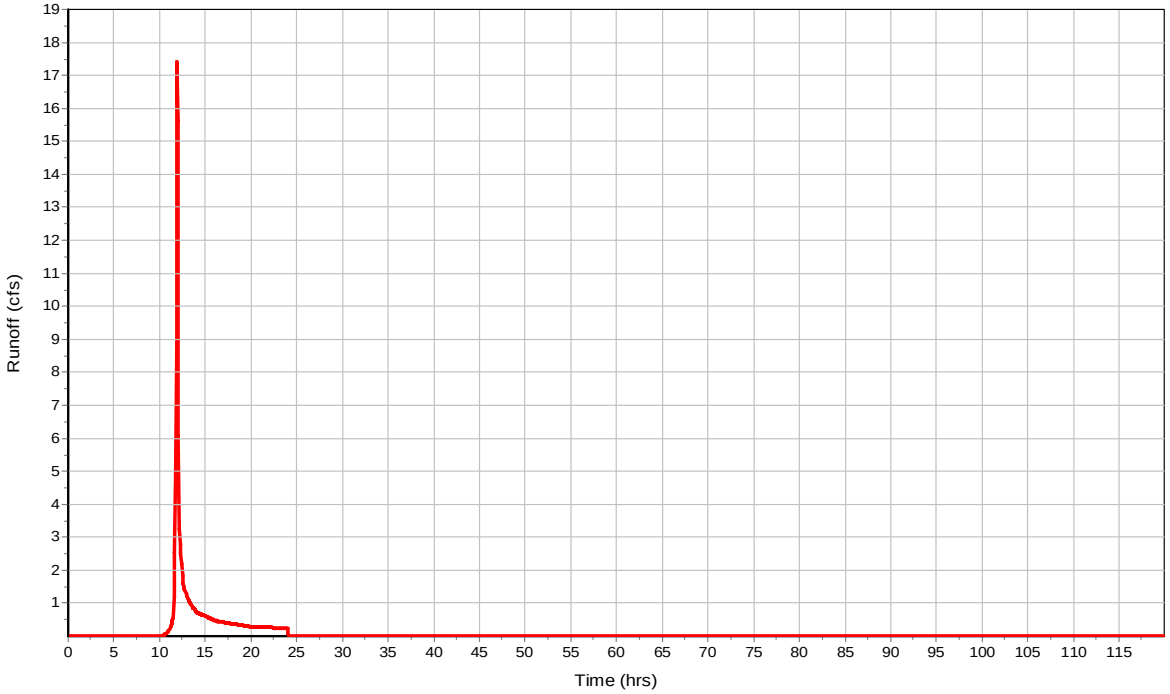
Total Rainfall (in)	3
Total Runoff (in)	1.12
Peak Runoff (cfs)	17.66
Weighted Curve Number	77.91
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_F

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_G

Input Data

Area (ac)	2.52
Peak Rate Factor	484
Weighted Curve Number	74
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.52	C	74
MANAGEDTURF	0	D	80
Composite Area & Weighted CN	2.52		74

Time of Concentration

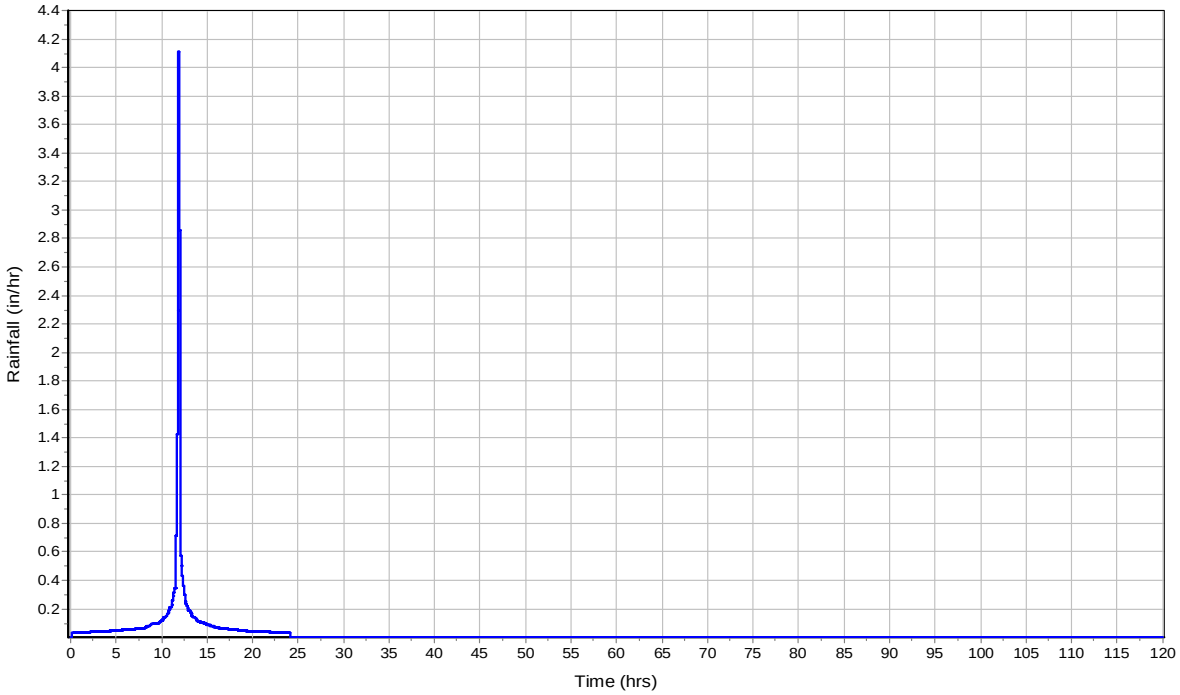
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

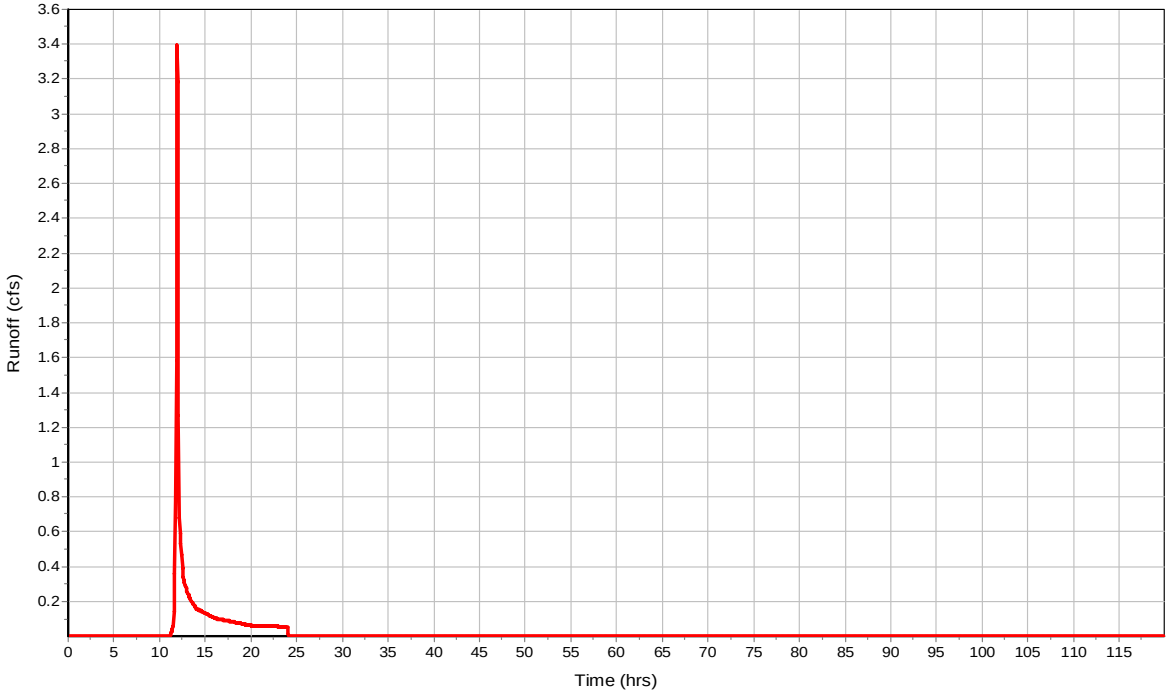
Total Rainfall (in)	3
Total Runoff (in)	0.91
Peak Runoff (cfs)	3.47
Weighted Curve Number	74
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_G

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_H

Input Data

Area (ac)	12.04
Peak Rate Factor	484
Weighted Curve Number	86.95
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	2.06	C	98
IMPERVIOUS	3.66	D	98
MANAGEDTURF	3.22	C	74
MANAGEDTURF	3.1	D	80
Composite Area & Weighted CN	12.04		86.95

Time of Concentration

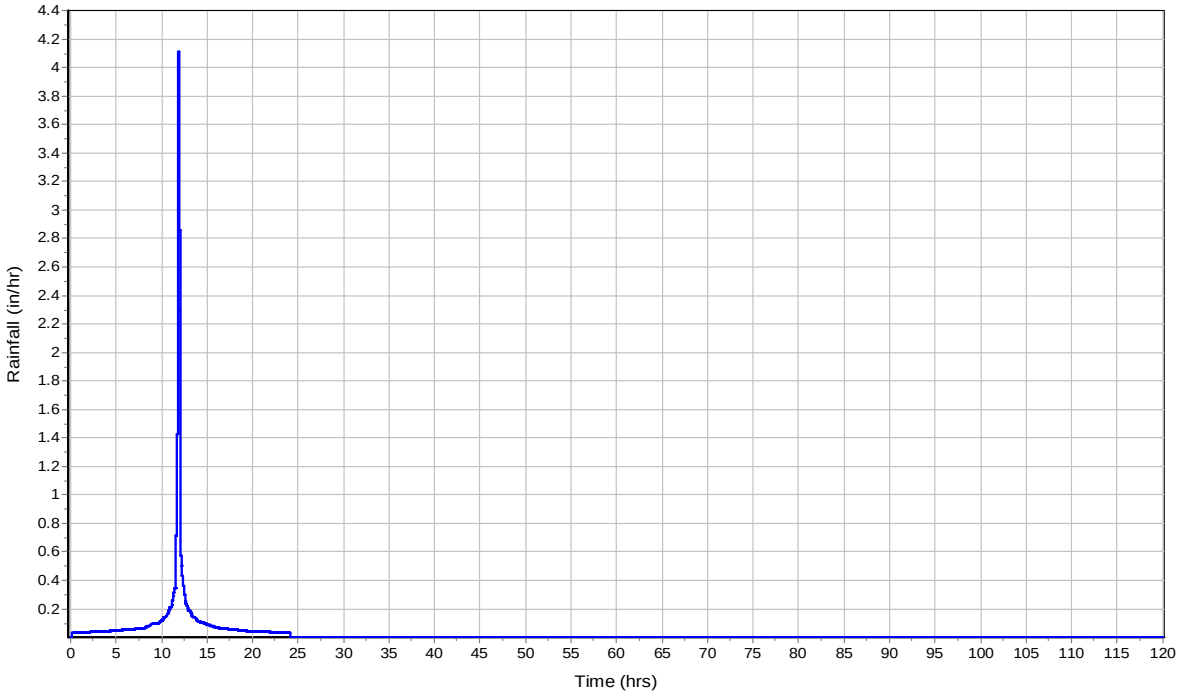
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

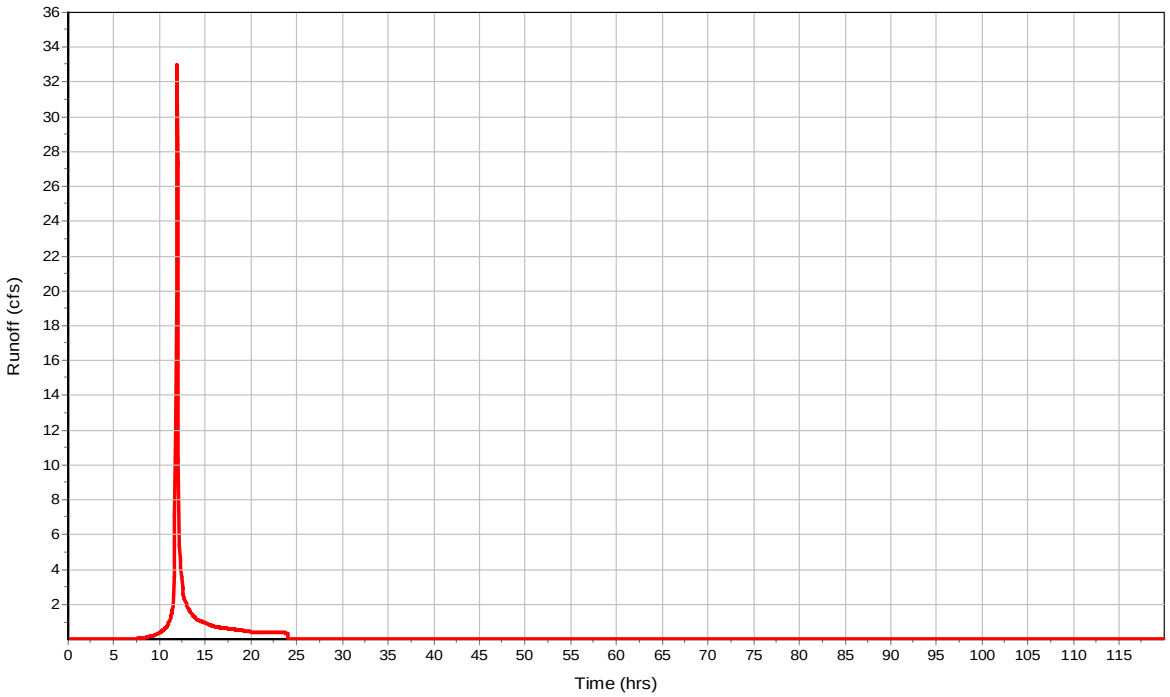
Total Rainfall (in)	3
Total Runoff (in)	1.74
Peak Runoff (cfs)	33.13
Weighted Curve Number	86.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_H

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_I

Input Data

Area (ac)	7.21
Peak Rate Factor	484
Weighted Curve Number	88.07
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	2.16	C	98
IMPERVIOUS	1.99	D	98
MANAGEDTURF	2.75	C	74
MANAGEDTURF	0.31	D	80
Composite Area & Weighted CN	7.21		88.07

Time of Concentration

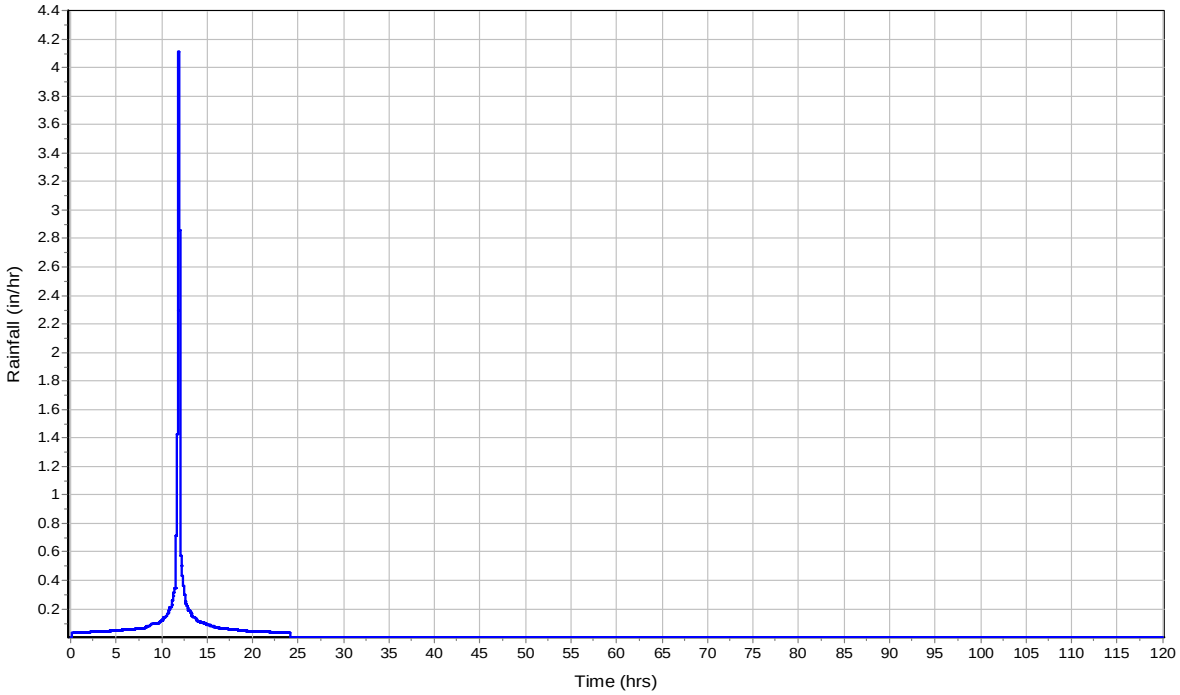
User-Defined TOC override (minutes): 8

Subbasin Runoff Results

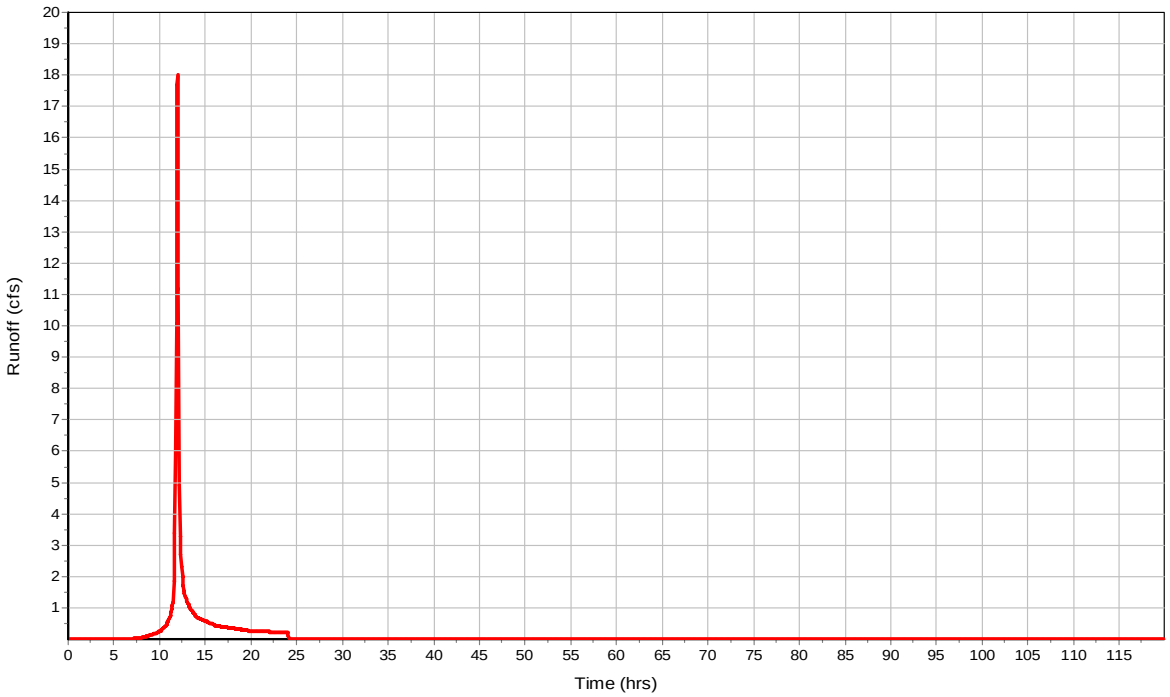
Total Rainfall (in)	3
Total Runoff (in)	1.82
Peak Runoff (cfs)	19.07
Weighted Curve Number	88.07
Time of Concentration (days hh:mm:ss)	0 00:08:00

Subbasin : POST_DA_I

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_J

Input Data

Area (ac)	19.55
Peak Rate Factor	484
Weighted Curve Number	85.27
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	1.36	C	98
IMPERVIOUS	5.65	D	98
MANAGEDTURF	3.87	C	74
MANAGEDTURF	8.67	D	80
Composite Area & Weighted CN	19.55		85.27

Time of Concentration

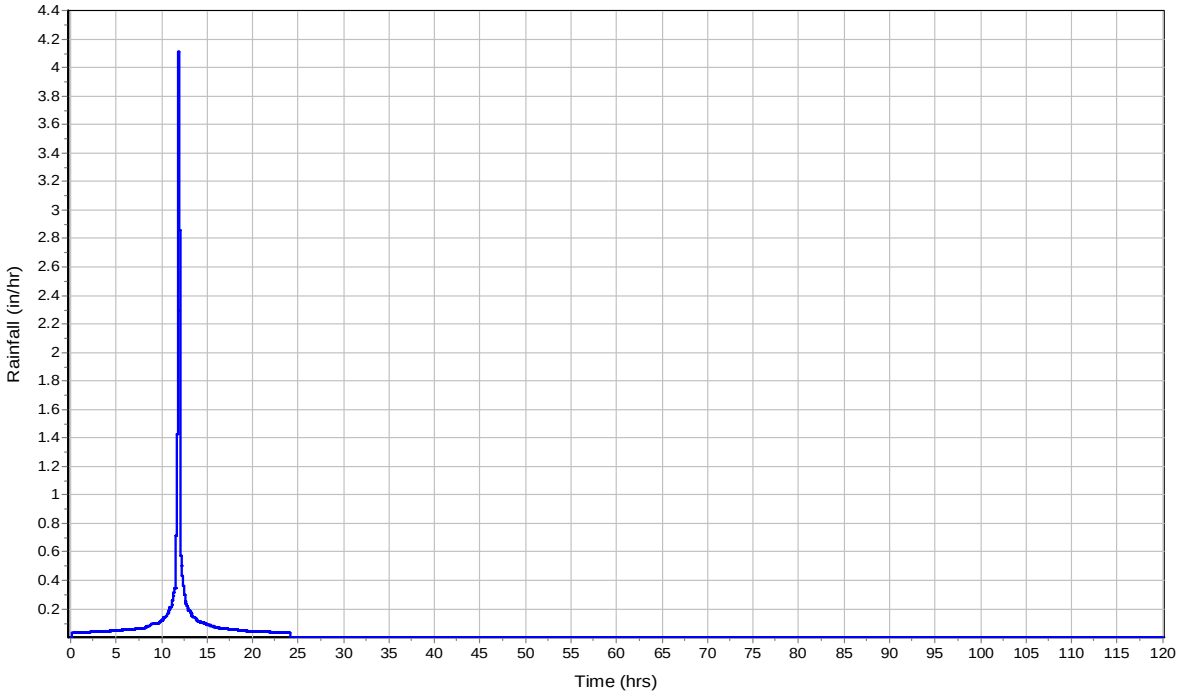
User-Defined TOC override (minutes): 13.00

Subbasin Runoff Results

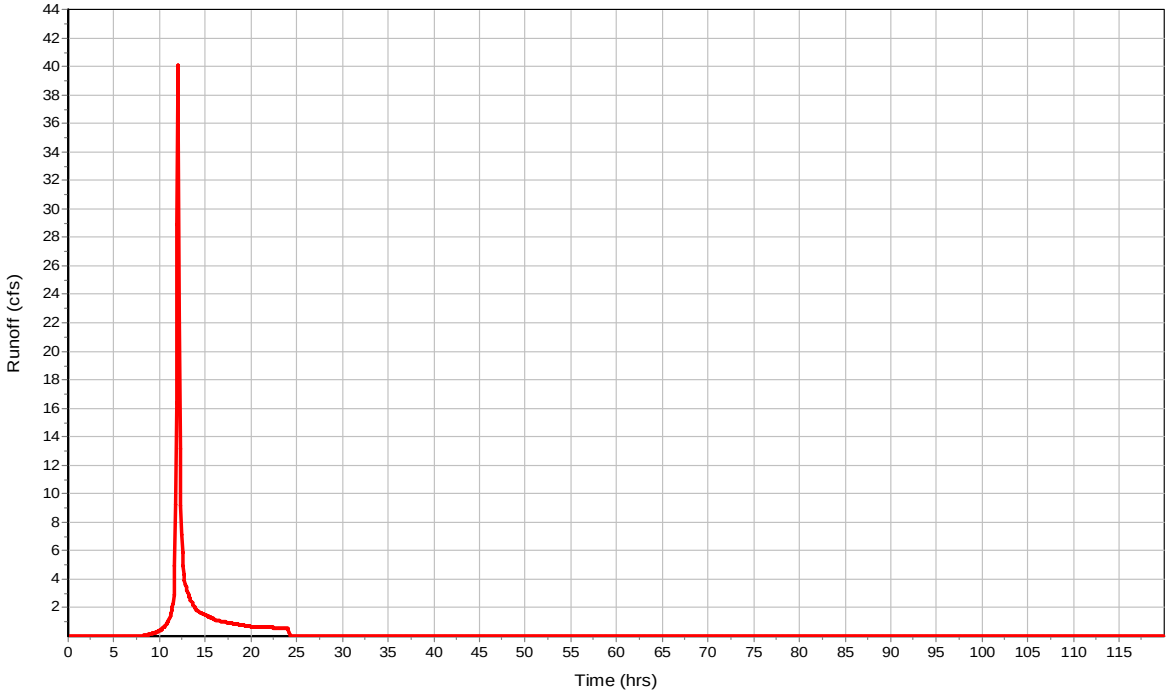
Total Rainfall (in)	3
Total Runoff (in)	1.61
Peak Runoff (cfs)	40.9
Weighted Curve Number	85.27
Time of Concentration (days hh:mm:ss)	0 00:13:00

Subbasin : POST_DA_J

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-A

Input Data

Area (ac)	13.13
Peak Rate Factor	484
Weighted Curve Number	87.11
Rain Gage ID	Rain Gage-01

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.24	C	98
IMPERVIOUS	5.62	D	98
MANAGEDTURF	2.02	C	74
MANAGEDTURF	5.25	D	80
Composite Area & Weighted CN	13.13		87.11

Time of Concentration

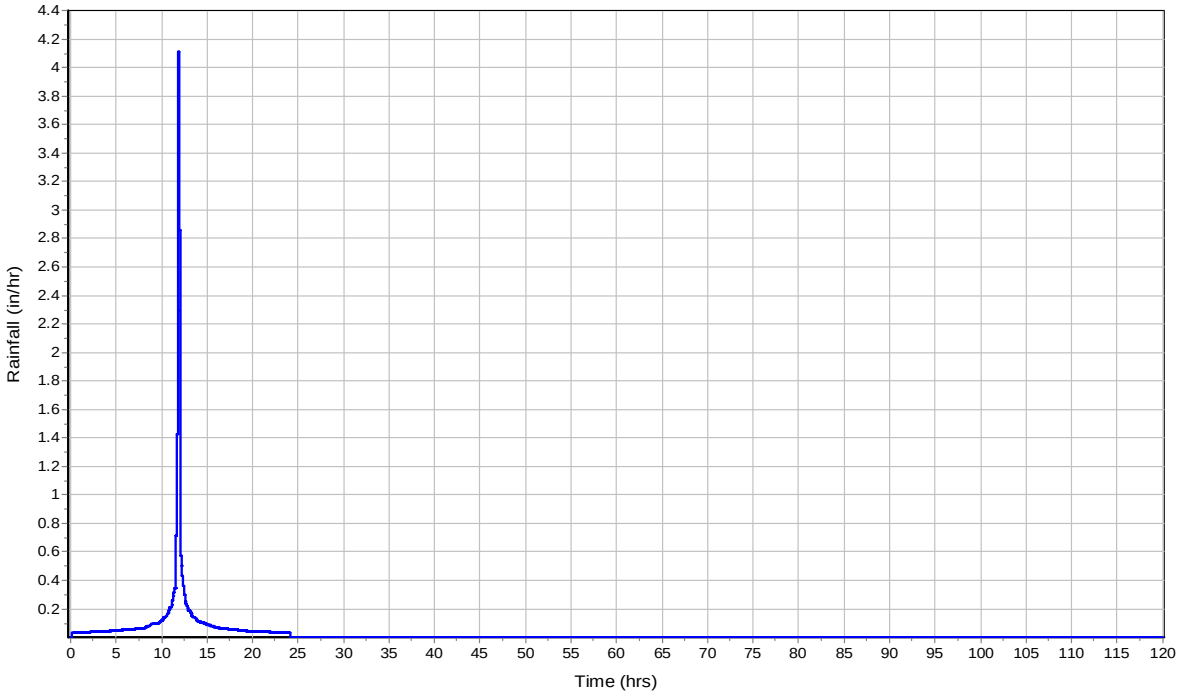
User-Defined TOC override (minutes): 7

Subbasin Runoff Results

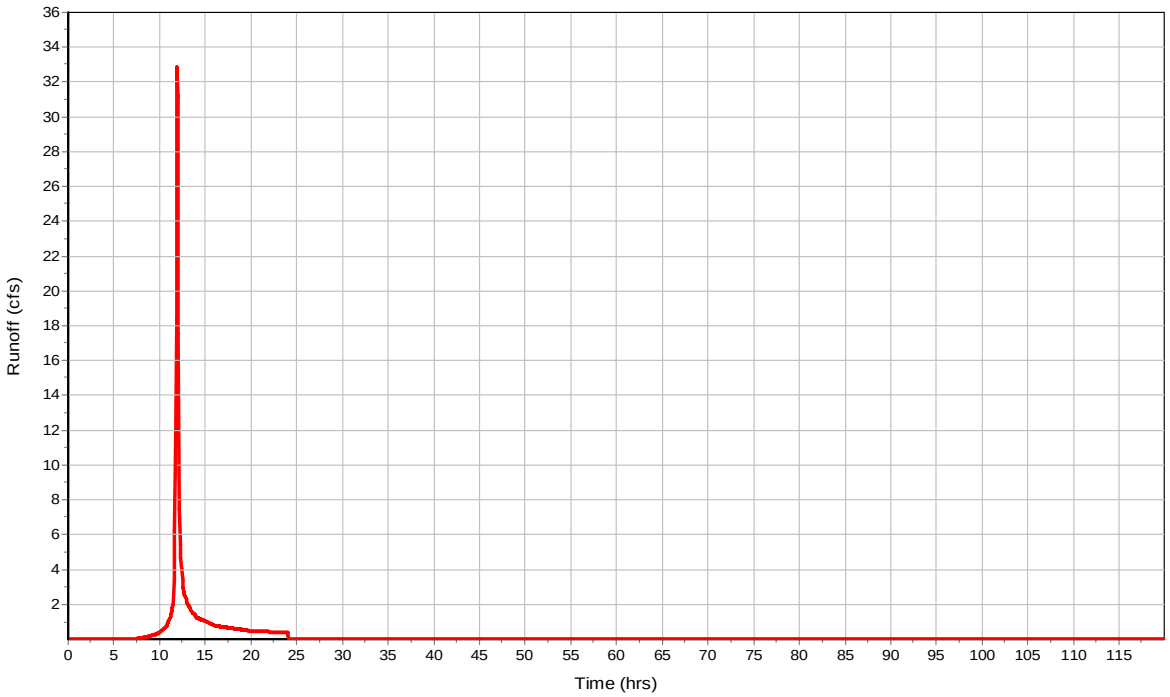
Total Rainfall (in)	3
Total Runoff (in)	1.75
Peak Runoff (cfs)	34.28
Weighted Curve Number	87.11
Time of Concentration (days hh:mm:ss)	0 00:07:00

Subbasin : PRE-DA-A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-B

Input Data

Area (ac)	9.92
Peak Rate Factor	484
Weighted Curve Number	78.19
Rain Gage ID	Rain Gage-01

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.14	C	98
IMPERVIOUS	0.73	D	98
MANAGEDTURF	5.6	C	74
MANAGEDTURF	3.45	D	80
Composite Area & Weighted CN	9.92		78.19

Time of Concentration

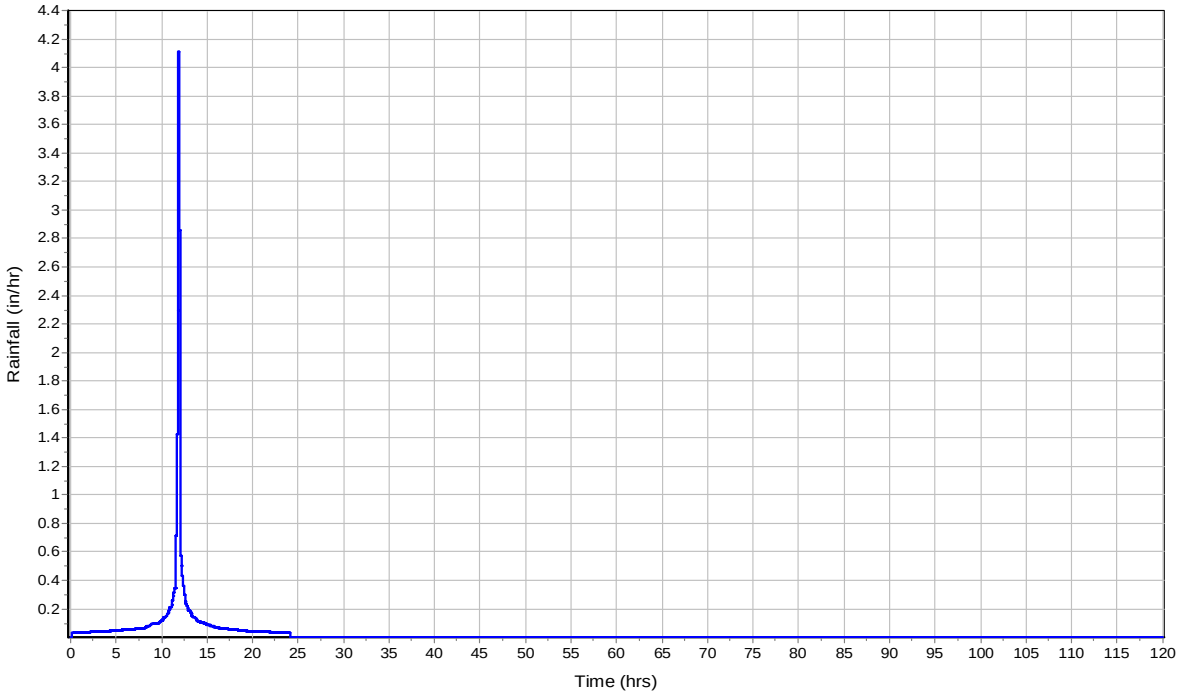
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

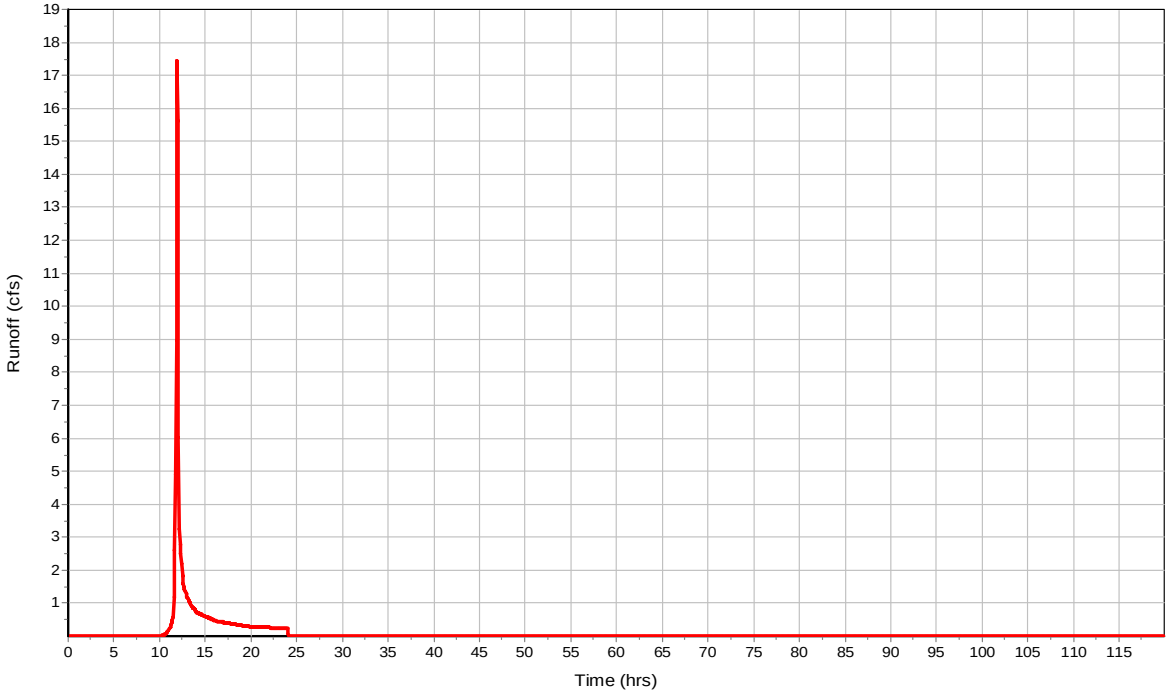
Total Rainfall (in)	3
Total Runoff (in)	1.14
Peak Runoff (cfs)	17.69
Weighted Curve Number	78.19
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-C

Input Data

Area (ac)	10.88
Peak Rate Factor	484
Weighted Curve Number	80.33
Rain Gage ID	Rain Gage-01

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.15	C	98
IMPERVIOUS	0.36	D	98
MANAGEDTURF	0.93	C	74
MANAGEDTURF	9.44	D	80
Composite Area & Weighted CN	10.88		80.33

Time of Concentration

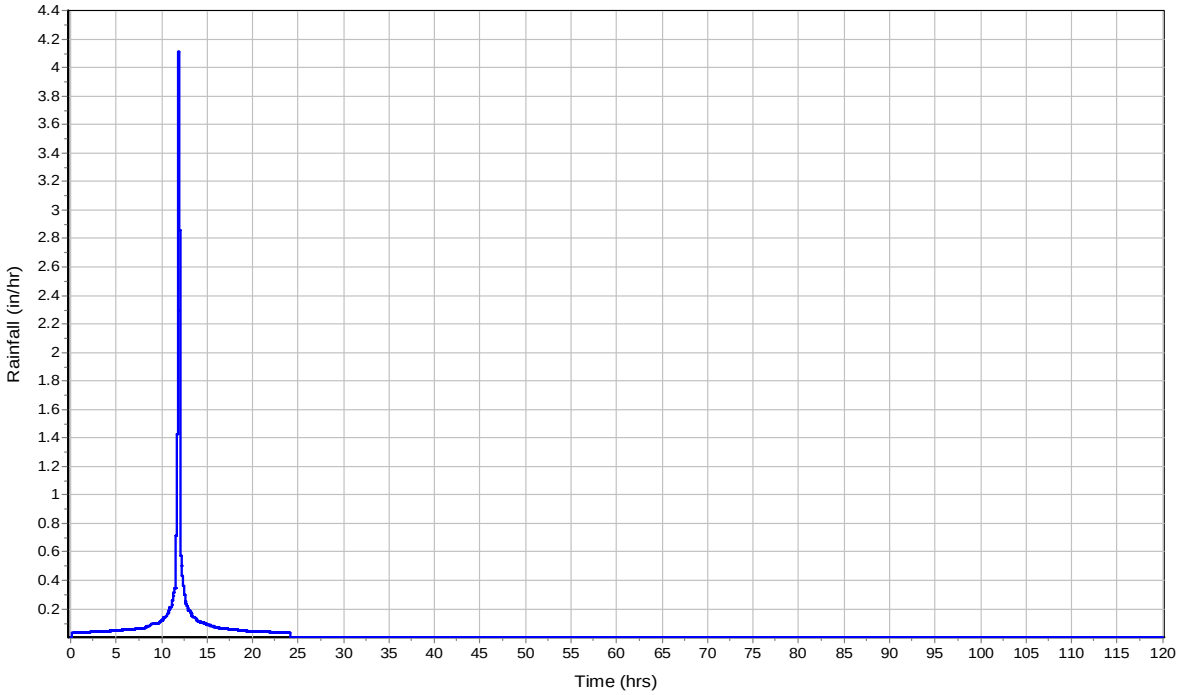
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

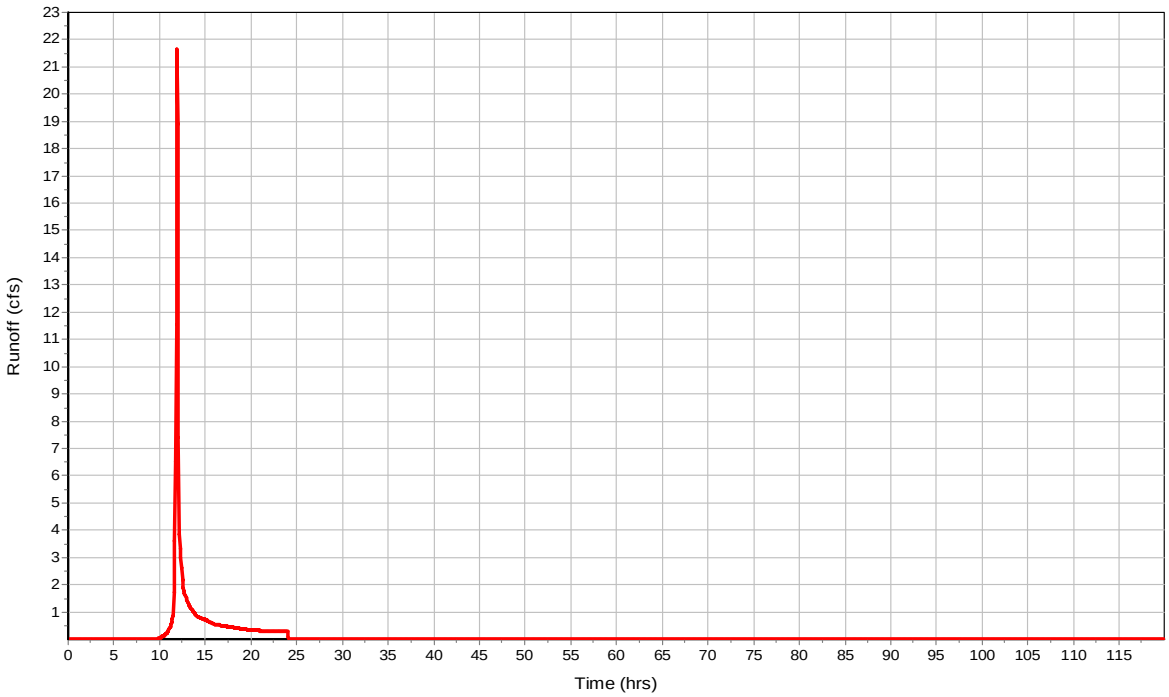
Total Rainfall (in)	3
Total Runoff (in)	1.27
Peak Runoff (cfs)	21.84
Weighted Curve Number	80.33
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-D

Input Data

Area (ac)	7.42
Peak Rate Factor	484
Weighted Curve Number	78.88
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0.36	D	98
MANAGEDTURF	2.46	C	74
MANAGEDTURF	4.6	D	80
Composite Area & Weighted CN	7.42		78.88

Time of Concentration

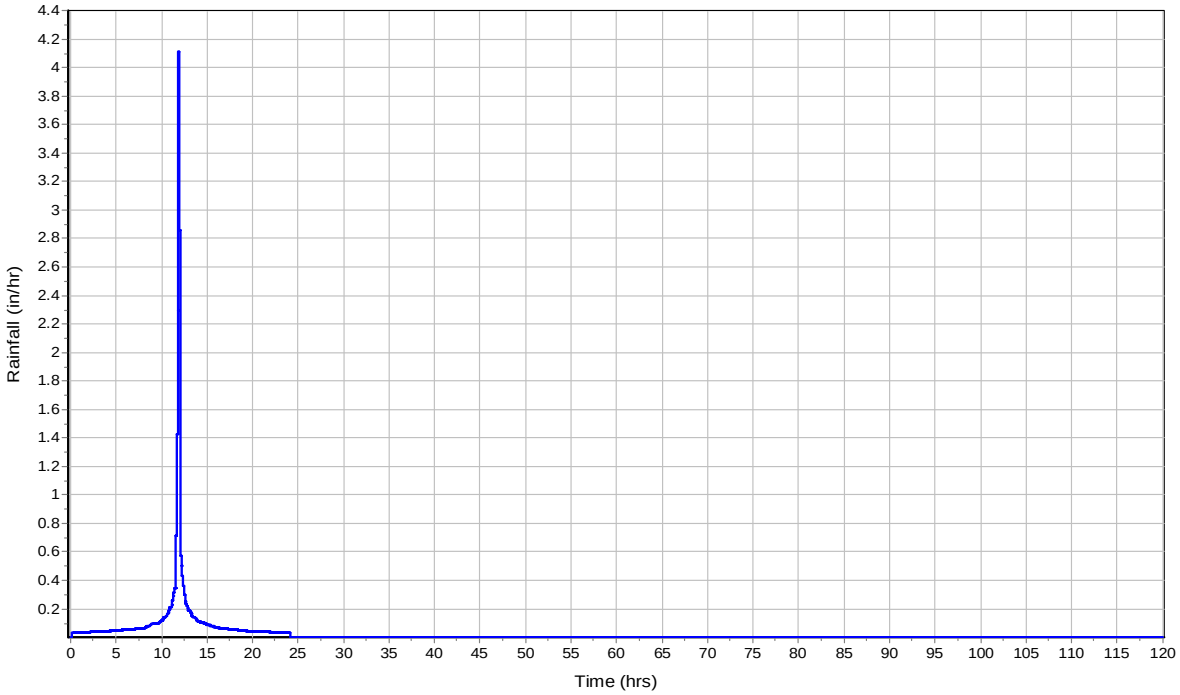
User-Defined TOC override (minutes): 9

Subbasin Runoff Results

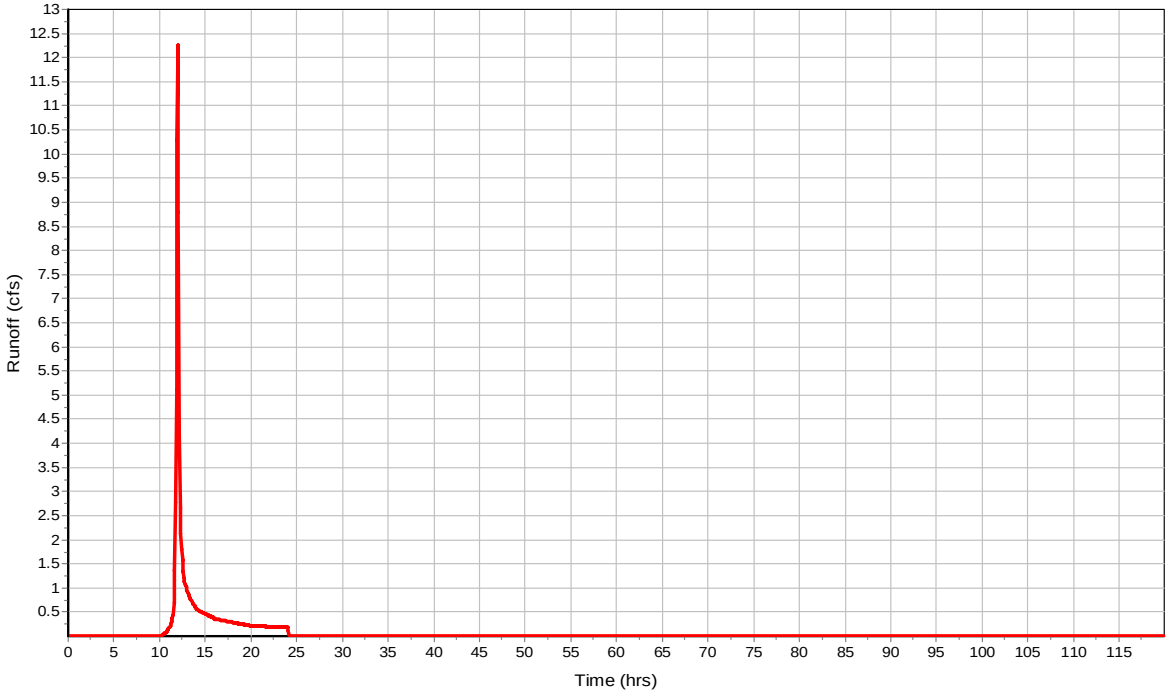
Total Rainfall (in)	3
Total Runoff (in)	1.18
Peak Runoff (cfs)	12.28
Weighted Curve Number	78.88
Time of Concentration (days hh:mm:ss)	0 00:09:00

Subbasin : PRE-DA-D

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-E

Input Data

Area (ac)	10.53
Peak Rate Factor	484
Weighted Curve Number	77.95
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.14	C	98
IMPERVIOUS	0.08	D	98
MANAGEDTURF	4.25	C	74
MANAGEDTURF	6.06	D	80
Composite Area & Weighted CN	10.53		77.95

Time of Concentration

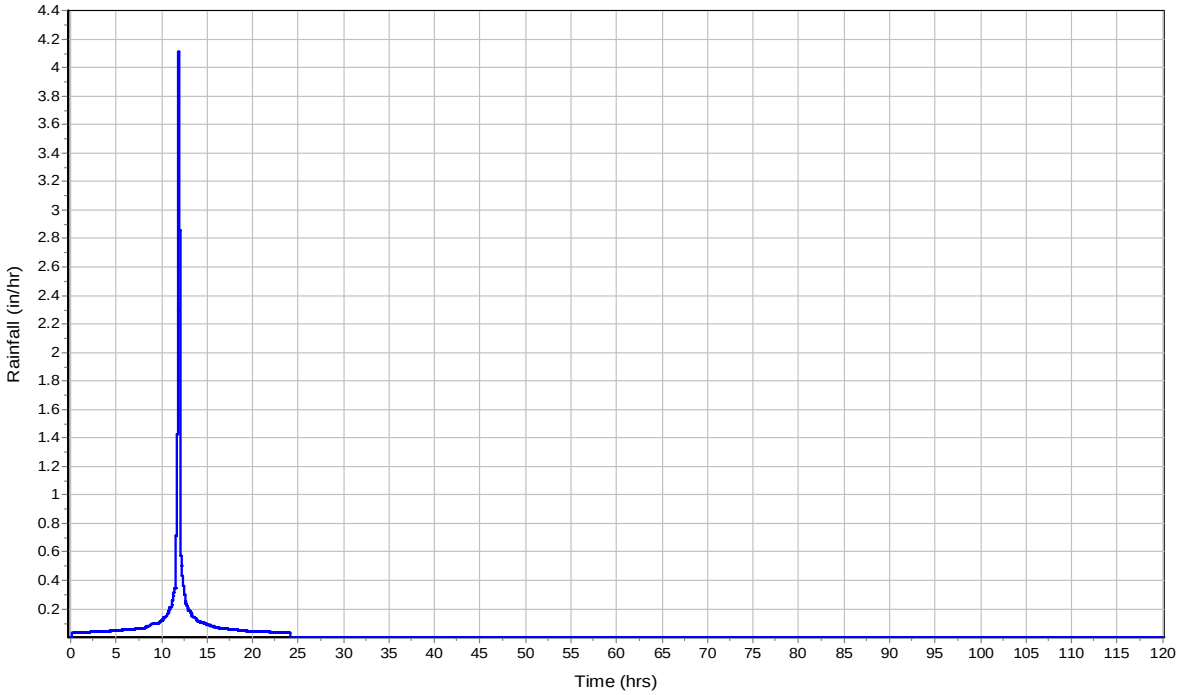
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

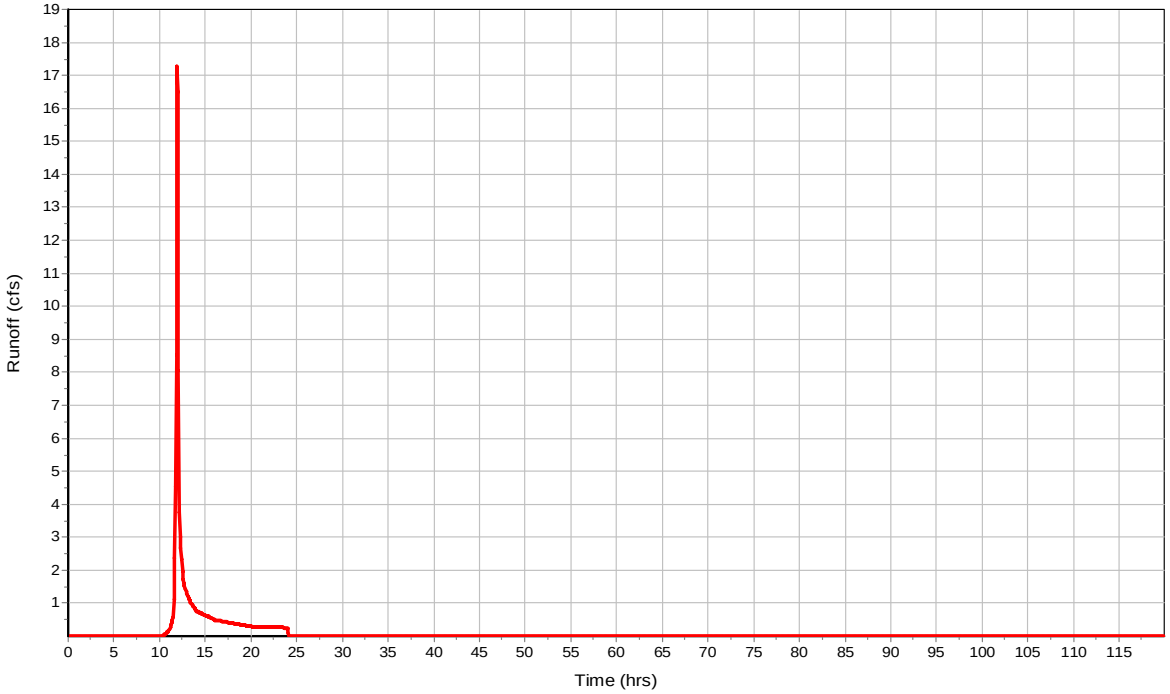
Total Rainfall (in)	3
Total Runoff (in)	1.13
Peak Runoff (cfs)	17.92
Weighted Curve Number	77.95
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : PRE-DA-E

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-F

Input Data

Area (ac)	9.53
Peak Rate Factor	484
Weighted Curve Number	79.32
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.06	C	98
IMPERVIOUS	1.5	D	98
MANAGEDTURF	5.76	C	74
MANAGEDTURF	2.21	D	80
Composite Area & Weighted CN	9.53		79.32

Time of Concentration

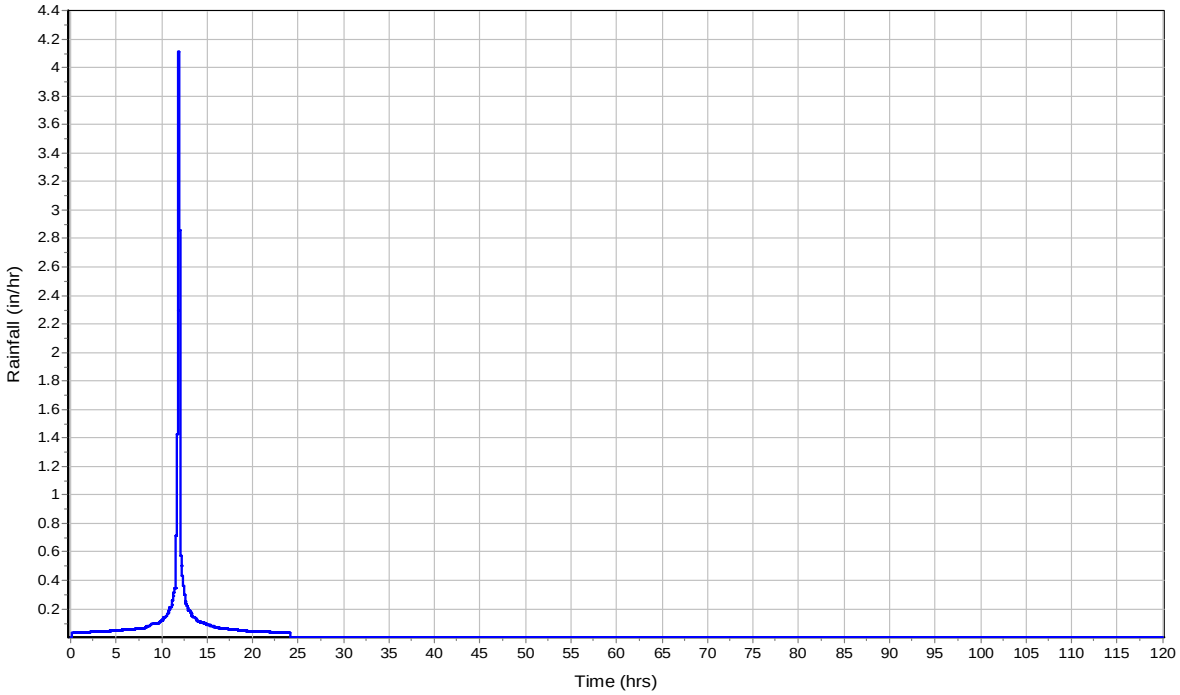
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

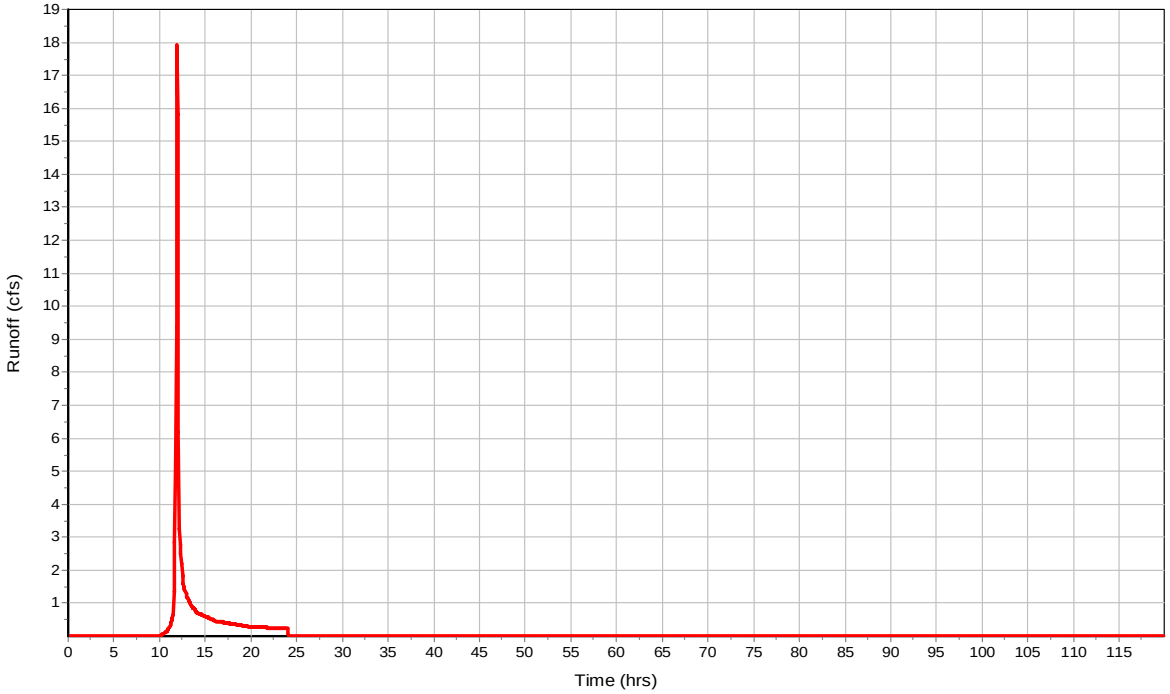
Total Rainfall (in)	3
Total Runoff (in)	1.21
Peak Runoff (cfs)	18.11
Weighted Curve Number	79.32
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-F

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-G

Input Data

Area (ac)	2.17
Peak Rate Factor	484
Weighted Curve Number	74
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.17	C	74
MANAGEDTURF	0	D	80
Composite Area & Weighted CN	2.17		74

Time of Concentration

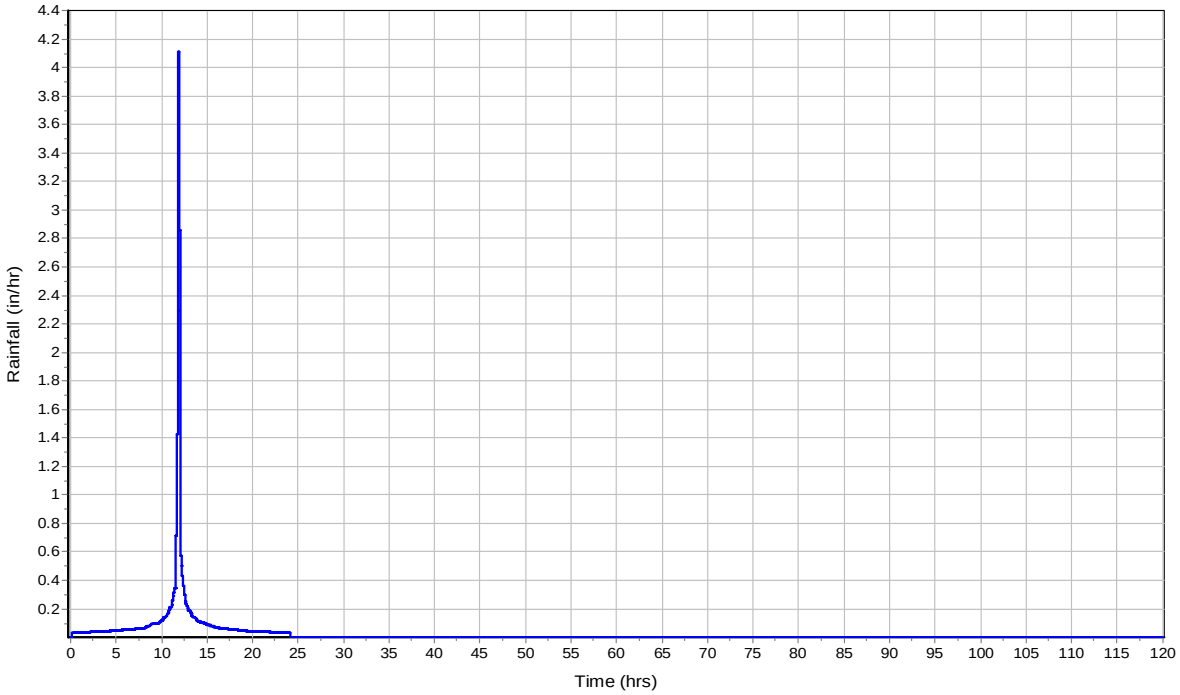
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

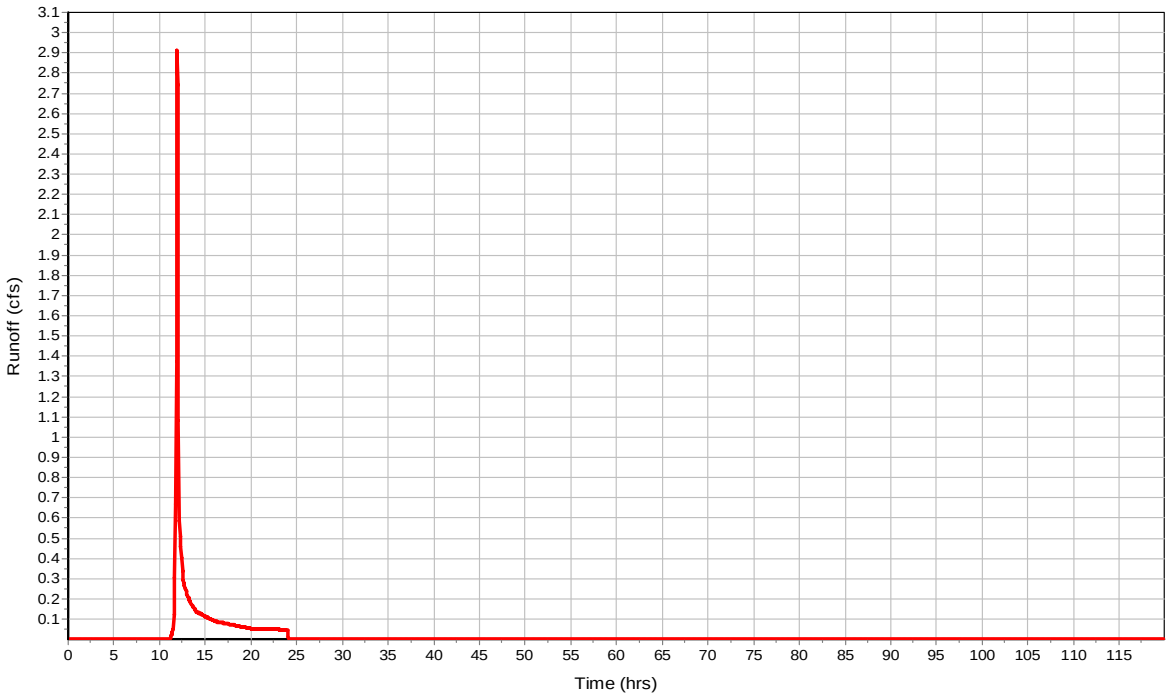
Total Rainfall (in)	3
Total Runoff (in)	0.91
Peak Runoff (cfs)	2.99
Weighted Curve Number	74
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-G

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-H

Input Data

Area (ac)	7.24
Peak Rate Factor	484
Weighted Curve Number	77.85
Rain Gage ID	Rain Gage-01

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.03	C	98
IMPERVIOUS	0.09	D	98
MANAGEDTURF	2.95	C	74
MANAGEDTURF	4.17	D	80
Composite Area & Weighted CN	7.24		77.85

Time of Concentration

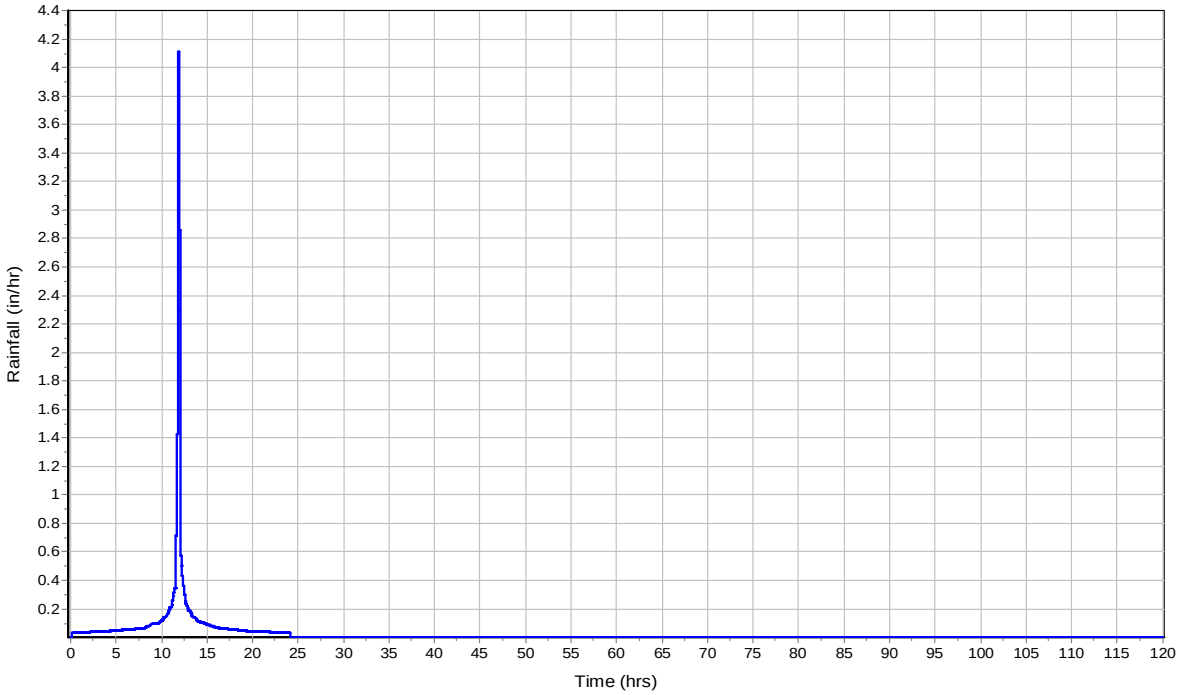
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

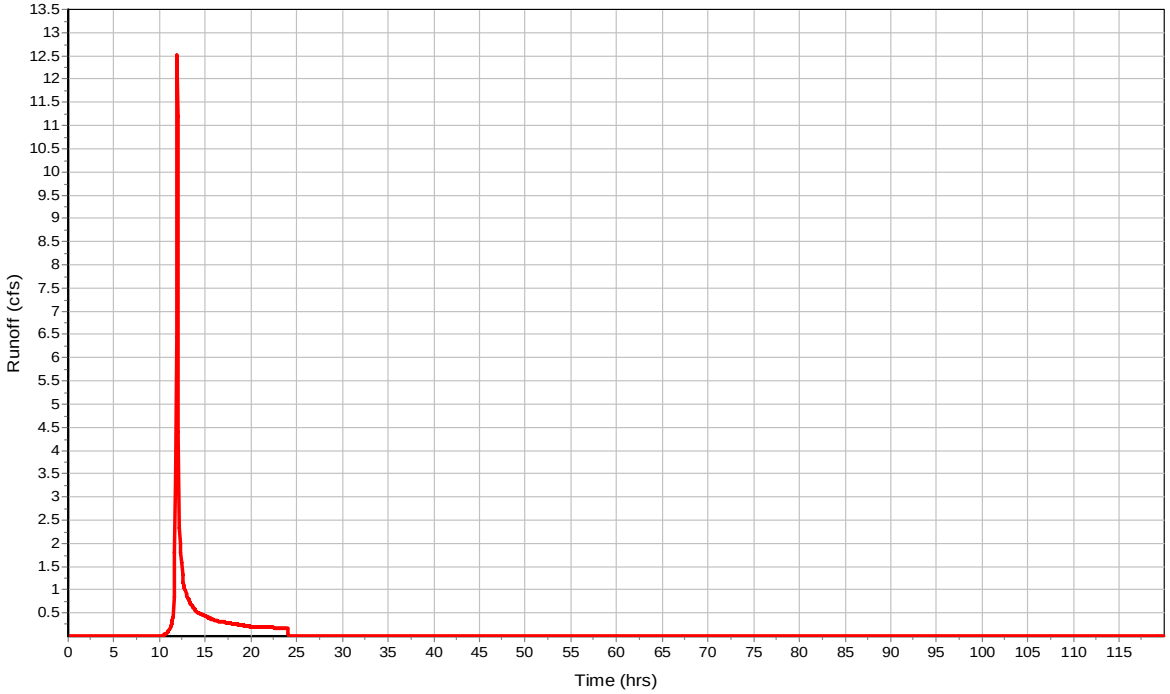
Total Rainfall (in)	3
Total Runoff (in)	1.12
Peak Runoff (cfs)	12.66
Weighted Curve Number	77.85
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-H

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-I

Input Data

Area (ac)	5.99
Peak Rate Factor	484
Weighted Curve Number	85.23
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	1.18	C	98
IMPERVIOUS	1.23	D	98
MANAGEDTURF	2.01	C	74
MANAGEDTURF	1.57	D	80
Composite Area & Weighted CN	5.99		85.23

Time of Concentration

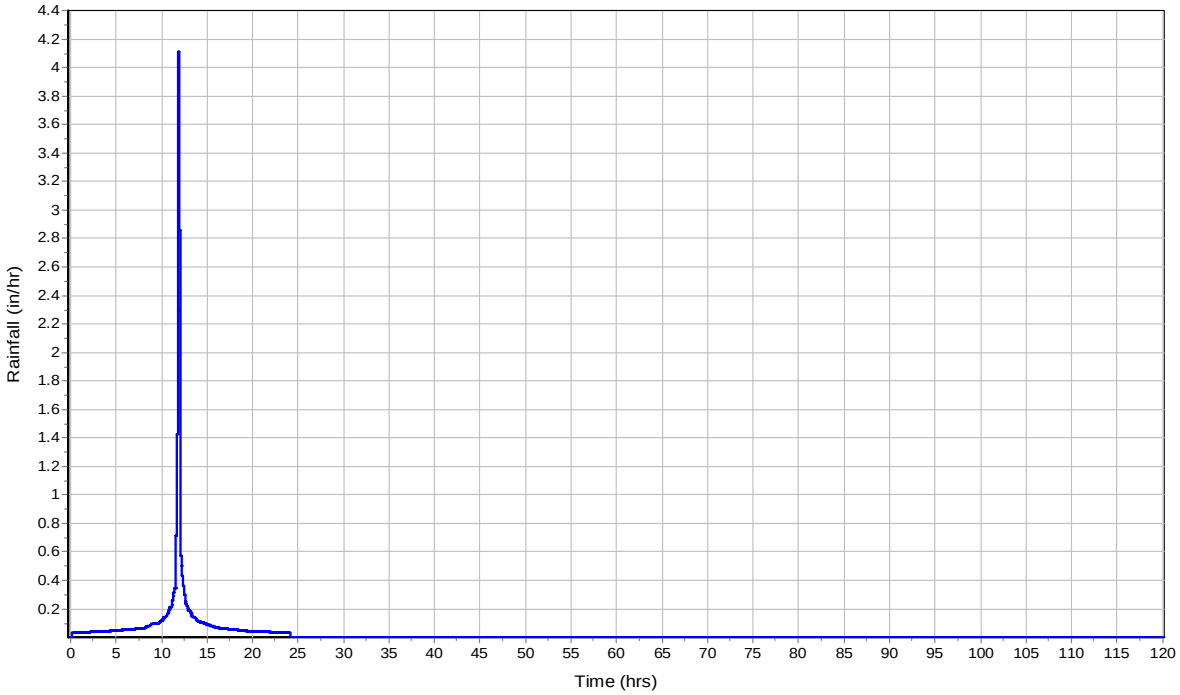
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

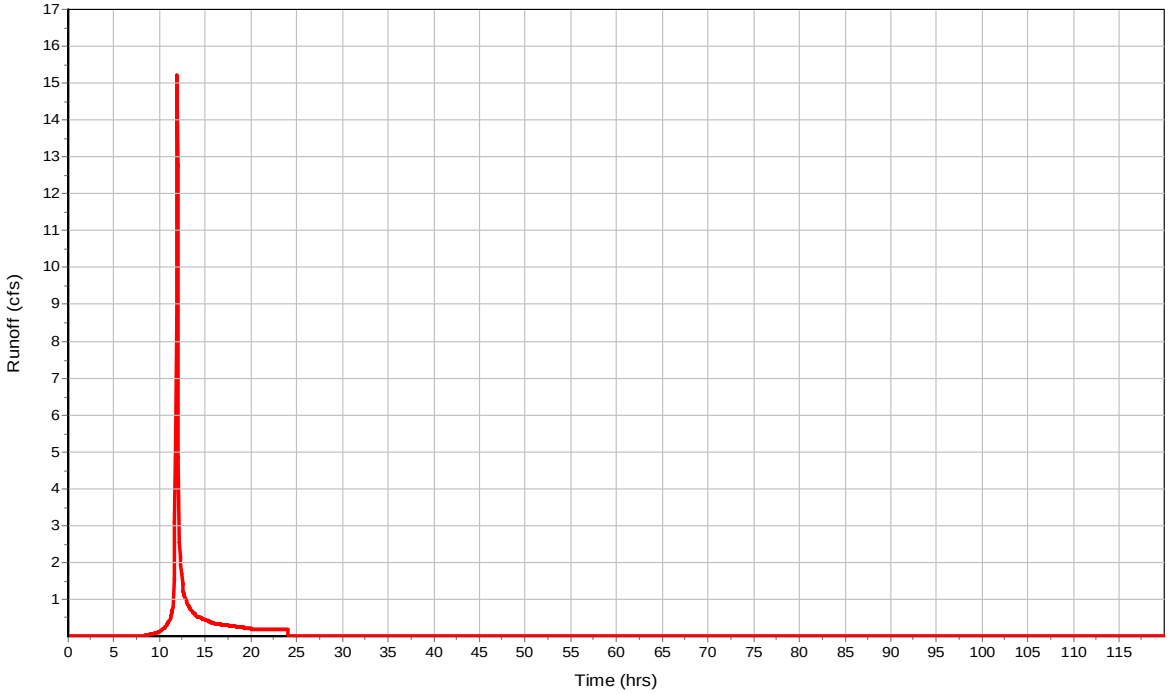
Total Rainfall (in)	3
Total Runoff (in)	1.61
Peak Runoff (cfs)	15.29
Weighted Curve Number	85.23
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-I

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-J

Input Data

Area (ac)	4.01
Peak Rate Factor	484
Weighted Curve Number	84.89
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.15	C	98
IMPERVIOUS	1.14	D	98
MANAGEDTURF	0.6	C	74
MANAGEDTURF	2.12	D	80
Composite Area & Weighted CN	4.01		84.89

Time of Concentration

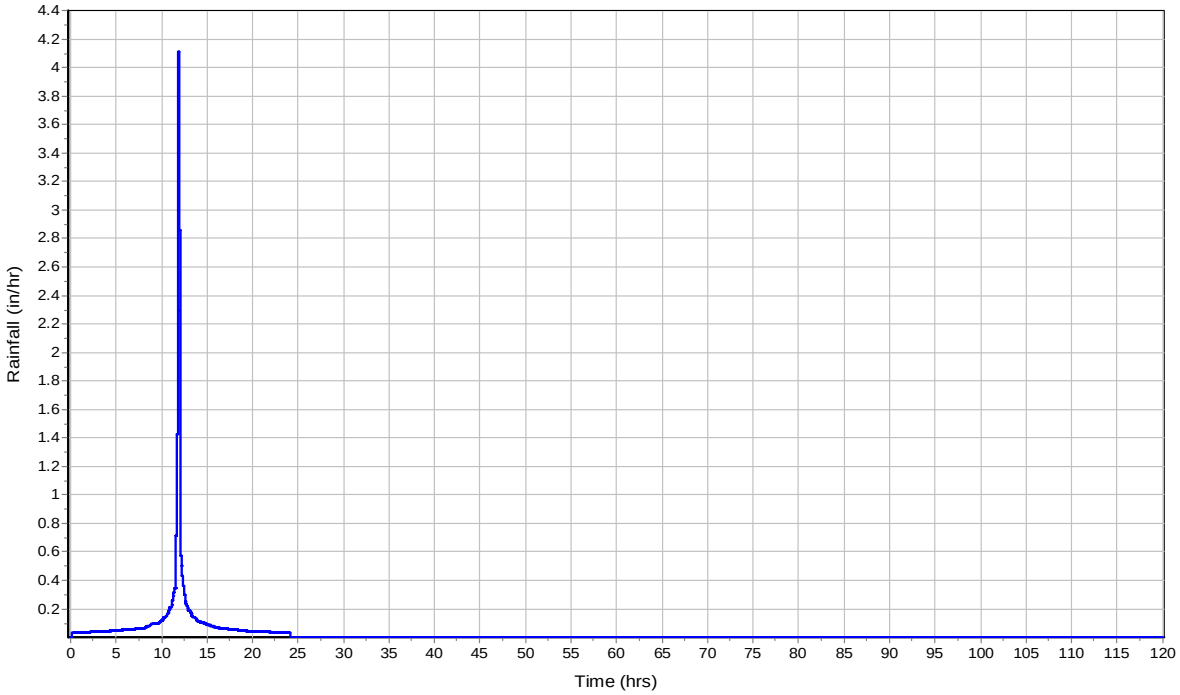
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

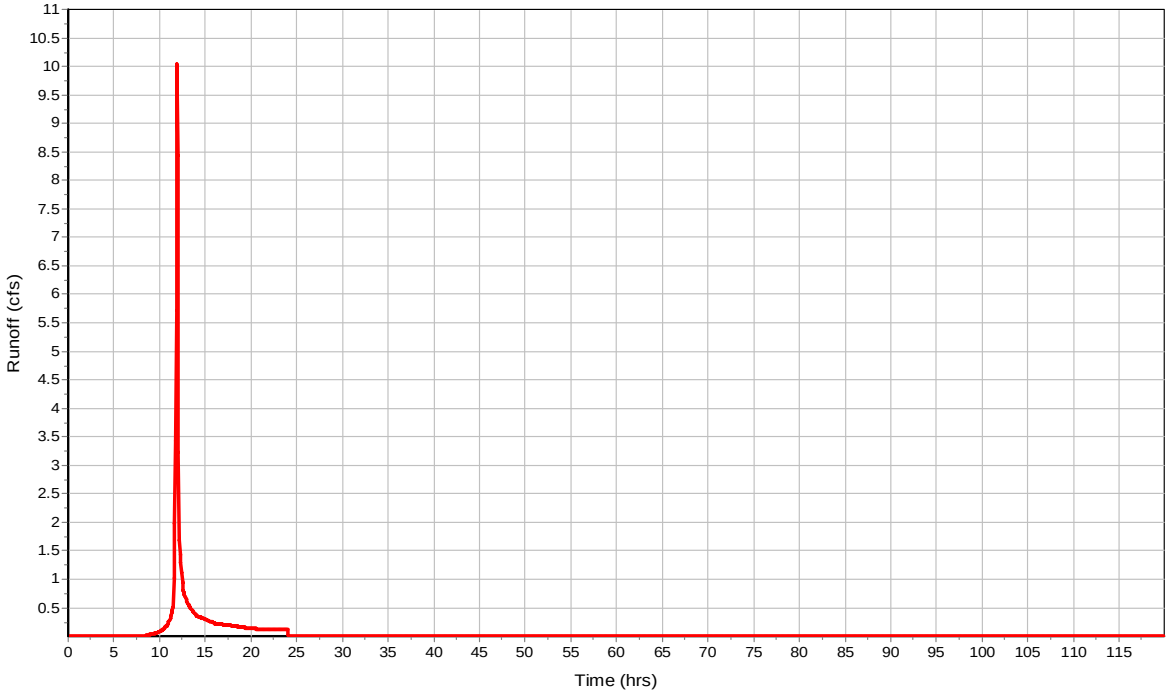
Total Rainfall (in)	3
Total Runoff (in)	1.58
Peak Runoff (cfs)	10.08
Weighted Curve Number	84.89
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-J

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-K

Input Data

Area (ac)	11.02
Peak Rate Factor	484
Weighted Curve Number	85.27
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.33	C	98
IMPERVIOUS	3.24	D	98
MANAGEDTURF	1.03	C	74
MANAGEDTURF	6.42	D	80
Composite Area & Weighted CN	11.02		85.27

Time of Concentration

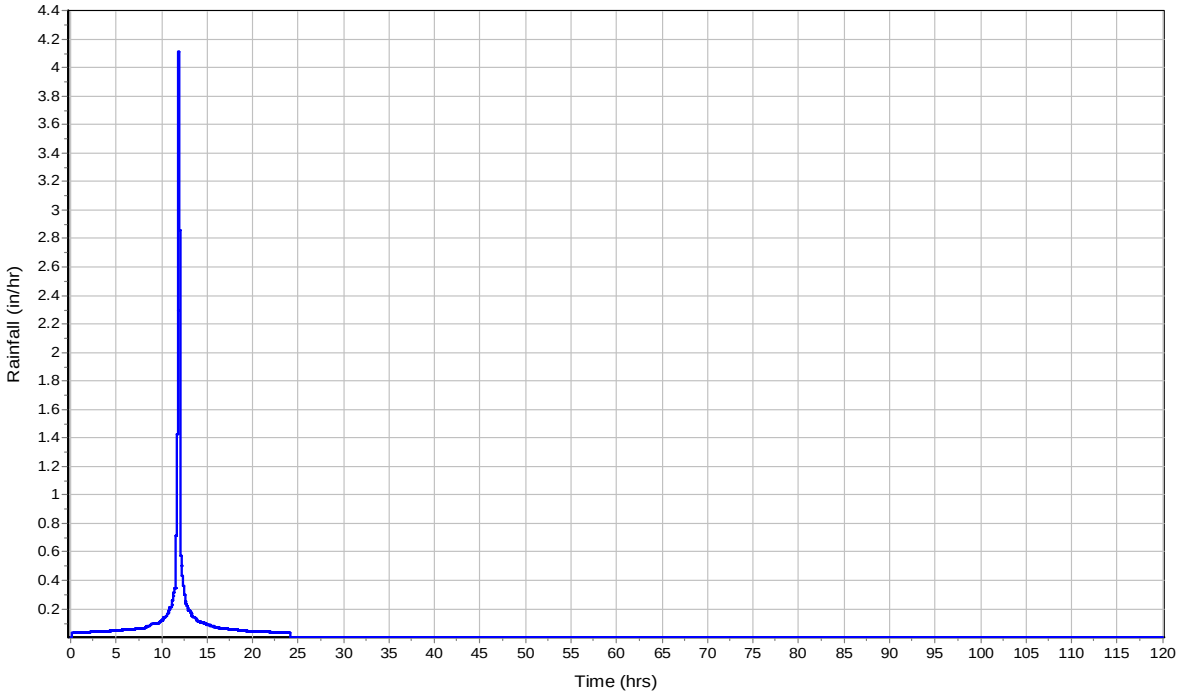
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

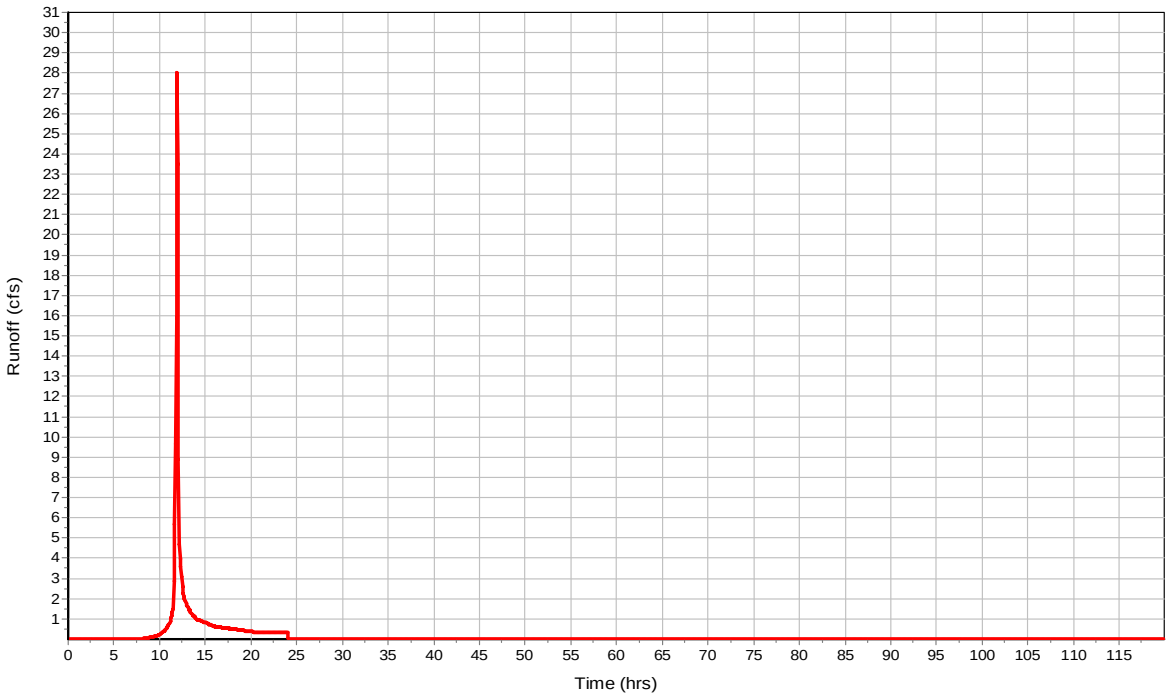
Total Rainfall (in)	3
Total Runoff (in)	1.61
Peak Runoff (cfs)	28.18
Weighted Curve Number	85.27
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-K

Rainfall Intensity Graph



Runoff Hydrograph



Project Description

File Name ..... 22056 - Pre-Post Model.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	SCS TR-55
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	3
Subbasins	21
Nodes	21
Junctions	0
Outfalls	21
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links	0
Channels	0
Pipes	0
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	Rain Gage-01	Time Series	TS-01	Cumulative	inches	Virginia	Augusta	1.00	3.00	SCS Type II 24-hr
2	Rain Gage-02	Time Series	TS-02	Cumulative	inches	Virginia	Augusta	2.00	3.50	SCS Type II 24-hr
3	Rain Gage-10	Time Series	TS-10	Cumulative	inches	Virginia	Augusta	10.00	5.50	SCS Type II 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	POST_DA_A	15.27	484.00	86.02	3.50	2.10	32.07	50.76	0 00:05:00
2	POST_DA_B	3.34	484.00	75.51	3.50	1.33	4.46	6.97	0 00:05:00
3	POST_DA_C	5.05	484.00	83.07	3.50	1.86	9.41	14.97	0 00:05:00
4	POST_DA_D	5.27	484.00	81.66	3.50	1.76	9.26	14.26	0 00:06:00
5	POST_DA_E	11.52	484.00	82.33	3.50	1.81	20.82	32.10	0 00:06:00
6	POST_DA_F	10.06	484.00	77.91	3.50	1.49	15.00	23.72	0 00:05:00
7	POST_DA_G	2.52	484.00	74.00	3.50	1.24	3.12	4.85	0 00:05:00
8	POST_DA_H	12.04	484.00	86.95	3.50	2.18	26.22	41.39	0 00:05:00
9	POST_DA_I	7.21	484.00	88.07	3.50	2.28	16.40	23.65	0 00:08:00
10	POST_DA_J	19.55	484.00	85.27	3.50	2.04	39.84	51.70	0 00:13:00
11	PRE-DA-A	13.13	484.00	87.11	3.50	2.19	28.78	42.80	0 00:07:00
12	PRE-DA-B	9.92	484.00	78.19	3.50	1.51	14.98	23.69	0 00:05:00
13	PRE-DA-C	10.88	484.00	80.33	3.50	1.66	18.06	28.69	0 00:05:00
14	PRE-DA-D	7.42	484.00	78.88	3.50	1.56	11.56	16.32	0 00:09:00
15	PRE-DA-E	10.53	484.00	77.95	3.50	1.49	15.73	24.06	0 00:06:00
16	PRE-DA-F	9.53	484.00	79.32	3.50	1.59	15.13	23.99	0 00:05:00
17	PRE-DA-G	2.17	484.00	74.00	3.50	1.24	2.69	4.18	0 00:05:00
18	PRE-DA-H	7.24	484.00	77.85	3.50	1.49	10.77	17.01	0 00:05:00
19	PRE-DA-I	5.99	484.00	85.23	3.50	2.04	12.19	19.33	0 00:05:00
20	PRE-DA-J	4.01	484.00	84.89	3.50	2.01	8.05	12.78	0 00:05:00
21	PRE-DA-K	11.02	484.00	85.27	3.50	2.04	22.46	35.61	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Outfall-POST-A	Outfall	0.00					0.00	0.00					
2	Outfall-POST-B	Outfall	0.00					0.00	0.00					
3	Outfall-POST-C	Outfall	0.00					0.00	0.00					
4	Outfall-POST-D	Outfall	0.00					0.00	0.00					
5	Outfall-POST-E	Outfall	0.00					0.00	0.00					
6	Outfall-POST-F	Outfall	0.00					0.00	0.00					
7	Outfall-POST-G	Outfall	0.00					0.00	0.00					
8	Outfall-POST-H	Outfall	0.00					0.00	0.00					
9	Outfall-POST-I	Outfall	0.00					0.00	0.00					
10	Outfall-POST-J	Outfall	0.00					0.00	0.00					
11	Outfall-PRE-A	Outfall	0.00					0.00	0.00					
12	Outfall-PRE-B	Outfall	0.00					0.00	0.00					
13	Outfall-PRE-C	Outfall	0.00					0.00	0.00					
14	Outfall-PRE-D	Outfall	0.00					0.00	0.00					
15	Outfall-PRE-E	Outfall	0.00					0.00	0.00					
16	Outfall-PRE-F	Outfall	0.00					0.00	0.00					
17	Outfall-PRE-G	Outfall	0.00					0.00	0.00					
18	Outfall-PRE-H	Outfall	0.00					0.00	0.00					
19	Outfall-PRE-I	Outfall	0.00					0.00	0.00					
20	Outfall-PRE-J	Outfall	0.00					0.00	0.00					
21	Outfall-PRE-K	Outfall	0.00					0.00	0.00					

Subbasin Hydrology

Subbasin : POST_DA_A

Input Data

Area (ac) 15.27
Peak Rate Factor 484
Weighted Curve Number 86.02
Rain Gage ID ..... Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.52	C	98
IMPERVIOUS	6	D	98
MANAGEDTURF	4.25	C	74
MANAGEDTURF	4.5	D	80
Composite Area & Weighted CN	15.27		86.02

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft^2)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

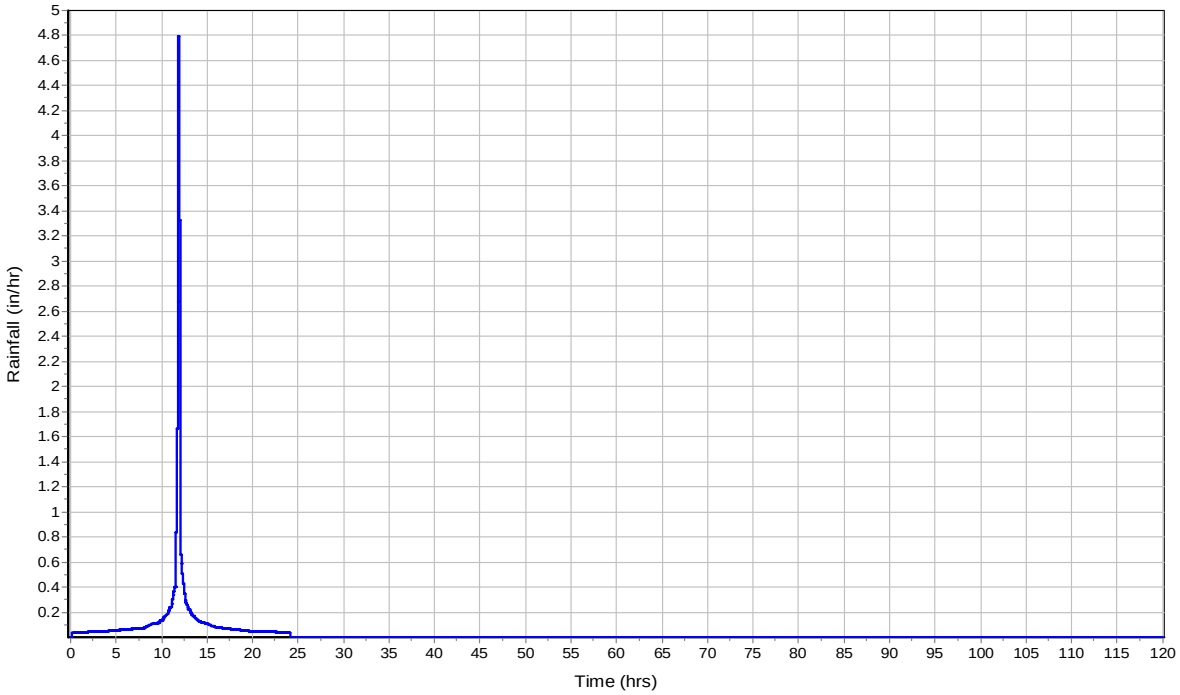
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

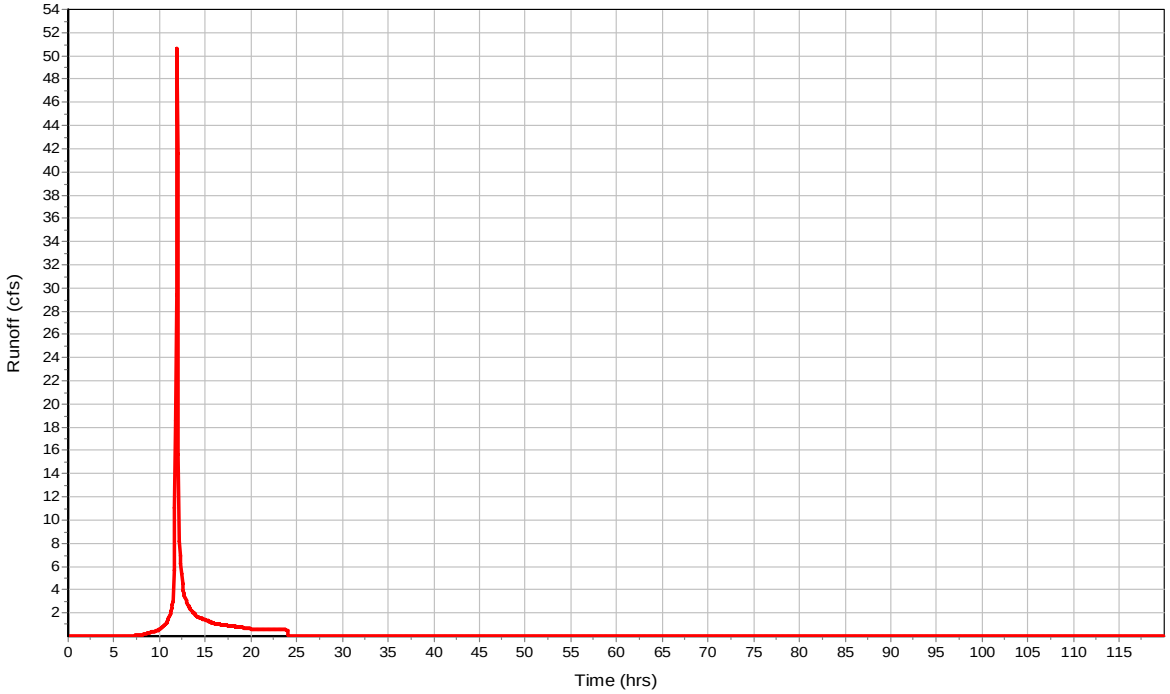
Total Rainfall (in) 3.5
Total Runoff (in) 2.1
Peak Runoff (cfs) 50.76
Weighted Curve Number 86.02
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : POST_DA_A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_B

Input Data

Area (ac)	3.34
Peak Rate Factor	484
Weighted Curve Number	75.51
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.5	C	74
MANAGEDTURF	0.84	D	80
Composite Area & Weighted CN	3.34		75.51

Time of Concentration

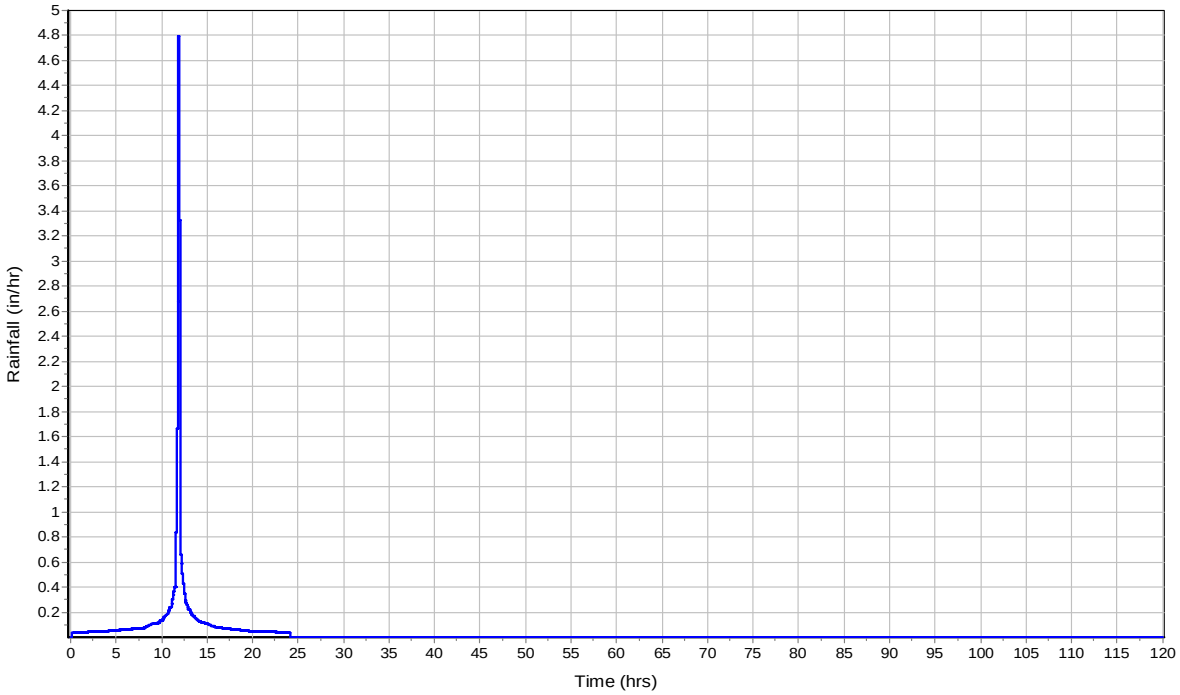
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

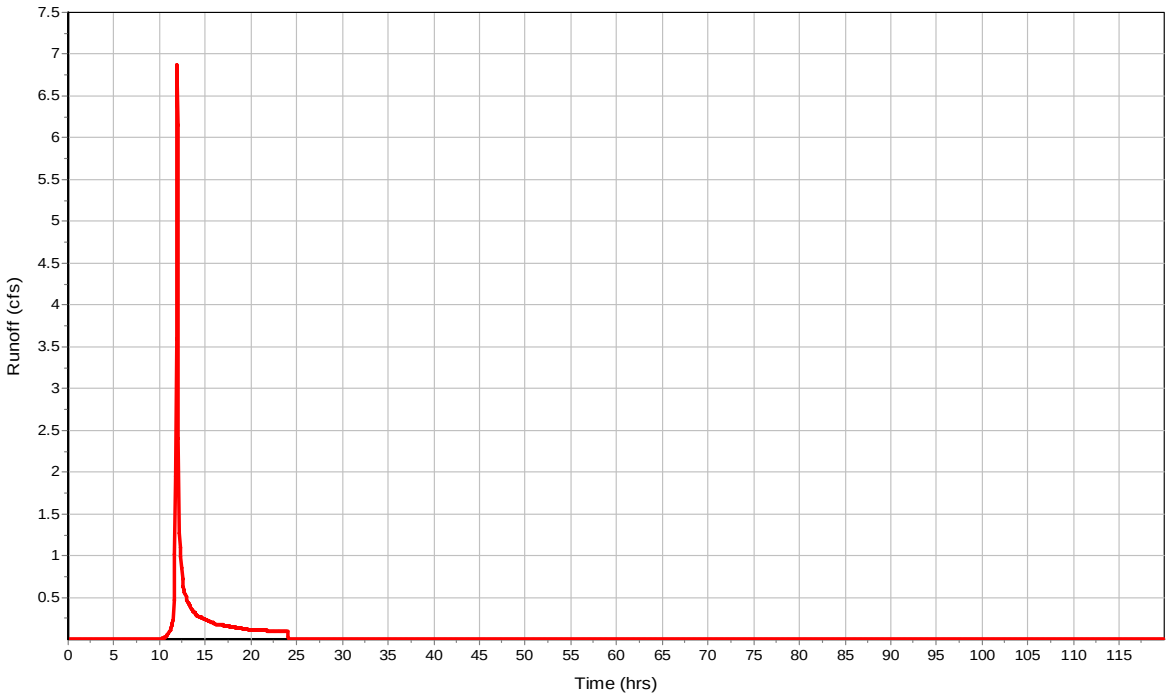
Total Rainfall (in)	3.5
Total Runoff (in)	1.33
Peak Runoff (cfs)	6.97
Weighted Curve Number	75.51
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_C

Input Data

Area (ac)	5.05
Peak Rate Factor	484
Weighted Curve Number	83.07
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.04	C	98
IMPERVIOUS	1.01	D	98
MANAGEDTURF	0.57	C	74
MANAGEDTURF	3.43	D	80
Composite Area & Weighted CN	5.05		83.07

Time of Concentration

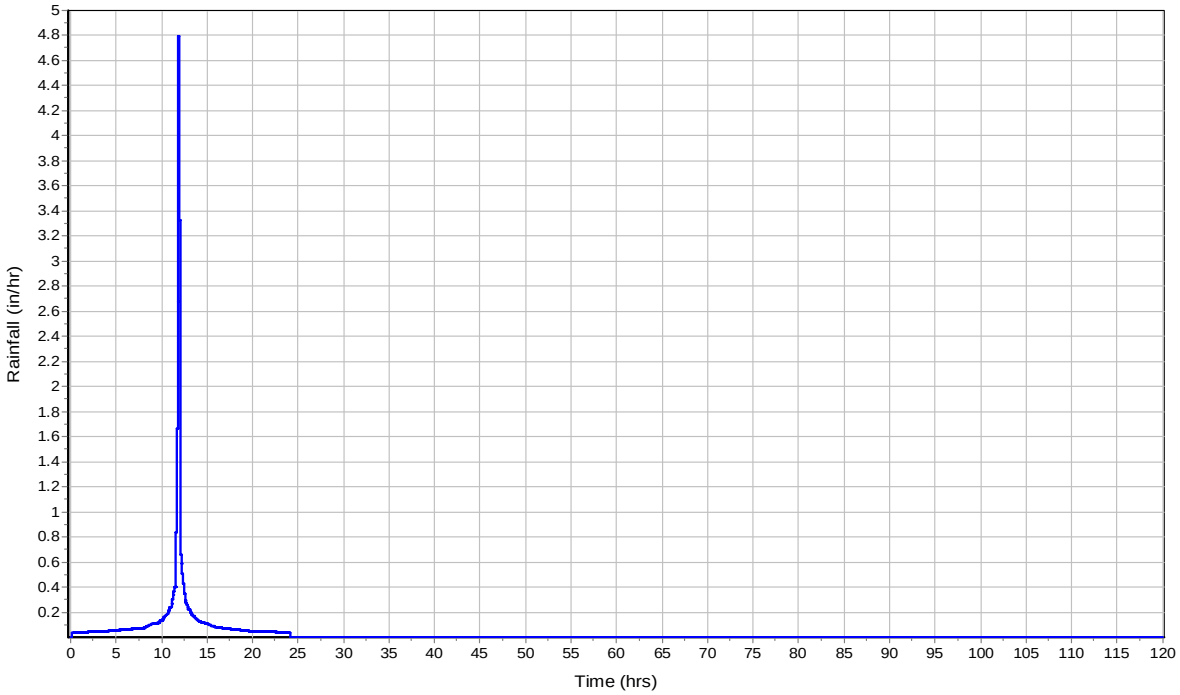
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

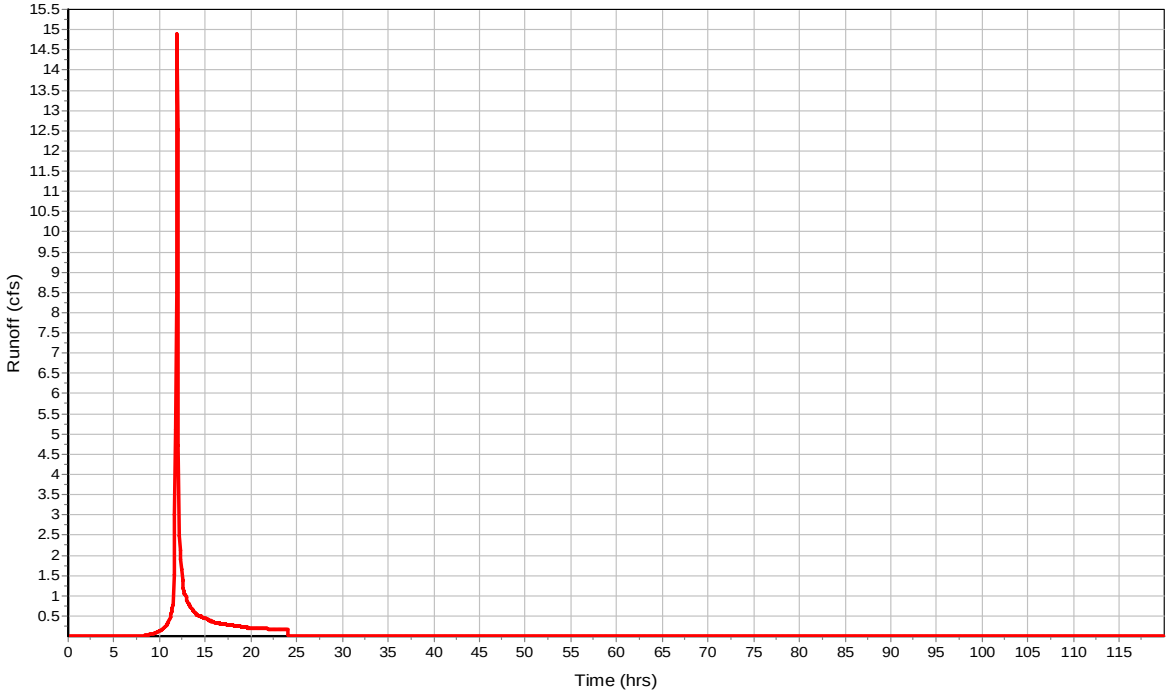
Total Rainfall (in)	3.5
Total Runoff (in)	1.86
Peak Runoff (cfs)	14.97
Weighted Curve Number	83.07
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_D

Input Data

Area (ac)	5.27
Peak Rate Factor	484
Weighted Curve Number	81.66
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.35	C	98
IMPERVIOUS	0.34	D	98
MANAGEDTURF	0.61	C	74
MANAGEDTURF	3.97	D	80
Composite Area & Weighted CN	5.27		81.66

Time of Concentration

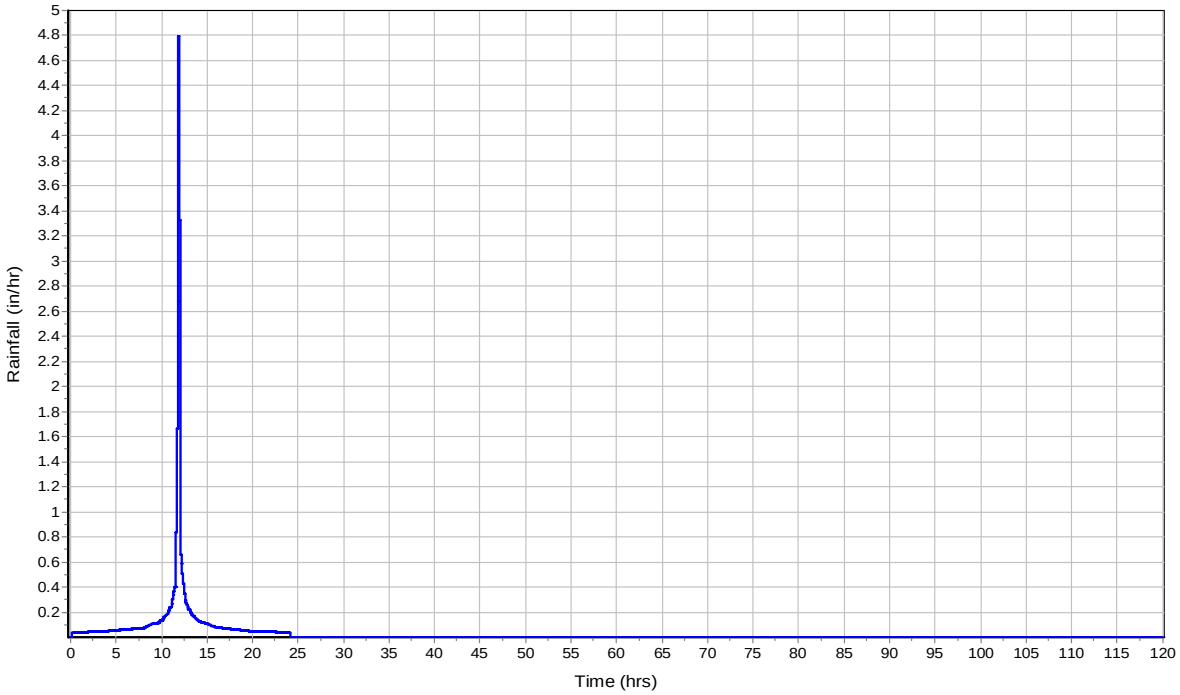
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

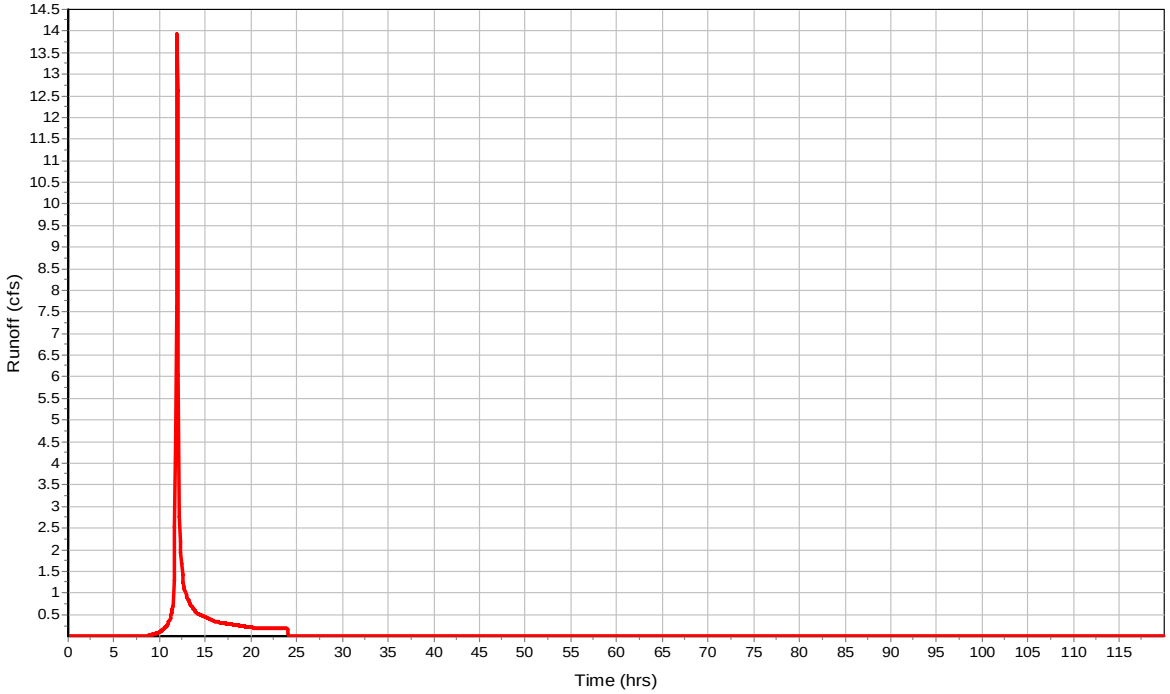
Total Rainfall (in)	3.5
Total Runoff (in)	1.76
Peak Runoff (cfs)	14.26
Weighted Curve Number	81.66
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : POST_DA_D

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_E

Input Data

Area (ac)	11.52
Peak Rate Factor	484
Weighted Curve Number	82.33
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.21	C	98
IMPERVIOUS	1.57	D	98
MANAGEDTURF	0.86	C	74
MANAGEDTURF	8.88	D	80
Composite Area & Weighted CN	11.52		82.33

Time of Concentration

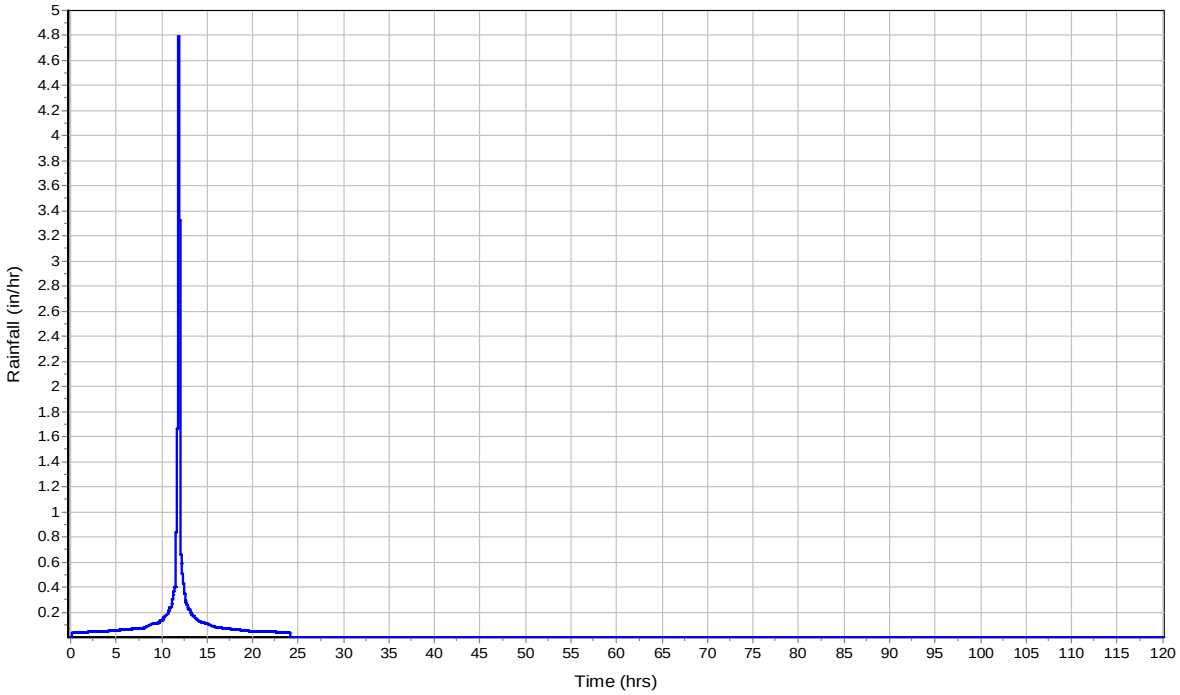
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

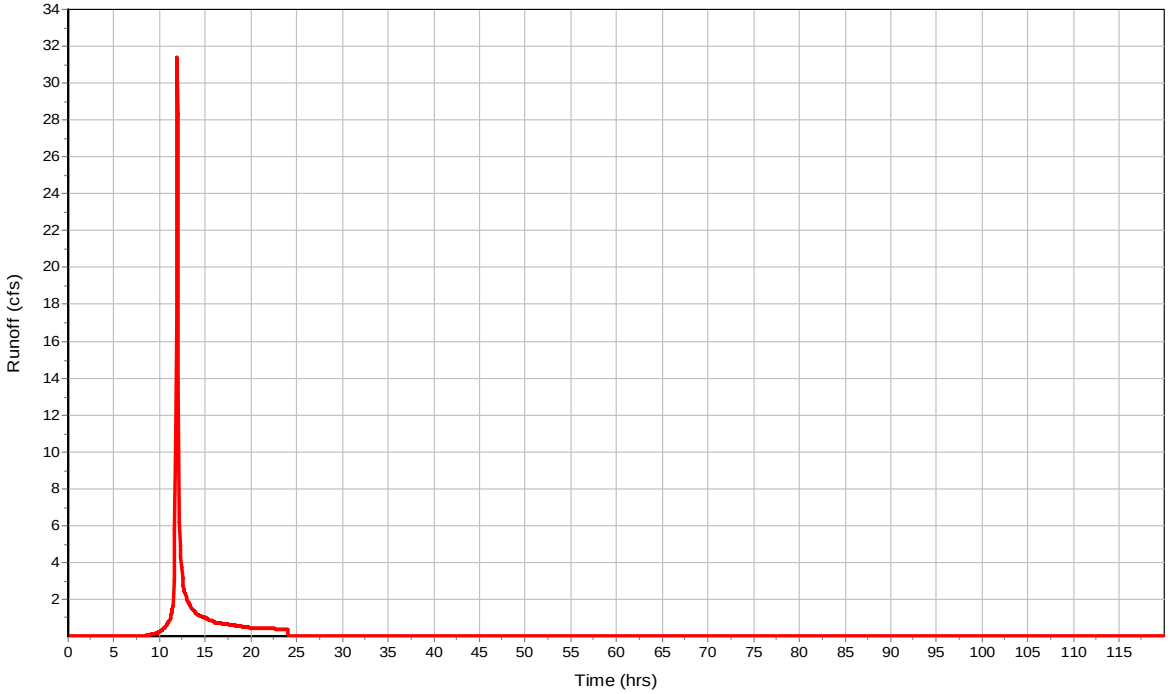
Total Rainfall (in)	3.5
Total Runoff (in)	1.81
Peak Runoff (cfs)	32.1
Weighted Curve Number	82.33
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : POST_DA_E

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_F

Input Data

Area (ac)	10.06
Peak Rate Factor	484
Weighted Curve Number	77.91
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.16	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	3.99	C	74
MANAGEDTURF	5.91	D	80
Composite Area & Weighted CN	10.06		77.91

Time of Concentration

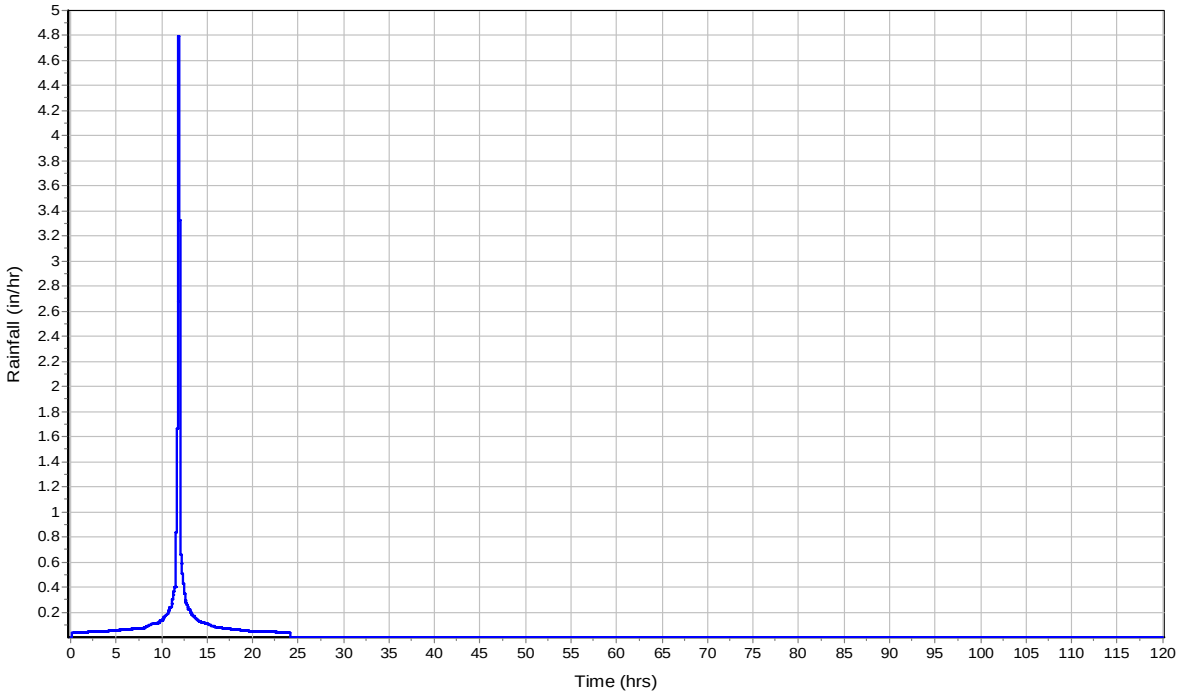
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

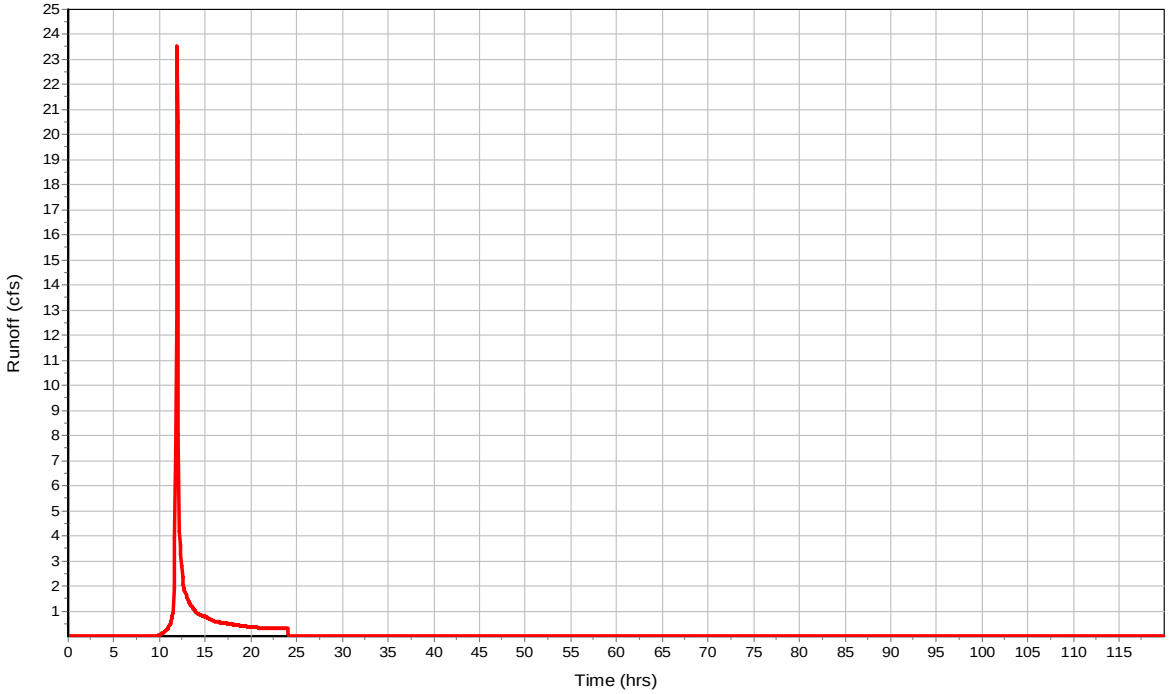
Total Rainfall (in)	3.5
Total Runoff (in)	1.49
Peak Runoff (cfs)	23.72
Weighted Curve Number	77.91
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_F

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_G

Input Data

Area (ac)	2.52
Peak Rate Factor	484
Weighted Curve Number	74
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.52	C	74
MANAGEDTURF	0	D	80
Composite Area & Weighted CN	2.52		74

Time of Concentration

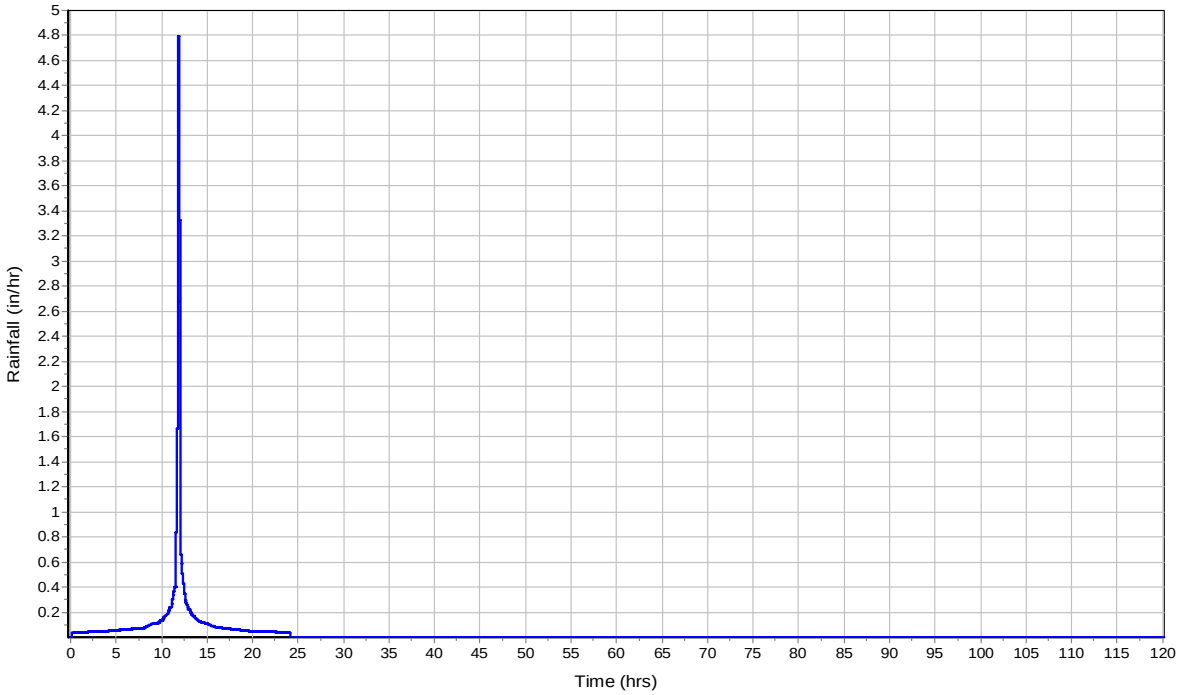
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

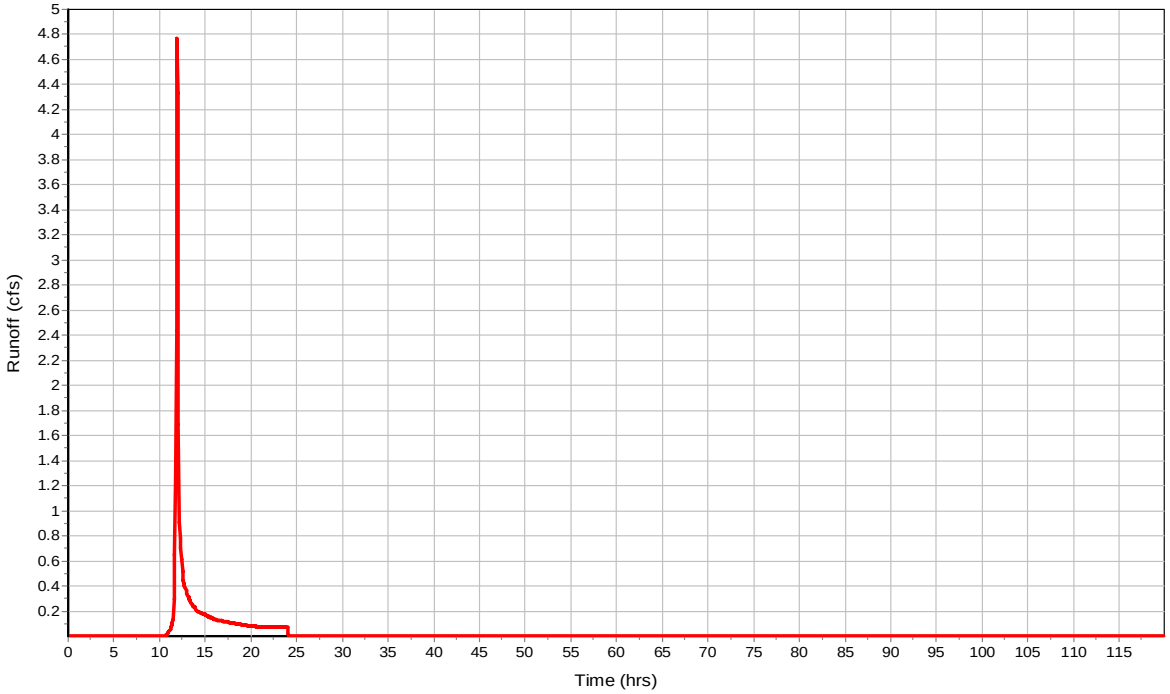
Total Rainfall (in)	3.5
Total Runoff (in)	1.24
Peak Runoff (cfs)	4.85
Weighted Curve Number	74
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_G

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_H

Input Data

Area (ac)	12.04
Peak Rate Factor	484
Weighted Curve Number	86.95
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	2.06	C	98
IMPERVIOUS	3.66	D	98
MANAGEDTURF	3.22	C	74
MANAGEDTURF	3.1	D	80
Composite Area & Weighted CN	12.04		86.95

Time of Concentration

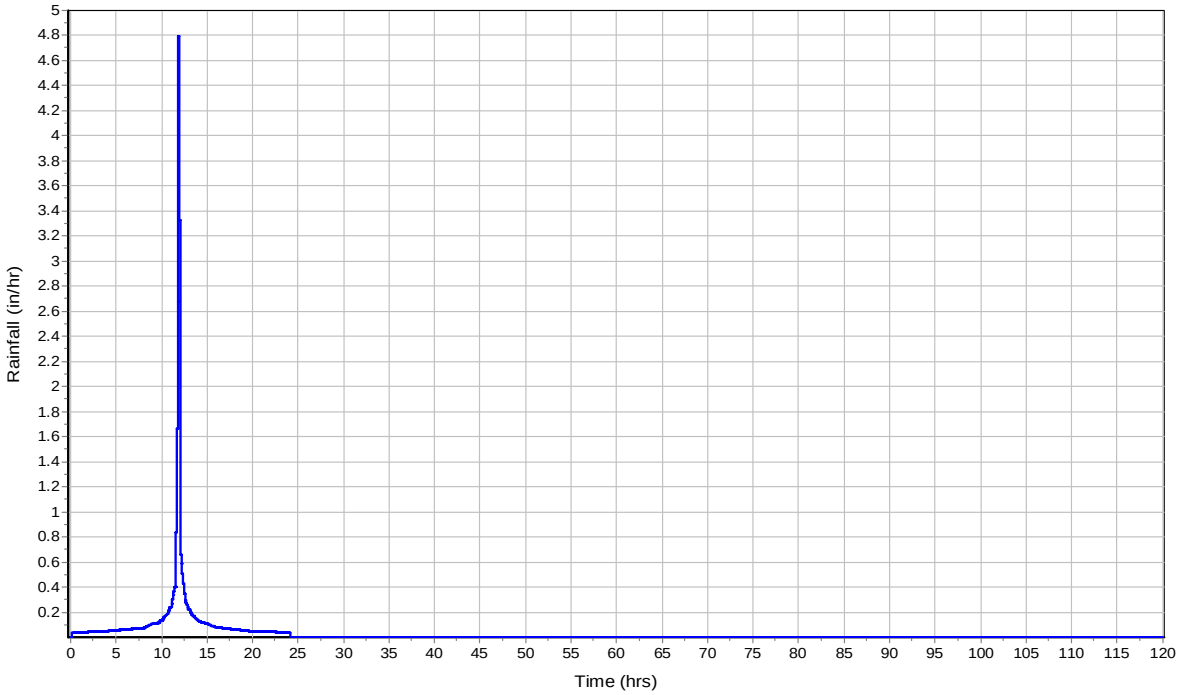
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

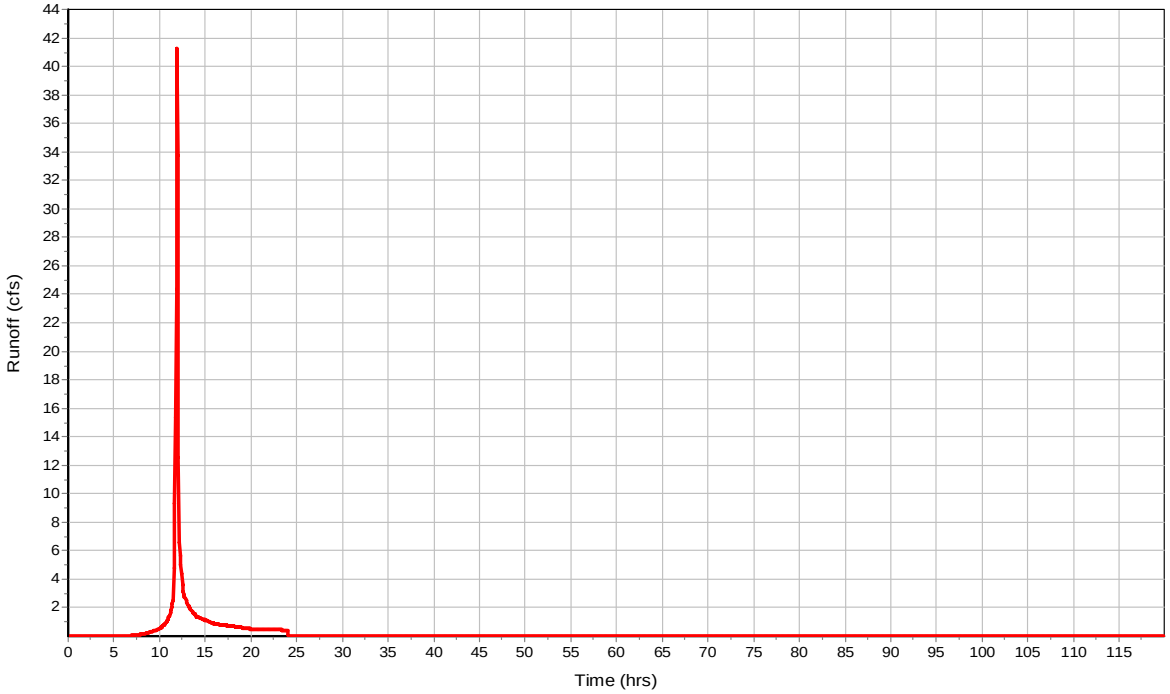
Total Rainfall (in)	3.5
Total Runoff (in)	2.18
Peak Runoff (cfs)	41.39
Weighted Curve Number	86.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_H

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_I

Input Data

Area (ac)	7.21
Peak Rate Factor	484
Weighted Curve Number	88.07
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	2.16	C	98
IMPERVIOUS	1.99	D	98
MANAGEDTURF	2.75	C	74
MANAGEDTURF	0.31	D	80
Composite Area & Weighted CN	7.21		88.07

Time of Concentration

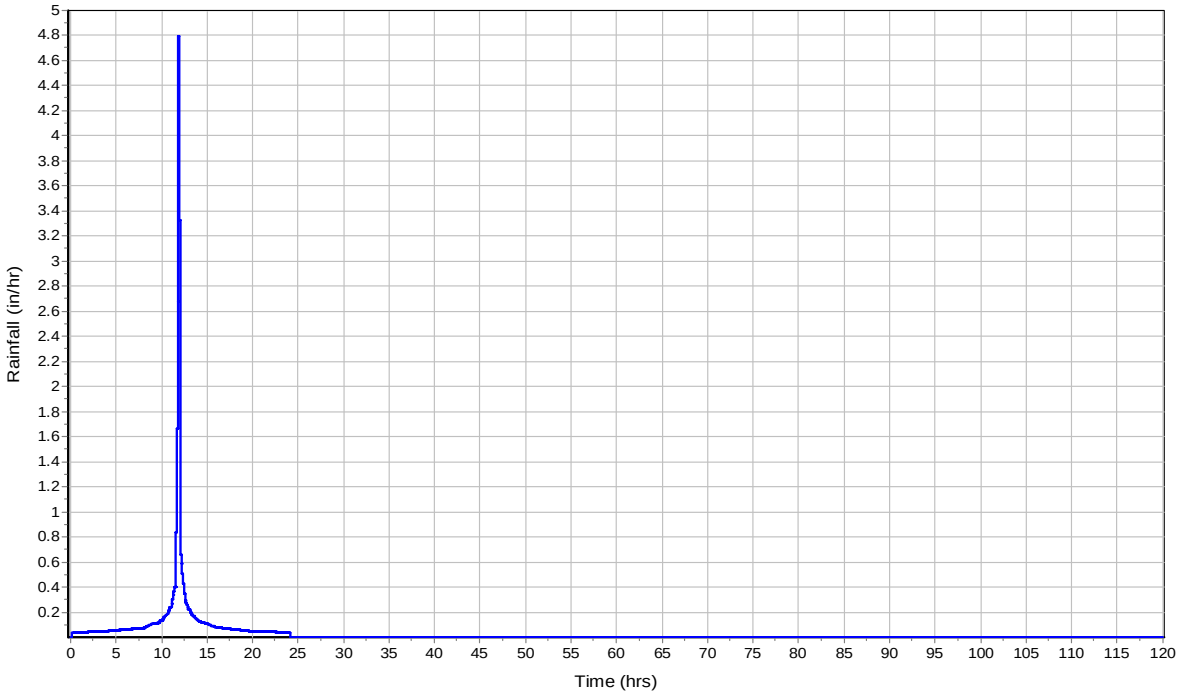
User-Defined TOC override (minutes): 8

Subbasin Runoff Results

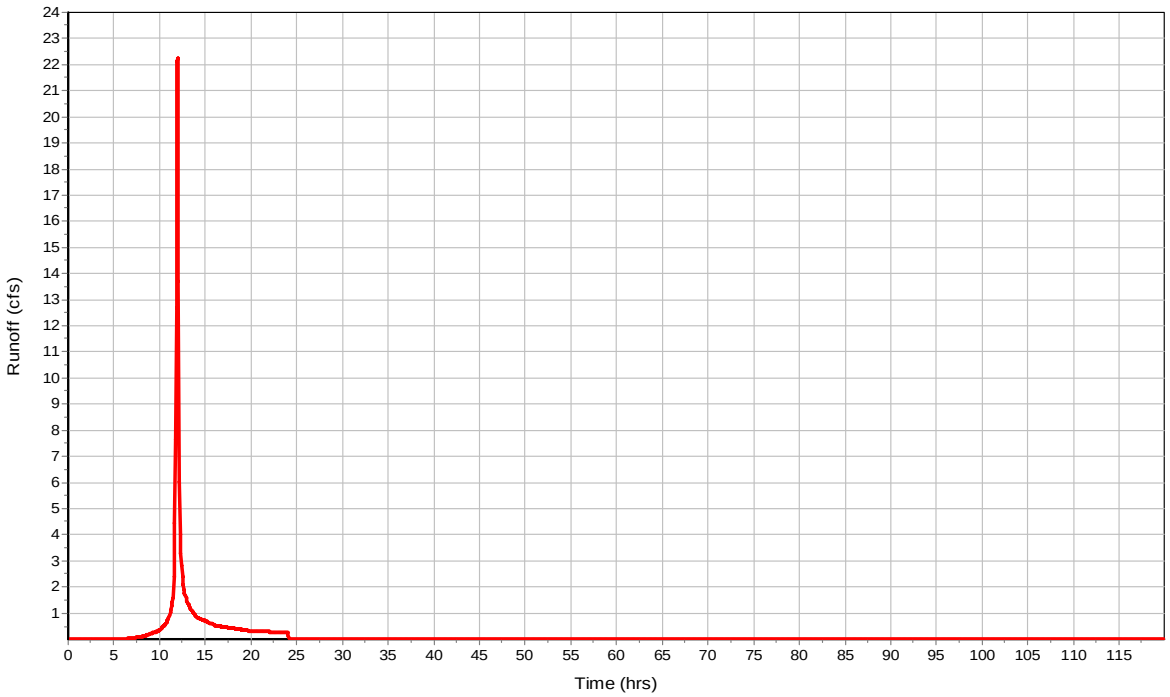
Total Rainfall (in)	3.5
Total Runoff (in)	2.28
Peak Runoff (cfs)	23.65
Weighted Curve Number	88.07
Time of Concentration (days hh:mm:ss)	0 00:08:00

Subbasin : POST_DA_I

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_J

Input Data

Area (ac)	19.55
Peak Rate Factor	484
Weighted Curve Number	85.27
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	1.36	C	98
IMPERVIOUS	5.65	D	98
MANAGEDTURF	3.87	C	74
MANAGEDTURF	8.67	D	80
Composite Area & Weighted CN	19.55		85.27

Time of Concentration

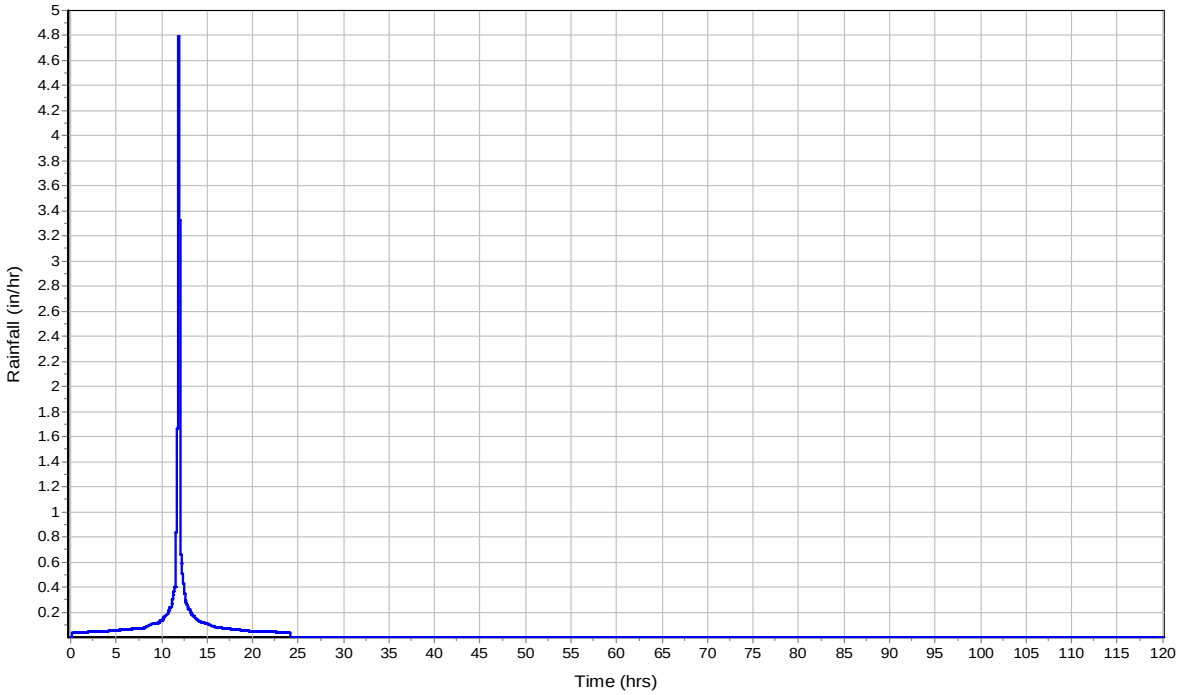
User-Defined TOC override (minutes): 13.00

Subbasin Runoff Results

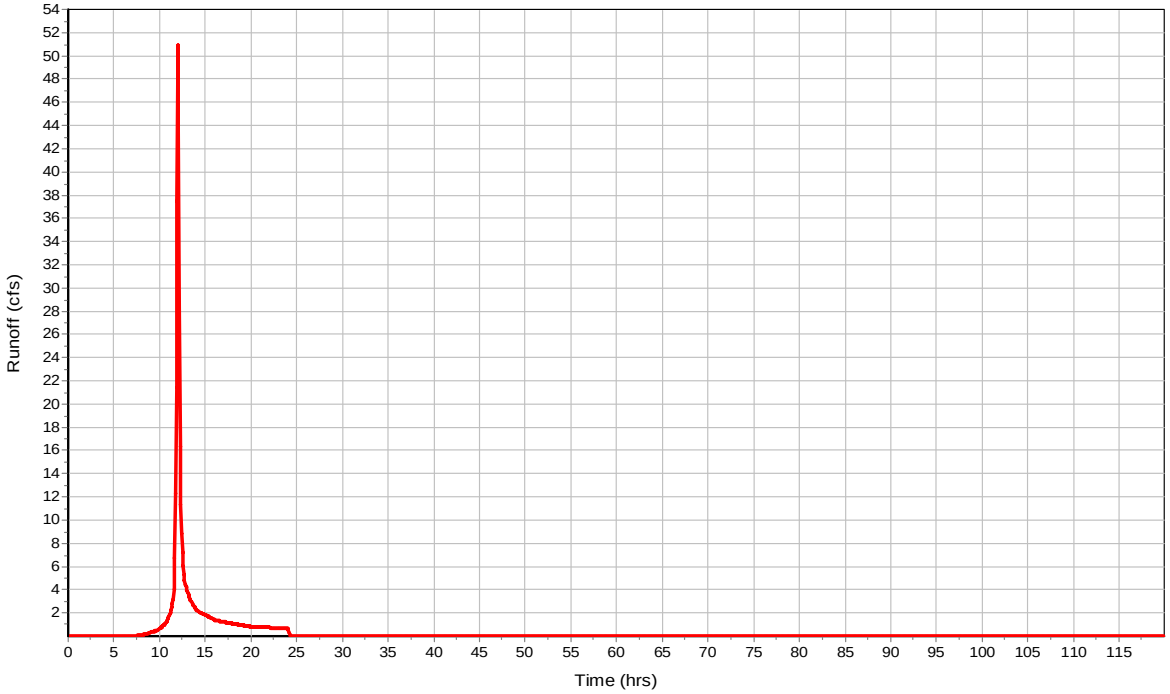
Total Rainfall (in)	3.5
Total Runoff (in)	2.04
Peak Runoff (cfs)	51.7
Weighted Curve Number	85.27
Time of Concentration (days hh:mm:ss)	0 00:13:00

Subbasin : POST_DA_J

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-A

Input Data

Area (ac)	13.13
Peak Rate Factor	484
Weighted Curve Number	87.11
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.24	C	98
IMPERVIOUS	5.62	D	98
MANAGEDTURF	2.02	C	74
MANAGEDTURF	5.25	D	80
Composite Area & Weighted CN	13.13		87.11

Time of Concentration

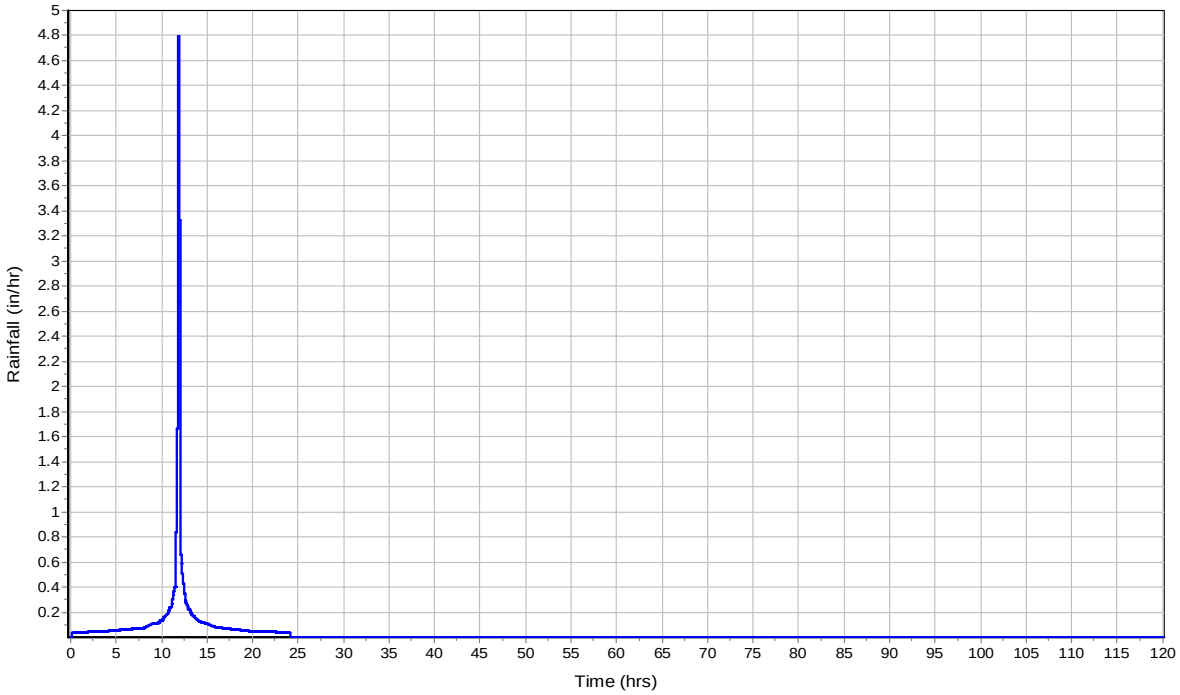
User-Defined TOC override (minutes): 7

Subbasin Runoff Results

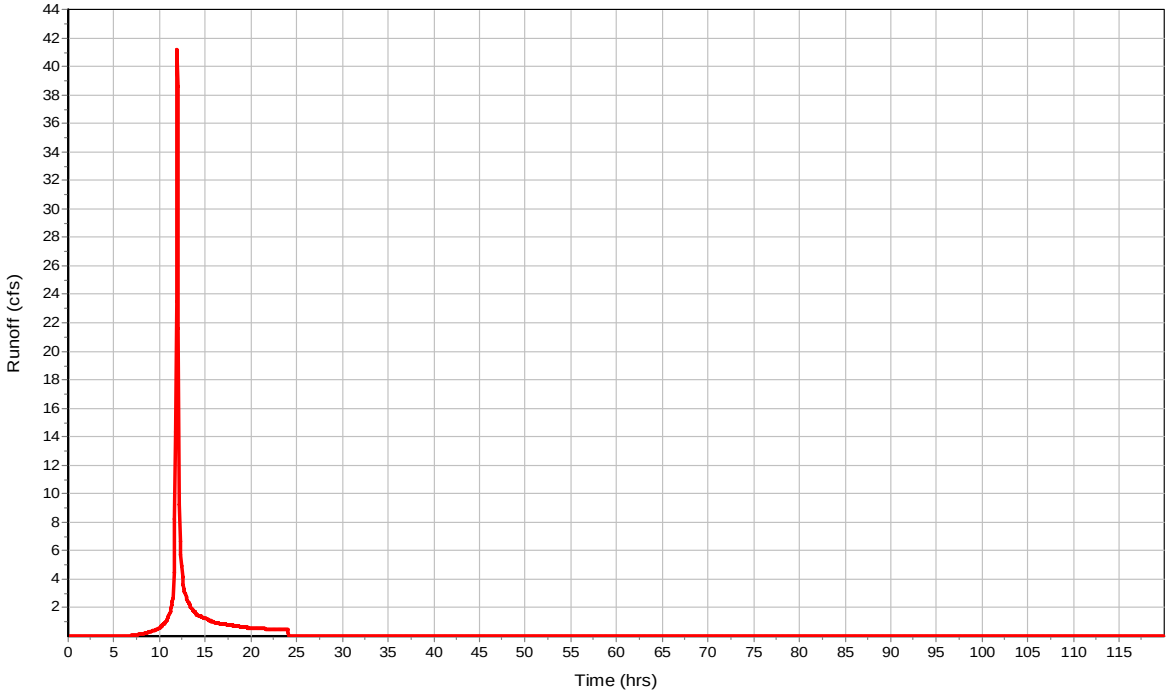
Total Rainfall (in)	3.5
Total Runoff (in)	2.19
Peak Runoff (cfs)	42.8
Weighted Curve Number	87.11
Time of Concentration (days hh:mm:ss)	0 00:07:00

Subbasin : PRE-DA-A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-B

Input Data

Area (ac)	9.92
Peak Rate Factor	484
Weighted Curve Number	78.19
Rain Gage ID	Rain Gage-02

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.14	C	98
IMPERVIOUS	0.73	D	98
MANAGEDTURF	5.6	C	74
MANAGEDTURF	3.45	D	80
Composite Area & Weighted CN	9.92		78.19

Time of Concentration

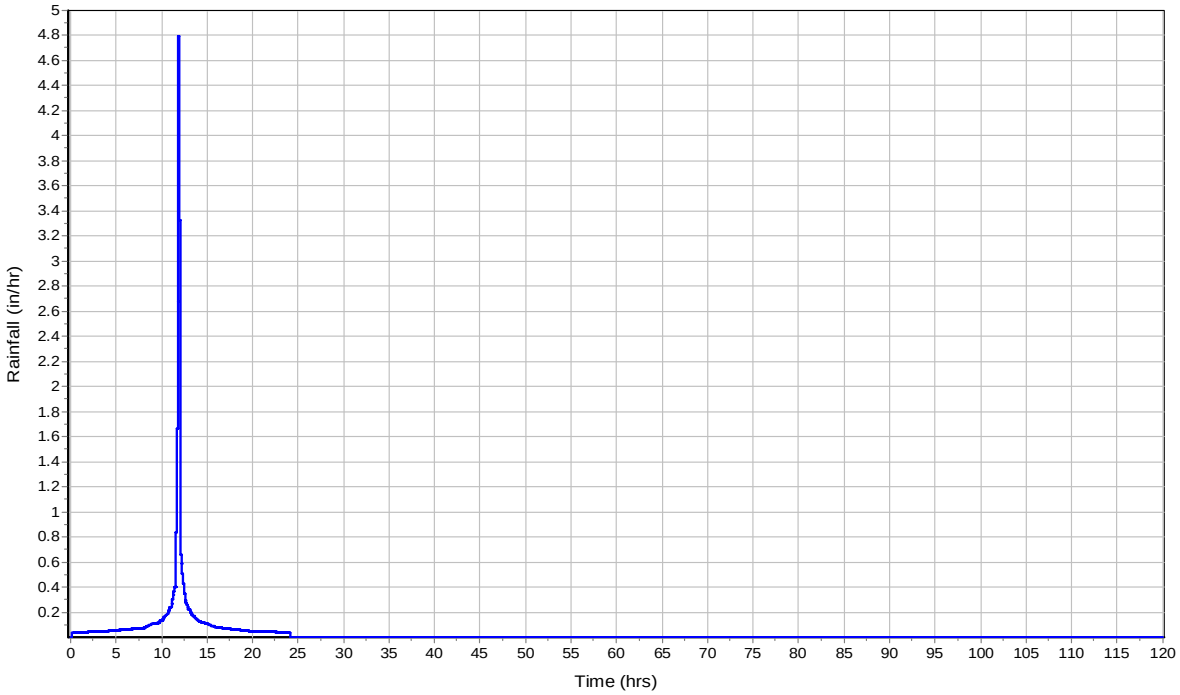
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

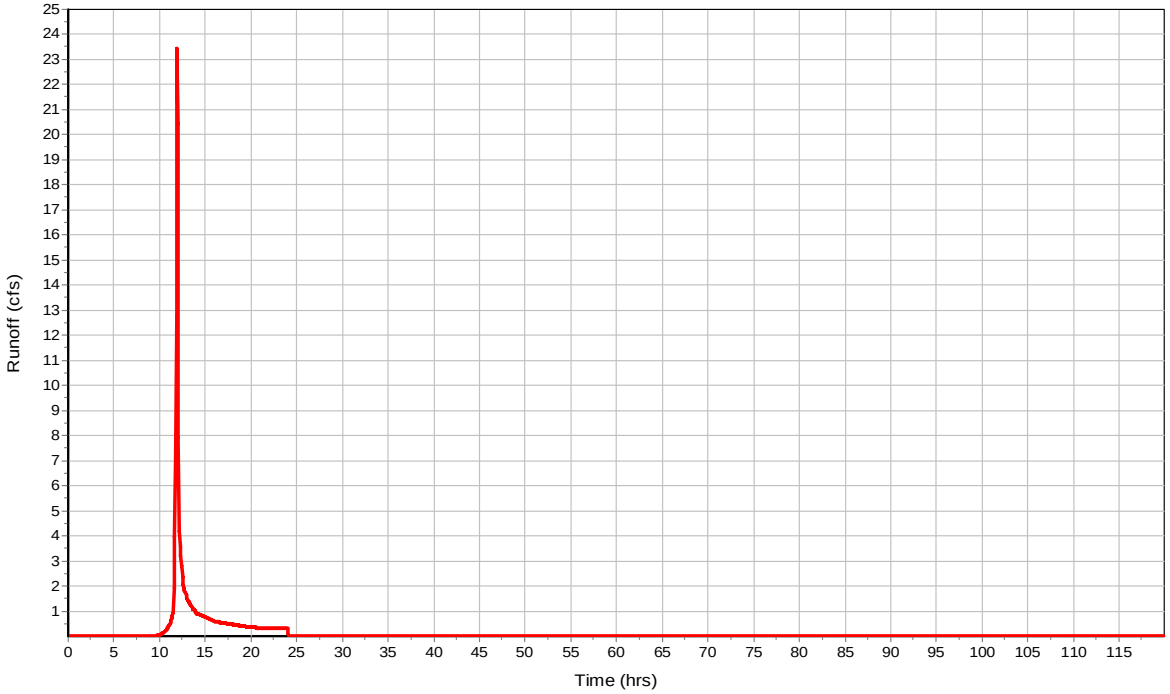
Total Rainfall (in)	3.5
Total Runoff (in)	1.51
Peak Runoff (cfs)	23.69
Weighted Curve Number	78.19
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-C

Input Data

Area (ac)	10.88
Peak Rate Factor	484
Weighted Curve Number	80.33
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.15	C	98
IMPERVIOUS	0.36	D	98
MANAGEDTURF	0.93	C	74
MANAGEDTURF	9.44	D	80
Composite Area & Weighted CN	10.88		80.33

Time of Concentration

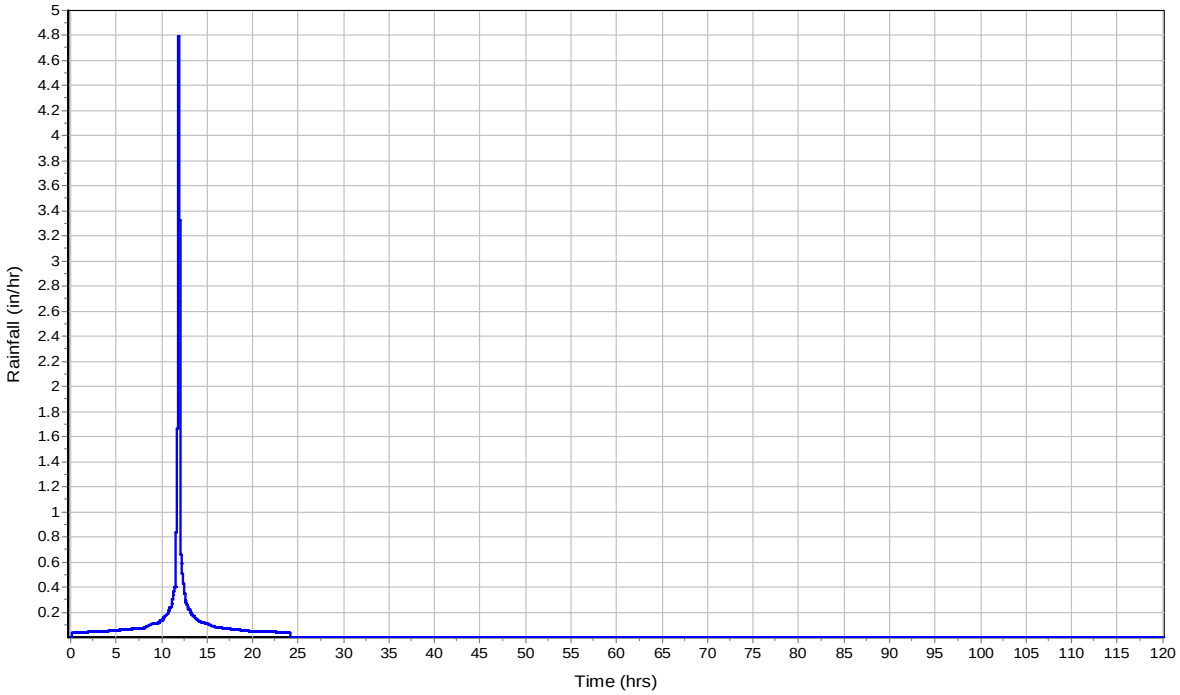
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

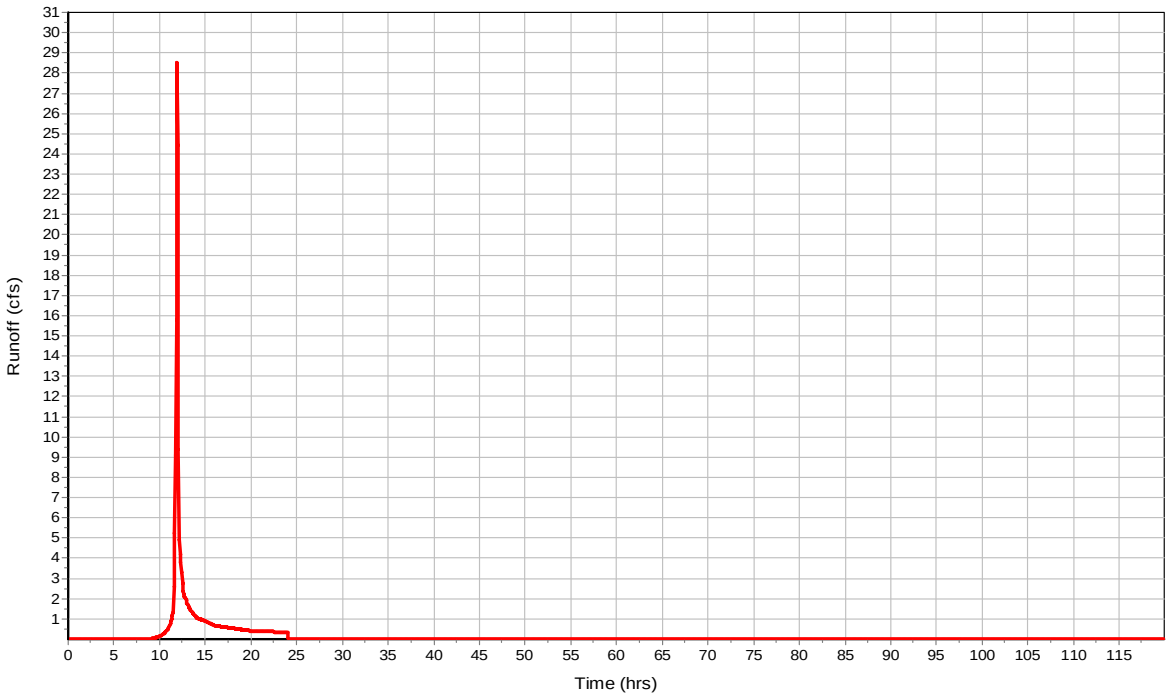
Total Rainfall (in)	3.5
Total Runoff (in)	1.66
Peak Runoff (cfs)	28.69
Weighted Curve Number	80.33
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-D

Input Data

Area (ac)	7.42
Peak Rate Factor	484
Weighted Curve Number	78.88
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0.36	D	98
MANAGEDTURF	2.46	C	74
MANAGEDTURF	4.6	D	80
Composite Area & Weighted CN	7.42		78.88

Time of Concentration

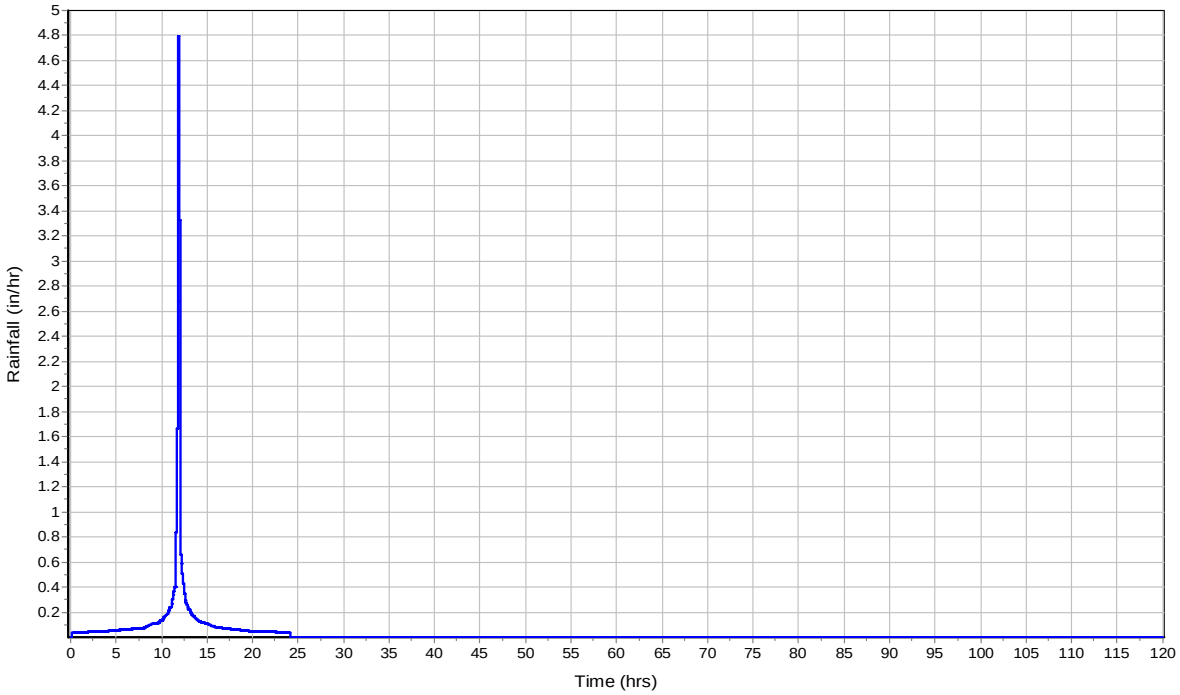
User-Defined TOC override (minutes): 9

Subbasin Runoff Results

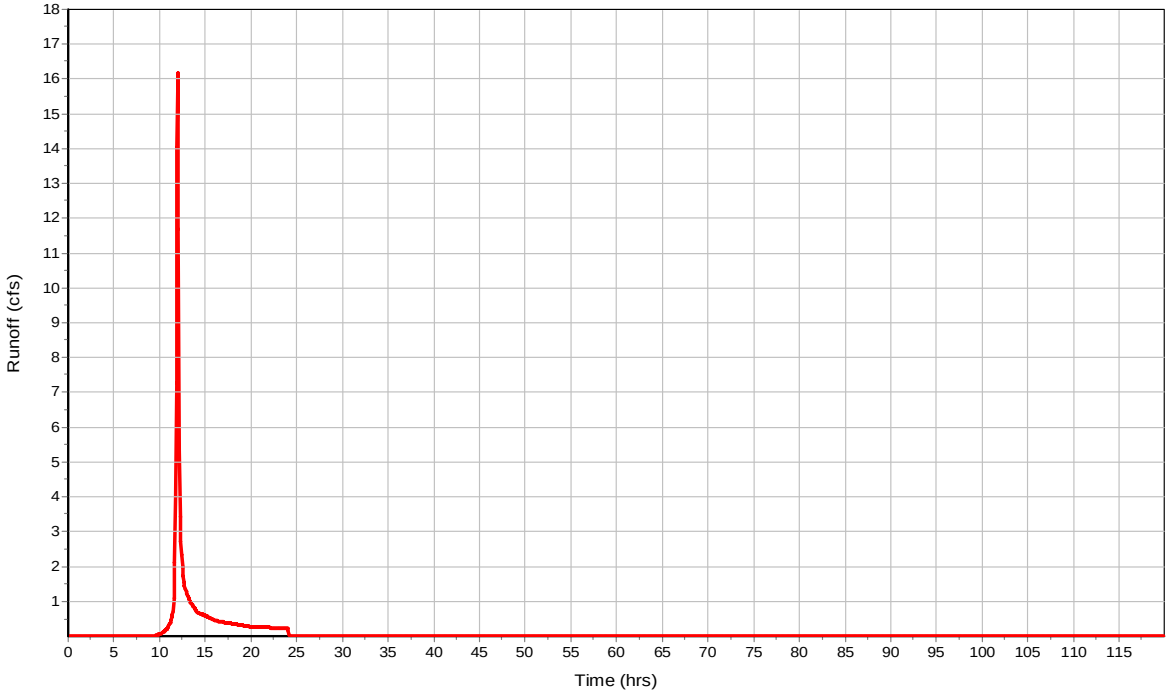
Total Rainfall (in)	3.5
Total Runoff (in)	1.56
Peak Runoff (cfs)	16.32
Weighted Curve Number	78.88
Time of Concentration (days hh:mm:ss)	0 00:09:00

Subbasin : PRE-DA-D

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-E

Input Data

Area (ac)	10.53
Peak Rate Factor	484
Weighted Curve Number	77.95
Rain Gage ID	Rain Gage-02

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.14	C	98
IMPERVIOUS	0.08	D	98
MANAGEDTURF	4.25	C	74
MANAGEDTURF	6.06	D	80
Composite Area & Weighted CN	10.53		77.95

Time of Concentration

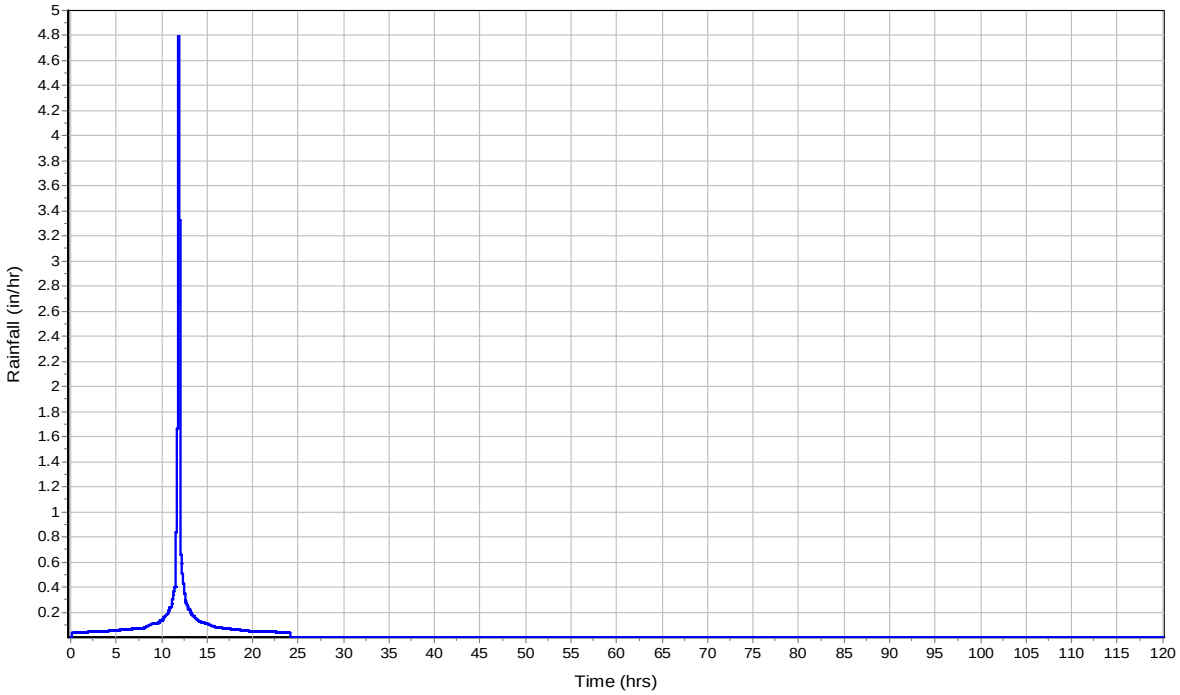
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

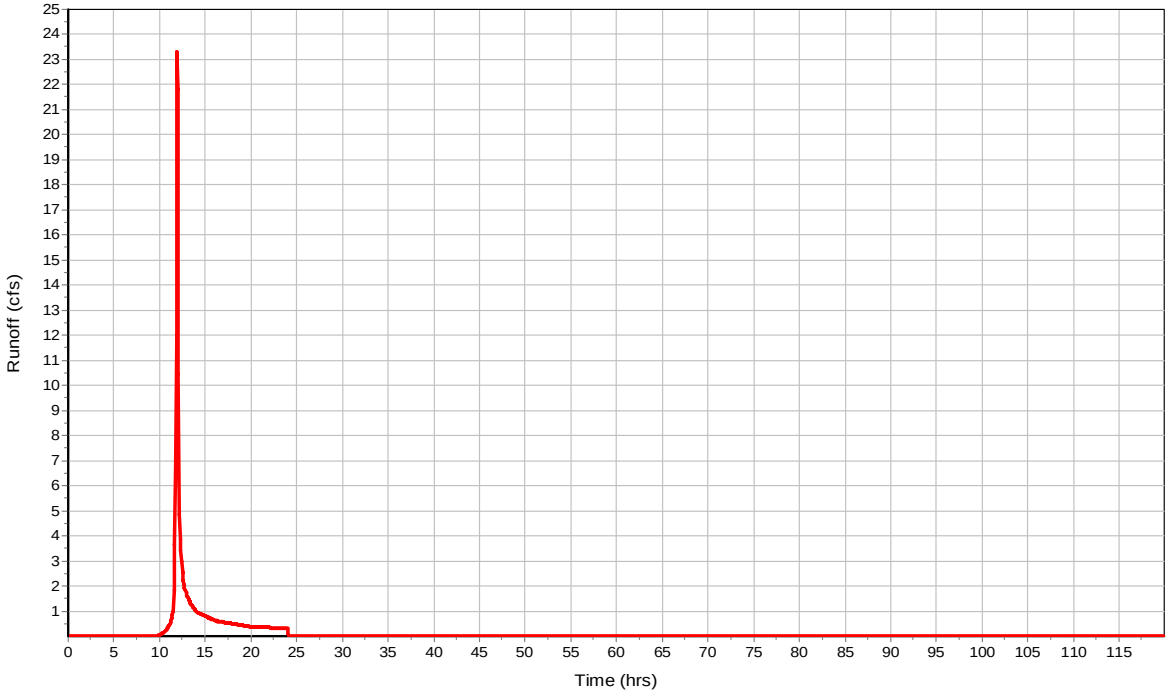
Total Rainfall (in)	3.5
Total Runoff (in)	1.49
Peak Runoff (cfs)	24.06
Weighted Curve Number	77.95
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : PRE-DA-E

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-F

Input Data

Area (ac)	9.53
Peak Rate Factor	484
Weighted Curve Number	79.32
Rain Gage ID	Rain Gage-02

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.06	C	98
IMPERVIOUS	1.5	D	98
MANAGEDTURF	5.76	C	74
MANAGEDTURF	2.21	D	80
Composite Area & Weighted CN	9.53		79.32

Time of Concentration

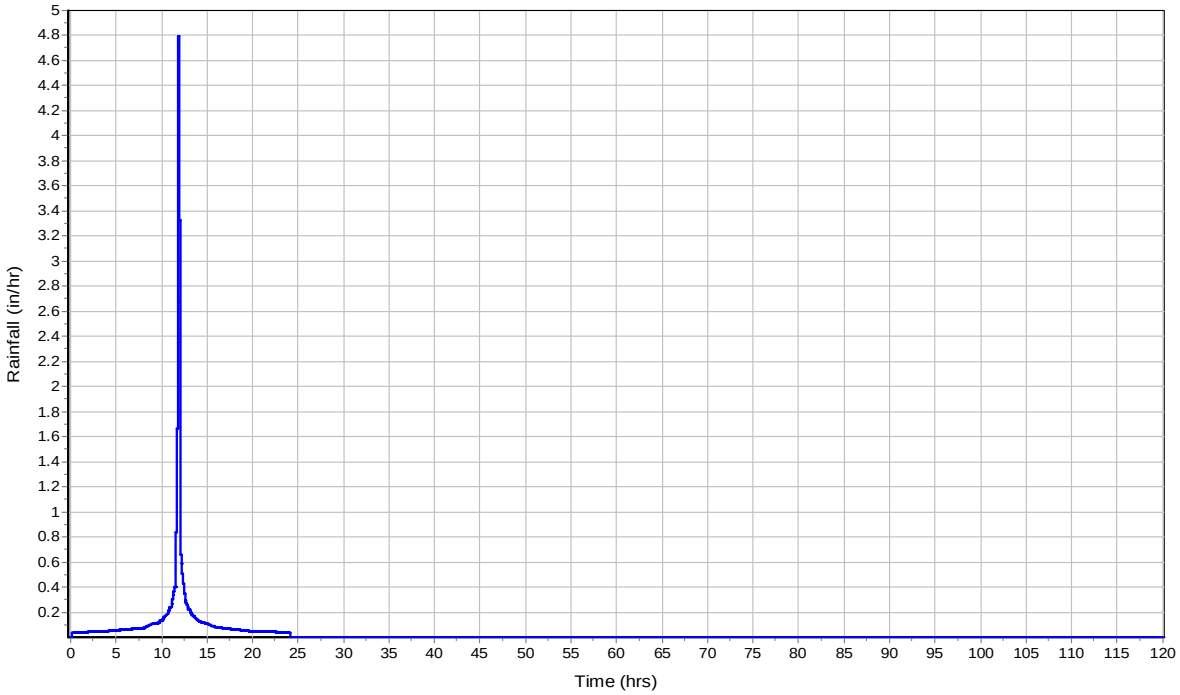
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

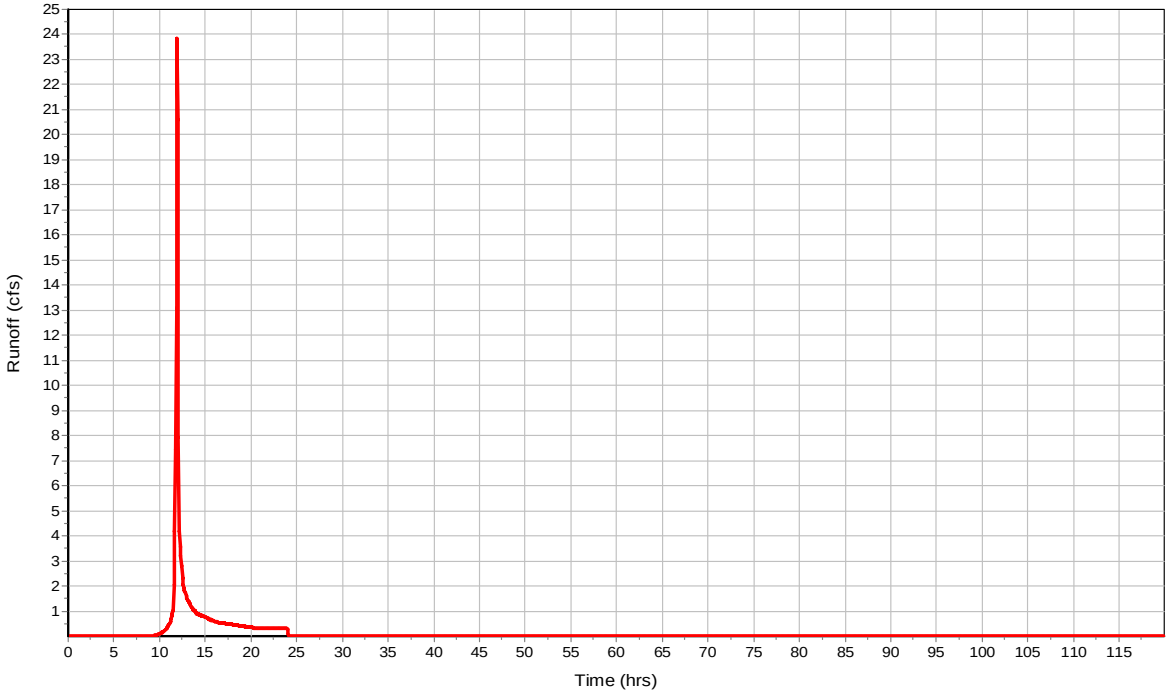
Total Rainfall (in)	3.5
Total Runoff (in)	1.59
Peak Runoff (cfs)	23.99
Weighted Curve Number	79.32
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-F

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-G

Input Data

Area (ac)	2.17
Peak Rate Factor	484
Weighted Curve Number	74
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.17	C	74
MANAGEDTURF	0	D	80
Composite Area & Weighted CN	2.17		74

Time of Concentration

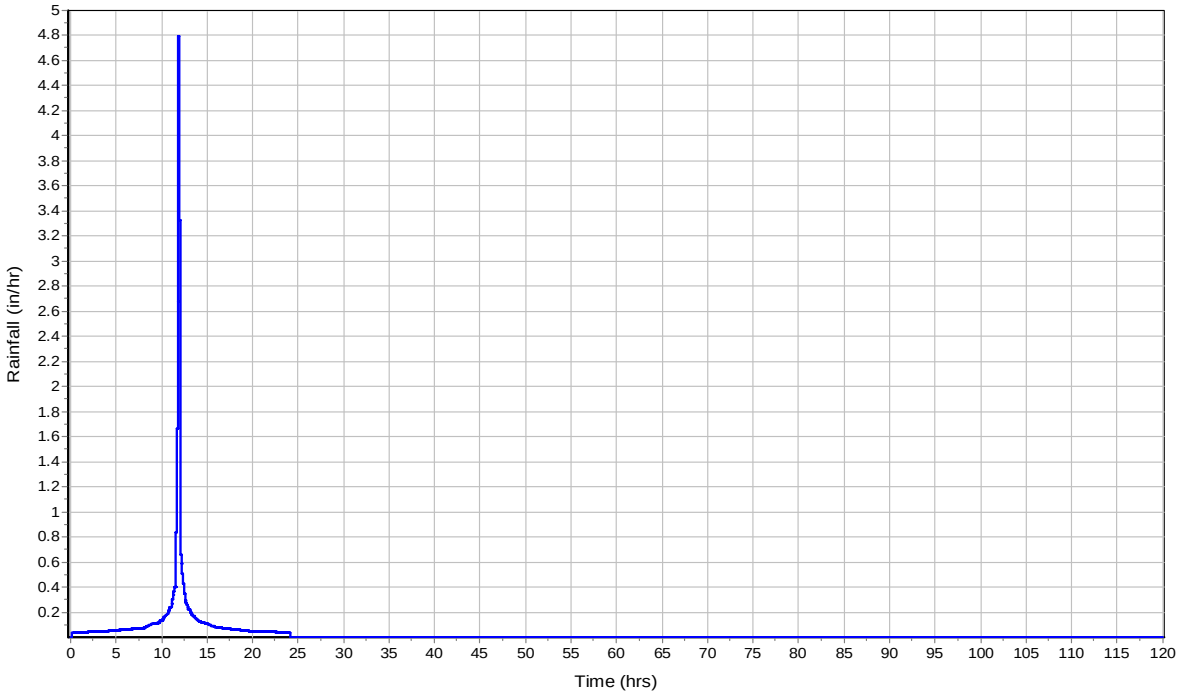
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

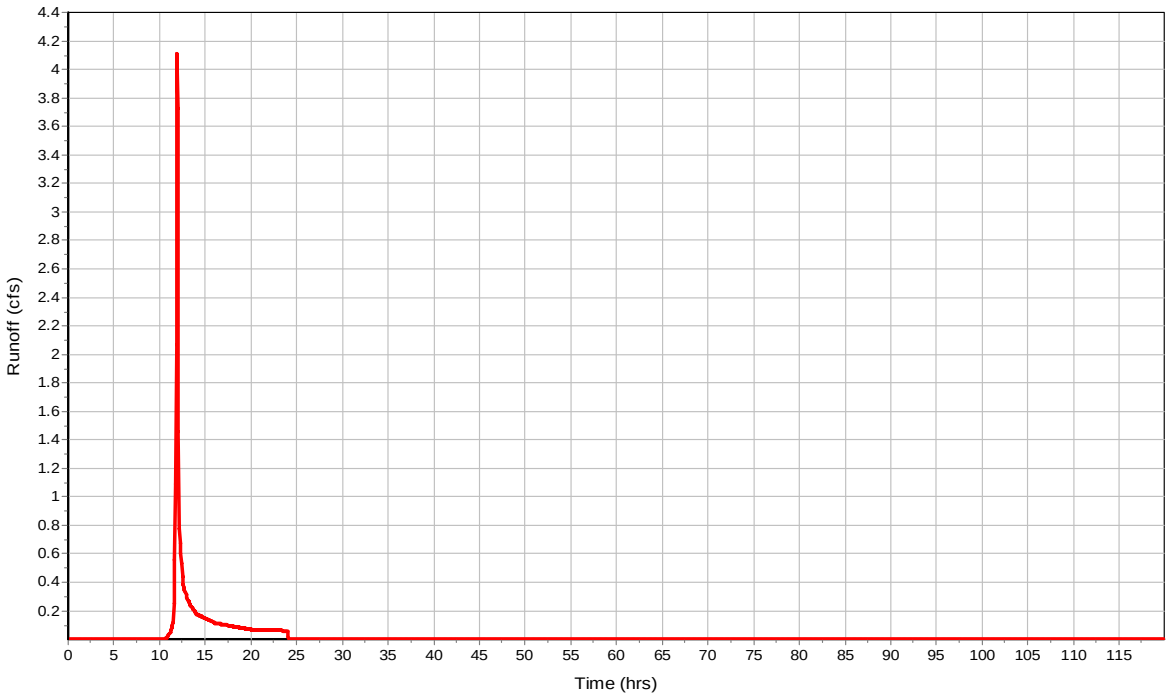
Total Rainfall (in)	3.5
Total Runoff (in)	1.24
Peak Runoff (cfs)	4.18
Weighted Curve Number	74
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-G

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-H

Input Data

Area (ac)	7.24
Peak Rate Factor	484
Weighted Curve Number	77.85
Rain Gage ID	Rain Gage-02

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.03	C	98
IMPERVIOUS	0.09	D	98
MANAGEDTURF	2.95	C	74
MANAGEDTURF	4.17	D	80
Composite Area & Weighted CN	7.24		77.85

Time of Concentration

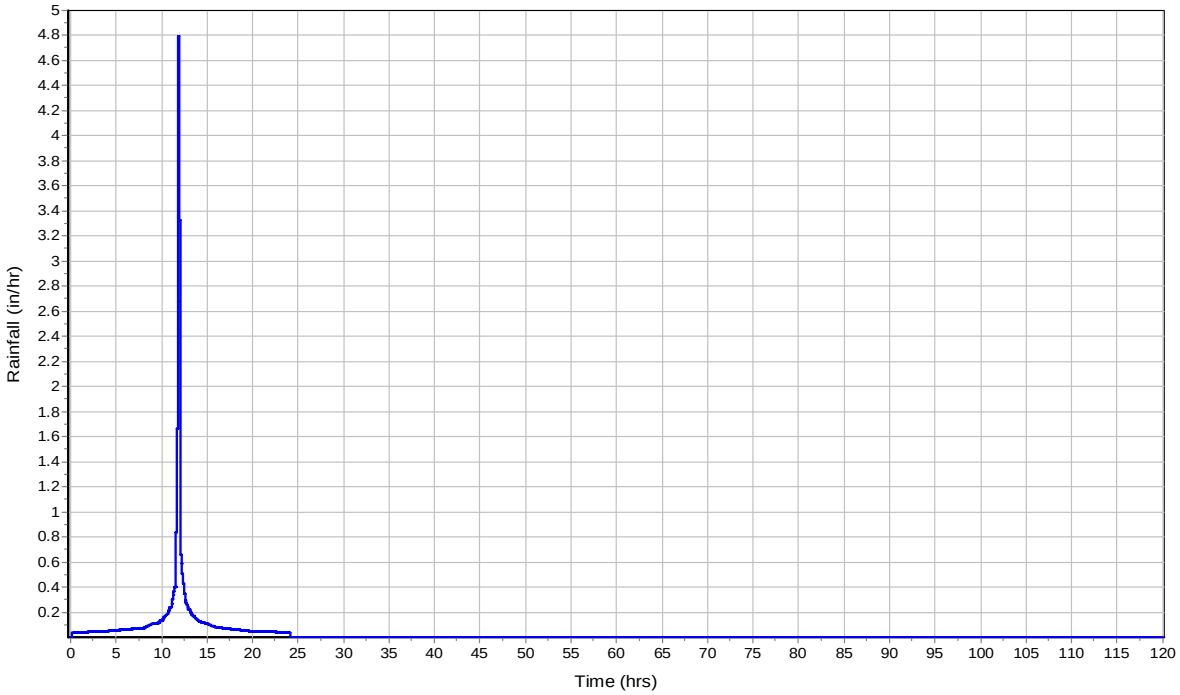
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

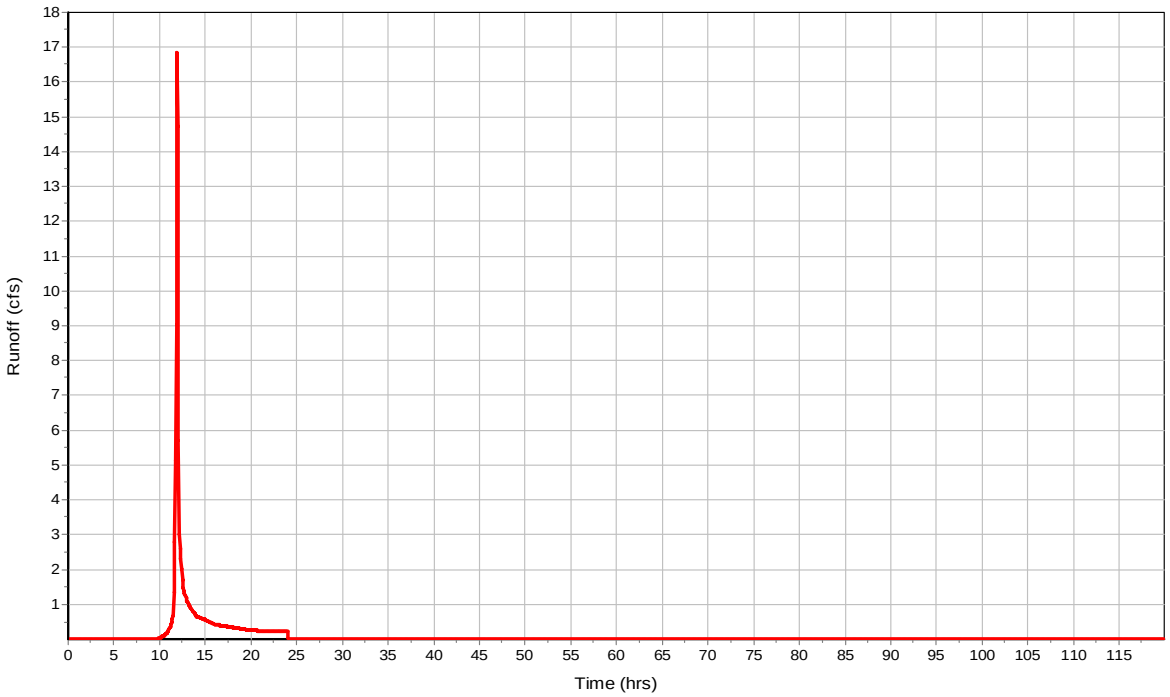
Total Rainfall (in)	3.5
Total Runoff (in)	1.49
Peak Runoff (cfs)	17.01
Weighted Curve Number	77.85
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-H

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-I

Input Data

Area (ac)	5.99
Peak Rate Factor	484
Weighted Curve Number	85.23
Rain Gage ID	Rain Gage-02

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	1.18	C	98
IMPERVIOUS	1.23	D	98
MANAGEDTURF	2.01	C	74
MANAGEDTURF	1.57	D	80
Composite Area & Weighted CN	5.99		85.23

Time of Concentration

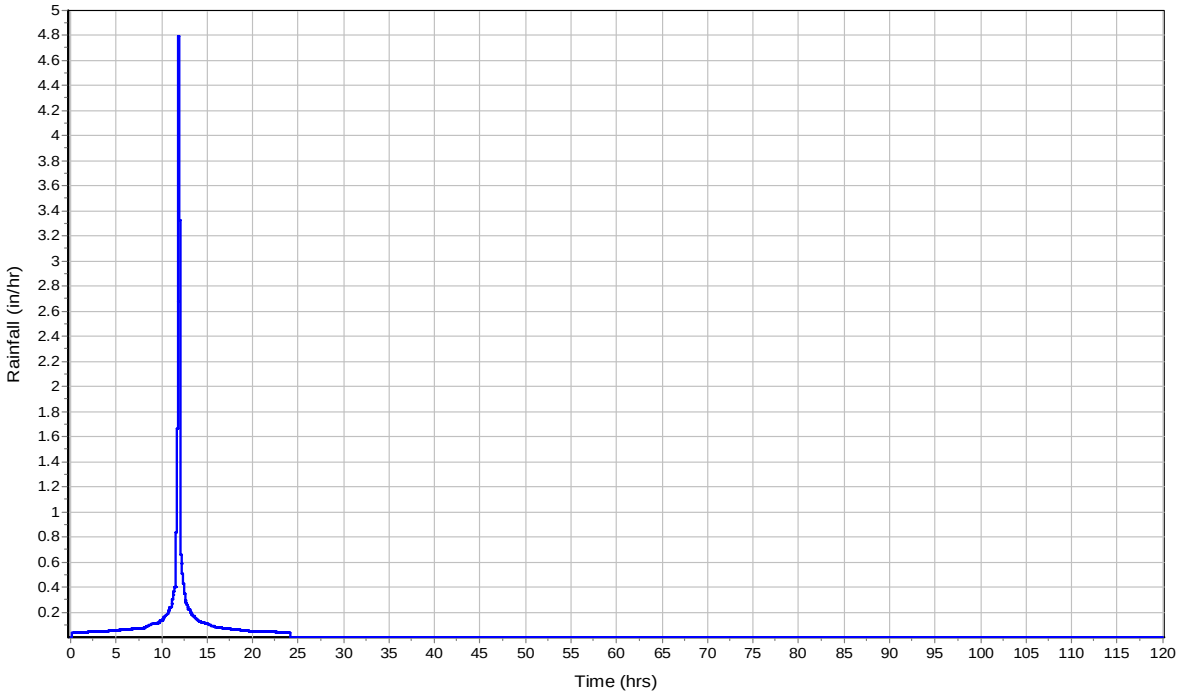
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

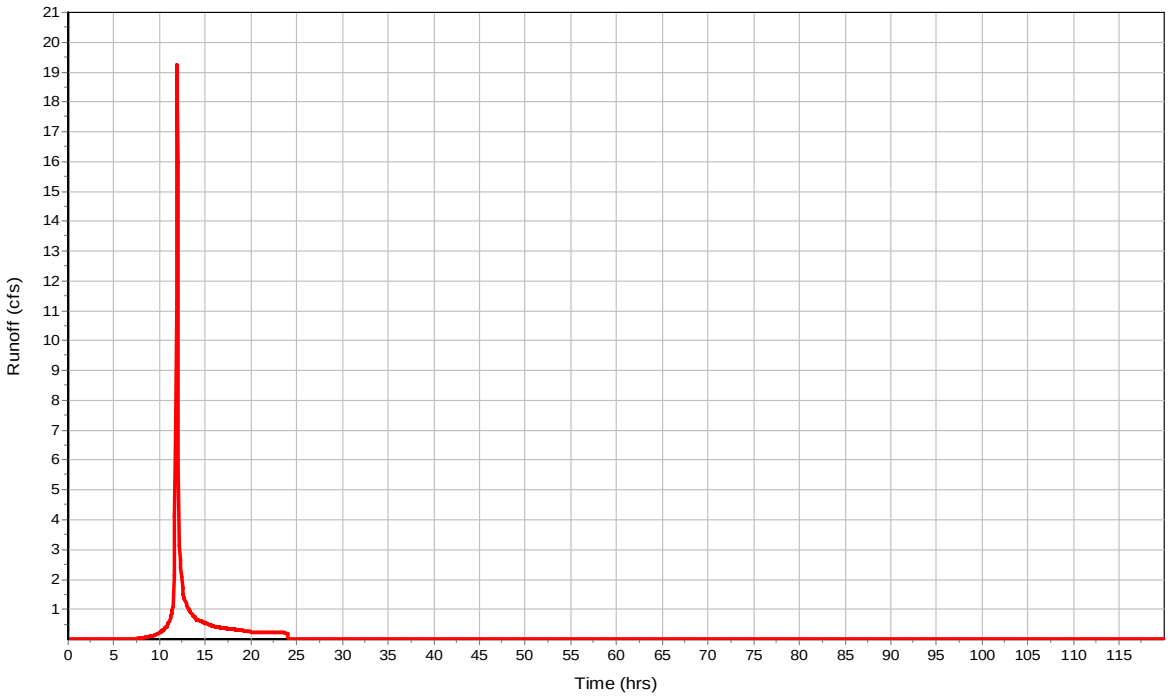
Total Rainfall (in)	3.5
Total Runoff (in)	2.04
Peak Runoff (cfs)	19.33
Weighted Curve Number	85.23
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-I

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-J

Input Data

Area (ac)	4.01
Peak Rate Factor	484
Weighted Curve Number	84.89
Rain Gage ID	Rain Gage-02

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.15	C	98
IMPERVIOUS	1.14	D	98
MANAGEDTURF	0.6	C	74
MANAGEDTURF	2.12	D	80
Composite Area & Weighted CN	4.01		84.89

Time of Concentration

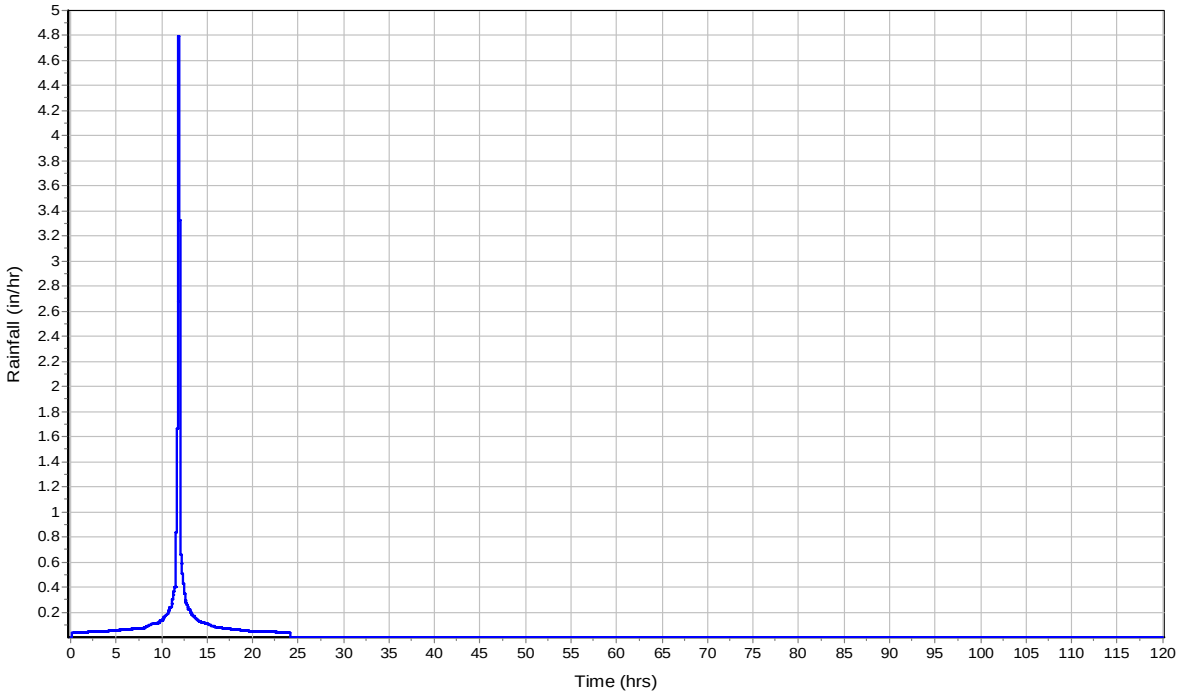
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

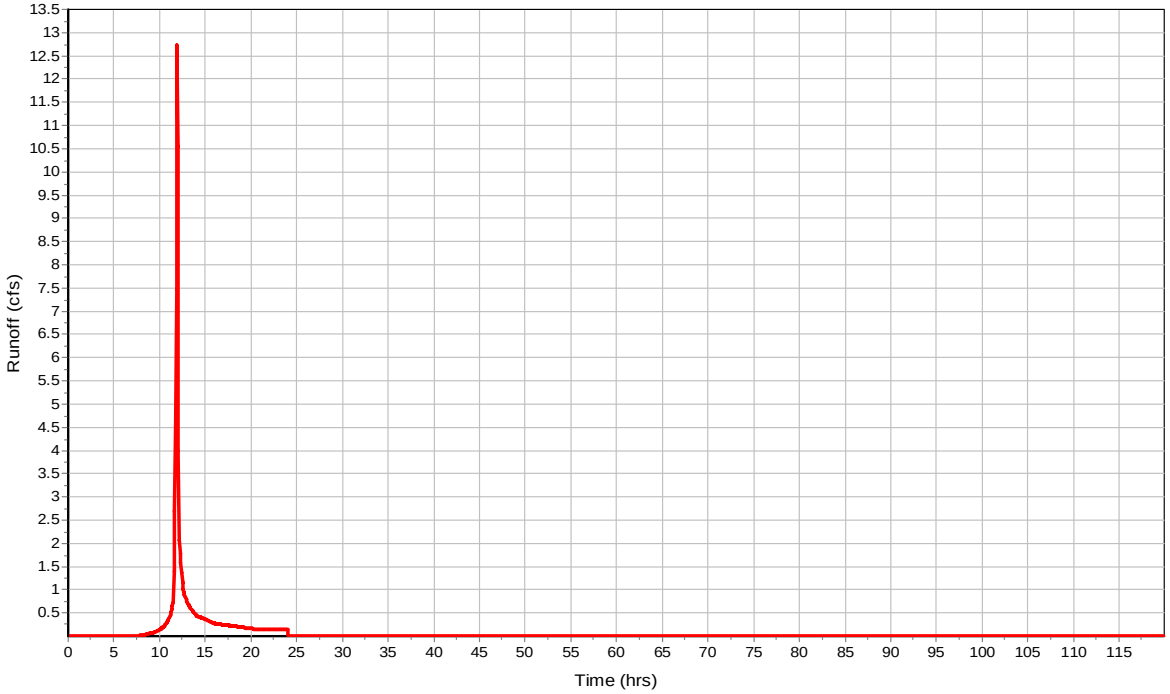
Total Rainfall (in)	3.5
Total Runoff (in)	2.01
Peak Runoff (cfs)	12.78
Weighted Curve Number	84.89
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-J

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-K

Input Data

Area (ac)	11.02
Peak Rate Factor	484
Weighted Curve Number	85.27
Rain Gage ID	Rain Gage-02

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.33	C	98
IMPERVIOUS	3.24	D	98
MANAGEDTURF	1.03	C	74
MANAGEDTURF	6.42	D	80
Composite Area & Weighted CN	11.02		85.27

Time of Concentration

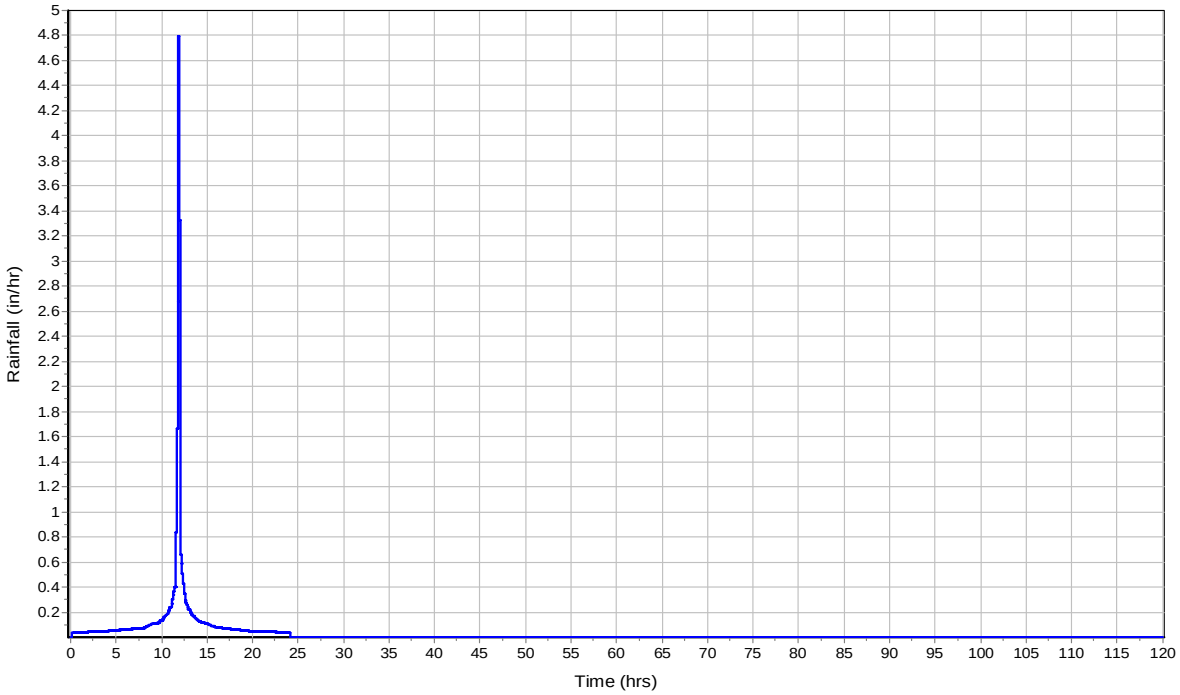
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

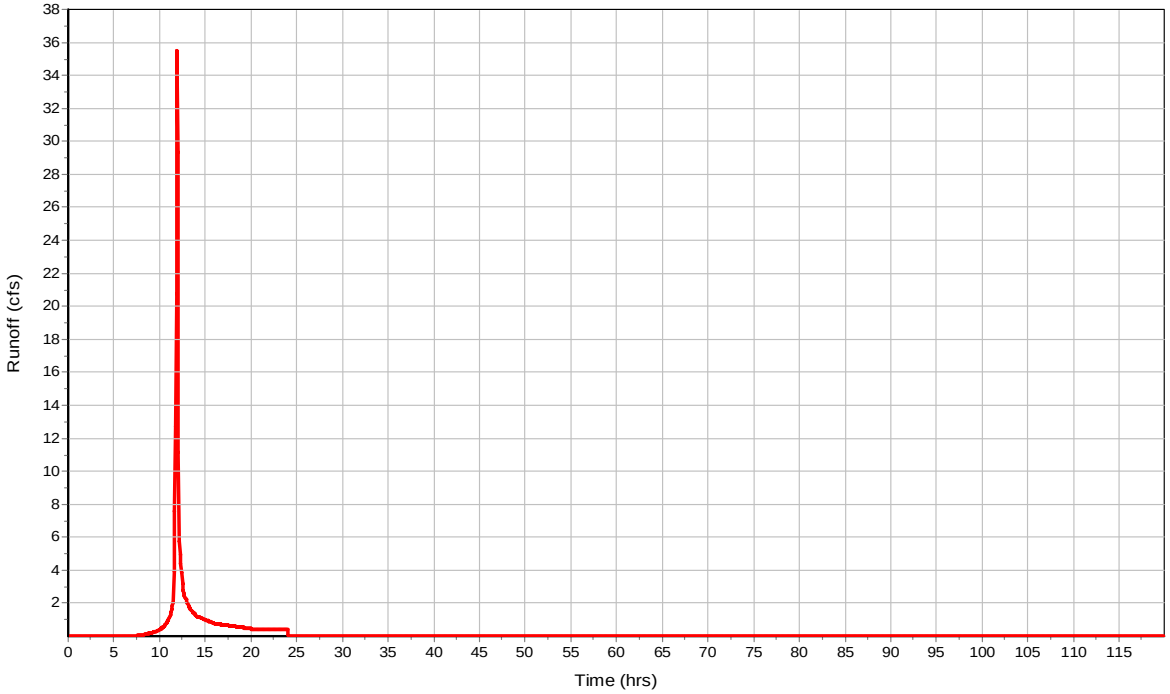
Total Rainfall (in)	3.5
Total Runoff (in)	2.04
Peak Runoff (cfs)	35.61
Weighted Curve Number	85.27
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-K

Rainfall Intensity Graph



Runoff Hydrograph



Project Description

File Name ..... 22056 - Pre-Post Model.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	SCS TR-55
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	3
Subbasins	21
Nodes	21
Junctions	0
Outfalls	21
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links	0
Channels	0
Pipes	0
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	Rain Gage-01	Time Series	TS-01	Cumulative	inches	Virginia	Augusta	1.00	3.00	SCS Type II 24-hr
2	Rain Gage-02	Time Series	TS-02	Cumulative	inches	Virginia	Augusta	2.00	3.50	SCS Type II 24-hr
3	Rain Gage-10	Time Series	TS-10	Cumulative	inches	Virginia	Augusta	10.00	5.50	SCS Type II 24-hr

Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	POST_DA_A	15.27	484.00	86.02	5.50	3.94	60.13	93.07	0 00:05:00
2	POST_DA_B	3.34	484.00	75.51	5.50	2.91	9.71	15.45	0 00:05:00
3	POST_DA_C	5.05	484.00	83.07	5.50	3.64	18.37	28.81	0 00:05:00
4	POST_DA_D	5.27	484.00	81.66	5.50	3.50	18.42	28.15	0 00:06:00
5	POST_DA_E	11.52	484.00	82.33	5.50	3.56	41.05	62.63	0 00:06:00
6	POST_DA_F	10.06	484.00	77.91	5.50	3.13	31.51	50.03	0 00:05:00
7	POST_DA_G	2.52	484.00	74.00	5.50	2.77	6.98	11.11	0 00:05:00
8	POST_DA_H	12.04	484.00	86.95	5.50	4.04	48.58	74.87	0 00:05:00
9	POST_DA_I	7.21	484.00	88.07	5.50	4.15	29.94	42.14	0 00:08:00
10	POST_DA_J	19.55	484.00	85.27	5.50	3.86	75.48	95.95	0 00:13:00
11	PRE-DA-A	13.13	484.00	87.11	5.50	4.05	53.20	77.38	0 00:07:00
12	PRE-DA-B	9.92	484.00	78.19	5.50	3.16	31.34	49.72	0 00:05:00
13	PRE-DA-C	10.88	484.00	80.33	5.50	3.37	36.61	57.87	0 00:05:00
14	PRE-DA-D	7.42	484.00	78.88	5.50	3.23	23.93	33.84	0 00:09:00
15	PRE-DA-E	10.53	484.00	77.95	5.50	3.14	33.02	50.84	0 00:06:00
16	PRE-DA-F	9.53	484.00	79.32	5.50	3.27	31.13	49.32	0 00:05:00
17	PRE-DA-G	2.17	484.00	74.00	5.50	2.77	6.01	9.56	0 00:05:00
18	PRE-DA-H	7.24	484.00	77.85	5.50	3.13	22.64	35.93	0 00:05:00
19	PRE-DA-I	5.99	484.00	85.23	5.50	3.86	23.10	35.91	0 00:05:00
20	PRE-DA-J	4.01	484.00	84.89	5.50	3.82	15.33	23.88	0 00:05:00
21	PRE-DA-K	11.02	484.00	85.27	5.50	3.86	42.55	66.11	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Outfall-POST-A	Outfall	0.00					0.00	0.00					
2	Outfall-POST-B	Outfall	0.00					0.00	0.00					
3	Outfall-POST-C	Outfall	0.00					0.00	0.00					
4	Outfall-POST-D	Outfall	0.00					0.00	0.00					
5	Outfall-POST-E	Outfall	0.00					0.00	0.00					
6	Outfall-POST-F	Outfall	0.00					0.00	0.00					
7	Outfall-POST-G	Outfall	0.00					0.00	0.00					
8	Outfall-POST-H	Outfall	0.00					0.00	0.00					
9	Outfall-POST-I	Outfall	0.00					0.00	0.00					
10	Outfall-POST-J	Outfall	0.00					0.00	0.00					
11	Outfall-PRE-A	Outfall	0.00					0.00	0.00					
12	Outfall-PRE-B	Outfall	0.00					0.00	0.00					
13	Outfall-PRE-C	Outfall	0.00					0.00	0.00					
14	Outfall-PRE-D	Outfall	0.00					0.00	0.00					
15	Outfall-PRE-E	Outfall	0.00					0.00	0.00					
16	Outfall-PRE-F	Outfall	0.00					0.00	0.00					
17	Outfall-PRE-G	Outfall	0.00					0.00	0.00					
18	Outfall-PRE-H	Outfall	0.00					0.00	0.00					
19	Outfall-PRE-I	Outfall	0.00					0.00	0.00					
20	Outfall-PRE-J	Outfall	0.00					0.00	0.00					
21	Outfall-PRE-K	Outfall	0.00					0.00	0.00					

Subbasin Hydrology

Subbasin : POST_DA_A

Input Data

Area (ac) 15.27
Peak Rate Factor 484
Weighted Curve Number 86.02
Rain Gage ID ..... Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.52	C	98
IMPERVIOUS	6	D	98
MANAGEDTURF	4.25	C	74
MANAGEDTURF	4.5	D	80
Composite Area & Weighted CN	15.27		86.02

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft^2)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

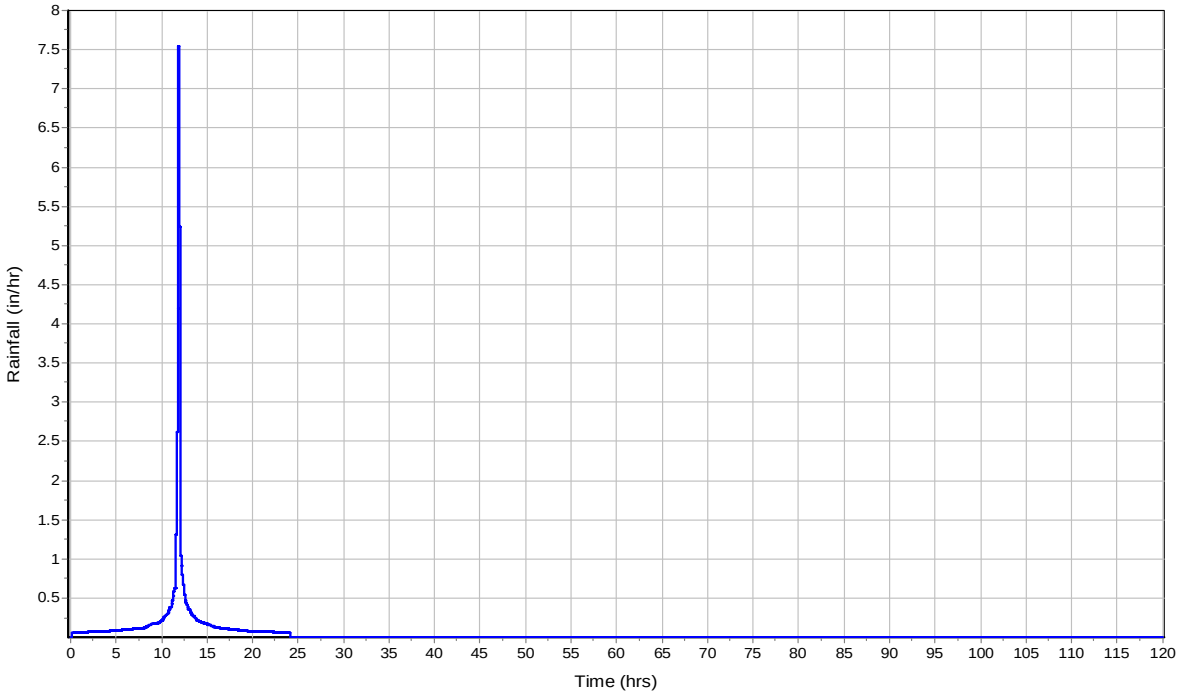
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

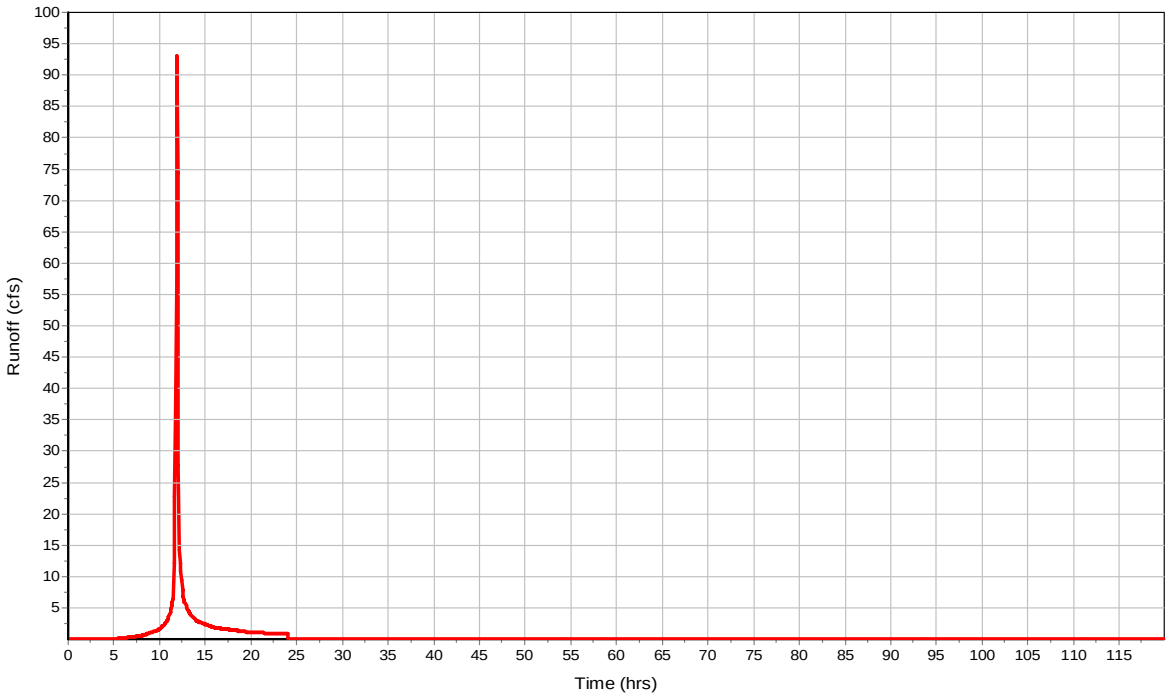
Total Rainfall (in) 5.5
Total Runoff (in) 3.94
Peak Runoff (cfs) 93.07
Weighted Curve Number 86.02
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : POST_DA_A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_B

Input Data

Area (ac)	3.34
Peak Rate Factor	484
Weighted Curve Number	75.51
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.5	C	74
MANAGEDTURF	0.84	D	80
Composite Area & Weighted CN	3.34		75.51

Time of Concentration

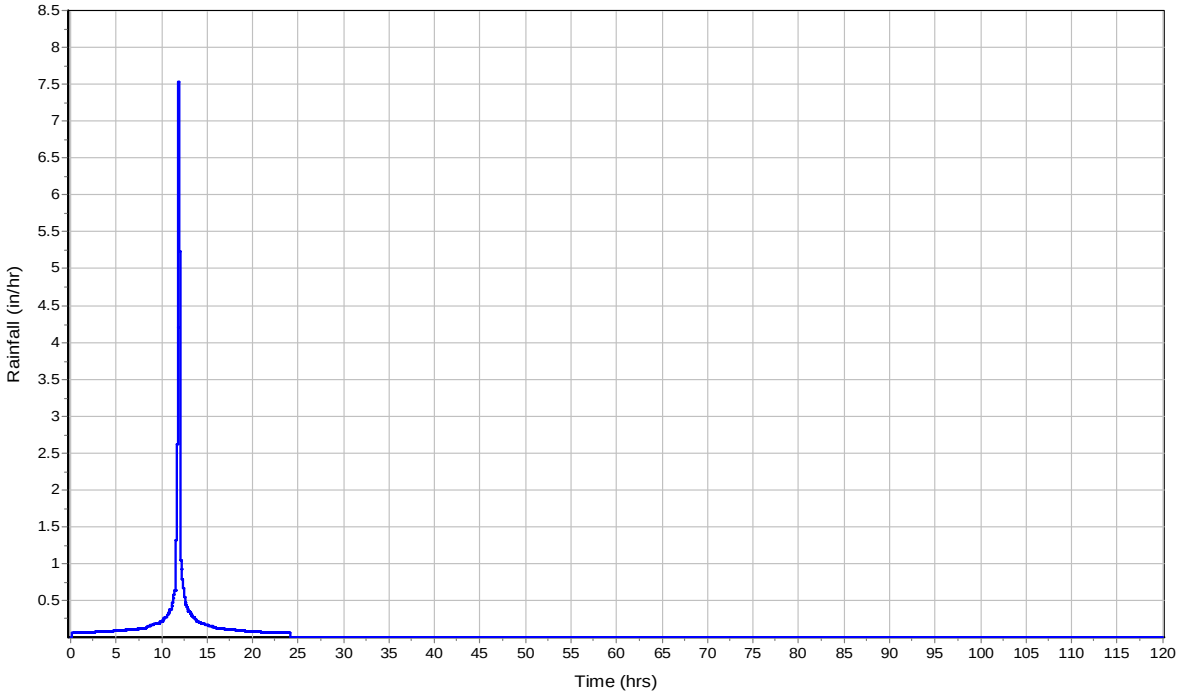
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

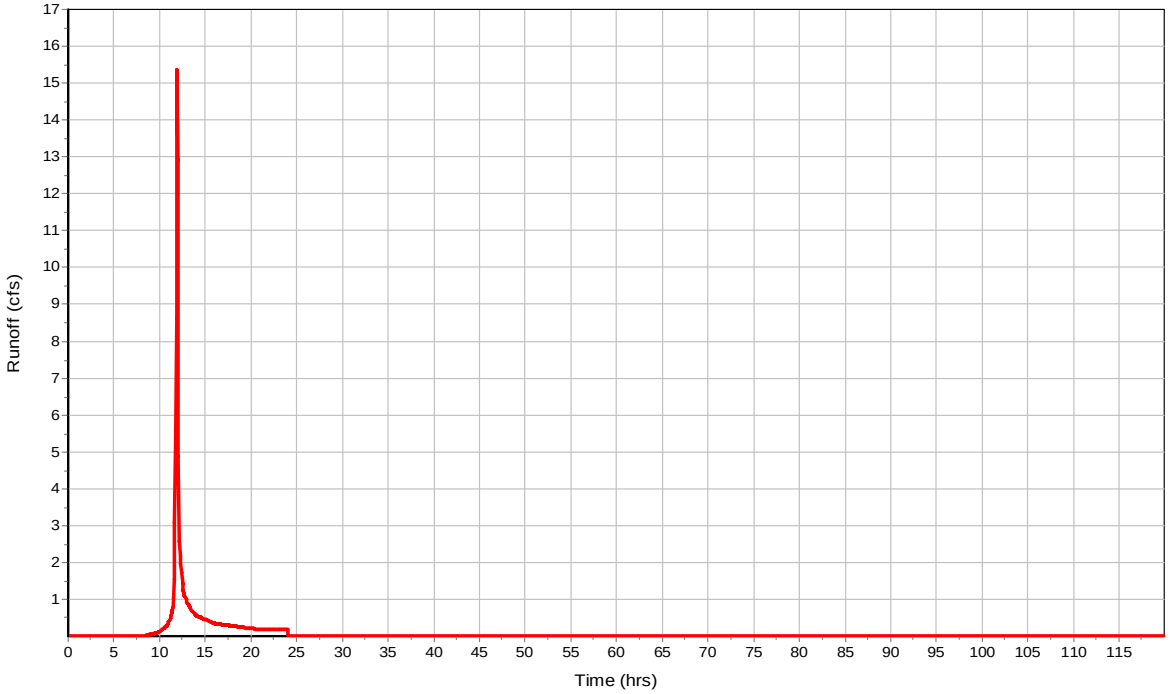
Total Rainfall (in)	5.5
Total Runoff (in)	2.91
Peak Runoff (cfs)	15.45
Weighted Curve Number	75.51
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_C

Input Data

Area (ac)	5.05
Peak Rate Factor	484
Weighted Curve Number	83.07
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.04	C	98
IMPERVIOUS	1.01	D	98
MANAGEDTURF	0.57	C	74
MANAGEDTURF	3.43	D	80
Composite Area & Weighted CN	5.05		83.07

Time of Concentration

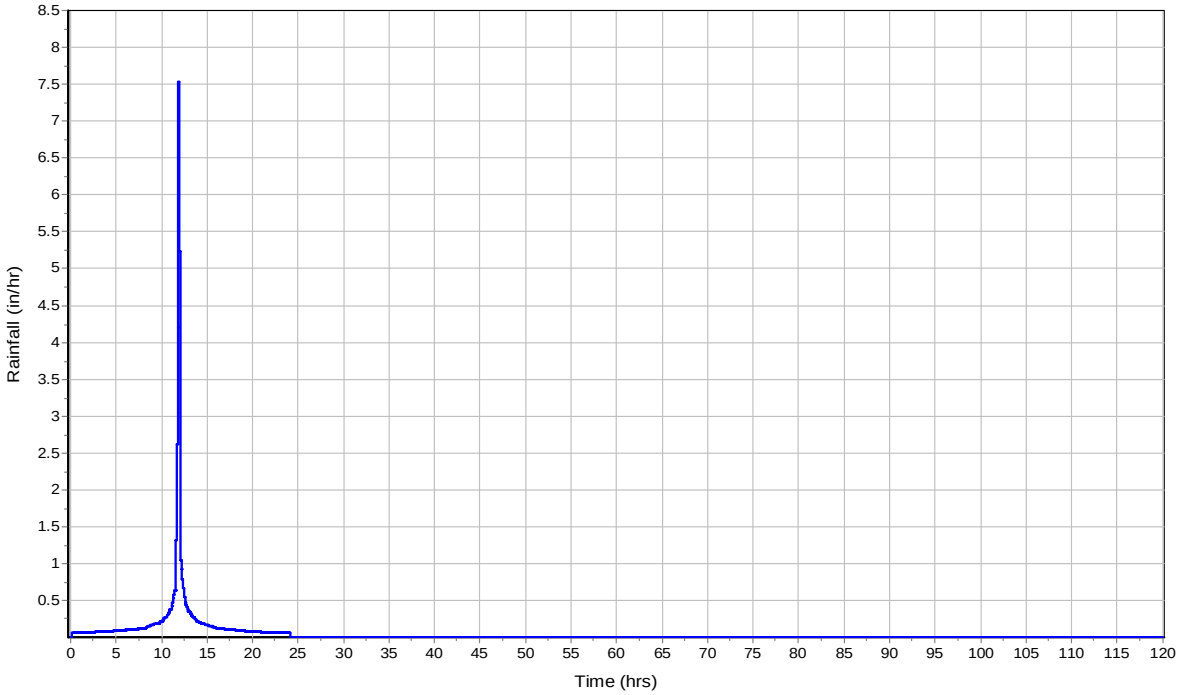
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

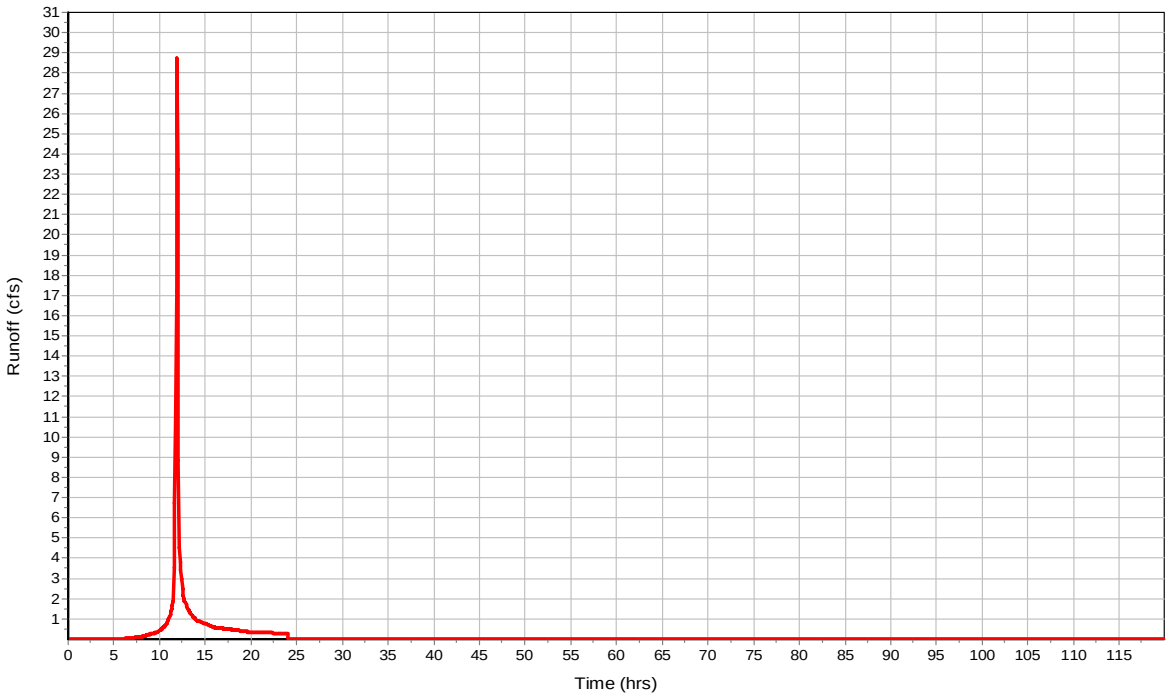
Total Rainfall (in)	5.5
Total Runoff (in)	3.64
Peak Runoff (cfs)	28.81
Weighted Curve Number	83.07
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_D

Input Data

Area (ac)	5.27
Peak Rate Factor	484
Weighted Curve Number	81.66
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.35	C	98
IMPERVIOUS	0.34	D	98
MANAGEDTURF	0.61	C	74
MANAGEDTURF	3.97	D	80
Composite Area & Weighted CN	5.27		81.66

Time of Concentration

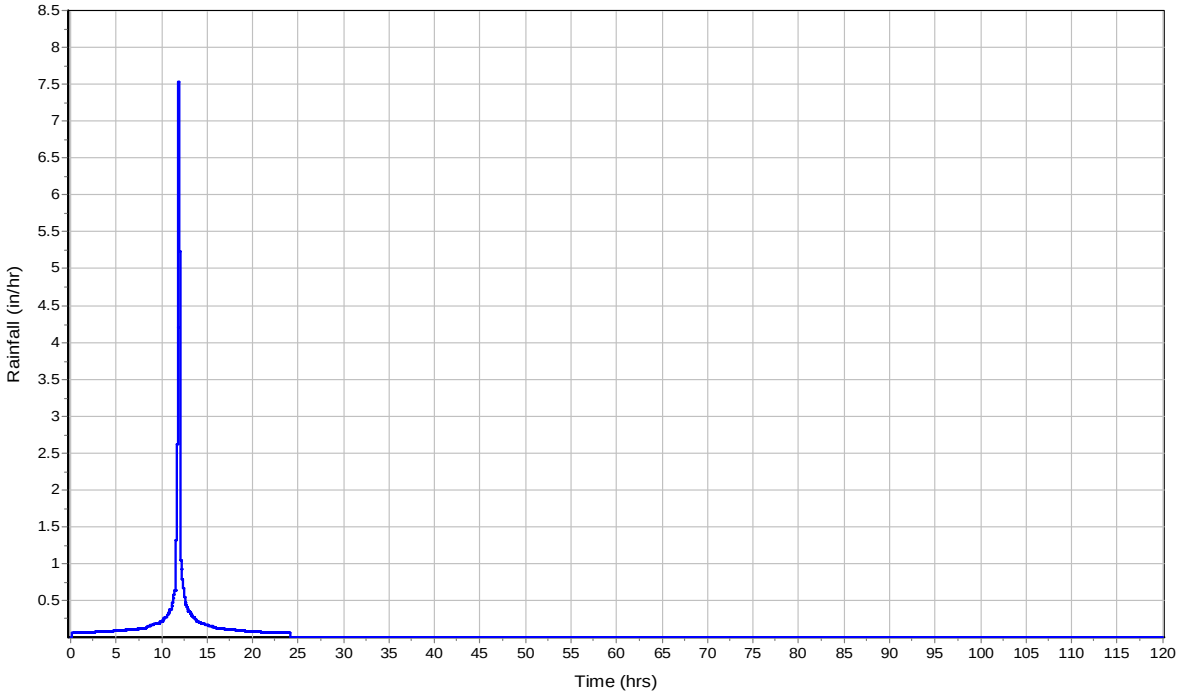
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

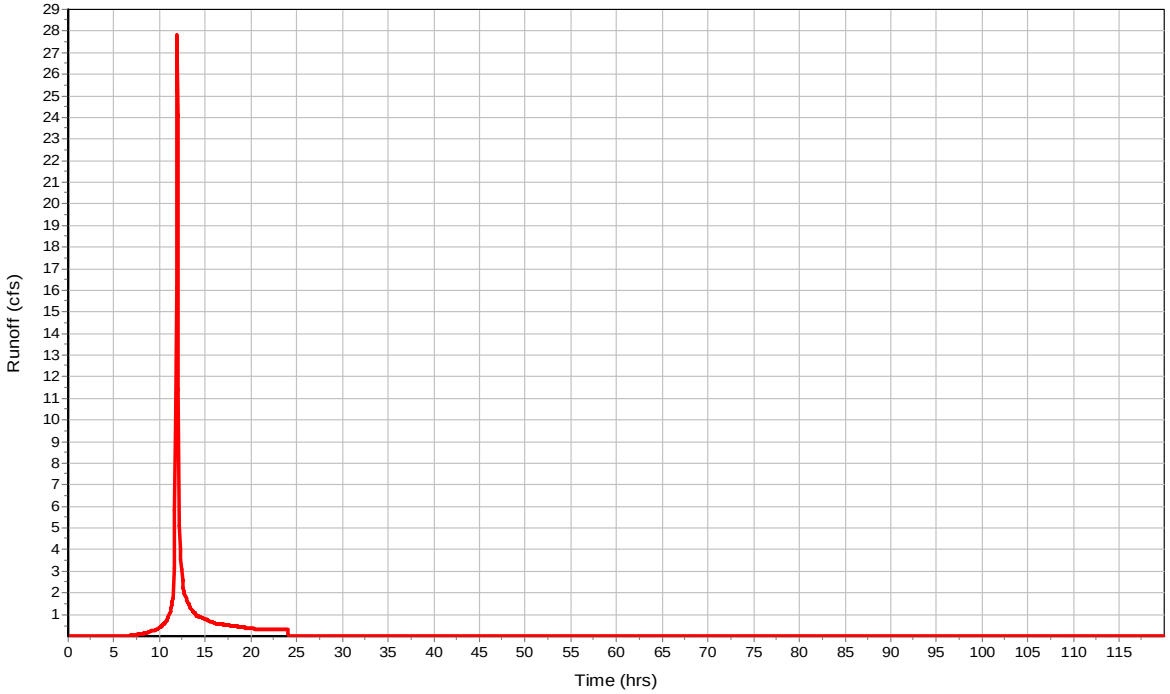
Total Rainfall (in)	5.5
Total Runoff (in)	3.5
Peak Runoff (cfs)	28.15
Weighted Curve Number	81.66
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : POST_DA_D

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_E

Input Data

Area (ac)	11.52
Peak Rate Factor	484
Weighted Curve Number	82.33
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.21	C	98
IMPERVIOUS	1.57	D	98
MANAGEDTURF	0.86	C	74
MANAGEDTURF	8.88	D	80
Composite Area & Weighted CN	11.52		82.33

Time of Concentration

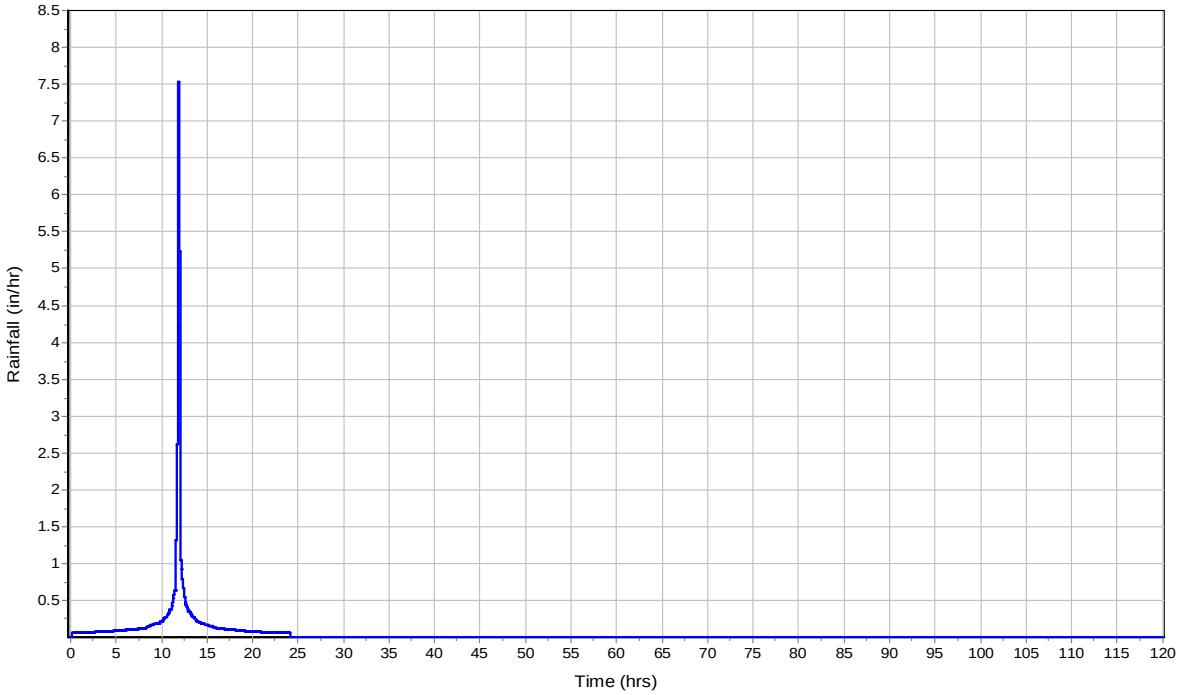
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

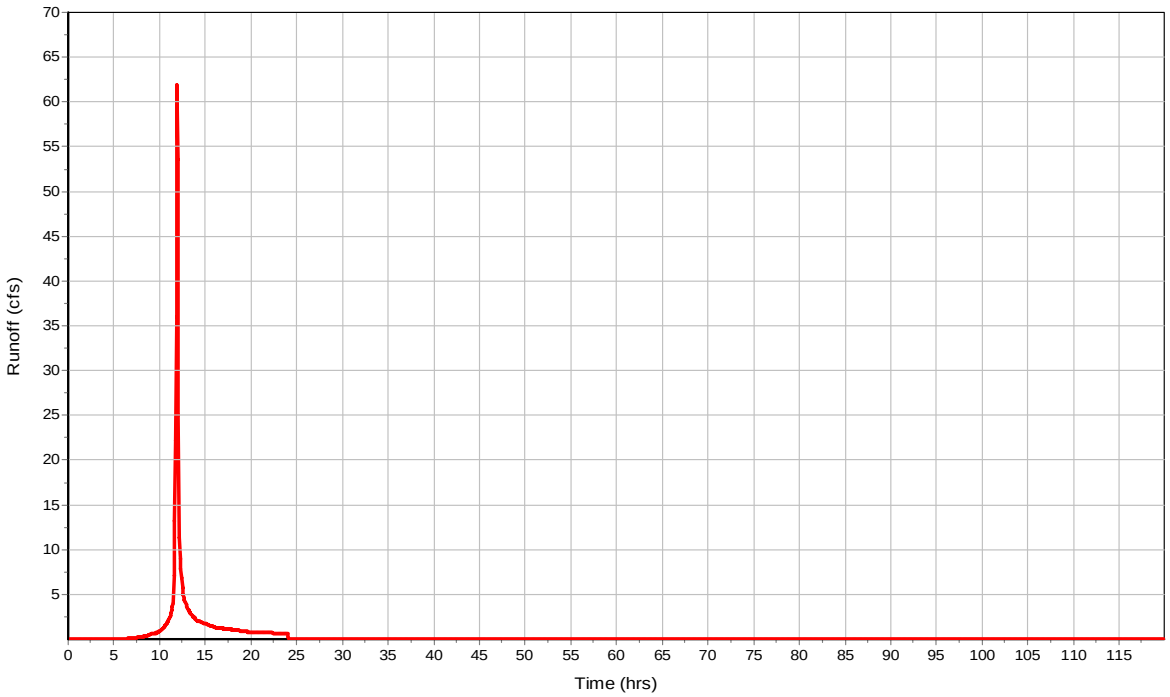
Total Rainfall (in)	5.5
Total Runoff (in)	3.56
Peak Runoff (cfs)	62.63
Weighted Curve Number	82.33
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : POST_DA_E

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_F

Input Data

Area (ac)	10.06
Peak Rate Factor	484
Weighted Curve Number	77.91
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.16	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	3.99	C	74
MANAGEDTURF	5.91	D	80
Composite Area & Weighted CN	10.06		77.91

Time of Concentration

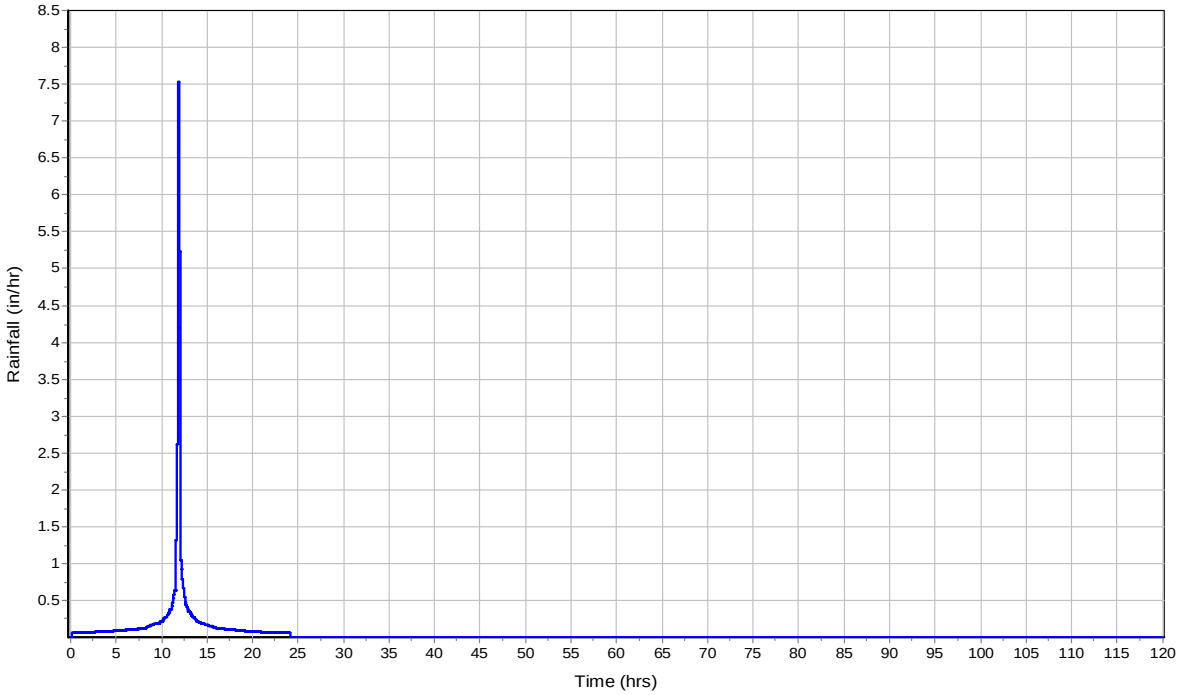
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

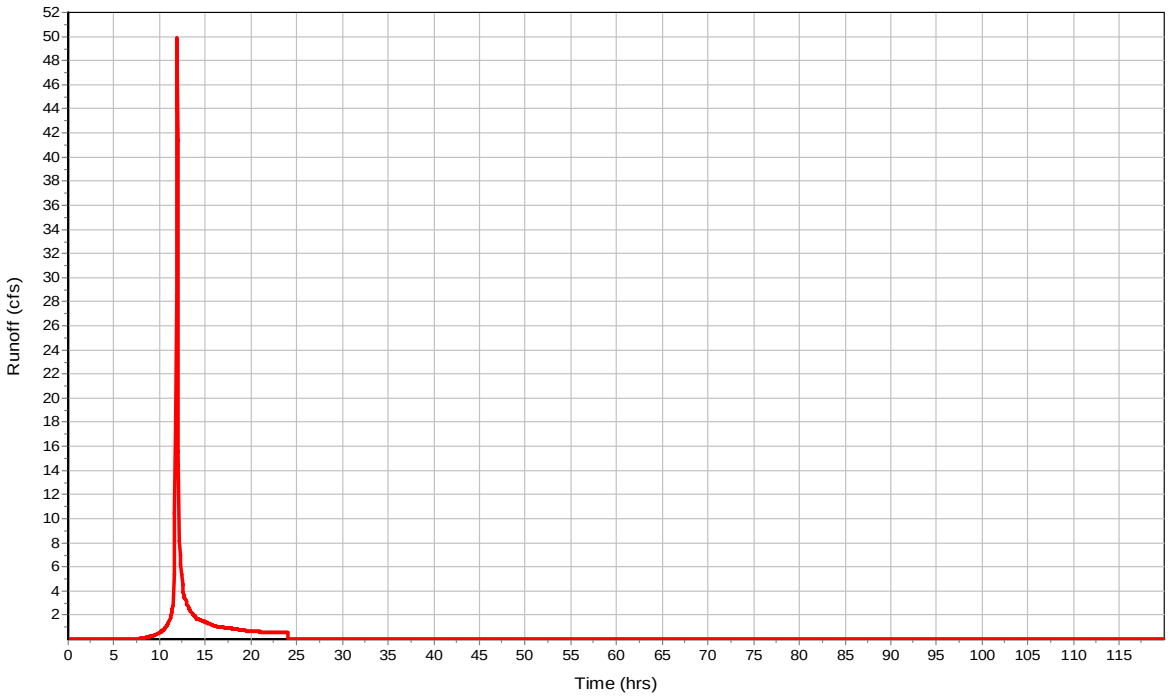
Total Rainfall (in)	5.5
Total Runoff (in)	3.13
Peak Runoff (cfs)	50.03
Weighted Curve Number	77.91
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_F

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_G

Input Data

Area (ac)	2.52
Peak Rate Factor	484
Weighted Curve Number	74
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.52	C	74
MANAGEDTURF	0	D	80
Composite Area & Weighted CN	2.52		74

Time of Concentration

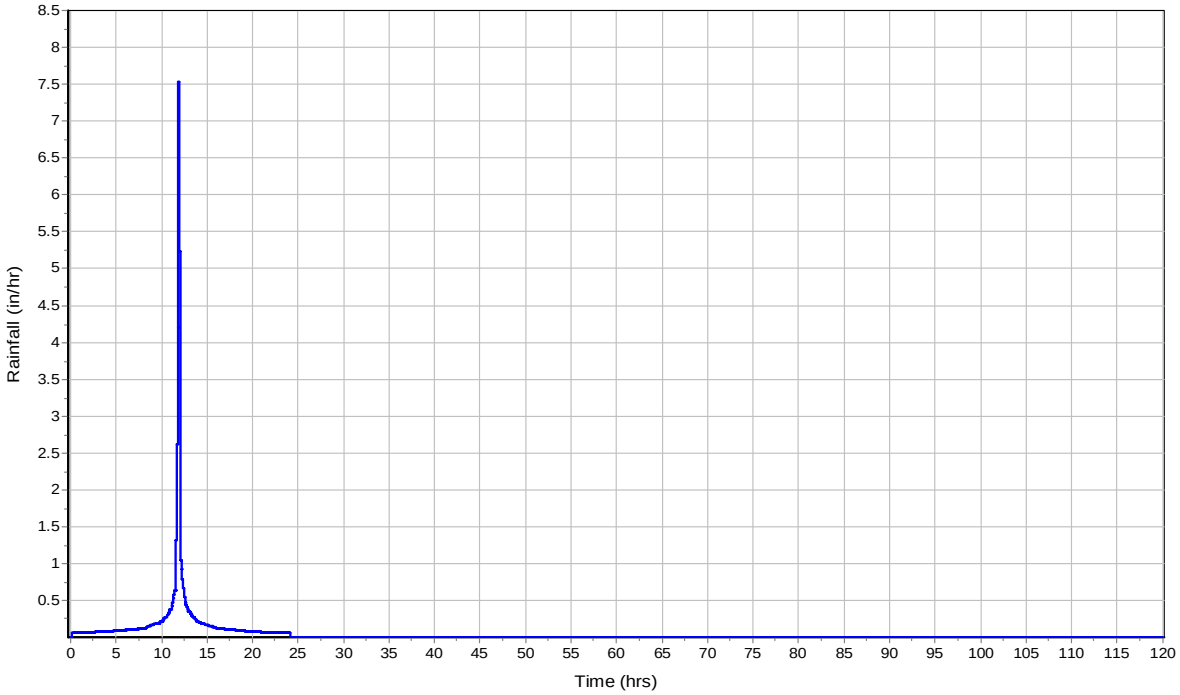
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

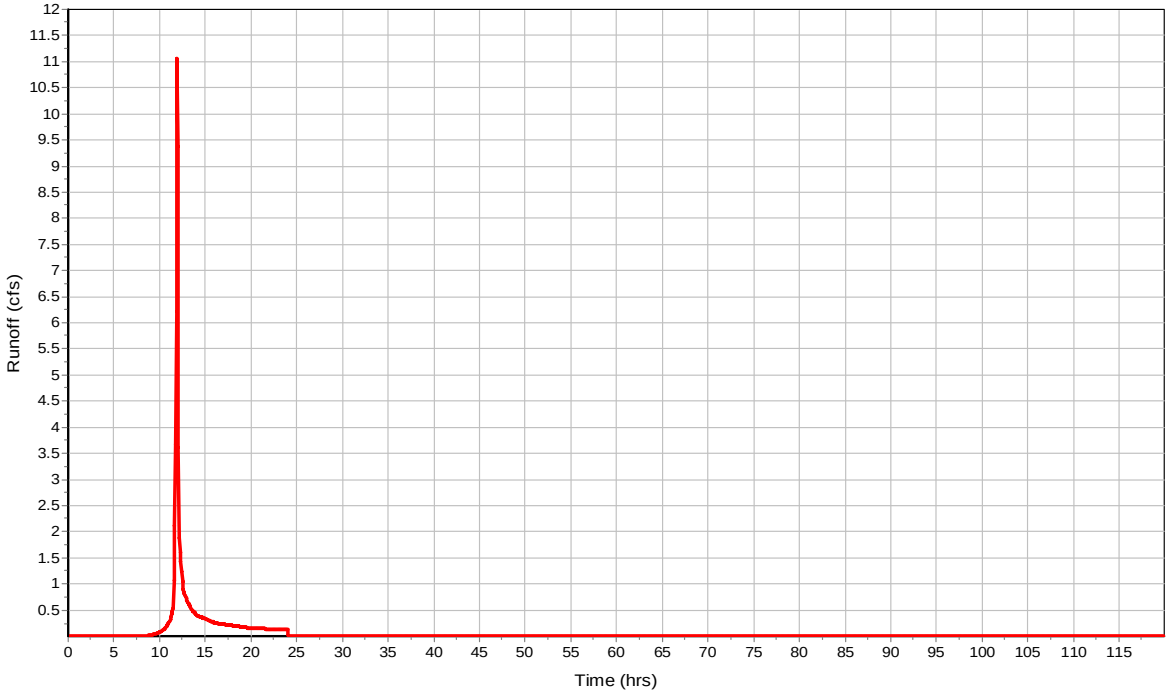
Total Rainfall (in)	5.5
Total Runoff (in)	2.77
Peak Runoff (cfs)	11.11
Weighted Curve Number	74
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_G

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_H

Input Data

Area (ac)	12.04
Peak Rate Factor	484
Weighted Curve Number	86.95
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	2.06	C	98
IMPERVIOUS	3.66	D	98
MANAGEDTURF	3.22	C	74
MANAGEDTURF	3.1	D	80
Composite Area & Weighted CN	12.04		86.95

Time of Concentration

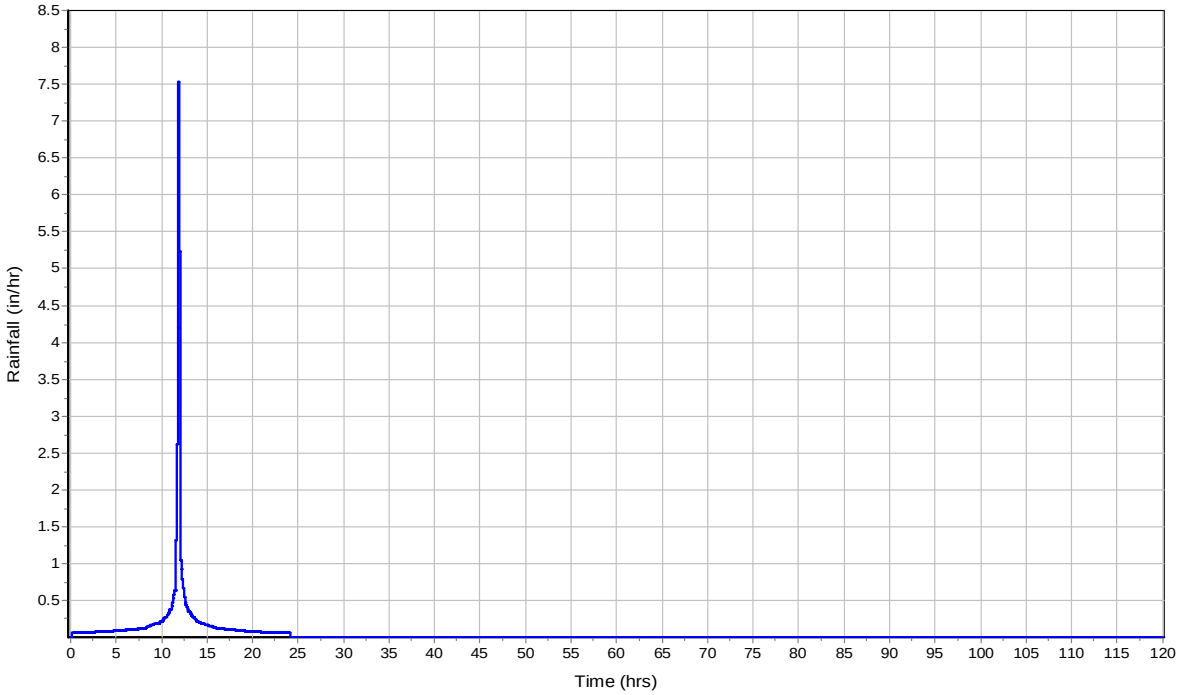
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

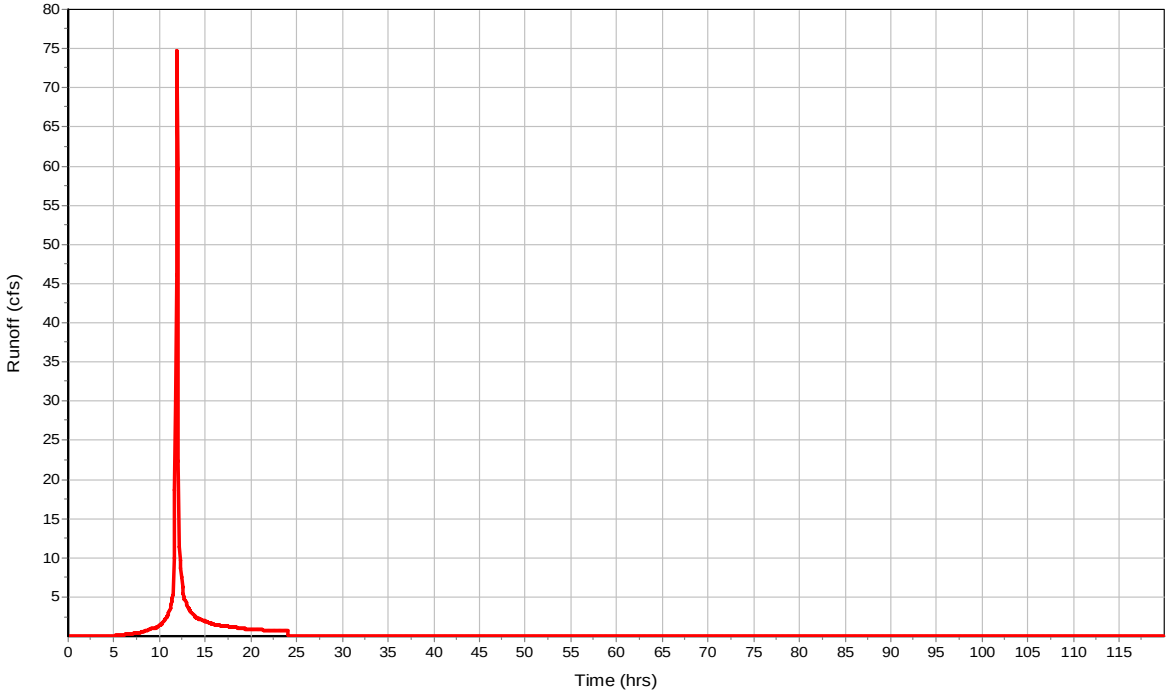
Total Rainfall (in)	5.5
Total Runoff (in)	4.04
Peak Runoff (cfs)	74.87
Weighted Curve Number	86.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : POST_DA_H

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_I

Input Data

Area (ac)	7.21
Peak Rate Factor	484
Weighted Curve Number	88.07
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	2.16	C	98
IMPERVIOUS	1.99	D	98
MANAGEDTURF	2.75	C	74
MANAGEDTURF	0.31	D	80
Composite Area & Weighted CN	7.21		88.07

Time of Concentration

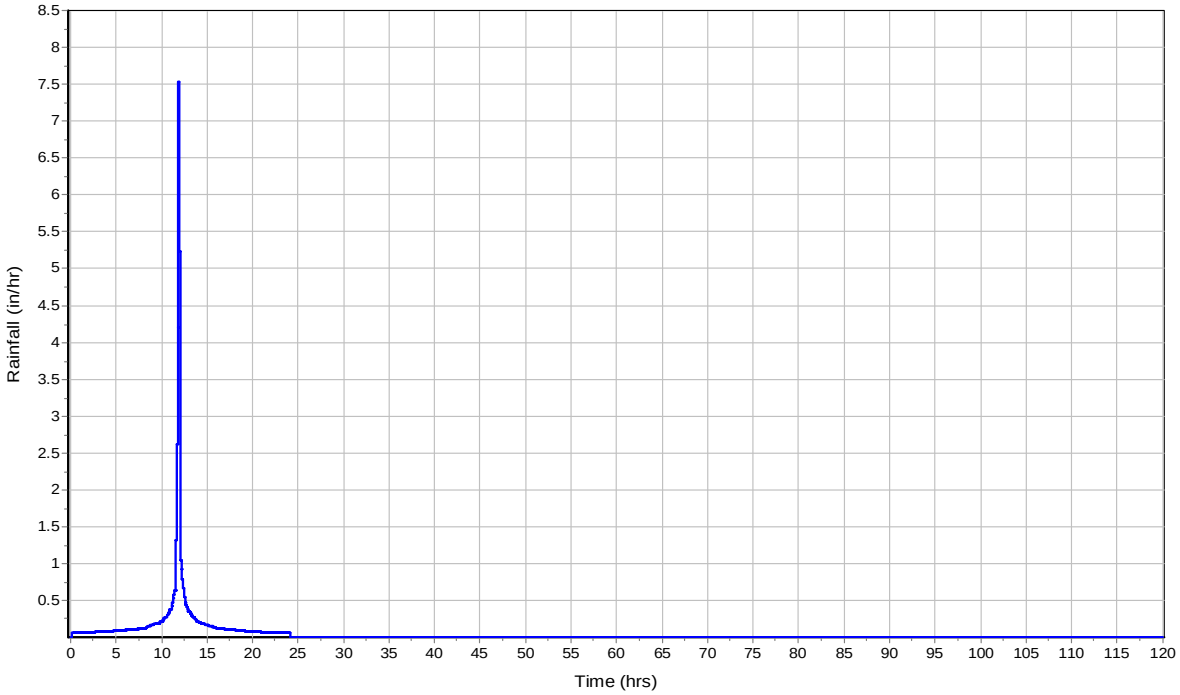
User-Defined TOC override (minutes): 8

Subbasin Runoff Results

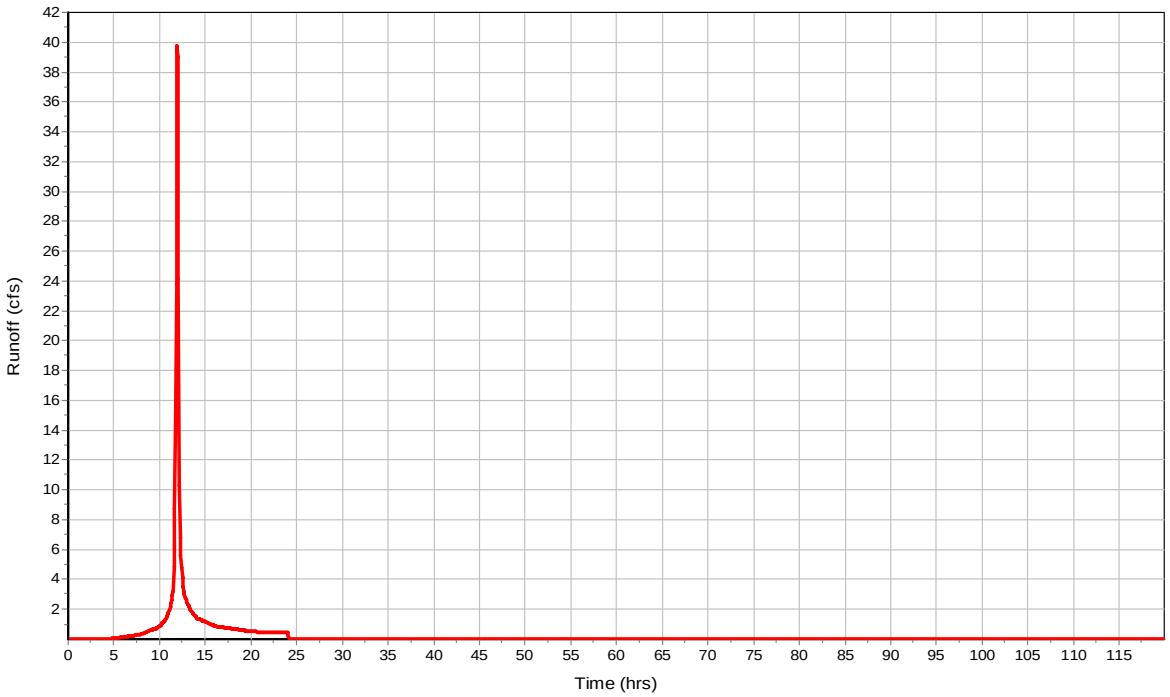
Total Rainfall (in)	5.5
Total Runoff (in)	4.15
Peak Runoff (cfs)	42.14
Weighted Curve Number	88.07
Time of Concentration (days hh:mm:ss)	0 00:08:00

Subbasin : POST_DA_I

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : POST_DA_J

Input Data

Area (ac)	19.55
Peak Rate Factor	484
Weighted Curve Number	85.27
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	1.36	C	98
IMPERVIOUS	5.65	D	98
MANAGEDTURF	3.87	C	74
MANAGEDTURF	8.67	D	80
Composite Area & Weighted CN	19.55		85.27

Time of Concentration

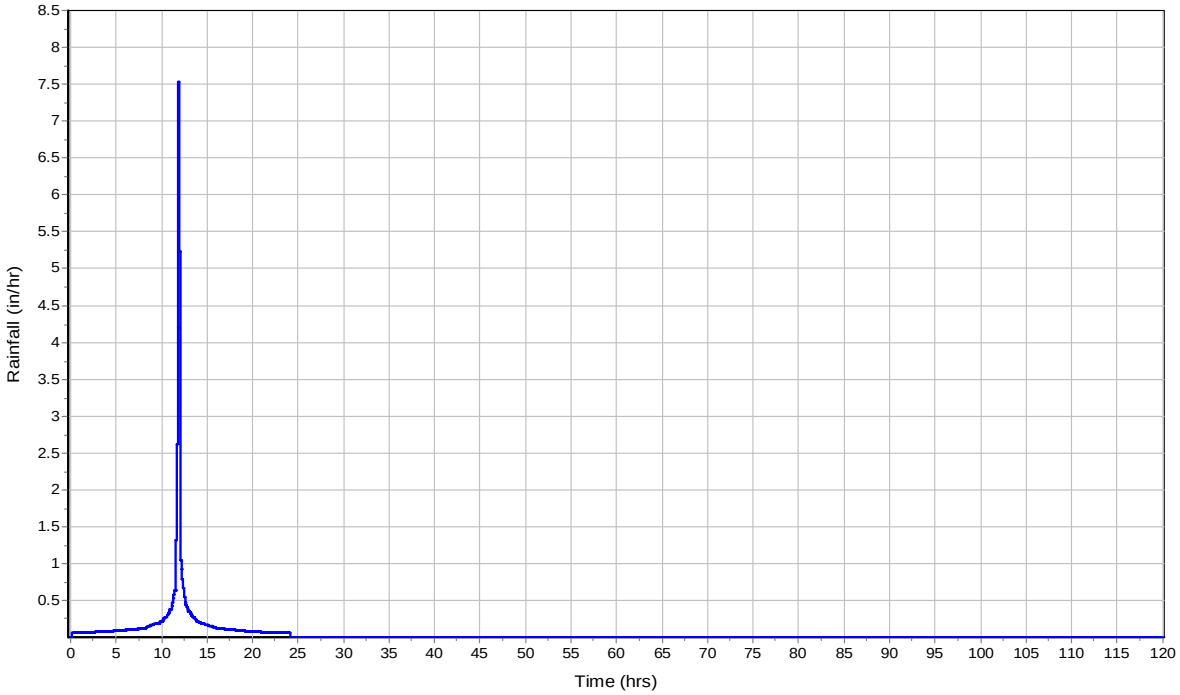
User-Defined TOC override (minutes): 13.00

Subbasin Runoff Results

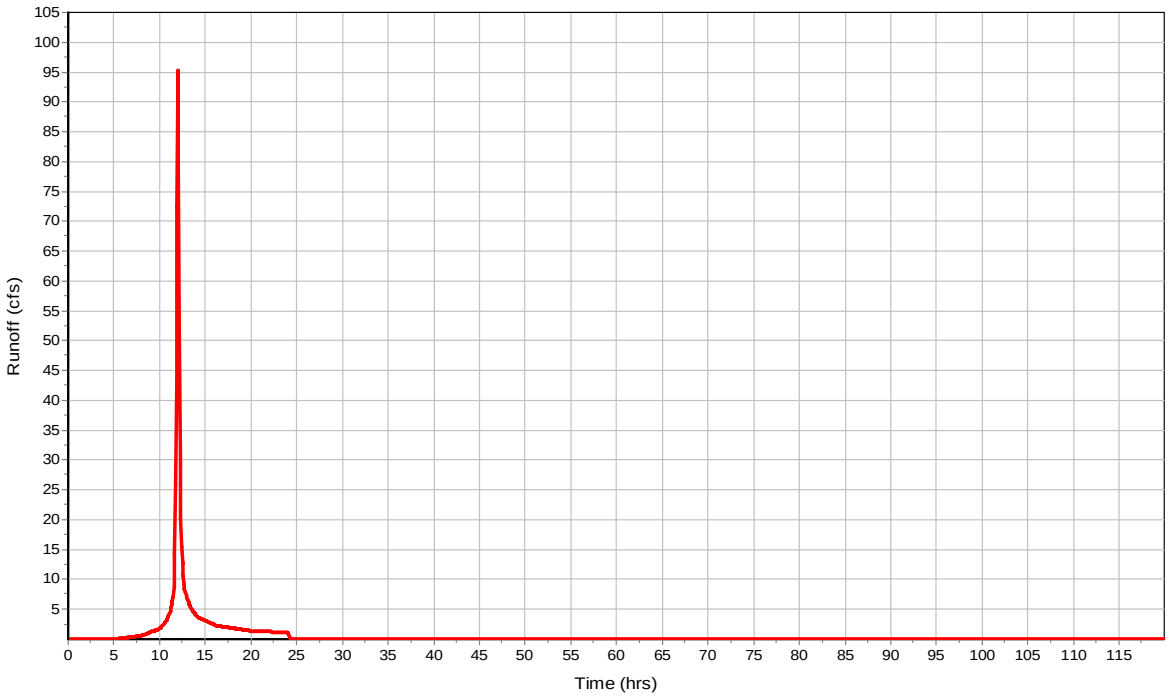
Total Rainfall (in)	5.5
Total Runoff (in)	3.86
Peak Runoff (cfs)	95.95
Weighted Curve Number	85.27
Time of Concentration (days hh:mm:ss)	0 00:13:00

Subbasin : POST_DA_J

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-A

Input Data

Area (ac)	13.13
Peak Rate Factor	484
Weighted Curve Number	87.11
Rain Gage ID	Rain Gage-10

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.24	C	98
IMPERVIOUS	5.62	D	98
MANAGEDTURF	2.02	C	74
MANAGEDTURF	5.25	D	80
Composite Area & Weighted CN	13.13		87.11

Time of Concentration

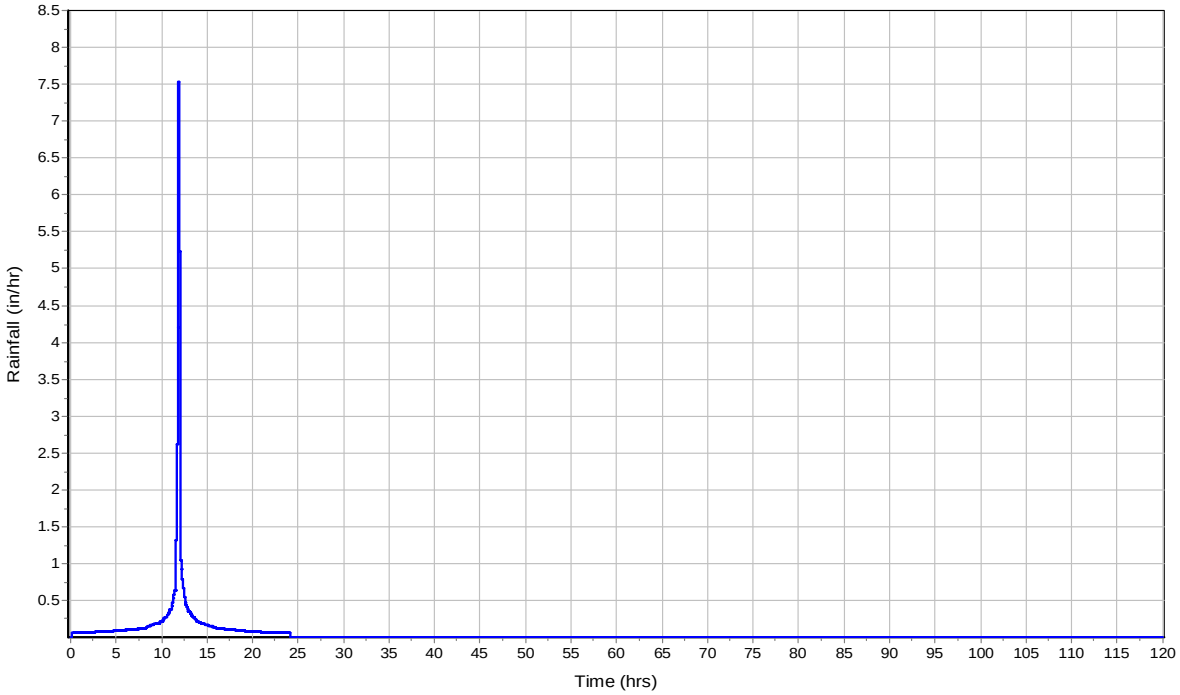
User-Defined TOC override (minutes): 7

Subbasin Runoff Results

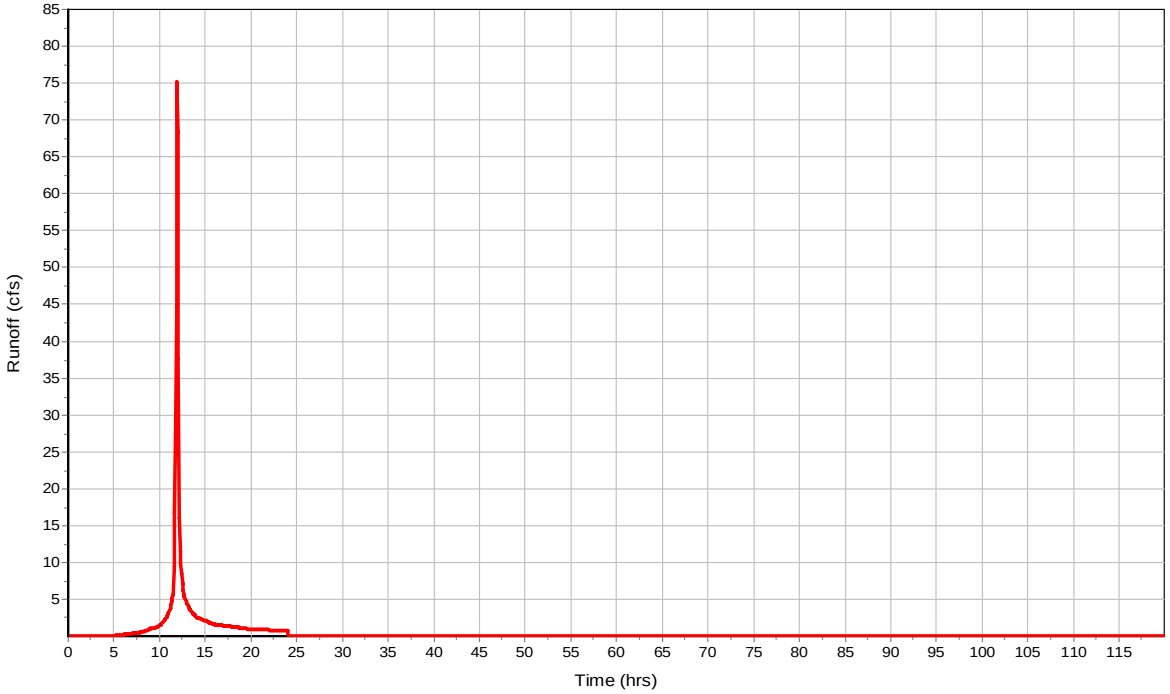
Total Rainfall (in)	5.5
Total Runoff (in)	4.05
Peak Runoff (cfs)	77.38
Weighted Curve Number	87.11
Time of Concentration (days hh:mm:ss)	0 00:07:00

Subbasin : PRE-DA-A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-B

Input Data

Area (ac)	9.92
Peak Rate Factor	484
Weighted Curve Number	78.19
Rain Gage ID	Rain Gage-10

Composite Curve Number

Soil/Surface Description	32 Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.14	C	98
IMPERVIOUS	0.73	D	98
MANAGEDTURF	5.6	C	74
MANAGEDTURF	3.45	D	80
Composite Area & Weighted CN	9.92		78.19

Time of Concentration

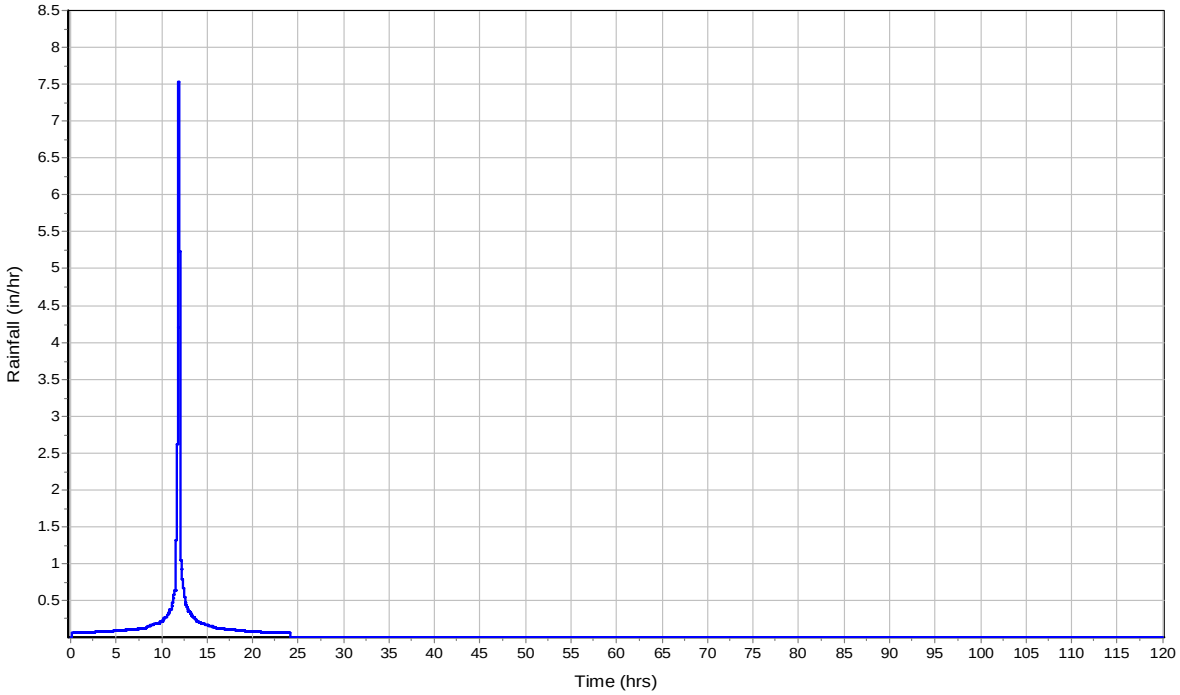
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

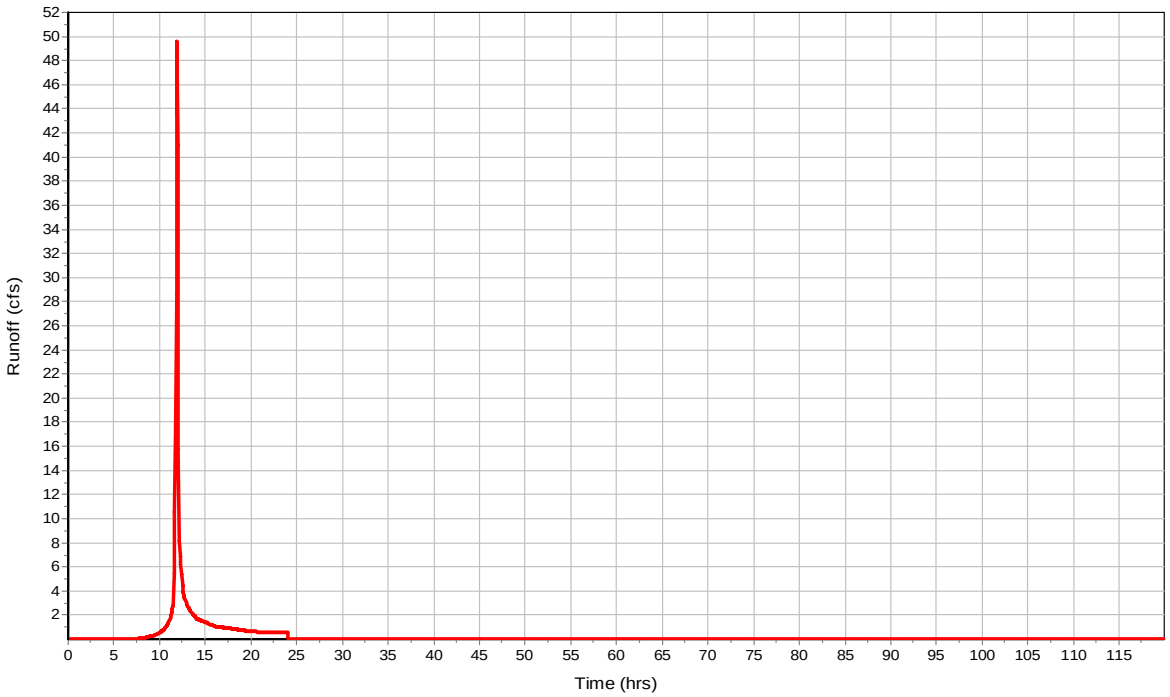
Total Rainfall (in)	5.5
Total Runoff (in)	3.16
Peak Runoff (cfs)	49.72
Weighted Curve Number	78.19
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-C

Input Data

Area (ac)	10.88
Peak Rate Factor	484
Weighted Curve Number	80.33
Rain Gage ID	Rain Gage-10

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.15	C	98
IMPERVIOUS	0.36	D	98
MANAGEDTURF	0.93	C	74
MANAGEDTURF	9.44	D	80
Composite Area & Weighted CN	10.88		80.33

Time of Concentration

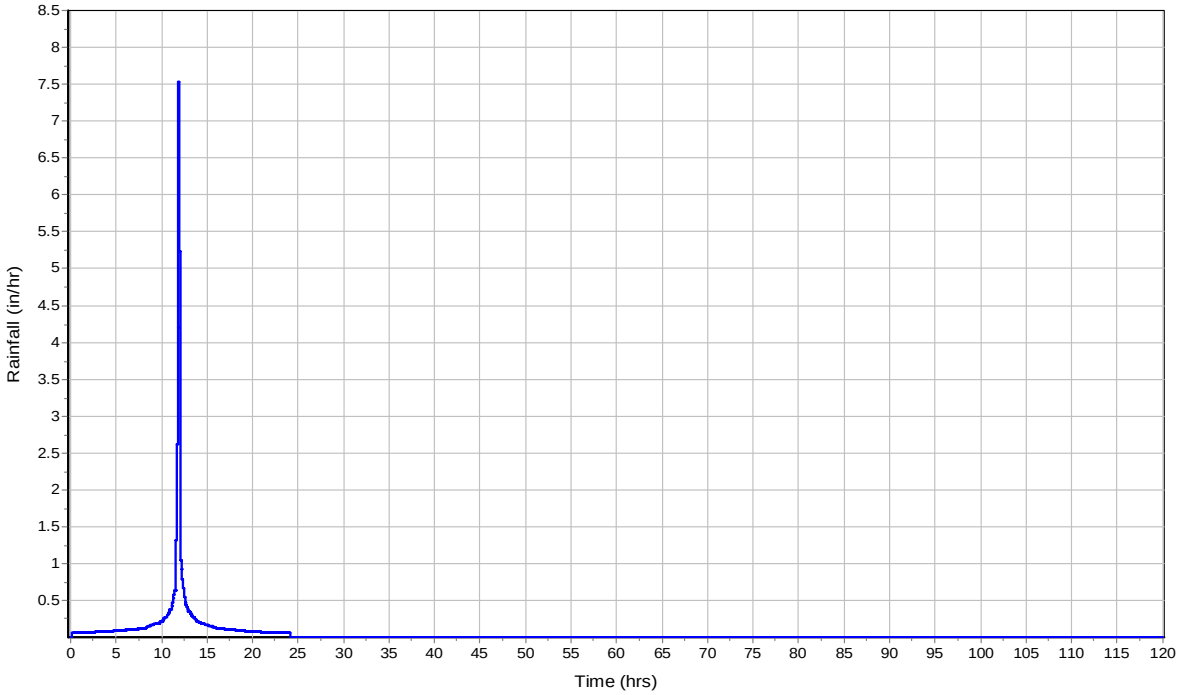
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

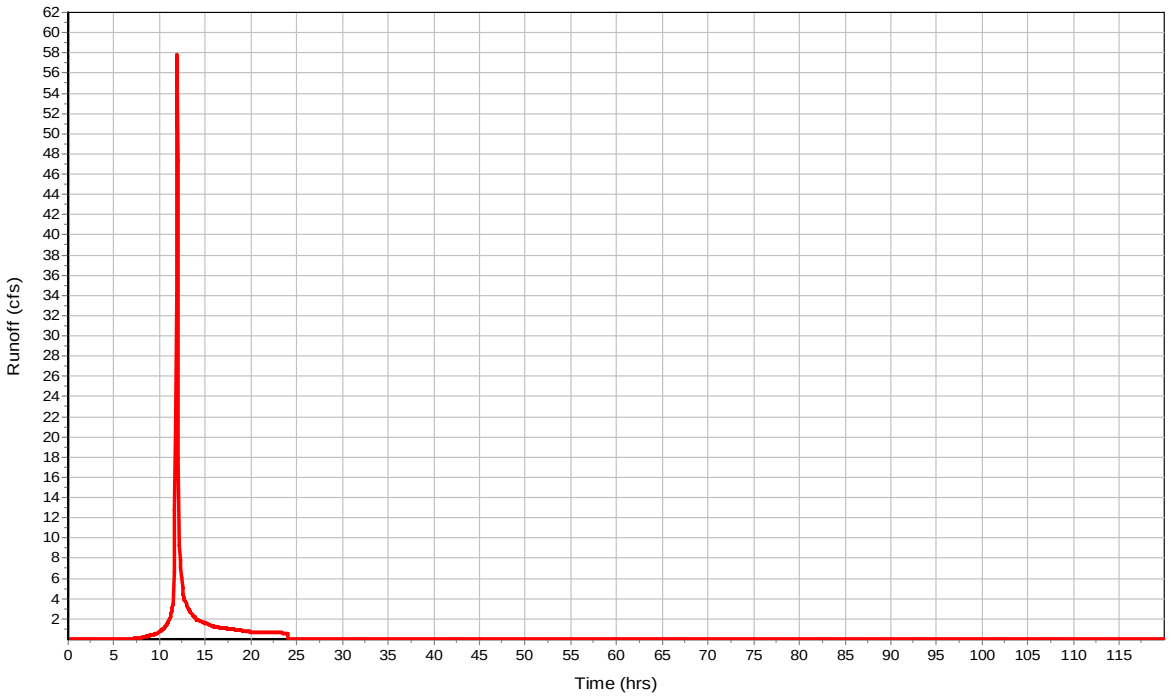
Total Rainfall (in)	5.5
Total Runoff (in)	3.37
Peak Runoff (cfs)	57.87
Weighted Curve Number	80.33
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-D

Input Data

Area (ac)	7.42
Peak Rate Factor	484
Weighted Curve Number	78.88
Rain Gage ID	Rain Gage-10

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0.36	D	98
MANAGEDTURF	2.46	C	74
MANAGEDTURF	4.6	D	80
Composite Area & Weighted CN	7.42		78.88

Time of Concentration

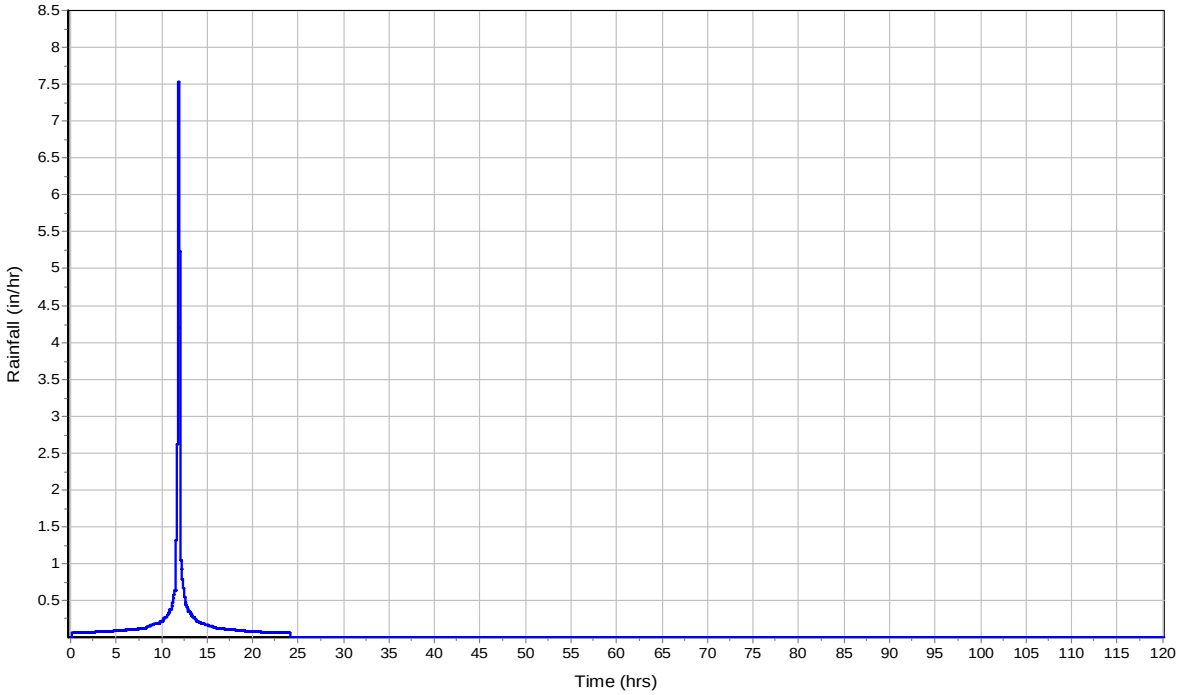
User-Defined TOC override (minutes): 9

Subbasin Runoff Results

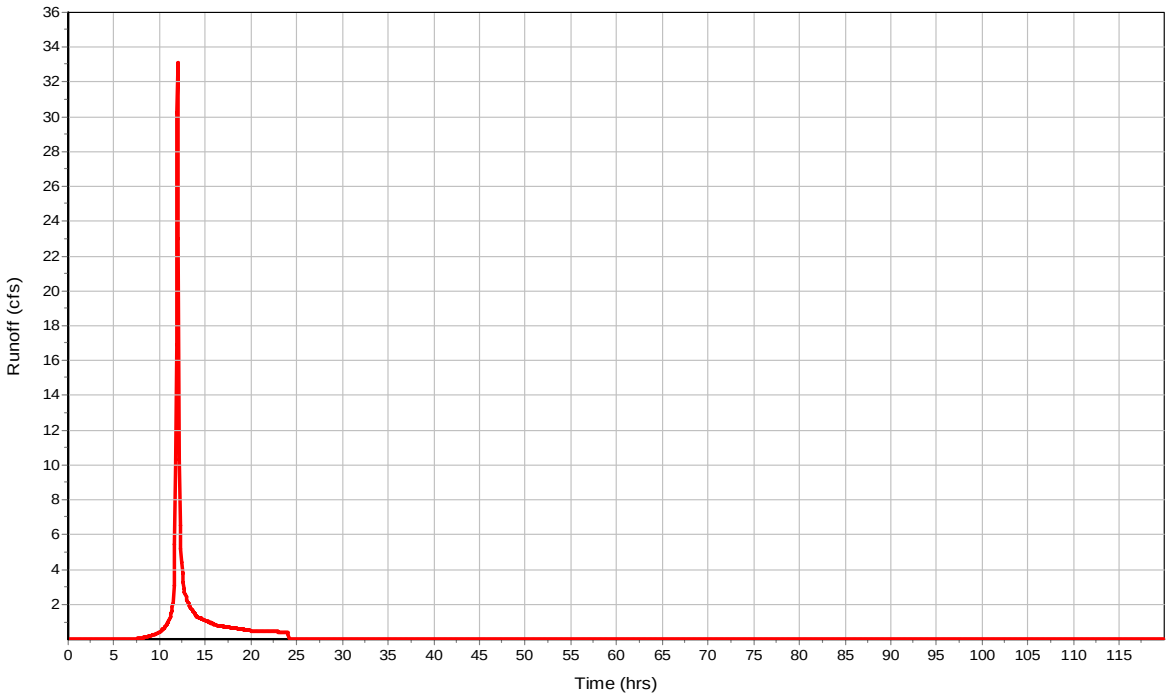
Total Rainfall (in)	5.5
Total Runoff (in)	3.23
Peak Runoff (cfs)	33.84
Weighted Curve Number	78.88
Time of Concentration (days hh:mm:ss)	0 00:09:00

Subbasin : PRE-DA-D

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-E

Input Data

Area (ac)	10.53
Peak Rate Factor	484
Weighted Curve Number	77.95
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.14	C	98
IMPERVIOUS	0.08	D	98
MANAGEDTURF	4.25	C	74
MANAGEDTURF	6.06	D	80
Composite Area & Weighted CN	10.53		77.95

Time of Concentration

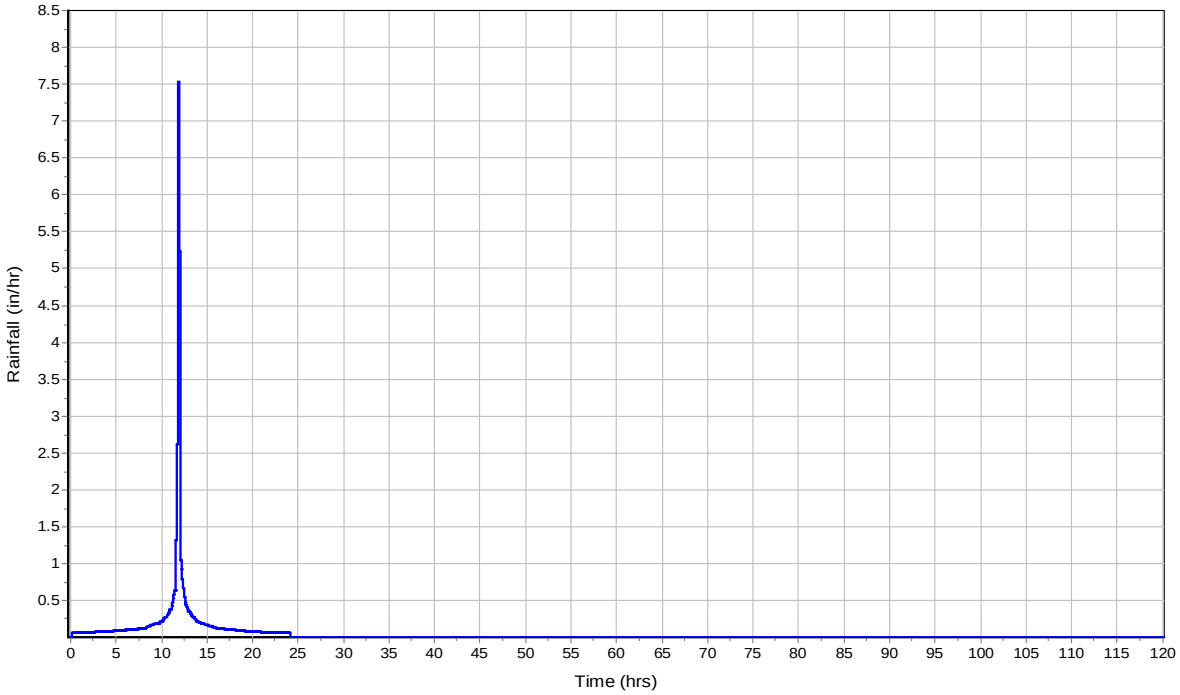
User-Defined TOC override (minutes): 6

Subbasin Runoff Results

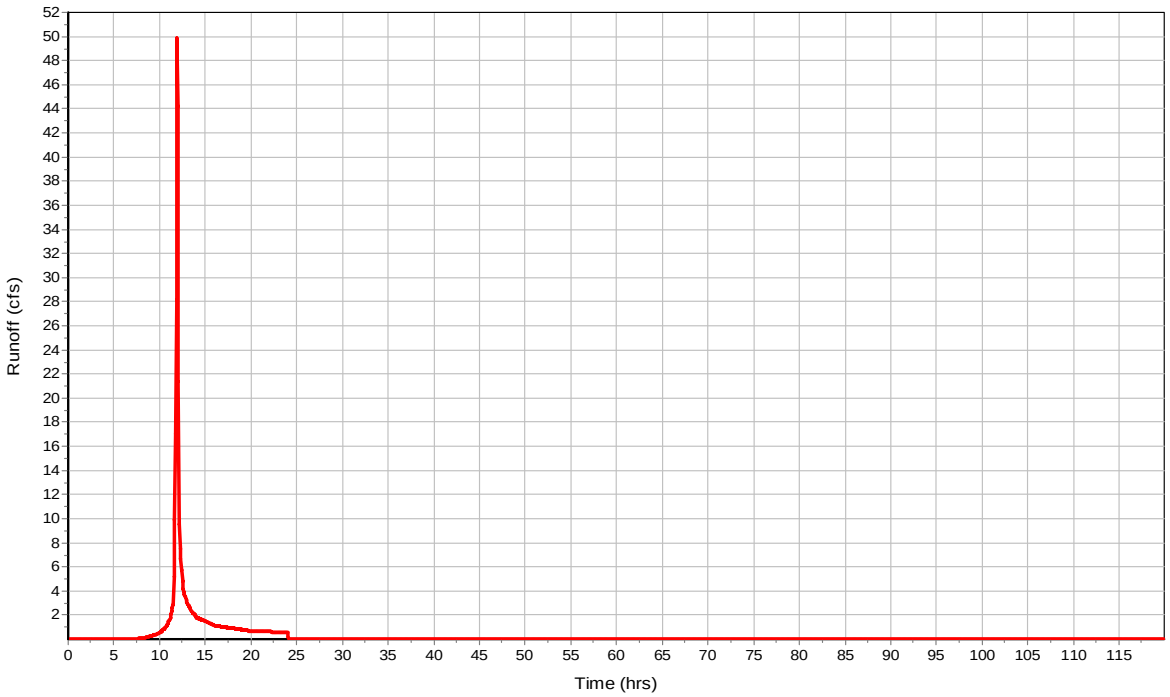
Total Rainfall (in)	5.5
Total Runoff (in)	3.14
Peak Runoff (cfs)	50.84
Weighted Curve Number	77.95
Time of Concentration (days hh:mm:ss)	0 00:06:00

Subbasin : PRE-DA-E

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-F

Input Data

Area (ac)	9.53
Peak Rate Factor	484
Weighted Curve Number	79.32
Rain Gage ID	Rain Gage-10

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
IMPERVIOUS	0.06	C	98
IMPERVIOUS	1.5	D	98
MANAGEDTURF	5.76	C	74
MANAGEDTURF	2.21	D	80
Composite Area & Weighted CN	9.53		79.32

Time of Concentration

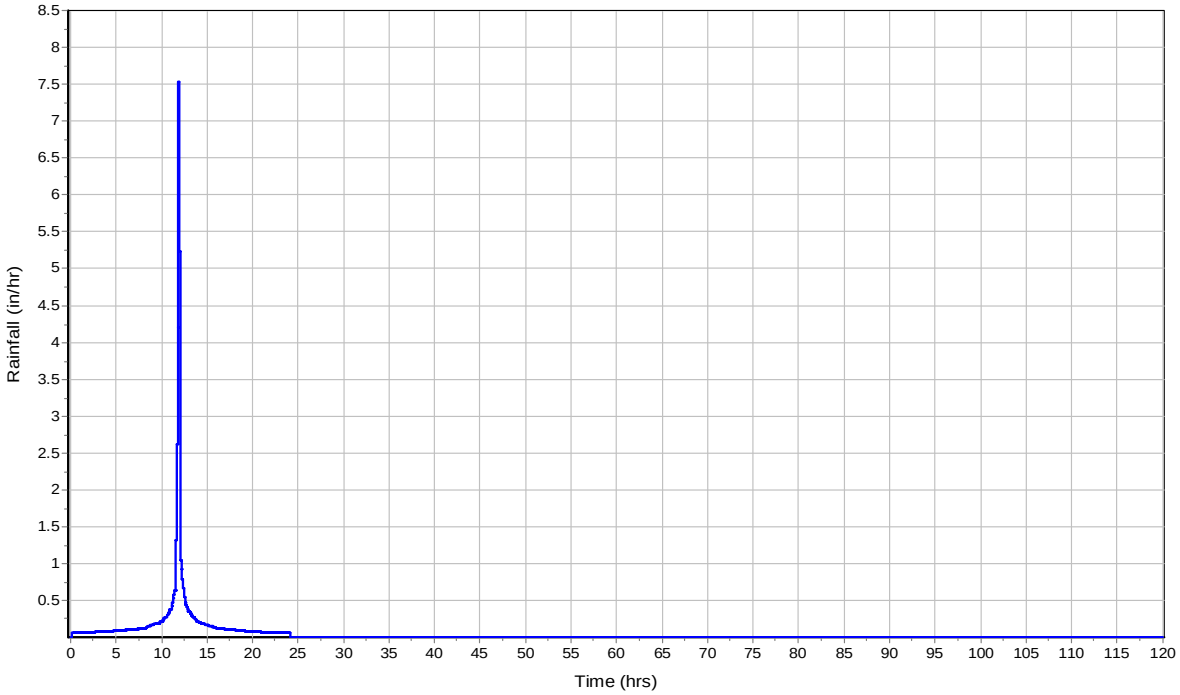
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

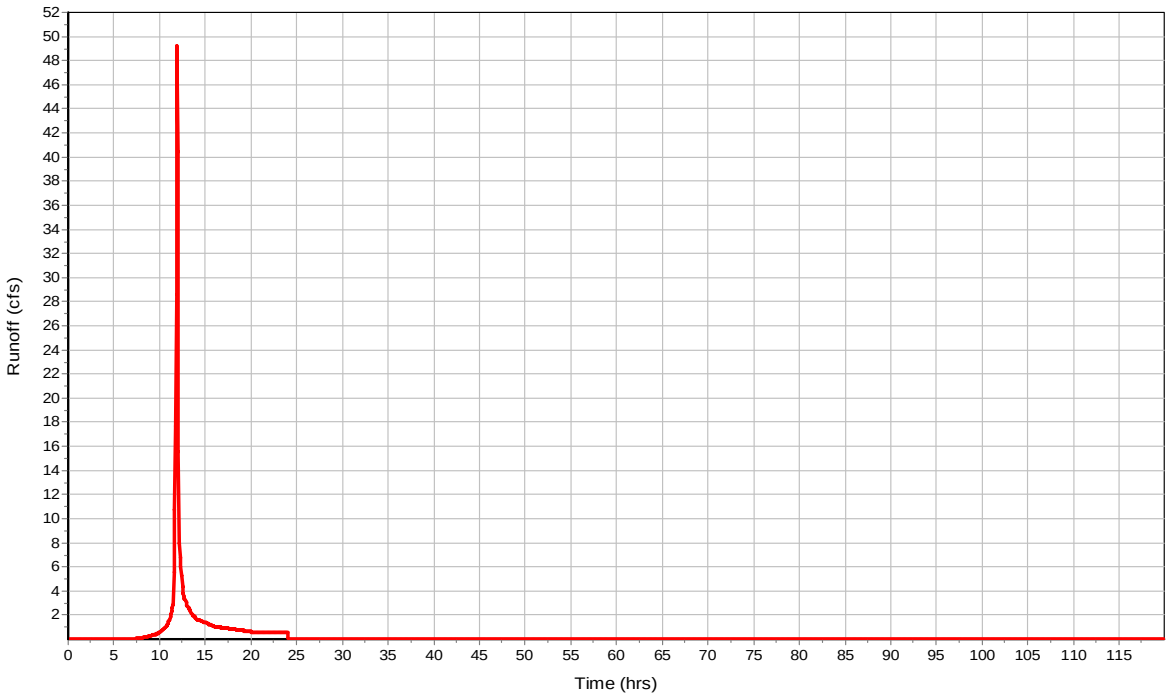
Total Rainfall (in)	5.5
Total Runoff (in)	3.27
Peak Runoff (cfs)	49.32
Weighted Curve Number	79.32
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-F

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-G

Input Data

Area (ac)	2.17
Peak Rate Factor	484
Weighted Curve Number	74
Rain Gage ID	Rain Gage-10

Composite Curve Number

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0	C	98
IMPERVIOUS	0	D	98
MANAGEDTURF	2.17	C	74
MANAGEDTURF	0	D	80
Composite Area & Weighted CN	2.17		74

Time of Concentration

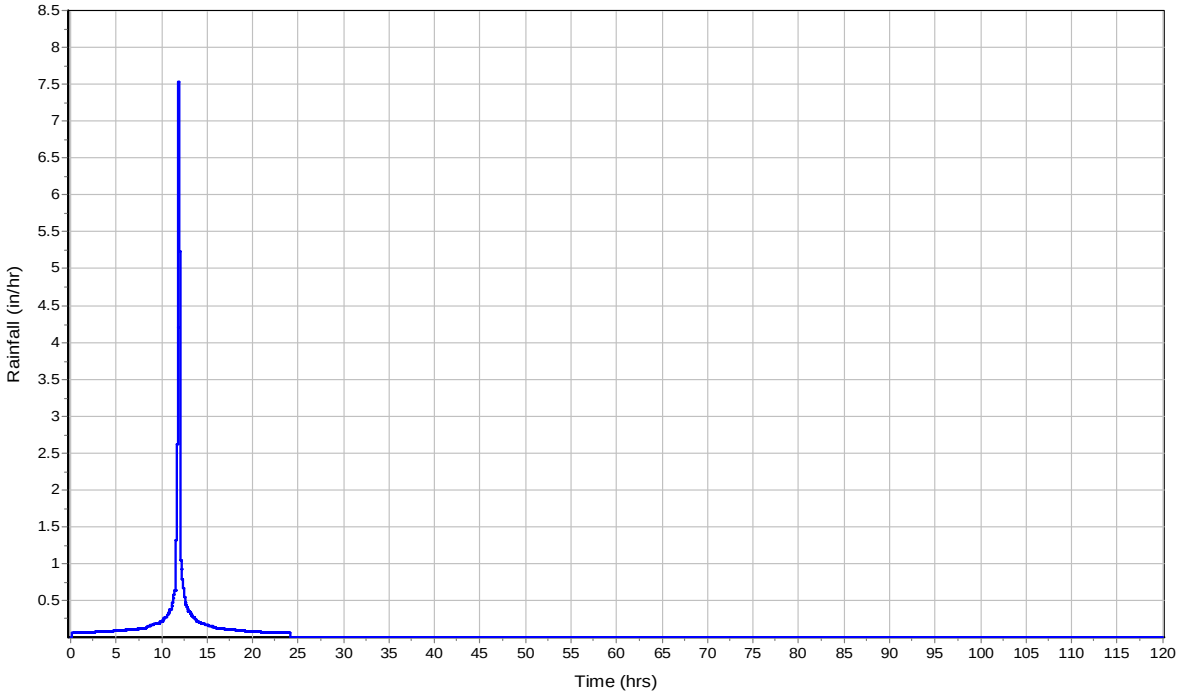
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

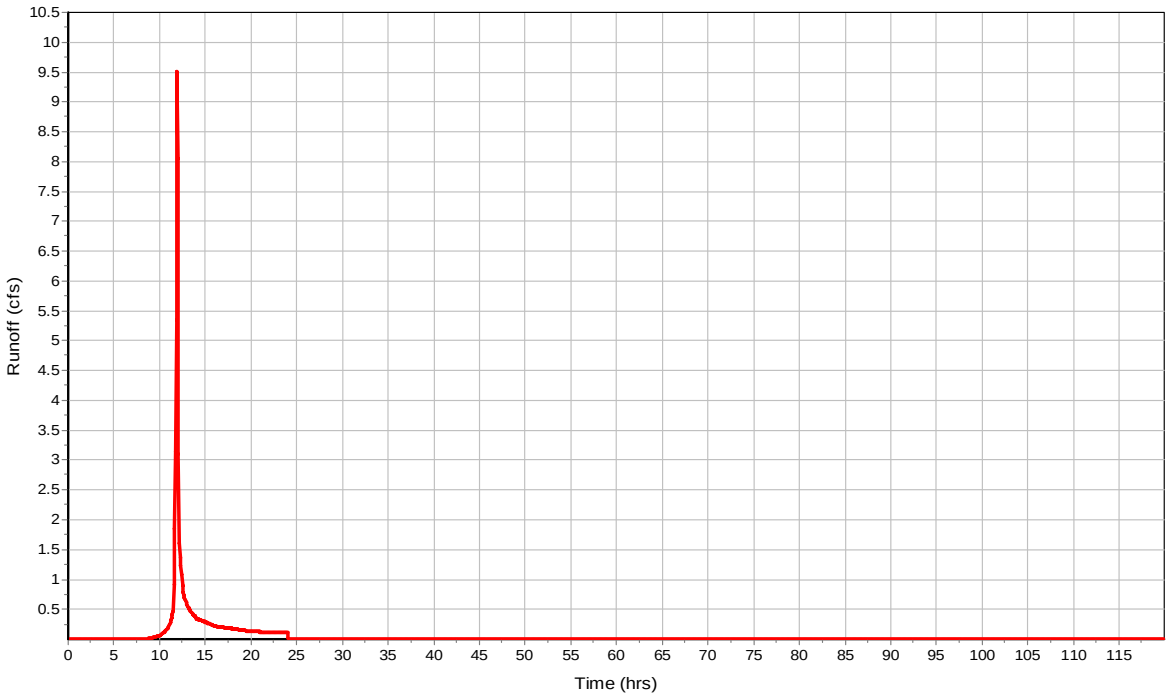
Total Rainfall (in)	5.5
Total Runoff (in)	2.77
Peak Runoff (cfs)	9.56
Weighted Curve Number	74
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-G

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-H

Input Data

Area (ac)	7.24
Peak Rate Factor	484
Weighted Curve Number	77.85
Rain Gage ID	Rain Gage-10

Composite Curve Number

32 Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.03	C	98
IMPERVIOUS	0.09	D	98
MANAGEDTURF	2.95	C	74
MANAGEDTURF	4.17	D	80
Composite Area & Weighted CN	7.24		77.85

Time of Concentration

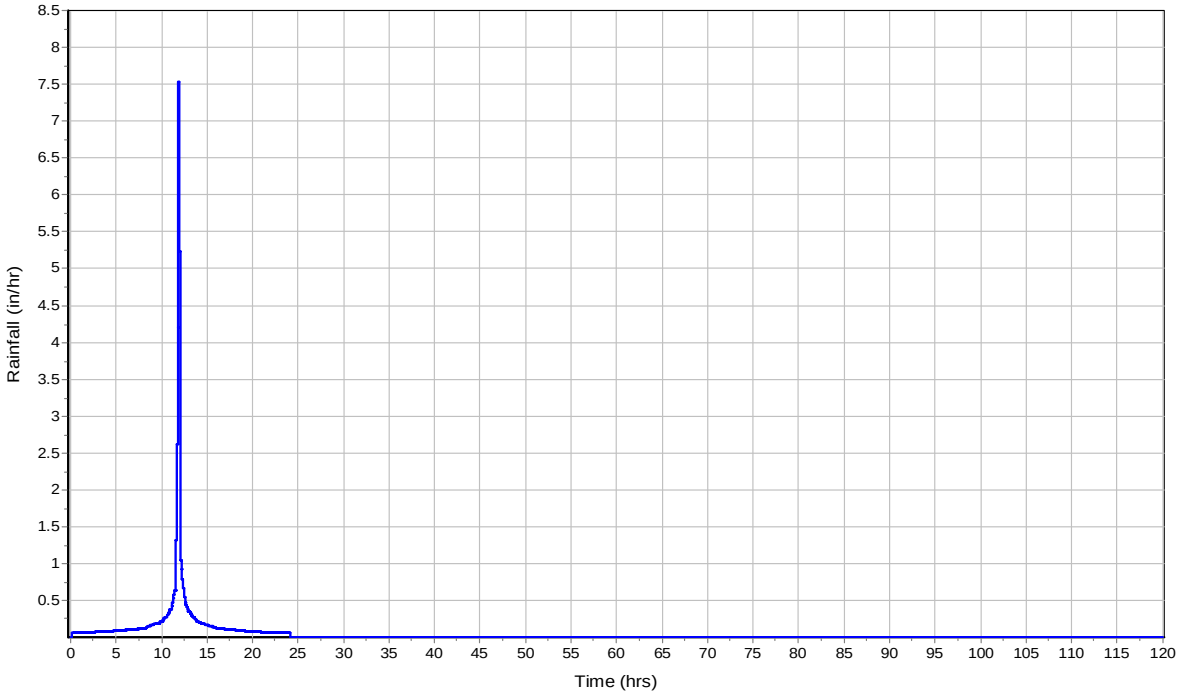
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

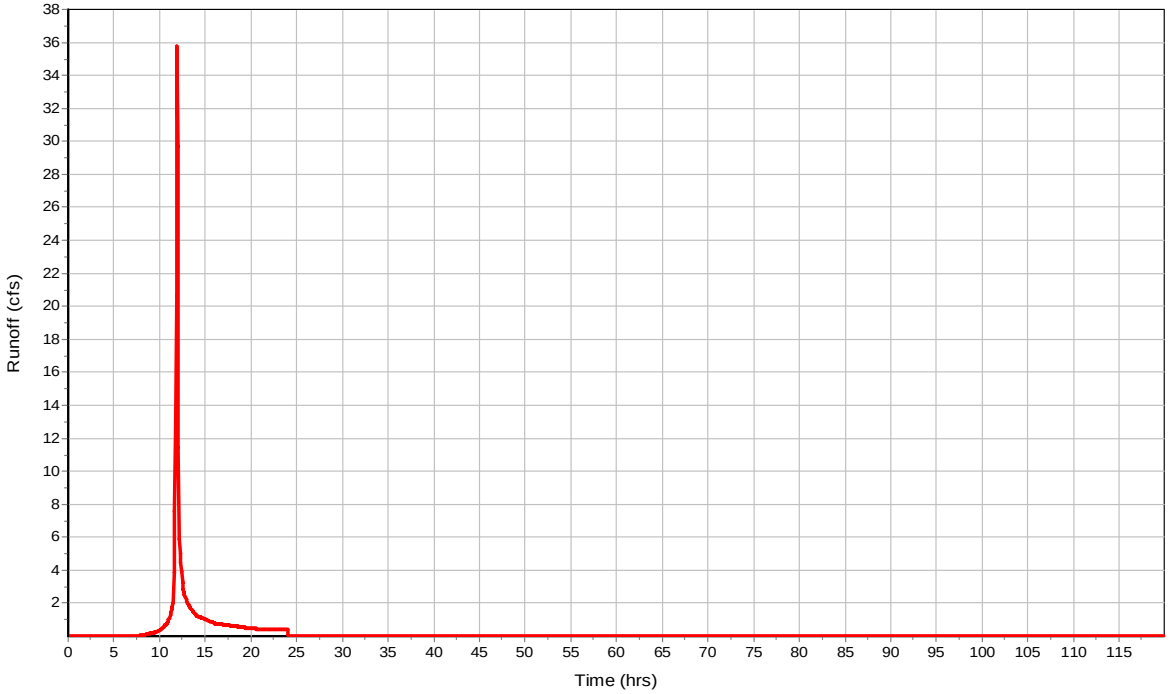
Total Rainfall (in)	5.5
Total Runoff (in)	3.13
Peak Runoff (cfs)	35.93
Weighted Curve Number	77.85
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-H

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-I

Input Data

Area (ac)	5.99
Peak Rate Factor	484
Weighted Curve Number	85.23
Rain Gage ID	Rain Gage-10

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	1.18	C	98
IMPERVIOUS	1.23	D	98
MANAGEDTURF	2.01	C	74
MANAGEDTURF	1.57	D	80
Composite Area & Weighted CN	5.99		85.23

Time of Concentration

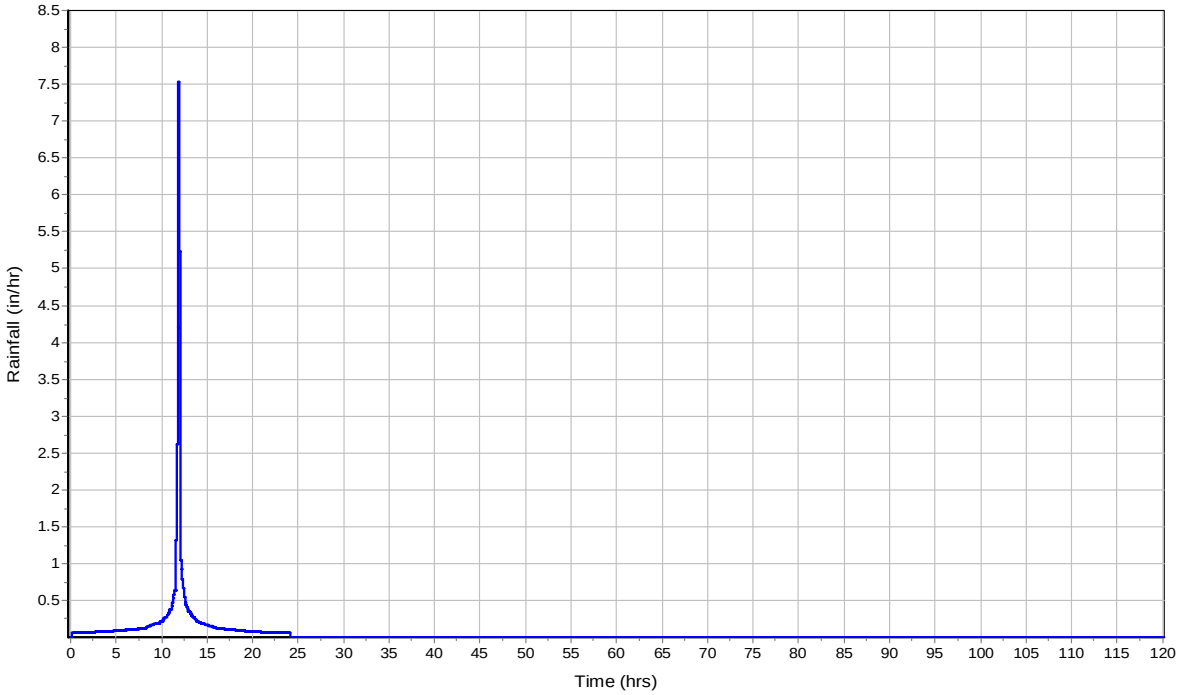
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

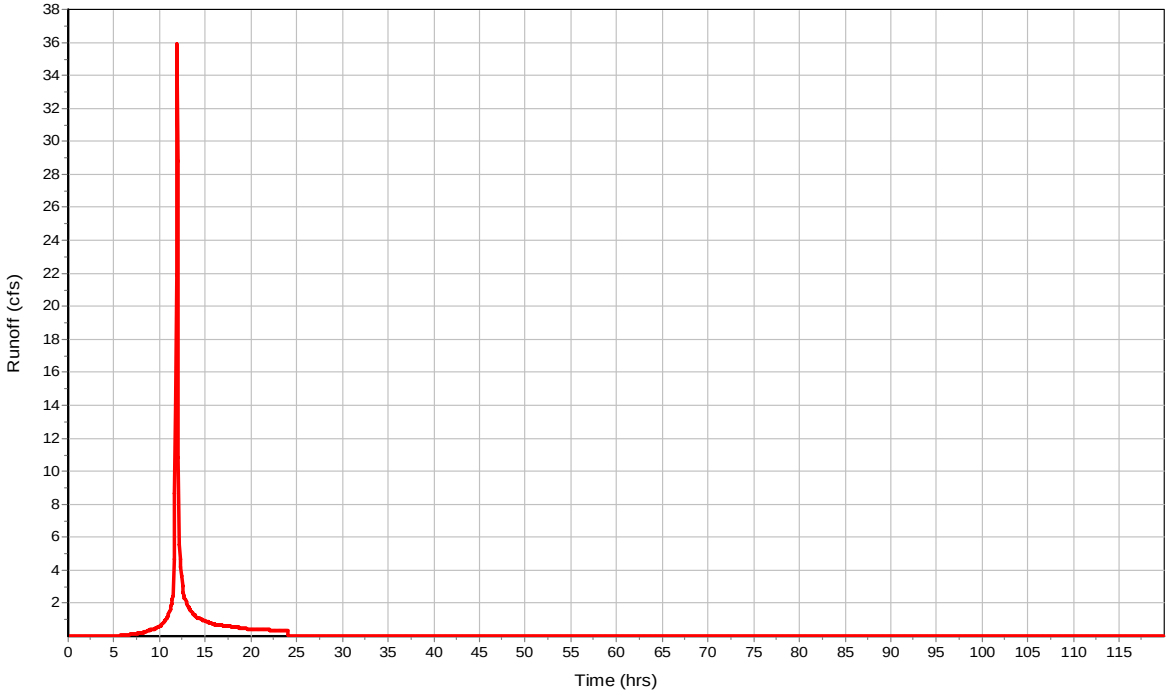
Total Rainfall (in)	5.5
Total Runoff (in)	3.86
Peak Runoff (cfs)	35.91
Weighted Curve Number	85.23
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-I

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-J

Input Data

Area (ac)	4.01
Peak Rate Factor	484
Weighted Curve Number	84.89
Rain Gage ID	Rain Gage-10

Composite Curve Number

32

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.15	C	98
IMPERVIOUS	1.14	D	98
MANAGEDTURF	0.6	C	74
MANAGEDTURF	2.12	D	80
Composite Area & Weighted CN	4.01		84.89

Time of Concentration

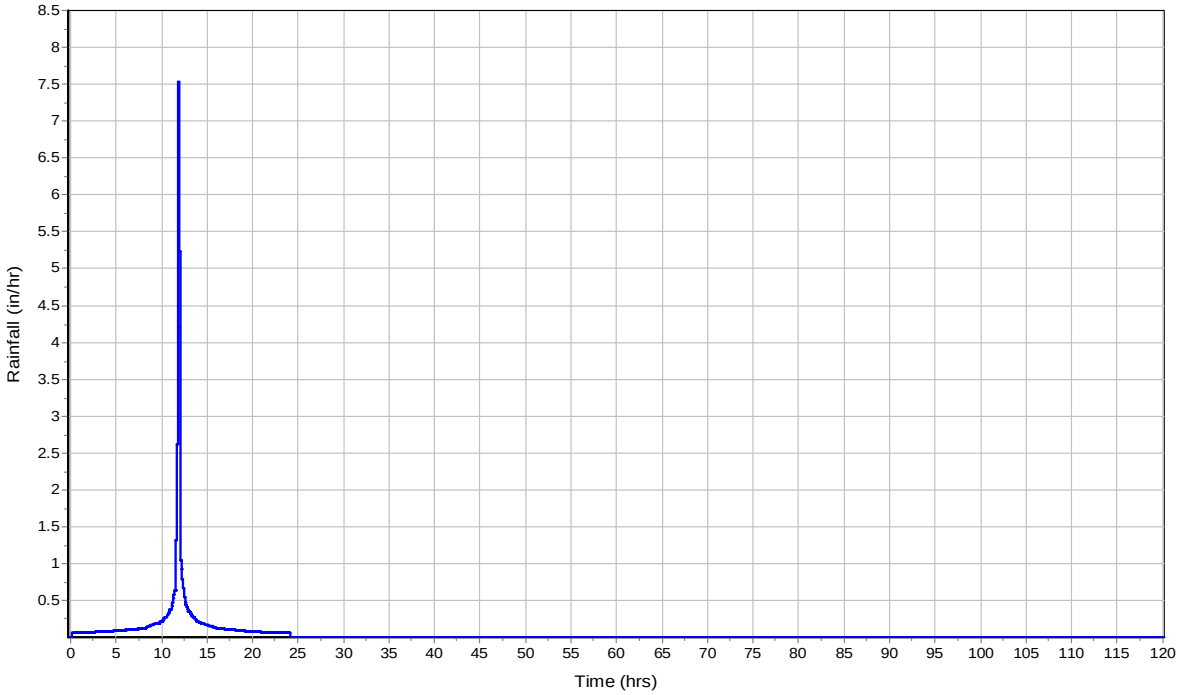
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

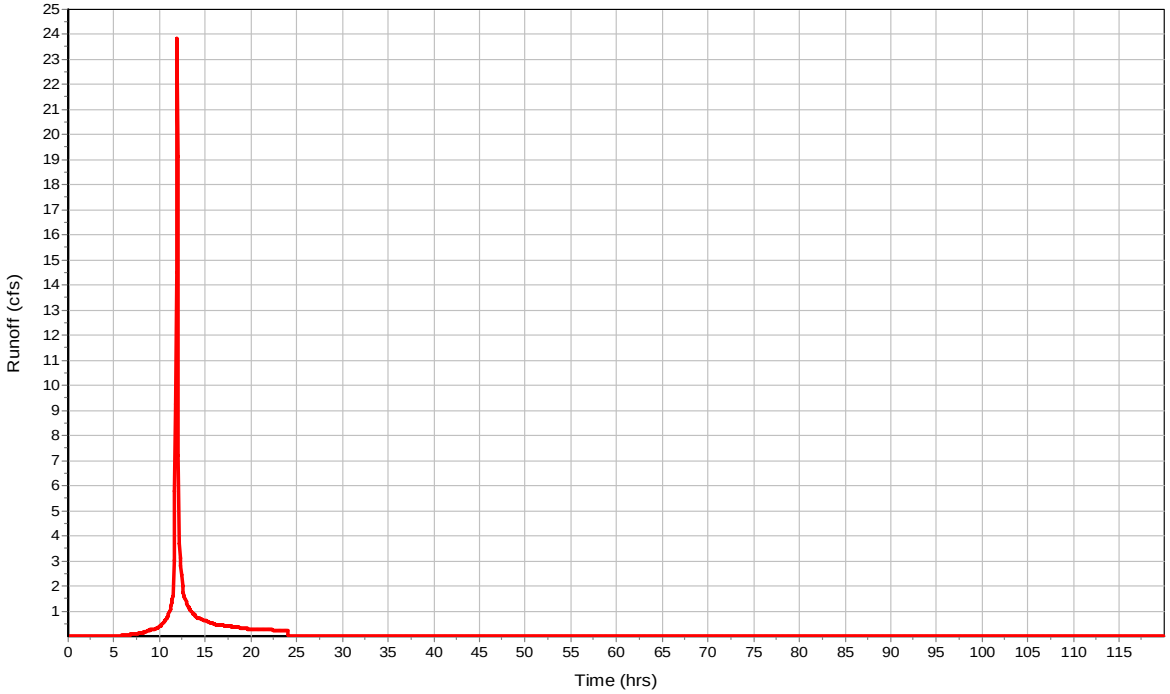
Total Rainfall (in)	5.5
Total Runoff (in)	3.82
Peak Runoff (cfs)	23.88
Weighted Curve Number	84.89
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-J

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PRE-DA-K

Input Data

Area (ac)	11.02
Peak Rate Factor	484
Weighted Curve Number	85.27
Rain Gage ID	Rain Gage-10

Composite Curve Number

Soil/Surface Description (32)	Area (acres)	Soil Group	Curve Number
IMPERVIOUS	0.33	C	98
IMPERVIOUS	3.24	D	98
MANAGEDTURF	1.03	C	74
MANAGEDTURF	6.42	D	80
Composite Area & Weighted CN	11.02		85.27

Time of Concentration

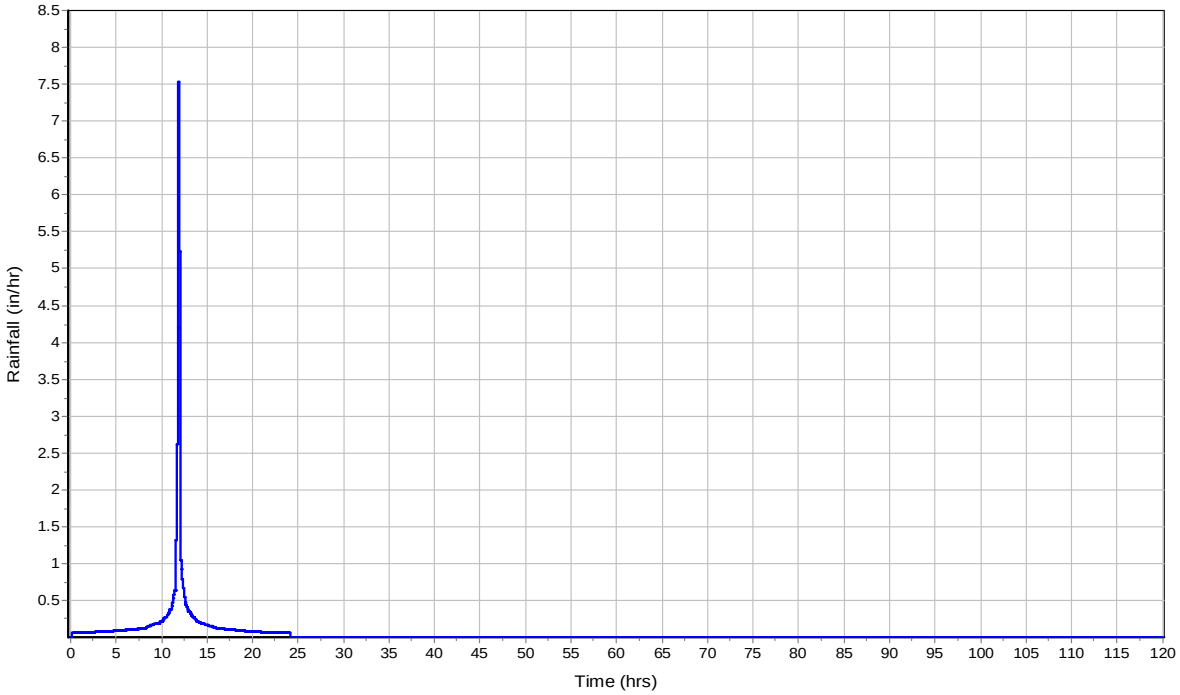
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

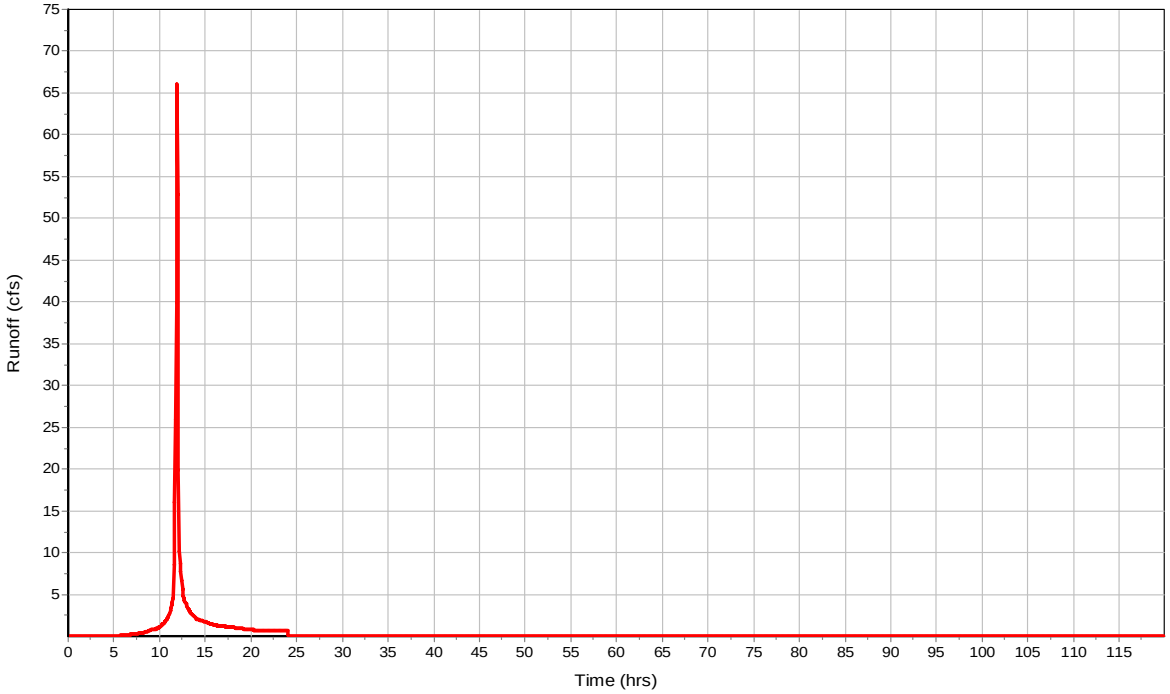
Total Rainfall (in)	5.5
Total Runoff (in)	3.86
Peak Runoff (cfs)	66.11
Weighted Curve Number	85.27
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : PRE-DA-K

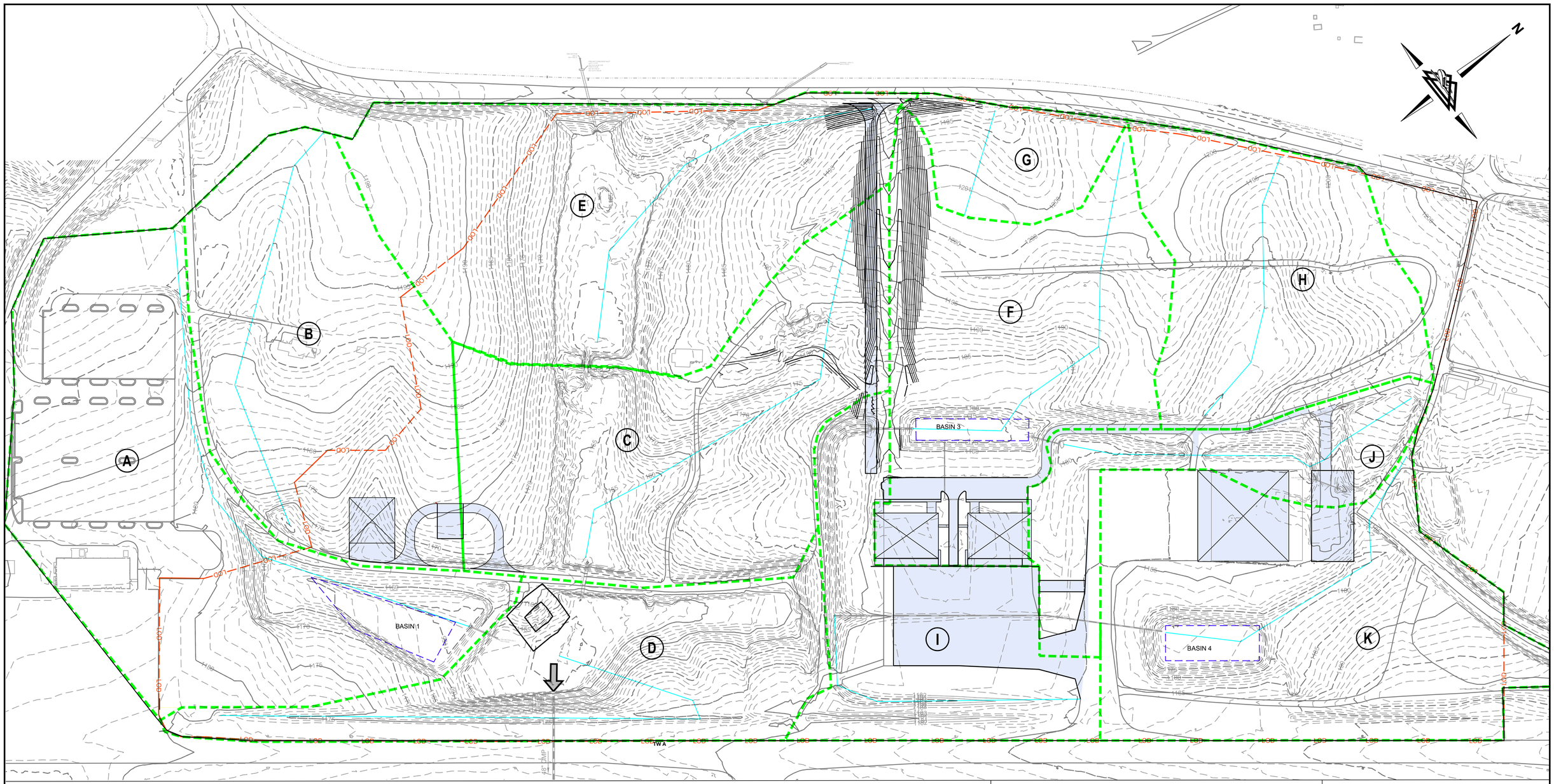
Rainfall Intensity Graph



Runoff Hydrograph



Appendix D – Drainage Area Maps



HYDROLOGIC DATA												
DRAINAGE AREA		IMPERVIOUS COVER (AC)				MANAGED TURF (GRASS) (AC)				TOTAL AREA (AC)	WEIGHTED CN	TIME OF CONCENTRATION (MIN)
	HSG	A	B	C	D	A	B	C	D			
	CN	98.00	98.00	98.00	98.00	39.00	61.00	74.00	80.00			
LOD - DRAINAGE AREA A		0.00	0.00	0.24	5.62	0.00	0.00	2.02	5.25	13.12	87	7
LOD - DRAINAGE AREA B		0.00	0.00	0.14	0.73	0.00	0.00	5.60	3.45	9.92	78	5
LOD - DRAINAGE AREA C		0.00	0.00	0.15	0.36	0.00	0.00	0.93	9.44	10.89	80	5
LOD - DRAINAGE AREA D		0.00	0.00	0.00	0.36	0.00	0.00	2.46	4.60	7.42	79	9
LOD - DRAINAGE AREA E		0.00	0.00	0.14	0.08	0.00	0.00	4.25	6.06	10.54	78	6
LOD - DRAINAGE AREA F		0.00	0.00	0.06	1.50	0.00	0.00	5.76	2.21	9.54	79	5
LOD - DRAINAGE AREA G		0.00	0.00	0.00	0.00	0.00	0.00	2.17	0.00	2.17	74	5
LOD - DRAINAGE AREA H		0.00	0.00	0.03	0.09	0.00	0.00	2.95	4.17	7.25	78	5
LOD - DRAINAGE AREA I		0.00	0.00	1.18	1.23	0.00	0.00	2.01	1.57	5.98	85	5
LOD - DRAINAGE AREA J		0.00	0.00	0.15	1.14	0.00	0.00	0.60	2.12	4.01	85	5
LOD - DRAINAGE AREA K		0.00	0.00	0.33	3.24	0.00	0.00	1.03	6.42	11.01	85	5

LEGEND

- LOD — LIMITS OF DISTURBANCE
- DRAINAGE AREA (PRE)
- X — DRAINAGE AREA LABEL
- TIME OF CONCENTRATION FLOW PATH
- EXISTING STORMWATER BASIN
- POINT OF OUTFALL ANALYSIS

100 0 100 200
SCALE: 1"=100' FEET

PRE DRAINAGE AREA MAP

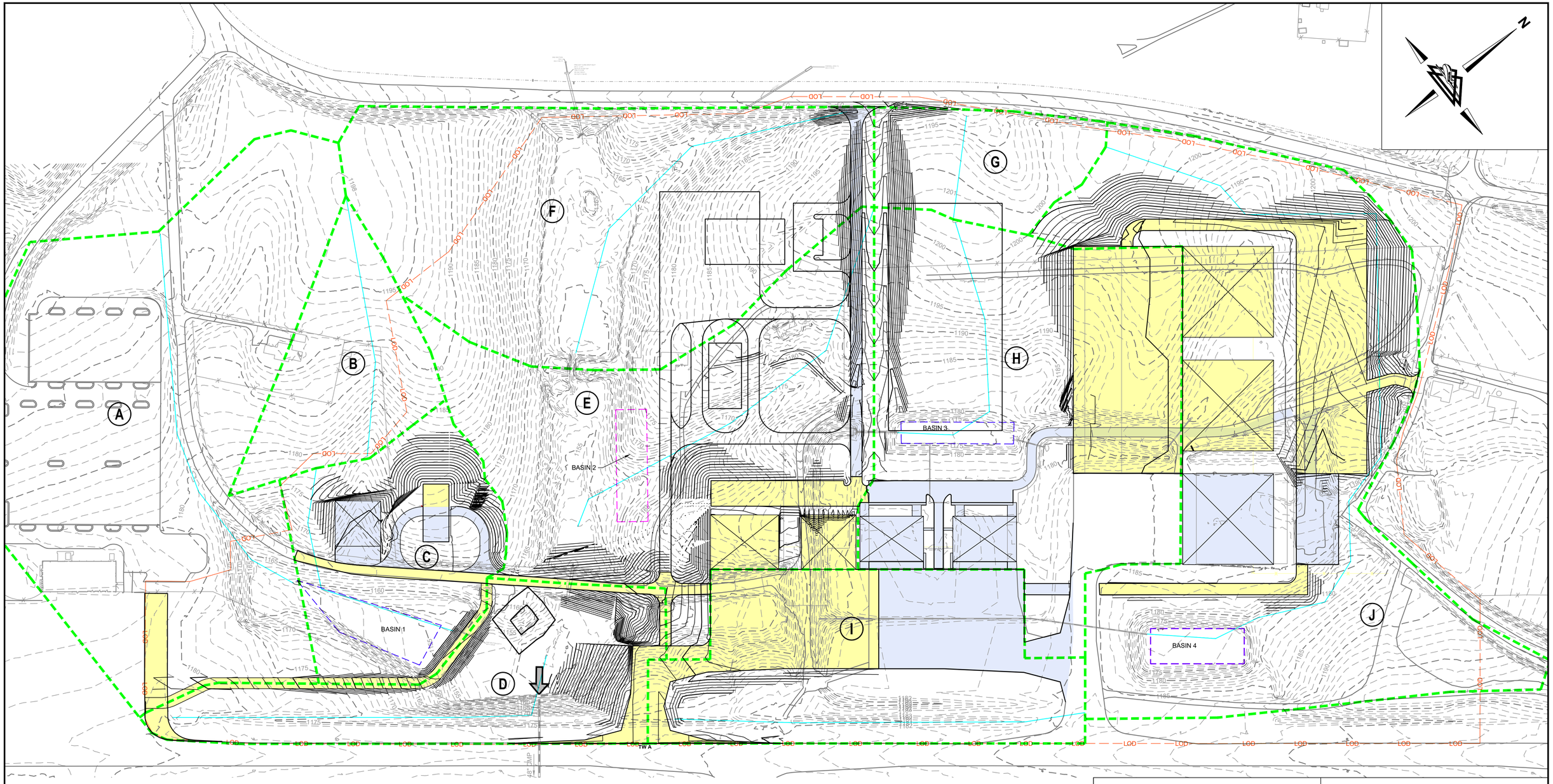
SHENANDOAH VALLEY REGIONAL AIRPORT

DELTA AIRPORT CONSULTANTS, INC.
www.deltaairport.com

EXHIBIT 1

DRAWN BY:	BMC	SCALE:	1" = 100'
CHECKED BY:	####	DATE:	JUNE 2023

DRAWING: 22056 DAM Pre.dwg LAYOUT: 24X36
XREFS: 22043-PLAN-EX.dwg IMAGES:



HYDROLOGIC DATA

DRAINAGE AREA		IMPERVIOUS COVER (AC)				MANAGED TURF (GRASS) (AC)				TOTAL AREA (AC)	WEIGHTED CN	TIME OF CONCENTRATION (MIN)
	HSG	A	B	C	D	A	B	C	D			
	CN	98.00	98.00	98.00	98.00	39.00	61.00	74.00	80.00			
LOD - DRAINAGE AREA A		0.00	0.00	0.52	6.00	0.00	0.00	4.25	4.50	15.27	86	5
LOD - DRAINAGE AREA B		0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.84	3.34	76	5
LOD - DRAINAGE AREA C		0.00	0.00	0.04	1.01	0.00	0.00	0.57	3.43	5.06	83	5
LOD - DRAINAGE AREA D		0.00	0.00	0.35	0.34	0.00	0.00	0.61	3.97	5.27	82	6
LOD - DRAINAGE AREA E		0.00	0.00	0.21	1.57	0.00	0.00	0.86	8.88	11.51	82	6
LOD - DRAINAGE AREA F		0.00	0.00	0.16	0.00	0.00	0.00	3.99	5.91	10.05	78	5
LOD - DRAINAGE AREA G		0.00	0.00	0.00	0.00	0.00	0.00	2.52	0.00	2.52	74	5
LOD - DRAINAGE AREA H		0.00	0.00	2.06	3.66	0.00	0.00	3.22	3.10	12.05	87	5
LOD - DRAINAGE AREA I		0.00	0.00	2.16	1.99	0.00	0.00	2.75	0.31	7.21	88	8
LOD - DRAINAGE AREA J		0.00	0.00	1.36	5.65	0.00	0.00	3.87	8.67	19.54	85	13

LEGEND

- LOD — LIMITS OF DISTURBANCE
- DRAINAGE AREA (PRE)
- X — DRAINAGE AREA LABEL
- TIME OF CONCENTRATION FLOW PATH
- EXISTING STORMWATER BASIN
- PROPOSED STORMWATER BASIN
- FUTURE ALP DEVELOPMENT
- POINT OF OUTFALL ANALYSIS

100 0 100 200
SCALE: 1"=100' FEET

POST DRAINAGE AREA MAP

SHENANDOAH VALLEY REGIONAL AIRPORT

DELTA AIRPORT CONSULTANTS, INC.
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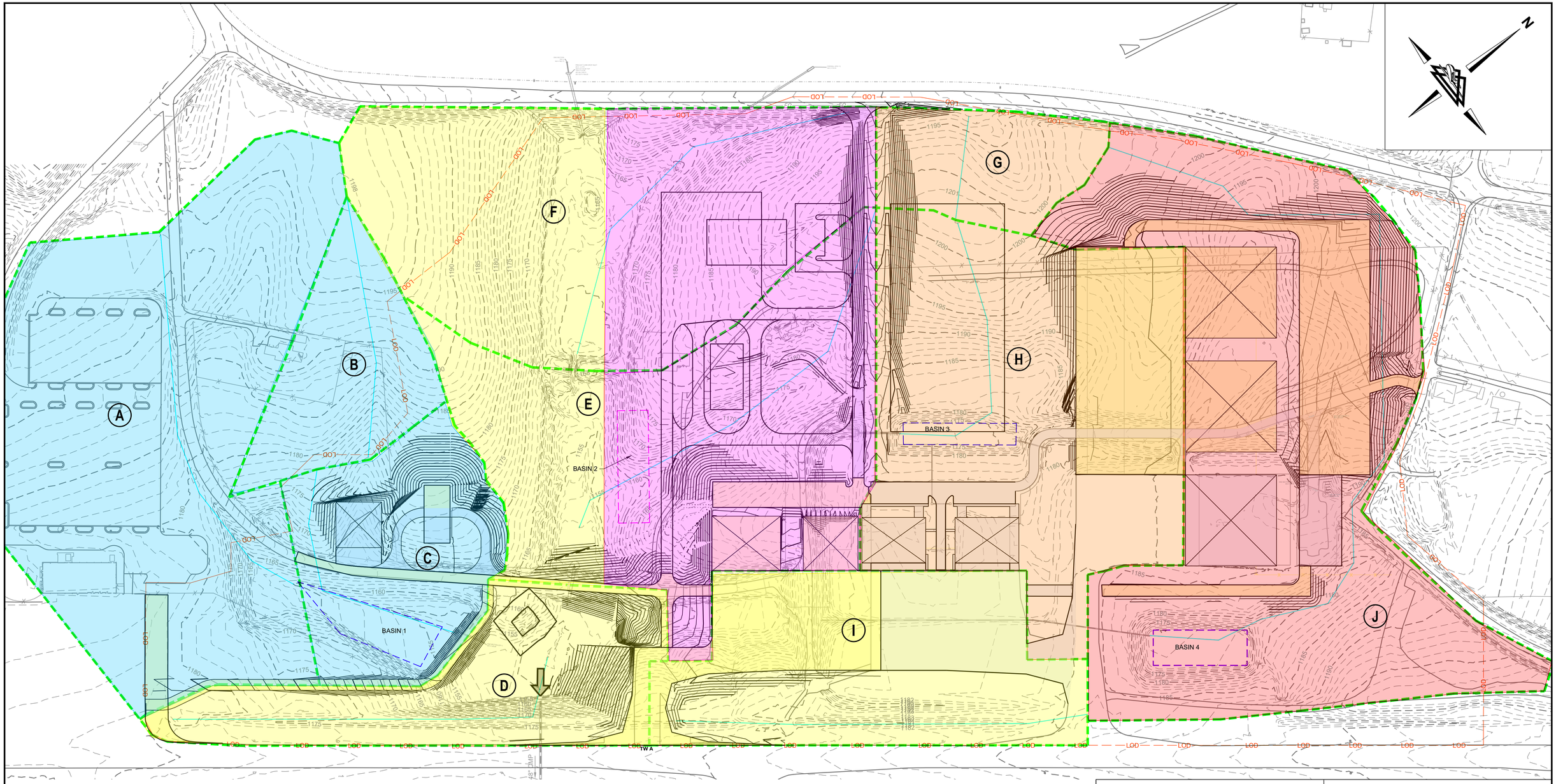
EXHIBIT 2

DRAWN BY:	BMC	SCALE:	1" = 100'
CHECKED BY:	####	DATE:	JULY 2023

DRAWING: 22056 DAM Post (1).dwg LAYOUT: 24X36
XREFS: 22043-PLAN-EX.dwg IMAGES:



HYDROLOGIC DATA

DRAINAGE AREA		IMPERVIOUS COVER (AC)				MANAGED TURF (GRASS) (AC)				TOTAL AREA (AC)	WEIGHTED CN	TIME OF CONCENTRATION (MIN)
	HSG	A	B	C	D	A	B	C	D			
	CN	98.00	98.00	98.00	98.00	39.00	61.00	74.00	80.00			
LOD - DRAINAGE AREA A		0.00	0.00	0.52	6.00	0.00	0.00	4.25	4.50	15.27	86	5
LOD - DRAINAGE AREA B		0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.84	3.34	76	5
LOD - DRAINAGE AREA C		0.00	0.00	0.04	1.01	0.00	0.00	0.57	3.43	5.06	83	5
LOD - DRAINAGE AREA D		0.00	0.00	0.35	0.34	0.00	0.00	0.61	3.97	5.27	82	6
LOD - DRAINAGE AREA E		0.00	0.00	0.21	1.57	0.00	0.00	0.86	8.88	11.51	82	6
LOD - DRAINAGE AREA F		0.00	0.00	0.16	0.00	0.00	0.00	3.99	5.91	10.05	78	5
LOD - DRAINAGE AREA G		0.00	0.00	0.00	0.00	0.00	0.00	2.52	0.00	2.52	74	5
LOD - DRAINAGE AREA H		0.00	0.00	2.06	3.66	0.00	0.00	3.22	3.10	12.05	87	5
LOD - DRAINAGE AREA I		0.00	0.00	2.16	1.99	0.00	0.00	2.75	0.31	7.21	88	8
LOD - DRAINAGE AREA J		0.00	0.00	1.36	5.65	0.00	0.00	3.87	8.67	19.54	85	13

LEGEND

- LOD — LIMITS OF DISTURBANCE
- DRAINAGE AREA (PRE)
- X — DRAINAGE AREA LABEL
- TIME OF CONCENTRATION FLOW PATH
- EXISTING STORMWATER BASIN
- PROPOSED STORMWATER BASIN
- FUTURE ALP DEVELOPMENT
- POINT OF OUTFALL ANALYSIS
- RUNOFF TO EXISTING BASIN 1
- RUNOFF TO EXISTING BASIN 3
- RUNOFF TO EXISTING BASIN 4
- RUNOFF TO PROPOSED BASIN 2
- RUNOFF DIRECT TO OUTFALL

100 0 100 200
SCALE: 1"=100' FEET

POST DRAINAGE AREA MAP

SHENANDOAH VALLEY REGIONAL AIRPORT

DELTA AIRPORT CONSULTANTS, INC.
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EXHIBIT 3

DRAWN BY:	BMC	SCALE:	1" = 100'
CHECKED BY:	####	DATE:	JULY 2023

DRAWING: 22056 DAM Post (1).dwg, LAYOUT: 24X36 (2)
XREFS: 22043-PLAN-EX.dwg, IMAGES:

Appendix E – Wetland Survey

EXISTING RUNWAY 5
RUNWAY PROTECTION ZONE (RPZ)
VISIBILITY: LOWER THAN 3/4 MILE
1,000' x 1,750' x 2,500'

EXISTING RUNWAY 23
RUNWAY PROTECTION
ZONE (RPZ)
VISIBILITY: NOT LOWER
THAN 1 MILE
500' x 1,010' x 1,700'

EXISTING RUNWAY 5-23 (6,002' x 150')

RPZ
RSA
ROFA

900 0 900 1800
SCALE: 1"=900' FEET

LEGEND

DESCRIPTION	EXISTING	DESCRIPTION	EXISTING
AIRPORT PROPERTY LINE		STREAM	
RUNWAY PROTECTION ZONE (RPZ)	RPZ	BODY OF WATER (POND)	
RUNWAY SAFETY AREA (RSA)	RSA	WETLAND AREAS	
RUNWAY OBJECT FREE AREA (ROFA)	ROFA		

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DELINEATED WETLANDS
SHENANDOAH VALLEY REGIONAL AIRPORT

DRAWN BY:	RAS	CHECKED BY:	MAP	SCALE:	1" = 800'	DATE:	JULY 2022

EXHIBIT
1

DRAWING: 22056 SHD- Wetlands Delineation Exh.dwg LAYOUT: L1

Appendix F – Project Cost Estimate

PROJECT COST SUMMARY
Environmental Assessment for Corporate Hangar Development

Shenandoah Valley Regional Airport
Weyers Cave, Virginia

AIP Project No. TBD
DOAV Project No. TBD
Delta Project No. 22056

Date: October 2023

	1 HANGARS H & I	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
	Subtotal:	$10,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Hangar H - Design (Non-AIP)	$250,000	0%	0%	0%	100%	$0	$0	$0	$250,000
	Construct Hangar I - Design (Non-AIP)	$250,000	0%	0%	0%	100%	$0	$0	$0	$250,000
	Subtotal:	$500,000								
f.	PROJECT INSPECTION FEES - PART TIME									
	Construct Hangar H - CA (Non-AIP)	$125,000	0%	0%	0%	100%	$0	$0	$0	$125,000
	Construct Hangar I - CA (Non-AIP)	$125,000	0%	0%	0%	100%	$0	$0	$0	$125,000
	Subtotal:	$250,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Hangar H (18,000 SF) - Architect's Estimate (Non-AIP)	$3,250,000	0%	0%	0%	100%	$0	$0	$0	$3,250,000
	Construct Hangar I (18,000 SF) - Architect's Estimate (Non-AIP)	$3,250,000	0%	0%	0%	100%	$0	$0	$0	$3,250,000
	Construct Hangar H&I - Site Work*	$1,025,000	90%	8%	2%	0%	$922,500	$82,000	$20,500	$0
	Utility Install & Relocation (Non-AIP)	$250,000	0%	80%	20%	0%	$0	$200,000	$50,000	$0
	Subtotal:	$7,525,000								
m.	WETLANDS									
	Mitigation (0.24 AC @ $85,000/AC	$20,400	90%	8%	2%	0%	$18,360	$1,632	$408	$0
	Permittir	$25,000	90%	8%	2%	0%	$22,500	$2,000	$500	$0
	Subtotal:	$45,400								
	Total:	**$8,400,000**					**$972,360**	**$286,432**	**$71,608**	**$7,250,000**

*Hangar site work includes approximate embankment, demo, drainage improvements, erosion & sediment, and mobilization for the hangar building footprint. Construction costs do not include the automobile parking or apron. See the engineer's opinion of probable construction costs for construction estimate breakdown and limits of earthwork approximation.

	1 HANGARS T & U	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
	Subtotal:	$10,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Hangar T - Design (Non-AIP)	$250,000	0%	0%	0%	100%	$0	$0	$0	$250,000
	Construct Hangar U - Design (Non-AIP)	$250,000	0%	0%	0%	100%	$0	$0	$0	$250,000
	Subtotal:	$500,000								
f.	PROJECT INSPECTION FEES - PART TIME									
	Construct Hangar T - CA (Non-AIP)	$125,000	0%	0%	0%	100%	$0	$0	$0	$125,000
	Construct Hangar U - CA (Non-AIP)	$125,000	0%	0%	0%	100%	$0	$0	$0	$125,000
	Subtotal:	$250,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Hangar T (40,000 SF) - Architect's Estimate (Non-AIP)	$8,000,000	0%	0%	0%	100%	$0	$0	$0	$8,000,000
	Construct Hangar U (40,000 SF) - Architect's Estimate (Non-AIP)	$8,000,000	0%	0%	0%	100%	$0	$0	$0	$8,000,000
	Construct Hangar T&U - Site Work*	$1,435,000	90%	8%	2%	0%	$1,291,500	$114,800	$28,700	$0
	Subtotal:	$17,435,000								
m.	WETLANDS									
	Mitigation (0.34 AC @ $85,000/AC	$28,900	90%	8%	2%	0%	$26,010	$2,312	$578	$0
	Permittir	$25,000	90%	8%	2%	0%	$22,500	$2,000	$500	$0
		$53,900								
	Total:	**$18,300,000**					**$1,349,010**	**$119,912**	**$29,978**	**$16,750,000**

*Hangar site work includes approximate embankment, demo, drainage improvements, erosion & sediment, and mobilization for the hangar building footprint. Construction costs do not include the automobile parking or apron. See the engineer's opinion of probable construction costs for construction estimate breakdown and limits of earthwork approximation.

	2 APRON FOR HANGARS H & I	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$15,000	90%	8%	2%	0%	$13,500	$1,200	$300	$0
	Subtotal:	$15,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Associated Aprons and Taxilanes - Design	$500,000	90%	8%	2%	0%	$450,000	$40,000	$10,000	$0
	Subtotal:	$500,000								
f.	PROJECT INSPECTION FEES									
	Construct Associated Aprons and Taxilanes - CA	$300,000	90%	8%	2%	0%	$270,000	$24,000	$6,000	$0
	Subtotal:	$300,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST*									
	Construct Associated Aprons and Taxilanes	$2,640,000	90%	80%	2%	0%	$2,376,000	$2,112,000	$52,800	$0
	Construct Associated Aprons and Taxilanes (Non-AIP)	$880,000	0%	80%	20%	0%	$0	$704,000	$176,000	$0
	Subtotal:	$3,520,000								
m.	WETLANDS									
	Mitigation (0.24 AC @ $85,000/AC	$20,400	90%	8%	2%	0%	$18,360	$1,632	$408	$0
	Subtotal:	$20,400								
	Total:	**$4,400,000**					**$3,127,860**	**$2,882,832**	**$245,508**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, CQCP, seeding/mulching and lump sum items for E&S, drainage, marking, electrical,and demo. The first 50' in front of the hangar buildings is separated as non-AIP funded. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

2 APRON FOR HANGARS T & U	ELIGIBLE	FUNDING				BUDGET			
CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a. ADMINISTRATION EXPENSE									
Owner Administration	$15,000	90%	8%	2%	0%	$13,500	$1,200	$300	$0
Subtotal:	$15,000								
d. ARCHITECTURAL ENGINEERING BASIC FEES									
Construct Associated Aprons and Taxilanes - Design	$500,000	90%	8%	2%	0%	$450,000	$40,000	$10,000	$0
Subtotal:	$500,000								
f. PROJECT INSPECTION FEES									
Construct Associated Aprons and Taxilanes - CA	$500,000	90%	8%	2%	0%	$450,000	$40,000	$10,000	$0
Subtotal:	$500,000								
k. CONSTRUCTION AND PROJECT IMPROVEMENT COST									
Construct Associated Aprons and Taxilanes	$3,376,000	90%	8%	2%	0%	$3,038,400	$270,080	$67,520	$0
Construct Associated Aprons and Taxilanes (Non-AIP)	$844,000	0%	80%	20%	0%	$0	$675,200	$168,800	$0
Subtotal:	$4,220,000								
Total:	**$5,300,000**					**$3,951,900**	**$1,026,480**	**$256,620**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, CQCP, seeding/mulching and lump sum items for E&S, drainage, marking, electrical,and demo. The first 50' in front of the hangar buildings is separated as non-AIP funded. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

3 ACCESS ROAD (HANGAR V)	ELIGIBLE	FUNDING				BUDGET			
CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a. ADMINISTRATION EXPENSE									
Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
Subtotal:	$10,000								
d. ARCHITECTURAL ENGINEERING BASIC FEES									
Construct Access Road - Design	$200,000	90%	8%	2%	0%	$180,000	$16,000	$4,000	$0
Subtotal:	$200,000								
f. PROJECT INSPECTION FEES									
Construct Access Road - CA	$70,000	90%	8%	2%	0%	$63,000	$5,600	$1,400	$0
Subtotal:	$70,000								
k. CONSTRUCTION AND PROJECT IMPROVEMENT COST*									
Construct Access Road	$335,000	90%	8%	2%	0%	$301,500	$26,800	$6,700	$0
Subtotal:	$335,000								
Total:	**$700,000**					**$553,500**	**$49,200**	**$12,300**	**$61,500**

* Construction costs include approximate earthwork, pavement materials, mobilization, seeding/mulching, vehicle gate/fence and lump sum items for E&S, drainage, marking, electrical,and demo. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

4 REHABILITATE OLD AIRPORT ROAD	ELIGIBLE	FUNDING				BUDGET			
CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a. ADMINISTRATION EXPENSE									
Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
Subtotal:	$10,000								
d. ARCHITECTURAL ENGINEERING BASIC FEES									
Rehabilitate Old Airport Road - Design	$300,000	90%	8%	2%	0%	$270,000	$24,000	$6,000	$0
Subtotal:	$300,000								
f. PROJECT INSPECTION FEES - PART TIME									
Rehabilitate Old Airport Road - CA	$150,000	90%	8%	2%	0%	$135,000	$12,000	$3,000	$0
Subtotal:	$150,000								
k. CONSTRUCTION AND PROJECT IMPROVEMENT COST									
Rehabilitate Old Airport Road	$1,615,000	90%	8%	2%	0%	$1,453,500	$129,200	$32,300	$0
Subtotal:	$1,615,000								
m. WETLANDS									
Mitigation (0.27 AC @ $85,000/AC	$22,950	90%	8%	2%	0%	$20,655	$1,836	$459	$0
Permittir	$25,000	90%	8%	2%	0%	$22,500	$2,000	$500	$0
	$47,950								
Total:	**$2,130,000**					**$1,910,655**	**$169,836**	**$42,459**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, seeding/mulching, and lump sum items for E&S, drainage, marking, and demo. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

5 TAXIWAY A CONNECTOR	ELIGIBLE	FUNDING				BUDGET			
CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a. ADMINISTRATION EXPENSE									
Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
Subtotal:	$10,000								
d. ARCHITECTURAL ENGINEERING BASIC FEES									
Construct Taixway A Connector - Design	$300,000	90%	8%	2%	0%	$270,000	$24,000	$6,000	$0
Subtotal:	$300,000								
f. PROJECT INSPECTION FEES - FULL TIME									
Construct Taxiway A Connector - CA	$300,000	90%	8%	2%	0%	$270,000	$24,000	$6,000	$0
Subtotal:	$300,000								
k. CONSTRUCTION AND PROJECT IMPROVEMENT COST									
Construct Taxiway A Connector	$1,858,000	90%	8%	2%	0%	$1,672,200	$148,640	$37,160	$0
Subtotal:	$1,858,000								
m. WETLANDS									
Mitigation (0.53 AC @ $85,000/AC	$45,050	90%	8%	2%	0%	$40,545	$3,604	$901	$0
Permittir	$25,000	90%	8%	2%	0%	$22,500	$2,000	$500	$0
	$70,050								
Total:	**$2,540,000**					**$2,284,245**	**$203,044**	**$50,761**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, seeding/mulching, and lump sum items for E&S, drainage, marking, electrical, and demo. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

	6 FUEL TRUCK PARKING	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
	Subtotal:	$10,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Fuel Truck Parking - Design	$100,000	90%	8%	2%	0%	$90,000	$8,000	$2,000	$0
	Subtotal:	$100,000								
f.	PROJECT INSPECTION FEES									
	Construct Fuel Truck Parking - CA	$100,000	90%	8%	2%	0%	$90,000	$8,000	$2,000	$0
	Subtotal:	$100,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Fuel Truck Parking	$720,000	90%	8%	2%	0%	$648,000	$57,600	$14,400	$0
	Subtotal:	$720,000								
	Total:	**$1,000,000**					**$837,000**	**$74,400**	**$18,600**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, seeding/mulching quantities, and lump sum items for E&S, drainage, marking, and demo. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

	7 NEW PERIMETER FENCE	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
	Subtotal:	$10,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct New Perimeter Fence - Design	$150,000	90%	8%	2%	0%	$135,000	$12,000	$3,000	$0
	Subtotal:	$150,000								
f.	PROJECT INSPECTION FEES									
	Construct New Perimeter Fence - CA	$100,000	90%	8%	2%	0%	$90,000	$8,000	$2,000	$0
	Subtotal:	$100,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct New Perimeter Fence	$315,000	90%	8%	2%	0%	$283,500	$25,200	$6,300	$0
	Subtotal:	$315,000								
	Total:	**$600,000**					**$517,500**	**$46,000**	**$11,500**	**$0**

	8 PARKING FOR HANGARS H & I	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$15,000	90%	8%	2%	0%	$13,500	$1,200	$300	$0
	Subtotal:	$15,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Automobile Parking - Design	$100,000	90%	8%	2%	0%	$90,000	$8,000	$2,000	$0
	Subtotal:	$100,000								
f.	PROJECT INSPECTION FEES									
	Construct Automobile Parking - CA	$100,000	90%	8%	2%	0%	$90,000	$8,000	$2,000	$0
	Subtotal:	$100,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Automobile Parking	$725,000	90%	8%	2%	0%	$652,500	$58,000	$14,500	$0
	Subtotal:	$725,000								
	Total:	**$1,000,000**					**$846,000**	**$75,200**	**$18,800**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, CQCP, seeding/mulching and lump sum items for E&S, drainage, marking, and demo. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

	8 PARKING FOR HANGARS T & U	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$15,000	90%	8%	2%	0%	$13,500	$1,200	$300	$0
	Subtotal:	$15,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Automobile Parking - Design	$300,000	90%	8%	2%	0%	$270,000	$24,000	$6,000	$0
	Subtotal:	$300,000								
f.	PROJECT INSPECTION FEES									
	Construct Automobile Parking - CA	$200,000	90%	8%	2%	0%	$180,000	$16,000	$4,000	$0
	Subtotal:	$200,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Automobile Parking	$4,655,000	90%	8%	2%	0%	$4,189,500	$372,400	$93,100	$0
	Subtotal:	$4,655,000								
	Total:	**$5,200,000**					**$4,653,000**	**$413,600**	**$103,400**	**$0**

* Construction costs include approximate earthwork, pavement materials, mobilization, CQCP, seeding/mulching and lump sum items for E&S, drainage, marking, and demo. Approximate limits considered for the embankment quantity can be found in the construction cost estimate.

	9 APRON EXPANSION	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	STATE	LOCAL	OTHER	FAA	STATE	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
	Subtotal:	$10,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Apron Expansion - Design	$200,000	90%	8%	2%	0%	$180,000	$16,000	$4,000	$0
	Subtotal:	$200,000								
f.	PROJECT INSPECTION FEES									
	Construct Apron Expansion - CA	$120,000	90%	8%	2%	0%	$108,000	$9,600	$2,400	$0
	Subtotal:	$120,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Apron Expansion	$635,000	90%	8%	2%	0%	$571,500	$50,800	$12,700	$0
	Subtotal:	$635,000								
	Total:	**$1,000,000**					**$868,500**	**$77,200**	**$19,300**	**$0**

	10 REALIGNED FUEL SERVICE ROAD	ELIGIBLE	FUNDING				BUDGET			
	CLASSIFICATION	AMOUNT	FAA	MAA	LOCAL	OTHER	FAA	MAA	LOCAL	OTHER
a.	ADMINISTRATION EXPENSE									
	Owner Administration	$10,000	90%	8%	2%	0%	$9,000	$800	$200	$0
	Subtotal:	$10,000								
d.	ARCHITECTURAL ENGINEERING BASIC FEES									
	Construct Fuel Service Road - Design	$200,000	90%	8%	2%	0%	$180,000	$16,000	$4,000	$0
	Subtotal:	$200,000								
f.	PROJECT INSPECTION FEES									
	Construct Fuel Service Road - CA	$70,000	90%	8%	2%	0%	$63,000	$5,600	$1,400	$0
	Subtotal:	$70,000								
k.	CONSTRUCTION AND PROJECT IMPROVEMENT COST									
	Construct Fuel Service Road	$430,000	90%	8%	2%	0%	$387,000	$34,400	$8,600	$0
	Subtotal:	$430,000								
m.	WETLANDS									
	Mitigation (0.42 AC @ $85,000/AC	$35,700	90%	8%	2%	0%	$32,130	$2,856	$714	$0
	Permittir	$25,000	90%	8%	2%	0%	$22,500	$2,000	$500	$0
		$60,700								
	Total:	**$800,000**					**$693,630**	**$61,656**	**$15,414**	**$0**

Attachment H

Projects 3 through 10

EMISSIONS INVENTORY - SUMMARY

Total Emissions by Year
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Year	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
2025	1.243527	0.297083	0.004124	0.053582	0.010985	0.6033427	479.1262956	0.01788	0.001577
2027	2.643075	0.631406	0.009552	0.140224	0.023966	2.1540505	1071.475848	0.035944	0.003589
2026	3.265495	0.541027	0.011036	0.199202	0.021924	4.6456207	878.7149455	0.0454	0.004947
2028	1.480005	0.391779	0.005323	0.104419	0.016304	0.8653492	652.6358945	0.020824	0.002815

Projects 1 and 2

EMISSIONS INVENTORY - SUMMARY

Total Emissions by Year
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Year	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
2025	0.564484	0.176576	0.001794	0.238108	0.010887	0.0853382	215.2598434	0.013874	0.005034
2026	4.954162	0.323082	0.013817	0.548233	0.009398	7.7327969	573.132202	0.079011	0.011437

Total Combined

Total Emissions by Year
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Year	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
2025	1.8080	0.4737	0.0059	0.2917	0.0219	0.6887	694.3861	0.0318	0.0066
2026	8.2197	0.8641	0.0249	0.7474	0.0313	12.3784	1451.8471	0.1244	0.0164
2027	2.6431	0.6314	0.0096	0.1402	0.0240	2.1541	1071.4758	0.0359	0.0036
2028	1.4800	0.3918	0.0053	0.1044	0.0163	0.8653	652.6359	0.0208	0.0028

Attachment I

DELTA AIRPORT CONSULTANTS, INC.

August 14, 2023

Memorandum

To: Distribution List- via Email Only

From: Mary A. Pearson, AICP
Delta Airport Consultants, Inc.

Reference: Shenandoah Valley Regional Airport (SHD)
Environmental Assessment for Aviation Technology Park Development
Agency Coordination Letter- **Invitation to Comment**

The Shenandoah Valley Regional Airport Commission ("the Commission"), owner and operator of the Shenandoah Valley Regional Airport (SHD), is proposing several airport development projects within the on-airport Aviation Technology Park. The Aviation Technology Park is in the northwest portion of the airfield and is generally bordered to the south by Route 771 and to the north by Route 847/Valley Church Road (see **Figure 1**).

The projects, together referred to as the Proposed Action, are illustrated conceptually on **Figure 2**. The projects would occur within the limits of dedicated airport property. The Proposed Action is composed of the following projects:

1. Construct Hangars H, I, T, and U
2. Construct Associated Aprons, Taxilanes, Taxiway Connectors, Auto Parking and Access for Hangars H, I, T, and U
3. Construct Access Road to Proposed Hangar V
4. Construct Access Road to the Fuel Farm and Rehabilitate Old Airport Road
5. Construct a Connector Taxiway from the Corporate Hangars to Taxiway A
6. Construct Fuel Truck Parking
7. Install Perimeter Fence
8. Automobile Parking
9. Commercial Apron Expansion
10. Realigned Road to Aircraft Parking Ramp

On behalf of the Commission, Delta Airport Consultants, Inc. is conducting an Environmental Assessment (EA) to assess the potential environmental impacts of the Proposed Action.

The purpose of this letter is to invite interested and involved parties to comment on items for the applicant to consider during the EA process.

Existing Land Use

SHD is an operating, commercial service airport which is situated within the Shenandoah Valley in the Blue Ridge Mountains, in the northwestern portion of the state of Virginia. The airport elevation is approximately 1,201 feet above mean sea level (MSL). The surrounding topography is mountain slopes and ridges, with elevations ranging from 1,100 feet to 3,400 feet with rolling hills and valleys. Land use around the Airport includes agricultural and industrial, with portions of low-density residential scattered throughout, especially on the north side of Airport property. The current zoning and land use designation for SHD is Airport Business (AB).

The Airport Layout Plan (ALP), which depicts the proposed projects 1 through 10, was approved by the Federal Aviation Administration (FAA) and the Virginia Department of Aviation (DOAV) in 2018.

Environmental Analysis

The EA is to be prepared in accordance with FAA guidelines, including FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. Individual environmental categories are to be analyzed to assess potential environmental impacts of the proposed development. Select categories are discussed below:

Air Quality: Augusta County is in attainment for the National Ambient Air Quality Standards (NAAQS), as established by the Environmental Protection Agency (EPA). The scope of work for the EA includes the preparation of a construction emissions inventory using the Airport Construction Emissions Inventory Tool (ACEIT) and default emissions factors based on the location and type of project, to provide a general and unofficial estimation of anticipated construction-related emissions.

Biotic Resources: The United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) database identified three federally protected mammals which may occur on or near the project area: the Endangered, Indiana Bat (*Myotis sodalis)*, the Endangered, Northern Long-eared Bat (NLEB), (*Myotis septentrionalis)*, and the Proposed Endangered Tricolored Bat. The Monarch Butterfly, a Candidate species, and 10 migratory birds, including the Bald Eagle, were also identified by the IPaC database. There are no critical habitats, wildlife refuges, or fish hatcheries within the project area. The Virginia Department of Wildlife Resources (DWR) identifies 558 species which could occur within two miles of the project area, including 12 state-listed species. A coordination review package is to be submitted to USFWS and DWR during the EA effort.

Historic, Architectural, Archeological and Cultural Resources: The Proposed Action would occur on airport property. There are two on-airport residences that are within the approximately 80 acre area of potential effect (APE) for the development. A small private cemetery, Cash Cemetery, is also within the APE. There are also several residences in the project vicinity which could be impacted indirectly by the project, including visually.

A Phase 1 Architectural Survey for the Aviation Technology Park Development was prepared in May 2023 to assess nine architectural resources within the direct and indirect APEs for the project; the report concluded that the resources are not architecturally or culturally significant. The Virginia Department of Historic Resources (DHR) concurred with the recommendations of the report in July 2023 and recommended that a 30-foot buffer be maintained from the cemetery during construction, including noting the buffer in construction document and defining it in the field. The scope of work for the EA includes an invitation-only briefing for the residents in the vicinity of the project.

Wetlands and Streams: A wetland and stream field survey and delineation was conducted in 2019 during a previous environmental effort which identified jurisdictional wetlands and streams within that project's 509± acre study area, including within the boundaries of the Aviation Technology Park (see **Figure 3).** The wetlands report was coordinated with the United States Army Corps of Engineers (USACE) which issued a Jurisdictional Determination (JD) in November 2019.

The scope of work for this 2023 EA includes a preliminary engineering effort to determine estimated wetland and stream impacts based on the 2019 delineation, and a pre-application meeting with USACE and the Virginia Department of Environmental Quality (DEQ).

Please send comments to **mapearson@deltaairport.com** no later than **Friday, September 1, 2023.**

If you have any questions or need further information, please contact me via email or at 804-955-4556.

Thank you for your review and input on this important project!

cc: Ms. Lisa Botkin, Airport Executive Director

Figure 1: General Extents of Aviation Technology Park at SHD

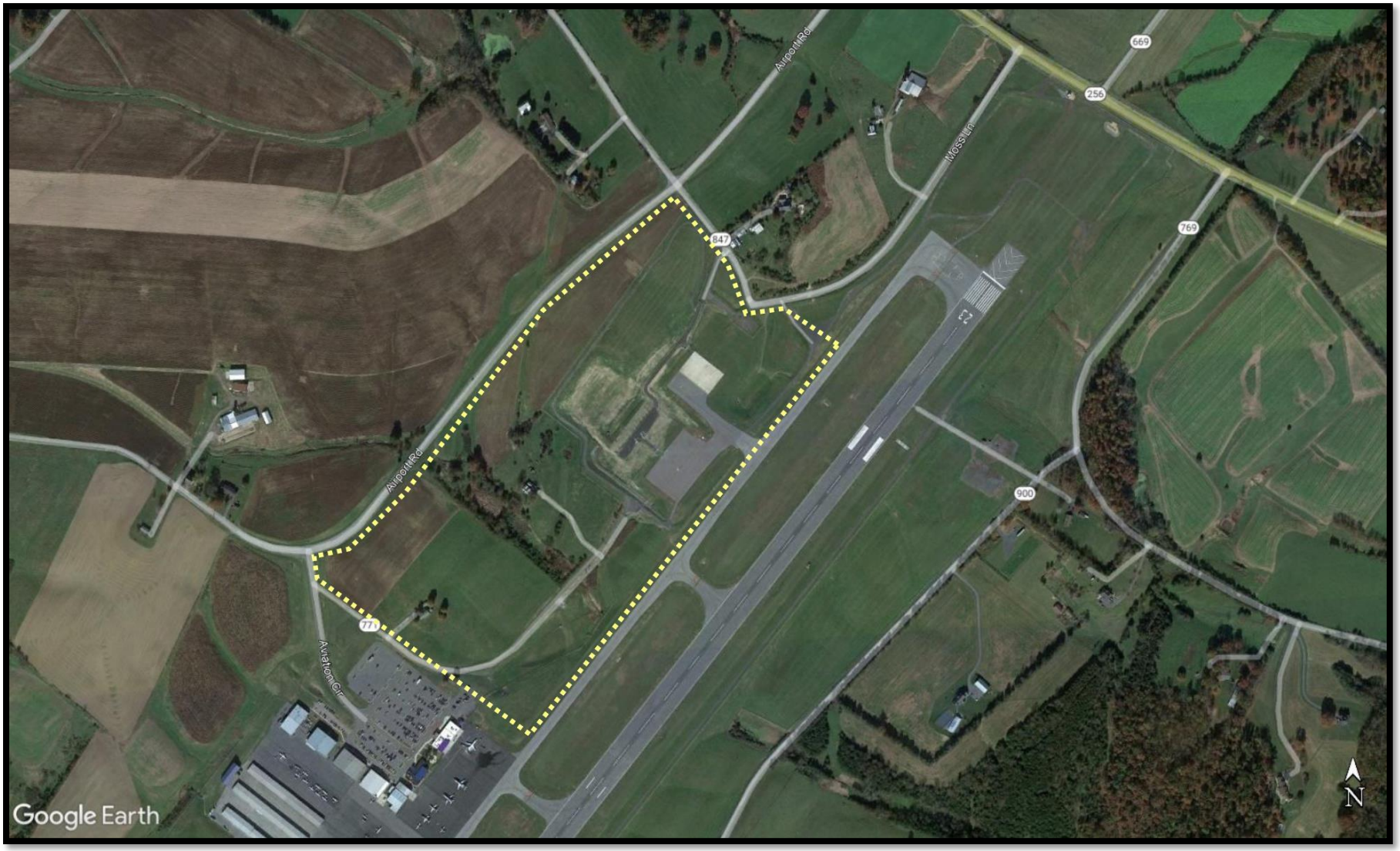


Figure 2: Proposed Action (Conceptual)

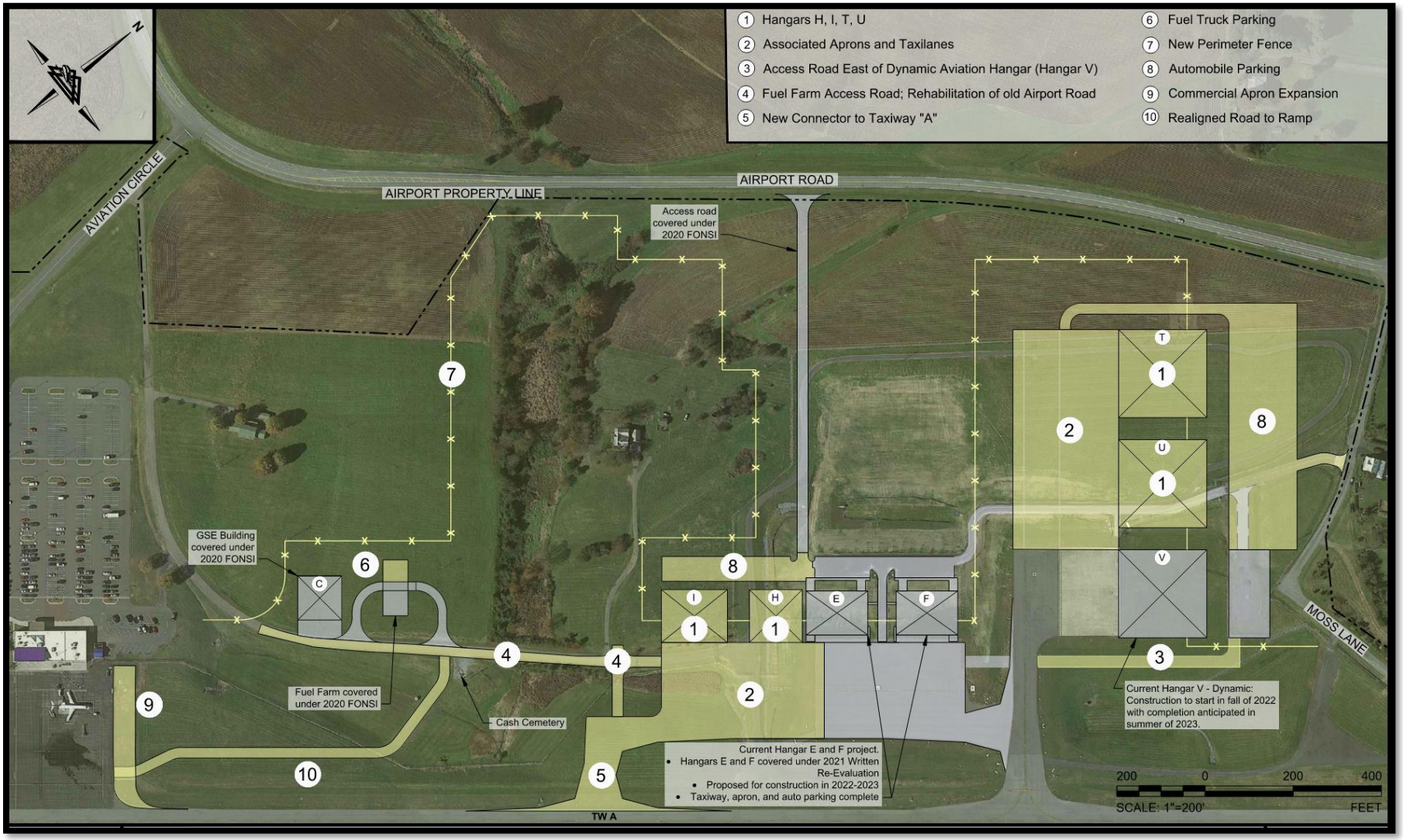
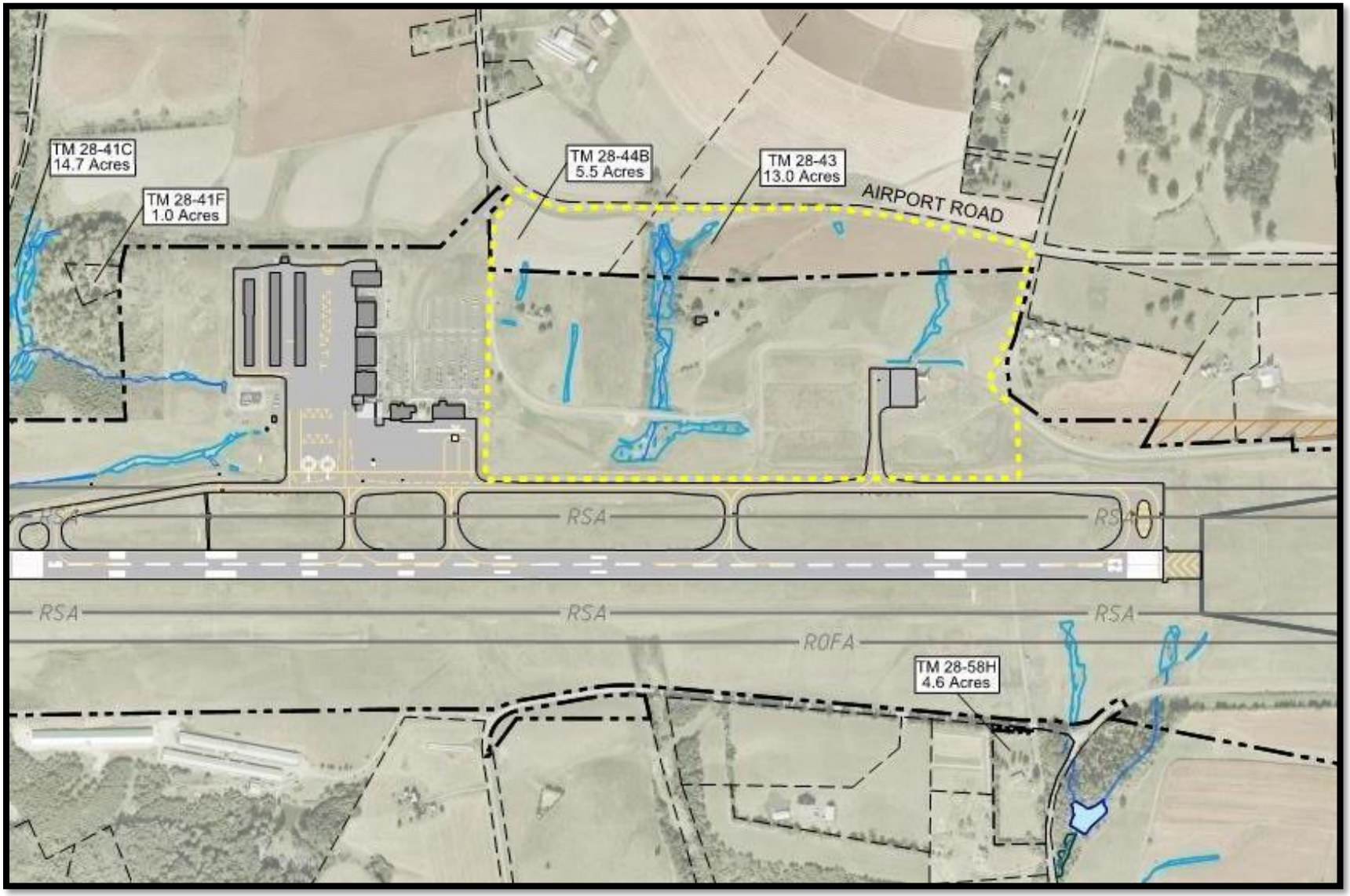


Figure 3: Delineated Wetlands and Streams (2019)



Mary Ashburn Pearson

From: Birge-wilson, Adrienne (DHR) <Adrienne.Birge-Wilson@dhr.virginia.gov>
Sent: Tuesday, August 15, 2023 7:42 AM
To: Mary Ashburn Pearson
Subject: RE: SHD Airport Aviation Technology Park E.A. - Opportunity to Comment

We maintain our previous comments that with the condition that a 30-foot buffer is established if the project is within 30 feet of the cemetery (and if so, it is noted in construction documents and defined in the field by temporary fencing during construction) DHR concurs with the FAA's determination of No Historic Properties Affected.

Adrienne Birge-Wilson
Architectural Historian
Review and Compliance Division | Virginia Department of Historic Resources

804-482-6092
adrienne.birge-wilson@dhr.virginia.g
www.dhr.virginia.gov
2801 Kensington Ave., Richmond, VA 23221

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Monday, August 14, 2023 3:32 PM
To: Mary Ashburn Pearson <mapearson@deltaairport.com>
Subject: SHD Airport Aviation Technology Park E.A. - Opportunity to Comment

Good afternoon!

My firm is preparing an Environmental Assessment (EA) for "Aviation Technology Park Development" at the Shenandoah Valley Regional Airport (SHD).

The attached memo describes the proposed project in greater detail. The purpose of this coordination letter is to invite interested parties to comment on items for the Commission to consider during the EA process.

Comments are requested by Friday, September 1, 2023.

Thank you for your time and for your input!

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

Mary Ashburn Pearson

From: Pero, Vincent D CIV USARMY CENAO (USA) <Vincent.D.Pero@usace.army.mil>
Sent: Tuesday, August 15, 2023 6:07 AM
To: Mary Ashburn Pearson
Subject: RE: SHD Airport Aviation Technology Park E.A. - Opportunity to Comment

Good morning Mary

The only comment the Corps has is that if you are proposing any wetland or stream impacts, you may require authorization from the Corps of Engineers regulatory office. If you have any questions feel free to contact my office

Thanks

Vinny

Vinny Pero
Norfolk District Corps of Engineers
Charlottesville Field Office
920 Gardens Boulevard, Suite 103-B
Charlottesville, VA 22901

757-297-0011

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Monday, August 14, 2023 3:32 PM
To: Mary Ashburn Pearson <mapearson@deltaairport.com>
Subject: [URL Verdict: Neutral][Non-DoD Source] SHD Airport Aviation Technology Park E.A. - Opportunity to Comment

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Thank you for your time and for your input!

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

Mary Ashburn Pearson

From: Fowler, Keith (DEQ) <Keith.Fowler@deq.virginia.gov>
Sent: Tuesday, August 15, 2023 3:23 PM
To: Mary Ashburn Pearson
Subject: RE: SHD Airport Aviation Technology Park E.A. - Opportunity to Comment

Hi Mary. As long as this project complies with relevant DEQ laws and regulations and receives any relevant / necessary DEQ approvals, DEQ has no objections to this project. Below is general information related to DEQ programs we provide for projects like this that are in the DEQ Valley Region. Please review (or relay) the general information provided below and contact me with any questions you may have at any time. We are happy to assist you in any way we can to determine what environmental permits you may need and to help you understand any other requirements associated with Virginia's environmental laws and regulations. If you happen to need any environmental permits you should know that some can be processed in a matter of days or weeks, but others may take several months or more due to coordination with other agencies and public notice requirements, and we want to make sure you can get started as soon as you desire.

In addition, we encourage you to refer to DEQ's Environmental Impact Reviews web site, https://www.deq.virginia.gov/permits-regulations/environmental-impact-review, and our Pollution Prevention / Environmental Excellence pages, https://www.deq.virginia.gov/get-involved/pollution-prevention, for other general information. We are glad to discuss specifics for any aspects of this project with you as it relates to any DEQ programs. Please let me know if you have any questions or need any additional information regarding environmental matters.

1. Air Permitting. Facilities, equipment, or processes that emit air pollutants may require an air permit prior to construction. Installation / operation / modification / replacement of stationary or portable fuel burning equipment or other sources of air pollutants, including dust, may be subject to registration and/or air permitting requirements (https://www.deq.virginia.gov/permits-regulations/permits/air). Some of the more ubiquitous equipment includes generators, boilers, paint booths, wood chippers/grinders, etc. For questions regarding these requirements, contact Trevor Wallace at DEQ-VRO (540-217-7185, Trevor.Wallace@deq.virginia.gov).

2. Erosion and Sediment Control and Storm Water Management. DEQ has regulatory authority for the Virginia Pollutant Discharge Elimination System (VPDES) programs related to municipal separate storm sewer systems (MS4s) and construction activities. Erosion and sediment control measures are addressed in local ordinances and State regulations. Additional information is available at https://www.deq.virginia.gov/water/stormwater. Non-point source pollution resulting from site development activities should be minimized by using effective erosion and sediment control practices and structures. Consideration should also be given to using permeable paving for parking areas and walkways where appropriate, and denuded areas should be promptly revegetated following construction work. If the total land disturbance exceeds 10,000 square feet, an erosion and sediment control plan will be required. Some localities also require an E&S plan for disturbances less than 10,000 square feet. A stormwater management plan may also be required. For land disturbing activities of one acre or more, permit coverage is required under the VPDES General Permit for Discharges of Storm Water from Construction Activities. The Virginia Stormwater Management Permit Authority may be DEQ or the locality. For questions regarding these requirements, contact Eric Millard at DEQ-VRO (540-217-7483, Eric.Millard@deq.virginia.gov).

3. Water Quality and Wetlands. Measures must be taken to avoid and minimize impacts to surface waters and wetlands during construction activities. The disturbance of surface waters or wetlands may require prior approval by DEQ and/or the U.S. Army Corps of Engineers. The Army Corps of Engineers is the final authority for an official confirmation of whether there are federal jurisdictional wetlands or other surface waters that may be impacted by the proposed project. DEQ may confirm additional waters as jurisdictional beyond those under federal authority. Review of National Wetland Inventory maps or topographic maps for locating wetlands or streams may not be sufficient; there may need to be a site-specific review of the site by a qualified professional. Even if there will be no intentional placement of fill material in jurisdictional waters, potential water quality impacts resulting from construction site surface runoff must be minimized. This can be achieved by using appropriate Best Management Practices (BMPs). If construction activities will occur in or along any streams (perennial, intermittent, or ephemeral), open water or wetlands, the applicant should contact Eric Millard at DEQ-VRO (540-217-7483, Eric.Millard@deq.virginia.gov) to determine the need for any permits prior to commencing work that could impact surface waters or wetlands.

4. Other Site Development Considerations. Fugitive dust generated during construction should be controlled by using measures such as the prompt removal of spilled or tracked dirt or other materials from paved streets, limited application of water to suppress dust, and washing of construction vehicles and paved roadways immediately adjacent to construction sites. Do not use water for dust control to the extent that it results in runoff to surface waters or wetlands. Land clearing wastes (vegetative debris) generated during construction should be properly managed in accordance with applicable regulations and local ordinances. Shredding/chipping of vegetative debris and reuse on-site is usually recommended over open burning. Any open burning of vegetative debris must be performed in accordance with the Open Burning Regulation and coordinated with the local fire official to ensure that all local ordinances are met. A copy of DEQ's open burning regulation and related information are accessible from https://www.deq.virginia.gov/permits-regulations/laws-regulations/air. Also, no open burning should take place in violation of the Virginia Waste Management Regulations, https://www.deq.virginia.gov/land-waste/solid-hazardous-waste. For questions regarding these requirements, contact Keith Fowler at DEQ-VRO (540-217-7480, Keith.Fowler@deq.virginia.gov).

5. Potable Water and Water Withdrawals. Installation of potable water lines and appurtenances must comply with the State's Waterworks Regulations. The Virginia Department of Health (VDH), https://www.vdh.virginia.gov/drinking-water/, administers both federal and state laws governing waterworks operation. For more information, contact the VDH's Lexington Office of Drinking Water at (540) 463-7136, https://www.vdh.virginia.gov/drinking-water/contact-us/. Projects that propose to withdraw surface water or groundwater for production or cooling water or other activities may require prior approval by DEQ. For more information, please refer to the DEQ Water Withdrawal page at https://www.deq.virginia.gov/permits-regulations/permits/water/water-withdrawal or contact Eric Seavey (804-754-6250, Eric.Seavey@deq.virginia.gov).

6. Wastewaters. DEQ has approval authority over wastewater discharges per the State Water Control Law and corresponding regulations. This includes discharges or land application of wastewaters generated from the washing of materials, products, or vehicles, or other practices which may be relevant to this project, including the discharge of chlorinated potable water, water contaminated by chemicals used on-site, or stormwater from certain industrial sites. DEQ also has approval authority over plans and specifications for sewage collection systems and treatment works (except drainfields and other on-site systems approved by the local health department), per the Sewage Collection and Treatment (SCAT) Regulations, http://law.lis.virginia.gov/admincode/title9/agency25/chapter790/. Any wastewaters generated by this project must be properly managed and disposed. For additional information and assistance, contact Brandon Kiracofe at DEQ-VRO (540-217-7479, Brandon.Kiracofe@deq.virginia.gov).

7. Petroleum Storage Tanks. Installation / operation / modification of tanks used for the storage of petroleum and CERCLA substances may be subject to registration and/or other regulatory requirements (https://www.deq.virginia.gov/land-waste/petroleum-tanks). If petroleum-contaminated soils or water are encountered during excavation work, or if old petroleum tanks need to be removed or replaced, contact DEQ. For questions regarding any of this, please contact Todd Pitsenberger at DEQ-VRO (540-830-8857, Todd.Pitsenberger@deq.virginia.gov).

8. Solid and Hazardous Wastes, and Hazardous Substances. DEQ administers the Virginia Waste Management Regulations, http://law.lis.virginia.gov/admincode/title9/agency20/. All solid wastes, hazardous wastes, and hazardous materials, including construction and demolition (C&D) wastes and universal wastes (batteries, fluorescent lights, refrigerants, mercury switches, mercury thermostats, etc.), must be managed in accordance with all applicable federal, state, and local environmental regulations. The generation of hazardous wastes should be minimized and solid wastes generated at the site should be reduced at the source, reused, or recycled. DEQ encourages the management of certain organic wastes by on-site composting or reuse as animal feed or soil amendment. Also, if you encounter any improperly disposed solid or hazardous wastes, or petroleum contaminated soils, you should contact DEQ-VRO. You may wish to refer to the web link for "What's in My Back Yard?", https://geohub-vadeq.hub.arcgis.com/, to help you determine areas where residual contamination may be more likely. Contact Laura Stuart at DEQ-VRO (540-209-5605, Laura.Stuart@deq.virginia.gov) for any questions related to waste management / disposal, including any questions related to open burning requirements and prohibitions. Manage / dispose of any asbestos-containing materials (ACMs) in accordance with Virginia Department of Labor and Industry (DOLI) regulations. Refer to the DOLI web page, https://www.doli.virginia.gov/asbestos-faqs/, or contact Doug Wiggins at DOLI (Richard.Wiggins@doli.virginia.gov, 540-562-3580, ext. 131) for any questions related to management / disposal of ACMs.

9. Pesticides and Herbicides. DEQ recommends that herbicides or pesticides for construction or landscape maintenance, when necessary, be used in accordance with the principles of integrated pest management, and that the least toxic pesticides that are effective in controlling the target species be used. Please contact the Department of Agriculture and Consumer Services at (804) 786-3501 for more information. If applying aquatic pesticides to surface waters, the applicant must comply with the DEQ's Pesticide General Permit, https://law.lis.virginia.gov/admincode/title9/agency25/chapter800/.

10. Natural Heritage Resources. The Virginia Department of Conservation and Recreation (DCR) Division of Natural Heritage (DNH) can search its Biotics Data System for occurrences of natural heritage resources from the area indicated on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered animal and plant species, unique or exemplary natural communities, and significant geologic communities. We recommend that the DNH be contacted at (804) 786-7951 to secure updated information on natural heritage resources before commencing the project. For additional information, refer to the DCR website, https://www.dcr.virginia.gov/natural-heritage/ereview.

11. Wildlife Resources. The Virginia Department of Wildlife Resources (DWR) exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species. DWR determines likely impacts on fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts. For more information, refer to the DWR website, https://dwr.virginia.gov/wies/contact-wies/.

12. Historic and Archaeological Resources. *Section 106 of the National Historic and Preservation Act of 1966*, as amended, requires that activities that receive federal funding must consider effects to properties that are listed or eligible for listing on the National Register of Historic Places. The Department of Historic Resources (DHR) conducts reviews of projects to determine their effect on historic structures or cultural resources. If applicable, contact DHR, https://www.dhr.virginia.gov/environmental-review/. In the event that archaeological resources are encountered during construction, immediately contact the appropriate staff from https://www.dhr.virginia.gov/environmental-review/staff-directory/.

13. Pollution Prevention. DEQ recommends that construction projects incorporate the principles of pollution prevention including the following recommendations:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content and toxicity level should be considered.
- Consider contractors' commitment to the environment when choosing contractors. Also, specifications regarding raw material selection (alternative fuels and energy sources) and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable practices and materials in infrastructure and construction and design. These could include asphalt and concrete containing recycled materials and integrated pest management in landscaping.
- Integrate pollution prevention techniques into maintenance and operation activities to include source reduction (fixing leaks, energy efficient products).

Pollution prevention measures are likely to reduce potential environmental impacts and reduce costs for material purchasing and waste disposal. DEQ's Office of Pollution of Prevention hosts a number of programs and initiatives that provide non-regulatory assistance to businesses, institutions, and communities including the Virginia Environmental Excellence Program and Virginia Green. For more information, please visit our web site at https://www.deq.virginia.gov/get-involved/pollution-prevention.

14. Energy Conservation. Any structures should be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency. For example, energy efficiency of the structures can be enhanced by maximizing the use of the following:

- thermally-efficient building shell components (roof, wall, floor, and insulation);
- high efficiency heating, ventilation, air conditioning systems; and
- high efficiency lighting systems.

The Virginia Department of Energy, https://www.virginia.gov/agencies/department-of-energy/, may be contacted for assistance in meeting this challenge.

B. Keith Fowler
Deputy Regional Director, Valley Regional Office
Virginia Department of Environmental Quality
4411 Early Road, P. O. Box 3000
Harrisonburg, VA 22801
(540)217-7480

From: Mary Ashburn Pearson <mapearson@deltaairport.com>
Sent: Monday, August 14, 2023 3:32 PM
To: Mary Ashburn Pearson <mapearson@deltaairport.com>
Subject: SHD Airport Aviation Technology Park E.A. - Opportunity to Comment

Good afternoon!

My firm is preparing an Environmental Assessment (EA) for “Aviation Technology Park Development” at the Shenandoah Valley Regional Airport (SHD).

The attached memo describes the proposed project in greater detail. The purpose of this coordination letter is to invite interested parties to comment on items for the Commission to consider during the EA process.

Comments are requested by Friday, September 1, 2023.

Thank you for your time and for your input!

Mary Ashburn

Mary Ashburn Pearson, AICP
Project Manager
DELTA AIRPORT CONSULTANTS, INC.
P. 804.955.4556 | WWW.DELTAAIRPORT.COM

Attachment J

U.S. Department of Transportation
Federal Aviation Administration

Beckley Airports Field Office
176 Airport Circle, Room 101
Beaver, West Virginia 25813
Telephone: (304) 252-6216
FAX: (304) 253-8028

January 22, 2019

Mr. John David Harper
State Soil Scientist
USDA - Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Subject: Shenandoah Valley Regional Airport Phase I Development Farmland Conversion Impact Rating

Dear Mr. Harper:

Shenandoah Valley Regional Airport (SHD) is proposing a Phase I Development Action. The proposed development action is mainly contained within on-airport property with the exception of off-airport obstruction removal (trees) and land acquisition. Land acquisition activities will result in direct conversion of 34.2 acres, of which 13.2 acres have been determined to constitute prime and unique farmland through prior coordination with your office.

Attached is the completed Form AD-1006. The Federal Aviation Administration has determined that the land acquisition acreage to be converted directly totals 131 points based on the relative value of farmland to be converted and the total site assessment. This total score is less than 160 and need not be given further consideration for protection as farmland and no additional sites need to be evaluated.

Should you have any questions or require additional information, please do not hesitate to contact me at Susan.Stafford@faa.gov or 304-252-6216 x 130.

Sincerely,

Susan B. Stafford
Environmental Protection Specialist

cc: Greg Campbell, SHD (email with enclosures)
Cheryl Rodriguez, Delta Airport Consultants (email with enclosures)
Mary Ashburn Pearson, Delta Airport Consultants (email with enclosures)
Scott Denny, DOAV (email with enclosures)

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 01/10/2019	
Name of Project EA for SHD Phase I Development	Federal Agency Involved Federal Aviation Administration	
Proposed Land Use Aeronautical	County and State Augusta County, Virginia	
PART II *(To be completed by NRCS)*	Date Request Received By NRCS	Person Completing Form:

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	34.2			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	286.18			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	80			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	14			
2. Perimeter In Non-urban Use	(10)	6			
3. Percent Of Site Being Farmed	(20)	14			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	0			
6. Distance To Urban Support Services	(15)	0			
7. Size Of Present Farm Unit Compared To Average	(10)	10			
8. Creation Of Non-farmable Farmland	(10)	0			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	0			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	2			
TOTAL SITE ASSESSMENT POINTS	160	51	0		0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	80	0		0
Total Site Assessment *(From Part VI above or local site assessment)*	160	51	0		0
TOTAL POINTS ***(Total of above 2 lines)***	260	131	0		0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form: Susan Stafford - Federal Aviation Administration	Date: 1/22/2019

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

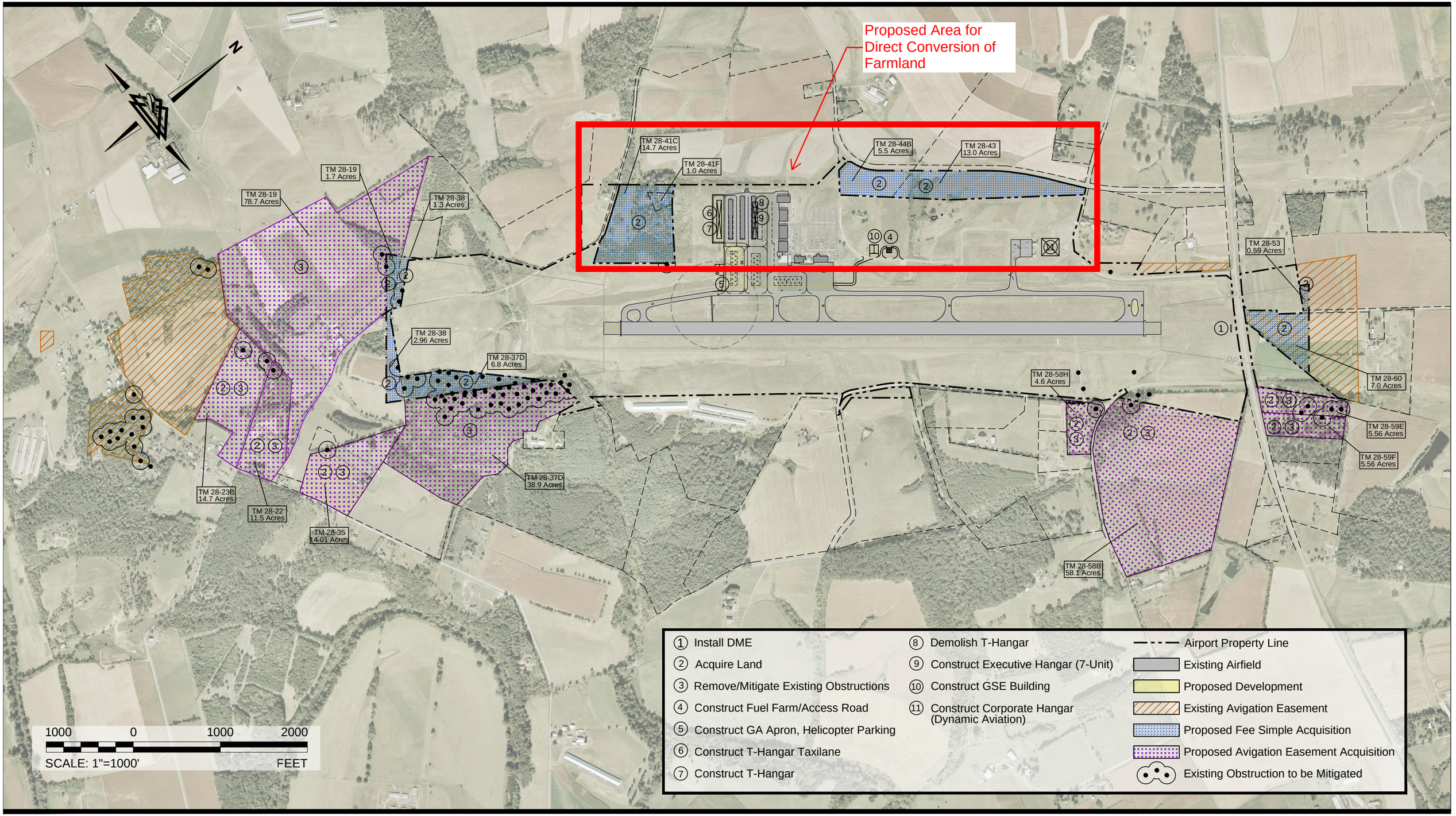
Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

DRAWING: 16107-Proposed Action-EA-v4-MRK.dwg LAYOUT: L1

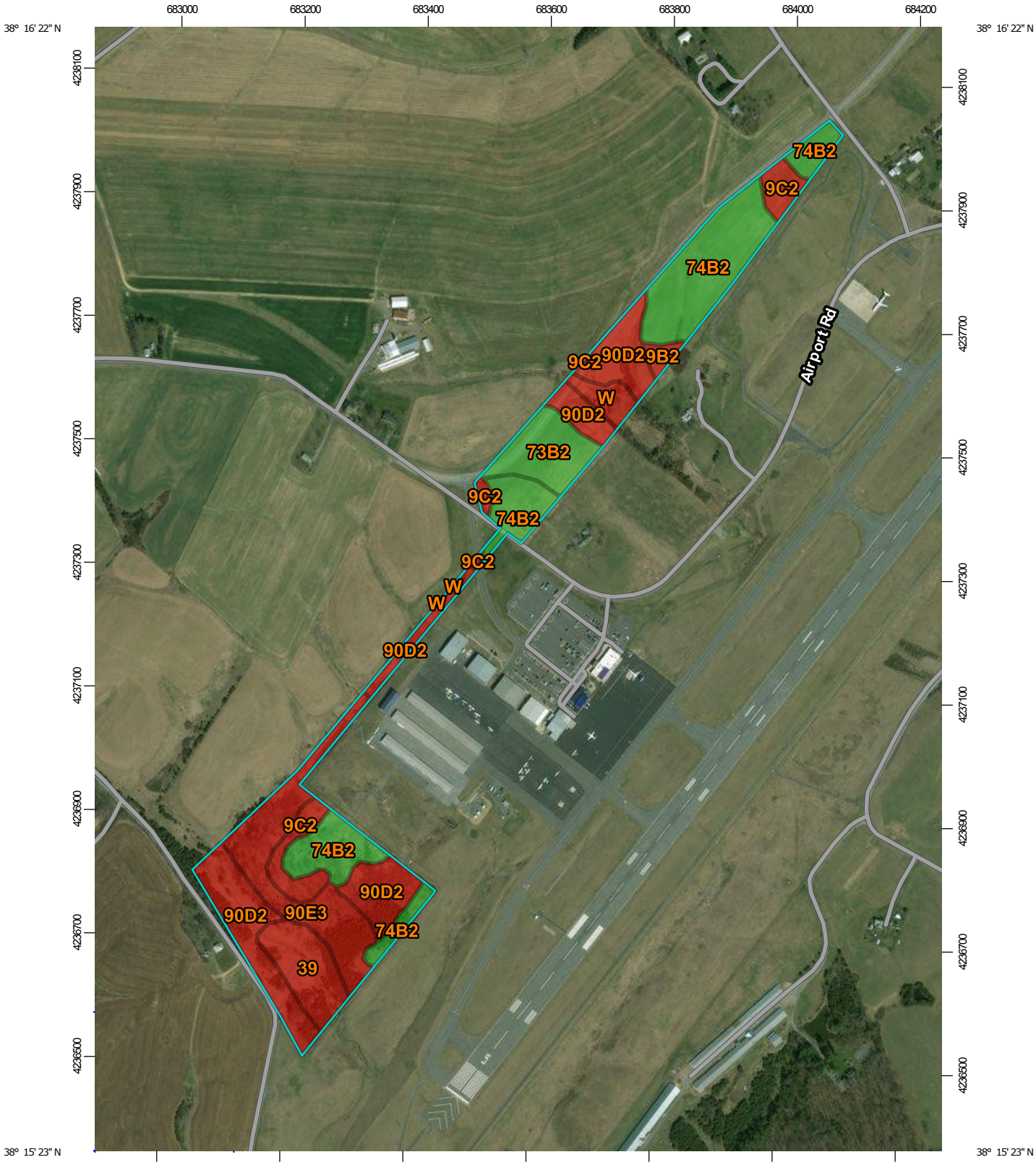


Proposed Action

Shenandoah Valley Regional Airport
Environmental Assessment

M:\Drawings\Logos\Delta Logos\Small\DAC Logo - Color.jpg

Farmland Classification—Augusta County, Virginia
(SHD EA for Phase I Development)



Map Scale: 1:8,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Augusta County, Virginia
Survey Area Data: Version 14, Aug 28, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 12, 2011—Mar 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9B2	Berks-Weikert channery silt loam, 2 to 7 percent slopes, eroded	Not prime farmland	0.5	1.2%
9C2	Berks-Weikert channery silt loam, 7 to 15 percent slopes, eroded	Not prime farmland	3.2	7.3%
39	Fluvaquents, nearly level	Not prime farmland	3.5	7.9%
73B2	Sequoia silt loam, 2 to 7 percent slopes, eroded	All areas are prime farmland	3.5	8.0%
74B2	Sequoia-Berks silt loams, 2 to 7 percent slopes, eroded	All areas are prime farmland	13.6	30.7%
90D2	Weikert-Berks channery silt loams, 15 to 25 percent slopes, eroded	Not prime farmland	11.8	26.7%
90E3	Weikert-Berks channery silt loams, 25 to 50 percent slopes, severely eroded	Not prime farmland	6.9	15.5%
W	Water	Not prime farmland	1.2	2.8%
Totals for Area of Interest			**44.3**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Attachment K

Federal Aviation Administration

Office of Environment and Energy

http://www.faa.gov/about/office_org/headquarters_offices/apl/research/models/aem_model/

Area Equivalent Method (AEM) Version 2c SP2

Airport Name/Code:	Shenandoah Valley Regional Airport (SHD)

DNL (dBA)	Baseline Area (Sq. Mi.)	Alternative Area (Sq. Mi.)	Percent Change in Area
65	0.3	0.3	13.6%

	BASE Case		ALTERNATIVE Case	
Aircraft Type	Daytime LTO Cycles	Nighttime LTO Cycles	Daytime LTO Cycles	Nighttime LTO Cycles
707				
720				
737				
7478				
707120				
707320				
717200				
727100				
727200				
737300				
737400				
737500				
737700				
737800			0.10	0.10
747100				
747200				
747400				
757300				
767300				
767400				
777200				
777300				
1900D				
707QN				
720B				
727D15				
727D17				
727EM1				
727EM2				
727Q15				
727Q7				
727Q9				
727QF				
7373B2				
737D17				
737N17				
737N9				
737QN				
74710Q				
74720A				
74720B				
747SP				
757PW				
757RR				
767CF6				
767JT9				
7773ER				
7878R				
A10A				
A3				
A300-622R				
A300B4-203				
A310-304				
A319-131				
A320-211				
A320-232				
A321-232				
A330-301				
A330-343				
A340-211				
A340-642				
A37				
A380-841				
A380-861				
A4C				

	BASE Case		ALTERNATIVE Case				
Aircraft Type	Daytime LTO Cycles	Nighttime LTO Cycles	Daytime LTO Cycles	Nighttime LTO Cycles			
A6A							
A7D							
A7E							
B1							
B2A							
B52BDE							
B52G							
B52H							
B57E							
BAC111							
BAE146							
BAE300							
BEC58P							
C118							
C12	2.06	2.03	2.06	2.03			
C130							
C130AD	0.08	0.05	0.08	0.05			
C130E							
C-130E							
C130HP							
C131B							
C135A							
C135B							
C137							
C140							
C141A							
C17							
C18A							
C-20							
C21A							
C22							
C23							
C5A							
C7A							
C9A							
CIT3							
CL600	1.98	1.98	2.45	2.45			
CL601							
CNA172	13.83	4.61	13.83	4.61			
CNA182							
CNA182FLT							
CNA206							
CNA208							
CNA20T							
CNA441							
CNA500							
CNA510							
CNA525C							
CNA55B							
CNA560E	1.98	1.98	2.46	2.46			
CNA560U							
CNA560XL							
CNA680							
CNA750							
COMJET							
COMSEP	13.83	4.61	13.83	4.61			
CONCRD							
CRJ9-ER							
CRJ9-LR							
CVR580							
DC1010							
DC1030							
DC1040							
DC3							
DC6							
DC820							
DC850							
DC860							
DC870							
DC8QN							
DC910							
DC930							
DC93LW							
DC950							
DC95HW							
DC9Q7							
DC9Q9							
DHC-2FLT							
DHC6	0.46	0.05	0.46	0.05			
DHC6QP							
DHC7							
DHC8							
DHC830							
DO228							
DO328							
E3A							

	BASE Case		ALTERNATIVE Case				
Aircraft Type	Daytime LTO Cycles	Nighttime LTO Cycles	Daytime LTO Cycles	Nighttime LTO Cycles			
E4							
EA6B							
ECLIPSE500							
EMB120							
EMB145	1.25	0.51	1.25	0.51			
EMB14L							
EMB170							
EMB175							
EMB190							
EMB195							
F10062							
F10065							
F100D							
F101B							
F102							
F104G							
F105D							
F106							
F111AE							
F111D							
F-111F							
F117A							
F14A							
F15A							
F15E20							
F15E29							
F16A							
F16GE							
F16PW0							
F-18							
F28MK2							
F28MK4							
F4C							
F-4C							
F5AB							
F5E							
F8							
FAL20							
FB111A							
GASEPF							
GASEPV							
GII							
GIIB							
GIV							
GV			0.10	0.10			
HS748A							
IA1125							
JAGUAR							
KC10A							
KC135							
KC-135							
KC135B							
KC135R							
L1011							
L10115							
L188							
LEAR25							
LEAR35							
MD11GE							
MD11PW							
MD81							
MD82							
MD83							
MD9025							
MD9028							
MU3001							
OV10A							
P3A							
PA28							
PA30							
PA31							
PA42							
S3A&B							
SABR80							
SD330							
SF340							
SR71							
T1							
T29							
T-2C							
T3							
T33A							
T34							
T37B							
T-38A							
T39A							

	BASE Case		ALTERNATIVE Case				
Aircraft Type	Daytime LTO Cycles	Nighttime LTO Cycles	Daytime LTO Cycles	Nighttime LTO Cycles			
T41							
T42							
T-43A							
T44							
TORNAD							
TR1							
U2							
U21							
U6							
U8F							
Total LTOs	35.47	15.82	36.62	16.97			

	Base Case- 2023				Ops per Rep Aircraft							Base	Base	Future	Future
Operations	**37204**			E135 day	E145 and B350 day	E135 night (29%)	E145 and B350 night (29%)		Aircraft	**Aircraft**	**Code**	**Day**	**Night**	**Day**	**Night**
Air Carrier	1401		E135, E145, B350	826	85	337	35	sum correct	E135	Embraer 135	EMB145	1.13	0.46	1.13	0.46
Air Taxi			E55P, C68A						E145	Embraer 145	EMB145	0.12	0.05	0.12	0.05
GA Locl	26928		C172, SR22		10098	*25% night*	3366	sum correct	B350	Beech 350	DHC600	0.46	0.05	0.46	0.05
GA Itinerant	8678		BE20, C560, CL30		1446	*50% night*	1446	sum correct	E55P	Embraer Phenom 3	CNA55B				
Military	197		BE20, D328		59.1	*40% night*	39.4	sum correct	C68A	Citation Latitude	CNA680				
									C172	Cessna 172	CNA172	13.83	4.61	13.83	4.61
	sum correct								SR22	Cirrus	COMPSE	13.83	4.61	13.83	4.61
									BE20	Beech Super King	C12	1.98	1.98	1.98	1.98
	Alternative Case - 2028								C560	Citation V	CNA560E	1.98	1.98	1.98	1.98
Operations	**38884**								CL30	Challenger 300	CL600	1.98	1.98	1.98	1.98
Air Carrier	1401		E135, E145, B350						BE20	Beech Super King	C12	0.08	0.05	0.08	0.05
Air Taxi			E55P, C68A						C130AD	Lockheed Hercules	C130AD	0.08	0.05	0.08	0.05
GA Locl	26928		C172, SR22						GV	Gulfstream jet	GV	none	none	0.10	0.10
GA Itinerant	8678		BE20, C560, CL30						737800	Boeing 737800	737800	none	none	0.10	0.10
Military	197		BE20, D328						C560	Citation V	CNA560E	none	none	0.48	0.48
New itinerant	1680		GV		71.4	*50% night*	71.4	sum correct	CL30	Challenger 300	CL600	none	none	0.47	0.47
	sum correct		737800 (BBJ)		71.4	*50% night*	71.4								
			C560		352.8	*50% night*	352.8								
			CL30		344.4	*50% night*	344.4					35.48	15.83	36.63	16.98

Shenandoah Valley Regional Airport (SHD)
Area Equivalent Method (AEM) Inputs and Methodology
December 2023

1. Base Case-
    a. Obtained total operations and operations by aircraft type from FAA 5010 Master Record.
    b. Downloaded FAA TFMSC data for 2023 (downloaded last half of Dec 2023) and filtered operations by aircraft type. Identified the top operators in 2023 as representative aircraft for each aircraft type. Note that the representative local GA aircraft includes the aircraft used by Blue Ridge Aviation fleet (Cessna 172).
    c. Divided operations per aircraft type by the number of representative aircraft for each aircraft type. In the case of Air Carrier, the percentage of E135 was so high that this category was broken out by percentage instead of a clean average.
    d. Percentage of night operations percentages provided by Airport Management. Night = 7 am to 10 pm.
    e. For the actual LTO cycles to be input into the AEM spreadsheet, divided the operations by two (to produce the LTO cycle) then divided those by 365 for a daily count.

2. Alternative (Future) Case-
    a. The only change in the future case is the assumption of 1680 additional annual operations by itinerant aircraft. This represents the "worst case" scenario if the proposed new hangars accommodate all new aircraft, and not existing, relocated tenants. While it is difficult to predict the number of future operations, the FAA Aerospace Forecast 2023-2043 notes that in five years, jet aircraft are anticipated to operate approximately 315 hours per year on average. Assuming a three-hour average trip duration, this amounts to 105 annual operations each, meaning that in the "worst case scenario" (that the hangars accommodate all new aircraft and not existing tenants), the hangars could account for 1,680 additional annual operations at SHD.
    b. Per the EA, Hangars T and U are intended for larger aircraft such as the Boeing Business Jet or Bombardier Global and could accommodate a total of 4-6 small jets or two single, larger aircraft. Hangars H and I are intended to accommodate a total of 6-10 small jets. For analysis, assume "worst case" of 2 large and 10 small jets.
        - Two large = 17% of total new ops. (2/12) 8.5% to BBJ and 8.5% to Bombardier Global
        - 10 small = 83% of total new ops (10/12). Divided among itinerant types currently operating at SHD.
    c. Same assumption for itinerant night operations as for the base case scenario.

Result- An increase of the 65 DNL noise contour by 13.6 percent, which is below the 17% threshold of significance established by FAA which would require additional analysis.

Attachment L

DELTA AIRPORT CONSULTANTS, INC.

August 2, 2023

Resident
18 Aviation Circle
Weyers Cave, VA 24486

Tax Map / Parcel No.: 28-40

Subject: **Invitation to Property Owner Briefing Session**
Environmental Assessment for Aviation Technology Park Development
Shenandoah Valley Regional Airport (SHD)

Dear Resident:

The Shenandoah Valley Regional Airport Commission (the Commission), as owner and operator of the Shenandoah Valley Regional Airport (SHD), proposes development on the airport property within the "Aviation Technology Park". The Aviation Technology Park is in the northwest portion of the airfield and is generally bordered to the south by Route 771 and to the north by Route 847/Valley Church Road, as depicted on the enclosed exhibit.

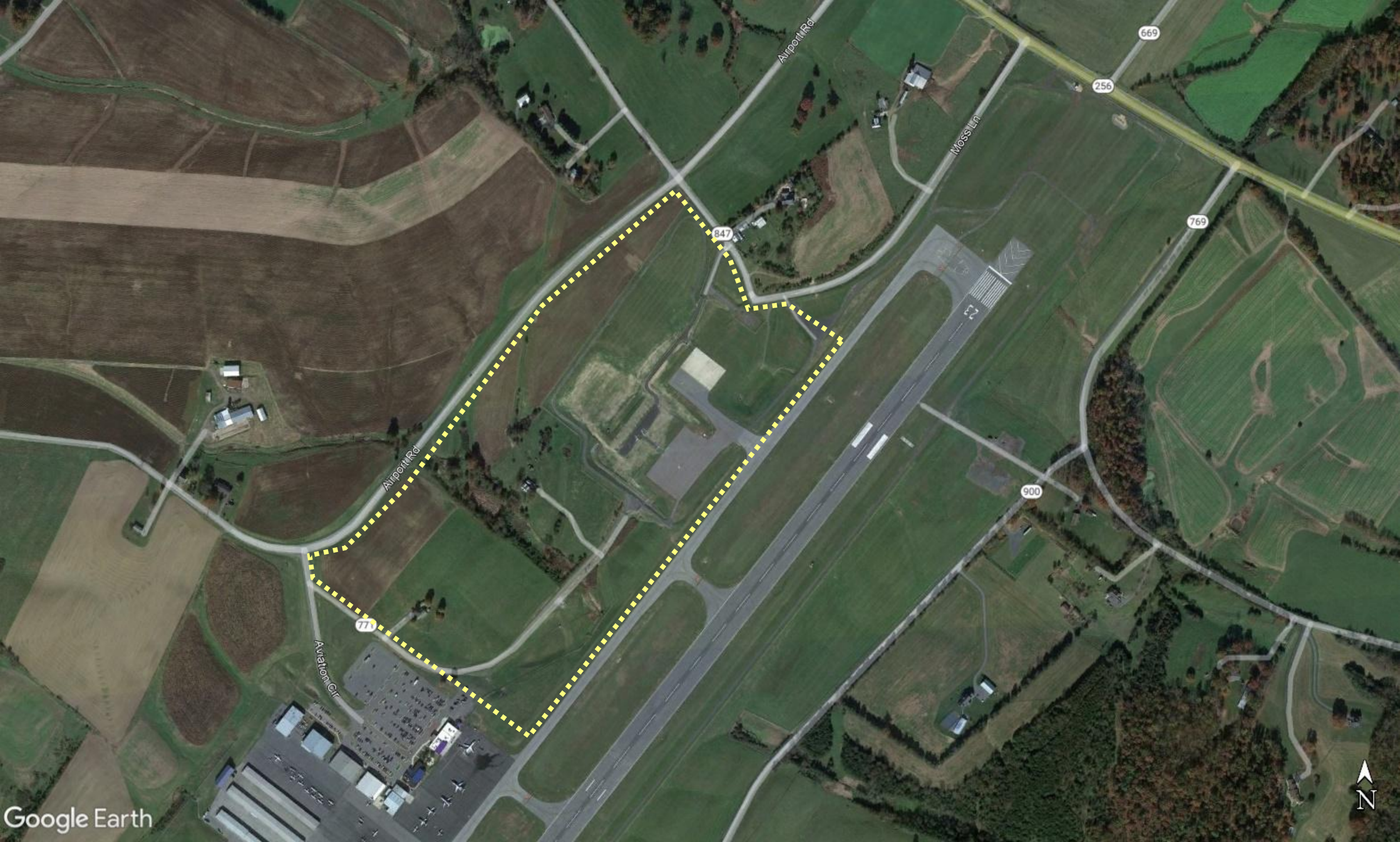
The Commission has engaged our firm, Delta Airport Consultants, to conduct an Environmental Assessment (EA) to determine the potential environmental impacts of the proposed development. The EA is a federal requirement and is to be conducted in conformance with applicable federal guidelines.

This letter is to inform you that a property owner briefing will be held on **Thursday, August 31, 2023 from 6:00 pm to 7:00 pm at the Airport Terminal (77 Aviation Circle, Weyers Cave, VA 24486).** While the proposed development would remain within the airport boundaries, the Commission has organized the invitation-only briefing session for adjacent property owners, to offer information and to answer questions. Your attendance is encouraged.

If you are unable to attend the meeting but have questions about the proposed development, please do not hesitate to contact me at 804-955-4556 or mapearson@deltaairport.com.

Sincerely,

Mary Ashburn Pearson, AICP
Delta Airport Consultants, Inc.


Airport Rd
Moss Ln
669
256
769
847
900
771
Aviation Cir
Google Earth
N

SHENANDOAH VALLEY REGIONAL AIRPORT (SHD)
ENVIRONMENTAL ASSESSMENT FOR AVIATION TECHNOLOGY PARK DEVELOPMENT
PROPERTY OWNER BRIEFING
SIGN-IN SHEET

AUGUST 31, 2023- 6:00 pm

Address	TAX MAP - PARCEL NUMBER	PROPERTY OWNER	ATTENDEE NAME	PREFERRED CONTACT EMAIL/TELEPHONE
18 Aviation Circle	28-40	Airport Commission – Leased	Attended but did not sign in	
14 Aviation Circle	28-43B	Airport Commission - Leased	Donna Steve Bothof	540 421 2882
283 Oakland Farm Rd.	28-55	Oakland Farms Inc.		
71 Moss Lane	28-55B	William and Cecilia Moss	William & Cecilia Moss	540-476-8735
384 Valley Church Rd.	28-56E	John or Orvalerie Mongold	John and Valerie Mongold	(540) 810-2250
390 Valley Church Rd.	28-56	William or Sandra Hanger	Bill + Sandy Hanger	5408852812
244 Airport Road	28-44 and 28-44B	Blue Mountain Investments, Inc. c/o Gary Bosser	✓ Attended - (MAP)	
220 Airport Road	28-41E	Blue Mountain Investments, Inc. c/o Gary Bosser	✓ Attended - (MAP)	
321 Valley Church Road	28-43C	Gregory E. Bussard and Oranne E. McCleary		