Continental United States (CONUS) Interceptor Site

SECTION 3.5 – FTD

Environmental Impact Statement
Final

Department of Defense
Missile Defense Agency
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3.5.1 Air Quality – FTD

An evaluation of the air quality environmental resource requires an evaluation of both the potentially affected environment, as well as the environmental consequences (including potential mitigation measures) of the potential CIS deployment at FTD. The evaluation of the potentially affected environment provided in this section includes an assessment of existing climate and meteorology, air quality in the surrounding area, existing FTD emissions sources, and air regulations potentially applicable to the potential deployment at FTD. The evaluation of the environmental consequences and mitigation options provided in this section includes an assessment of impacts from construction and operation phases of the potential CIS deployment at FTD.

3.5.1.1 Regulatory Framework – Air Quality - FTD

This section summarizes notable regulatory requirements, both at the federal and state levels, required to authorize construction and subsequent operation of the substantial air emissions sources for the CIS at the FTD site. The discussion here is intended to illustrate how the air permitting process, if undertaken at a later date, would assist in controlling the emissions in order to comply with all federal and state air quality regulations.

The federal air quality regulatory framework is laid out in the CAA, which originally became law in 1970 and was revised in 1977 and 1990. The USEPA, which is charged with executing the CAA's requirements at the federal level, delegates much of the monitoring, enforcement, and permitting responsibilities stipulated by the CAA to individual states. New York's state air quality regulations, which adopt and incorporate various key federal regulations, are codified under Title 6 of the New York Codes, Rules, and Regulations (NYCRR), Parts 200-317, and are enforced by the New York State Department of Environmental Conservation (NYSDEC).

The notable state and federal air quality requirements identified as applicable to the potential CIS deployment include:

- 6 NYCRR Part 201 – Permits and Registrations.
- Title V Operating Permits.
- NESHAPS.
- NSPS.

3.5.1.1.1 New York Codes, Rules, and Regulations Part 201 – Permits and Registrations

A proposed new emission source or a proposed modification to an existing emission source is required to apply for and obtain an air construction permit prior to the commencement of construction. In New York, construction of new or modified emissions sources is authorized via one of three alternative permits, depending on the project's magnitude of emissions. These three permits are:

- Minor Facility Registration.
    - Must emit less than 50 percent of the major facility threshold for any regulated air contaminant.
    - Must emit less than 50 percent of any lesser specific threshold for a single HAP as established by the administrator.
    - Must emit less than 50 percent of any lesser threshold established in state regulations for VOCs.
- State Facility Permit.
    - Must emit more than the Minor Facility Registration thresholds and less than the thresholds for a Title V Facility Permit.
    - Applicable if the facility's PTE is capped by a federally enforceable emissions cap.
    - Applicable if the facility is subject to any department approved variance from the requirements of this chapter.
- Title V Facility Permit.
    - Applicable for a major facility (i.e., has a PTE for VOC in excess of 50 tpy and/or any other criteria pollutant in excess of 100 tpy and/or a single HAP in excess of 10 tpy and/or cumulative HAP emissions in excess of 25 tpy).
    - Applicable to any facility specifically required to obtain a Title V permit by being subject to a standard, limitation, or other requirement under the federal NSPS regulations.
    - Applicable to any facility, including an area source, subject to a standard or other requirement regulating HAPs under federal NESHAP regulations.

The construction of each emissions source included in the potential CIS deployment would need to be authorized by one of the three permits unless an exemption from the requirement to obtain a permit for a particular emissions source would be applicable under the New York rules.

<u>Major Source Permitting</u>

NSR, which is outlined in the CAA, is the process that major stationary sources of air pollution or major modifications to major stationary sources must undergo in order to obtain an air construction permit to authorize their construction and initial operation. NSR is executed on a pollutant-by-pollutant basis and can take one of two paths for a given pollutant depending on whether a project is proposed to be located in an area not attaining the NAAQS (i.e., non-attainment) for one or more pollutants, or in an area that is in attainment of the NAAQS for a given pollutant. The following are regulatory requirements for each path:

- Non-Attainment New Source Review (NA NSR).
  - Federal rule codified at 40 CFR Part 51.165.
  - State rule outlined in New York Rules 6 NYCRR Parts 231-5 and 231-6.
  - The requirements of NA NSR are designed to ensure that proposed major sources of air pollution do not impede a non-attainment area's progress towards improving air quality such that the NAAQS is attained.
- Prevention of Significant Deterioration New Source Review (PSD NSR).
  - Federal rule codified at 40 CFR Part 51.166.
  - State rule outlined in New York Rules 6 NYCRR Parts 231-7 and 231-8.
  - The requirements of PSD NSR are designed to ensure that proposed major sources of air pollution do not cause significant deterioration of an area's air quality such that a violation of the NAAQS occurs.

As indicated, Jefferson County, New York is designated as a moderate non-attainment area for the 1997 ozone NAAQS (USEPA, 2015c). As such, the potential CIS deployment's maximum potential annual emissions (i.e., the PTE) of NO_X and VOCs (considered precursors to ground-level ozone formation) would be limited by the more stringent requirements of NA NSR (assuming they would be of a magnitude large enough to trigger the applicability threshold).

NA/NSR Permitting. As previously indicated, the existing FTD site is currently classified as a major source for both NSR and Title V definitions. However, the project would consider the possibility of permitting any new emissions sources included in the potential CIS as separate facilities from an air regulatory standpoint. Thus, the potential CIS at the FTD site would be considered a new stationary emissions source. As a new stationary source, NA NSR applicability for the project's emissions of NO_x and/or VOCs would be determined by comparing the project's PTE (on an individual pollutant basis) to the moderate non-attainment area NA NSR major source threshold of 50 tpy for VOC and 100 tpy for NO_X.

Should the potential CIS be applicable to NA NSR permitting requirements for its emissions of NO_X and/or VOCs, the following would be required:

- Application of the LAER technology regardless of cost.
- Compliance Certification - The applicant is required to certify that all existing major stationary sources owned and/or operated by the applicant are in compliance with all applicable emission limitations and standards under the CAA.

- An analysis demonstrating that the site, size, processes, and environmental controls proposed for the project outweigh possible alternatives on a basis of environmental and social costs.
- Acquisition of emissions offsets - Emissions offsets are credits for a permanent reduction or elimination of emissions of a non-attainment pollutant or its precursors/surrogates within the non-attainment area or an adjacent source region for the purpose of negating or reducing the impact of emissions produced due to the proposed installation. 6 NYCRR Part 231-13.1, Table 1 stipulates that for moderate ozone non-attainment areas such as Jefferson County, offsets for NO_x and VOC emissions must be obtained at a ratio of 1.15:1.

For the remainder of criteria pollutants emitted by the facility (i.e., those pollutants for which the CIS footprint is classified as in attainment of the NAAQS), the requirements of PSD NSR would be applicable to the potential CIS at the FTD should the project be applicable as a major stationary source.

PSD Permitting. As indicated above, within areas where the project's location is classified as in attainment with the NAAQS, the requirements of PSD NSR would be applicable should the project's estimated level of air emissions trigger specific thresholds that would classify the project as a major source. The major source classification is triggered when the project's maximum potential annual emissions (i.e., PTE) on a pollutant-by-pollutant basis is equal to or greater than 100 tons per year for a facility that is one of the 28 sources listed in 40 CFR Part 68, or 250 tpy for sources that are not one of the 28 sources listed in 40 CFR Part 68. The potential CIS deployment at FTD would not be one of the 28 listed sources and, as such, the determination of whether it would constitute a PSD major source (thus triggering PSD NSR) would be made by comparing its PTE for each PSD applicable criteria pollutant (i.e., SO_2, CO, PM_{10}, $PM_{2.5}$) against the 250 tpy major source threshold. Should the CIS's PTE exceed the major source threshold for one or more pollutants, the project would be required to undergo PSD NSR for each of those pollutants. PSD NSR requires the following exercises and analyses:

- One year of preconstruction ambient air monitoring.
- Air Quality Impact Analyses using air dispersion models.
- Case-by-case BACT analysis.
- Additional Impact Analysis examining the project's impacts on visibility, soils, vegetation, and residential and industrial growth.
- A demonstration that the project would not negatively impact the air quality and visibility at Federal Class I areas.

Conversely, should the project's PTE be less than the major source threshold for each of the PSD applicable criteria pollutants, the project would be considered a minor source and therefore, would not be required to undergo PSD NSR.

Emissions of GHG are also regulated under USEPA's PSD permitting rules and trigger PSD permitting under a separate major source threshold. Emission sources that exceed major source threshold(s) for one or more traditionally regulated pollutants (i.e., NO_x, VOC, PM_{10}, $PM_{2.5}$, CO, SO_2) and exceed separate GHG major source thresholds (New: 100,000 tpy/ Modified: 75,000 tpy) would be required to obtain a PSD and/or Title V permit for GHG emissions.

Minor Source Permitting

Should the CIS's PTE be less than the applicable major source threshold for each criteria pollutant, the project would be considered a minor source and would therefore not be required to undergo PSD NSR or NA NSR. However, as discussed earlier, a minor facility registration, a facility permit, or a Title V facility permit would still be required to authorize construction.

3.5.1.1.2 Title V Operating Permit

In addition to authorizing construction and/or modification of emissions sources, the three permits discussed (i.e., minor facility registration, state facility permit, Title V facility permit) also authorize long term operation. As such, depending on the magnitude of emissions, the authorization of operations would be handled via one of those three permits.

Title V of the federal CAA, codified under 40 CFR Part 70, requires individual states to establish an air operating permit program. New York's Title V operating permit program, which establishes Title V facility permits, is outlined in 6 NYCRR Part 201-6. The Title V facility permit, which is required to authorize long term operation of a Title V major source, essentially combines all regulated emissions sources and their associated state and federal regulatory requirements at a facility into a single comprehensive permit. Title V major source applicability is determined by comparing a facility's total PTE against the following Title V major source thresholds[13]:

- 100 tpy of any criteria pollutant.
- 100 tpy GHG on a mass basis and 100,000 tpy GHG on a CO2e basis[14].
- 10 tpy of a single HAP.
- 25 tpy of cumulative HAPs.

[13] Title V major source thresholds are more stringent than PSD major source thresholds for sources not included in the group of 28 listed sources (i.e., 100 tpy vs. 250 tpy). Additionally, Title V applicability considers emissions from every emissions source operating at a facility, whereas PSD applicability only considers sources included in a particular project (i.e., construction of new emissions source or modification of existing emissions source).
[14] Federal Title V permitting requirements cannot be applied to sources based solely on their GHG emissions. Rather, a source must exceed major source thresholds for at least one other regulated pollutant and GHG in order to be considered a major Title V source for GHGs.

According to 6 NYCRR Part 201-6, long term operation of a project that is a non-Title V source (i.e., minor source) is authorized under the project's PTIO.

3.5.1.1.3 National Emissions Standards for Hazardous Air Pollutants

Unlike permit authorizations which must be obtained prior to installing a new source of air emissions, there are other regulations that set standards which certain emissions units must meet regardless of major or minor source permit requirements. A certain set of such standards are addressed in Section 112 of the CAA regarding emissions of HAPs for major and certain area sources of HAP emissions. A major source of HAPs is a site that emits, or has the potential to emit, any single HAP at a rate of 10 tons or more per year, or any combination of HAPs at a rate of 25 tons or more per year. An area source of HAPs is a source that is not a major source of HAPs. For major sources, Section 112 requires the maximum degree of reduction in HAP emissions per standards that are commonly referred to as MACT standards. For area sources, GACT or management practices are used to reduce emissions of HAPs. These MACT/GACT standards are found in 40 CFR Part 63. Various NESHAPS, which can entail emissions limits, work and management practices, and/or reporting requirements, may be applicable to the proposed emissions sources included in the CIS design. One such notable emissions source is the desired use of diesel generator engines for backup power generation.

3.5.1.1.4 New Source Performance Standards (NSPS)

Similar to the standards previously discussed, Section 111 of the CAA authorized the USEPA to develop technology-based standards which apply to specific categories of stationary sources for criteria pollutants. These standards are referred to as NSPS and are found in 40 CFR Part 60. NSPS establish minimum emissions control requirements, or "best demonstrated technology", for all facilities within a specified category. Various NSPS, which can entail emissions limits, work and management practices, and/or reporting requirements, may be applicable to the proposed emissions sources included in the CIS design. The diesel generator engines are emission sources that may be subject to NSPS.

3.5.1.2 Affected Environment – Air Quality – FTD

The following sections provide a description of the affected environment surrounding FTD.

3.5.1.2.1 Climate and Meteorology

FTD is located in northern New York and experiences long cold winters and warm summers. Northern New York generally has a humid continental climate interspersed with frequent intrusions of continental polar air throughout the year. Maritime polar air that originates over the Pacific Ocean also can make it to New York during most seasons. These air masses are carried over the Rocky Mountains by the predominant westerly upper level winds and are modified to continental polar air. This leads to mainly dry and mild to cool conditions, depending upon the season. Occasional arctic air is not uncommon during the cold season.

The warm season features occasional continental tropical air. The continental tropical air originates in the southwestern U.S. and can bring periods of very warm weather to the region. The continental tropical air often mixes with maritime tropical air from the Gulf of Mexico, thus creating periods of warm and humid conditions in the region (NWS, 2010; TAMU, 2014).

Temperatures are typically highly variable from season to season. The summer is generally warm, but prolonged periods of extreme heat are rare. Spring and fall are transitional periods. The winter is cold with periods of arctic air intrusions and with persistent cloudiness. A maximum high temperature of 100°F has been recorded in the region, with a coldest minimum regional temperature of -45°F (WRCC, 2014c). Average temperatures range from as low as 18.8°F in January, to as high as 70.5°F in July. The temperature exceeds 90°F on average 2.2 days per year during the summer period. During the cold season, air temperatures fall below 32°F an average of 142.2 days per year (NCDC, 2014c).

Precipitation amounts are spread evenly throughout the year (NCDC, 2014f). The average precipitation for the area is 43.1 inches, 53 percent of which falls between May and October. There are approximately 162 days per year with at least 0.01 inch of precipitation recorded in the region. The area around FTD averages 112.3 inches of snow per year, some of which is caused by lake effect snow off of Lake Ontario. The region averages 92.2 days per year with at least 1 inch of snow on the ground (NCDC, 2014c). The region also averages around 8 days per year with dense fog (1/4 mile or less) and 27 thunderstorm days per year (NCDC, 2014f).

Persistent winds are out of the southwest approximately 13 percent of the time. Winds are southeast 12 percent of the time. The average wind speed is 7.6 knots. The annual wind rose is provided on Figure 3.5.1-1 (NCDC, 2014i).

3.5.1.2.2 Regional Air Quality

This section provides a description of the existing air quality near FTD. Impacts on air quality from construction and operation are described in Section 3.5.1.3.

Air Quality Standards

The CAA requires that the USEPA establish NAAQS. The USEPA developed these ambient air quality standards for six criteria pollutants: SO_2, CO, O_3, NO_x, Pb, and PM. PM includes two subspecies; particles with diameters less than or equal to 10 microns (PM_{10}), and particles with diameters less than or equal to 2.5 micrometers ($PM_{2.5}$). The NAAQS are based on total concentrations of criteria pollutants in the ambient air (i.e., outdoor air that is accessible to the public [40 CFR Part 50.1(e)]). The NAAQS are comprised of both primary and secondary standards. The primary standards protect the health of particularly vulnerable segments of the populations such as asthmatics, children, the sick, and the elderly. Secondary standards are welfare-based and protect against visibility decreases and damage to crops, animals, vegetation, and buildings (USEPA, 2014c).

The NYSDEC is the responsible agency for monitoring air quality and assessing compliance with the NAAQS for each of the criteria pollutants. Table 3.5.1-1 lists the applicable NAAQS for each of the six criteria pollutants.

Table 3.5.1-1 National and New York Ambient Air Quality Standards - FTD

Pollutant	Averaging Period	Primary Limit (Health Based) (µg/m3)	Secondary Limit (Welfare Based) (µg/m3)	NAAQS Basis
CO	1-Hour	40,000	---	High-2nd-High – Not to be exceeded (NTBE) more than once per year
CO	8-Hour	10,000	---	High-2nd-High - NTBE more than once per year
NO_X	1-Hour	188	---	98th percentile 3-Year average per receptor
NO_X	Annual	100	100	High-1st-High
PM_{10}	24-Hour	150	150	24-hour average NTBE more than once every 3-years
$PM_{2.5}$	24-Hour	35	35	98th percentile 3-year average
$PM_{2.5}$	Annual	12	15	High-1st-High Ave – annual mean averaged over 3-years Secondary is an annual mean
SO_2	1-Hour	196	---	99th percentile 3-year average
SO_2	3-Hour	---	1,300	NTBE more than once per year
SO_2	Annual	100	---	Not to be exceeded
Ozone	8-hour	147	147	High-4th-High - 3-Year Average
Pb	Quarterly	0.15	0.15	Maximum 3-month rolling average
Sources: USEPA, 2014c; NYSDEC, 2014b.				

Existing Air Quality

FTD is located in Jefferson County, New York. The air quality of the site is influenced by Watertown, New York, as well as, to a lesser degree, the Buffalo, New York, Rochester, New York, and Toronto, Canada metropolitan areas, which are located upwind of FTD. Jefferson County is part of Region 6 of the NYSDEC air monitoring network.

Monitored ambient concentrations of criteria pollutants during the 2013 annual period for locations within Jefferson County or in counties near FTD are listed in Table 3.5.1-2 (NYSDEC, 2014a). In some cases in which no data were available from a nearby representative county, data from the nearest monitor were used as a substitute. Data from the monitors are used to demonstrate attainment with the NAAQS and develop pollution control strategies.

Table 3.5.1-2 Monitored New York Background Concentrations - FTD

Pollutant	Averaging Period	2013 Background (µg/m3)	Standard Primary/ Secondary (µg/m3)	Background Monitoring County
CO	1-Hour	1,281	40,760	Rochester
CO	8-Hour	932	10,481	Rochester
NO_X	1-Hour	98	191	Buffalo
NO_X	Annual	20	101	Buffalo
PM_{10}	24-Hour	26	150	Rochester
$PM_{2.5}$	24-Hour	21	35	Rochester
$PM_{2.5}$ [2]	Annual	8.3	12/15	Rochester
SO_2	1-Hour	54	200	Rochester
SO_2	3-Hour	--	--	--
SO_2	Annual	2.4	80	Rochester
Ozone	8-hour	132	150	Perch River
Pb	Quarterly	0.003	0.15	Rochester
Source: NYSDEC, 2014c.				

Jefferson County is currently classified as a moderate non-attainment area for the 1997 8-hour ozone standard and is located within the ozone transport region. Jefferson County is classified as attainment for all other criteria pollutants (USEPA, 2015c).

<u>Existing Emission Sources</u>

The existing emission sources at the FTD site include boilers, paint booths, and storage tanks. An inventory of the quantity of each type of emission source is included in the Table 3.5.1-3, including exempt sources (internal and external combustion engines) listed in FTD's annual emission statement. The current emission sources are itemized in FTD's New York Title V permit. In addition to the existing emission sources in Table 3.5.1-3, a biomass facility is also located at the FTD site, and is not included in the table as it is owned and operated by ReEnergy Holding LLC. As such, the ReEnergy Black River biomass facility holds its own New York Title V permit. The biomass facility includes three biomass fueled circulating bed fluidized boilers and three diesel generators.

Table 3.5.1-3 Inventory of Existing Emission Sources at FTD

Type of Emission Source	Total Units of Each Emission Source Type
Natural Gas Boilers	284
Paint Booths	2
Underground Storage Tanks	11
External Combustion Engine	5
Internal Combustion Engine	3

3.5.1.3 Environmental Consequences and Mitigation – Air Quality - FTD

This section addresses the potential air quality impacts that would result from the construction, and operation phases of the potential CIS deployment, as well as the potential measures that could be undertaken to mitigate the air quality impacts.

It should be noted that the operations impacts and mitigation analyses for the CIS operation are provided for both the baseline and expedited schedules. This is because the vehicle and equipment emission factors established by USEPA and industry vary by year. As such, emission estimates for operations that initiates in Year 6 could differ from emission estimates for operation that initiates in Year 4.

3.5.1.3.1 Construction – Baseline Schedule

Under implementation of the potential CIS deployment, various types of site preparation and construction activities and their associated equipment would emit criteria air pollutants and GHGs. Therefore, if a decision is made to deploy and if FTD is selected, then construction of the potential CIS deployment would cause some impact to the air quality; however, any such construction impacts would be temporary in nature. The following sections discuss the methods for assessing potential impacts, the types of potential impacts to the air quality surrounding FTD, and possible mitigation measures for reducing such impacts for the baseline schedule.

3.5.1.3.1.1 Methods for Assessing Construction Impacts

<u>Factors Considered in Air Quality Impact Analysis</u>

The following key factors are typically considered in assessing the intensity and duration of construction-related air quality impacts:

- Construction activities (types, durations, etc.).
- Construction schedule.
- Construction equipment and vehicle emissions (types, number, duration of operation, etc.).

These factors were reviewed in evaluating the air quality impacts from construction of the potential CIS deployment. Their contributions to the potential CIS deployment's air quality analysis modeling and any respective assumptions that were used in the analysis are further described in Section 3.5.1.3.1.2.

Air Quality Impact Analysis Modeling

The U.S. Air Force ACAM model, Version 5.06 (USAF, 2016) was used in this analysis to estimate both the combustion and fugitive source emissions from potential construction activities. The ACAM model was utilized because it has the capability to develop an air emission estimate based on certain assumptions regarding the preliminary construction schedule, preliminary construction equipment list, and the total acreage disturbed.

3.5.1.3.1.2 Environmental Consequences – Baseline Schedule

The type and extent of air quality impacts depend on various construction characteristics including activities, schedule, equipment, acreage of construction site disturbed, equipment emission characteristics, and other factors. These construction characteristics for the baseline schedule are described in greater detail in the following paragraphs.

Emission Sources

Emission Types. Generally, emissions of criteria pollutants (i.e., PM_{10}, $PM_{2.5}$, NO_x, SO_2, VOC, and CO) and GHGs (i.e., mostly CO_2) during construction activities would occur from one of two processes: 1) combustion of fuels in engines which propel or otherwise operate mobile or stationary construction equipment; or 2) fugitive dust activities which introduce particles into the air through the disturbance and movement of materials. In more project-specific terms, the air emissions from combustion of fuels in mobile engines (both on-road and non-road) during construction would be primarily driven by the following construction activities:

- Construction workers traveling from surrounding counties in the nonattainment area to and from the construction site.
- Trucks that travel through the nonattainment area and deliver construction materials to the construction site.
- Trucks that travel from the construction site through the nonattainment area hauling soil and waste materials to a local disposal site.
- Operation of heavy equipment such as cranes, bulldozers, and scrapers.
- Use of support vehicles to transport materials around the construction site.
- Operation of other miscellaneous mobile fossil-fuel combustion sources such as generators necessary for construction activities.

Construction activities would also result in fugitive dust emissions (in the form of direct PM_{10} and $PM_{2.5}$ emissions) in the construction area and nearby surrounding area. In general, the levels of fugitive dust released depend on the type of construction activity, the level of activity conducted, the weather during the construction activity, and the composition of the soil disturbed. In more project-specific terms, the fugitive dust emissions during construction would be primarily caused by the following construction activities:

- Tree clearing.
- Ground clearing, grading, and excavation.
- Bulk handling of materials such as spoils, backfill, and aggregate.
- Disturbance from the movement of vehicle tires over paved and non-paved surface.

Air emissions from construction of the CIS can be further categorized as being either direct or indirect emissions. Both direct and indirect emissions are those emissions of criteria pollutants and precursors that are initiated by the federal approval of the CIS, originate in the nonattainment area, and are reasonably foreseeable. Direct emissions are those that occur at the same time and place as the CIS. Air emissions resulting from operation of construction equipment, stationary emission sources (i.e., generators, air compressors, etc.), and other construction activities that occur at the construction site would be considered direct emissions.

Indirect emissions are those emissions that occur at a different time or place as the location of the potential CIS deployment. Indirect air emission resulting from construction activities include worker vehicles, trucks that deliver dirt and construction materials to the construction site, and trucks that transport dirt and waste materials from the construction site to an off-base disposal site. These types of construction activities would have the potential to occur away from the CIS construction site and within the nonattainment area.

Effects of Construction Schedule on Emissions Estimates. The construction of the potential CIS deployment, which would include the initial deployment of up to 60 GBIs total and the associated buildings and components, would occur over approximately a 5-year period under the baseline construction schedule as described in Section 2.5.1. Design and permitting activities would occur throughout Year 1, however, tree and brush clearing would last 6 months starting in October of Year 1, referenced as Month 1 in the emission analysis. This would be followed by 12 months of site preparation activities, such as grading and cut and fill activities. The construction phase of the project (i.e., building foundations, erection of structures, and build-out) could last an additional 3 years after the site preparation phase. The emissions analysis assumed the following construction schedule:

- Tree Clearing: Months 1 through 6, beginning October of Year 1.
- Site Preparation: Months 7 through 18, beginning April of Year 2.
- Heavy/intrusive construction: Months 19 through 42, beginning April of Year 3.
- Build-out and completion: Months 43 through 54, beginning April of Year 5.

Construction Equipment. As the construction plan for the potential CIS deployment has not yet been developed, there is no detailed equipment list for the construction equipment. However, a preliminary equipment list was developed for the purpose of developing an air emission estimate for the construction of the CIS (see Appendix D-1). The preliminary equipment list was based on construction information from previous MDA projects similar to the CIS. The preliminary construction list includes an inventory of the construction equipment (i.e., type and amount) and hours per day that the construction equipment would operate and be used to perform work. This preliminary equipment list and the assumptions discussed previously were used as input into the ACAM model to estimate both the combustion and fugitive source emissions from tree and brush clearing, site preparation, and construction activities.

Construction Site Disturbance. Should the decision be made to deploy and FTD is selected, the construction footprint for the CIS would require approximately 977 acres and include a lay-down area, GBI fields to accommodate up to 60 GBIs total, associated mission facilities, mission support structures, and the upgrade to certain roads. This analysis assumed that the entire acreage for the CIS would be graded. In reality, however, some of the acreage would not be graded or require construction activities, a factor which further supports this analysis as representing the upper bounds of the actual expected air emissions.

Emissions Estimates

Construction Equipment. The criteria air pollutant and GHG emissions from construction equipment during the construction of the CIS were estimated based on the inputs and assumptions discussed previously pertaining to construction activities, preliminary construction schedule, preliminary equipment list, and acreage disturbed during construction. The emission factors utilized in ACAM for non-road construction equipment are specific to Jefferson County from USEPA's MOVES model (USEPA, 2014b). The fugitive and combustion source air emissions from construction equipment are provided in Table 3.5.1-4 for each year of construction.

Worker Vehicles. Vehicles transporting construction workers to and from the site on a daily basis would emit criteria pollutants and GHGs into the air shed surrounding the CIS. During each month of construction, the number of construction workers and site activation personnel would vary depending on the phases of the project, as well as the construction activities that would be conducted. The emissions estimate for worker vehicles traveling to FTD assumed 100 workers during tree and brush clearing, 400 workers during site preparation (first 12 months), 600 workers during 2-years of construction involving heavy/intrusive construction activities, and again 400 workers during the final year of construction that involves build-out. It was further assumed that the construction workers would travel 50 miles roundtrip 6 days per week with the

Table 3.5.1-4 Estimated Annual Emissions from Construction Activities - Baseline Schedule - FTD

Emission Activity (1)(2)(3)	Annual Period (4)					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	VOC (tons)					
Construction Equipment	0.23	3.75	4.83	4.93	1.69	0.16
Worker Vehicles	0.19	2.18	3.31	3.27	2.23	0.50
On-Road Haul/Delivery Trucks	0.09	0.33	0.30	0.27	0.25	0.06
Total Annual Emissions	0.5	6.3	8.4	8.5	4.2	0.7
	CO (tons)					
Construction Equipment	1.12	19.42	24.15	24.21	10.48	1.49
Worker Vehicles	1.97	23.50	37.04	37.70	26.54	5.90
On-Road Haul/Delivery Trucks	0.33	1.22	1.11	1.02	0.94	0.23
Total Annual Emissions	3.4	44.1	62.3	62.9	38.0	7.6
	PM10 (tons)					
Construction Equipment	0.09	4,573.71	1,525.85	1.76	0.53	0.03
Worker Vehicles	0.01	0.07	0.11	0.11	0.07	0.02
On-Road Haul/Delivery Trucks	0.05	0.16	0.14	0.12	0.10	0.03
Total Annual Emissions	0.1	4,573.9	1,526.1	2.0	0.7	0.1
	$PM_{2.5}$ (tons)					
Construction Equipment	0.09	1.39	1.75	1.76	0.53	0.03
Worker Vehicles	0.01	0.06	0.09	0.09	0.07	0.01
On-Road Haul/Delivery Trucks	0.04	0.14	0.13	0.11	0.09	0.02
Total Annual Emissions	0.1	1.6	2.0	2.0	0.7	0.1
	NO_x (tons)					
Construction Equipment	1.59	25.07	31.80	32.14	11.28	1.10
Worker Vehicles	0.24	2.27	3.31	3.12	2.04	0.45
On-Road Haul/Delivery Trucks	1.04	3.75	3.37	3.03	2.73	0.68
Total Annual Emissions	2.9	31.1	38.5	38.3	16.1	2.2
	CO_2e (5) (metric tons)					
Construction Equipment	222	3,770	4,693	4,698	2,406	412
Worker Vehicles	162	2,052	3,379	3,585	2,612	581
On-Road Haul/Delivery Trucks	212	842	834	827	820	205
Total Annual Emissions	596	6,664	8,906	9,110	5,839	1,198
	SO_2 (tons)					
Construction Equipment	0.003	0.044	0.055	0.055	0.028	0.005
Worker Vehicles	0.003	0.014	0.024	0.026	0.019	0.004
On-Road Haul/Delivery Trucks	0.002	0.008	0.008	0.008	0.008	0.002
Total Annual Emissions	0.01	0.07	0.09	0.09	0.06	0.01

Notes:

1. The annual air emissions of criteria pollutants for construction equipment include both fugitive and combustion source related emissions from non-road type construction equipment.
2. The annual emissions for worker vehicles are based on the maximum number of construction workers that would commute to and from FTD for the construction phase of the CIS.
3. The annual emissions from on-road trucks represents the activities for heavy-duty trucks that 1) remove dirt, debris, and construction waste from FTD to an off-base location and 2) deliver dirt and construction-related materials to FTD.
4. The preliminary baseline schedule assumes that tree clearing would commence in October of Year 1 and last for 6 months. The start of site preparation activities commences during April of Year 2 and would last a full 12 months. The heavy intrusive construction activities would start during April of Year 3 and continue until March of Year 5. Build-out would start during April of Year 5 and continue until March of Year 6.
5. The air emissions of carbon dioxide equivalents are provided in metric tpy. The air emissions of criteria pollutants are provided in tpy.

vehicle types divided between 50 percent passenger cars and 50 percent light-duty trucks fueled by gasoline. Mobile emission factors used to estimate the emissions from worker vehicles were from the ACAM model, which utilizes emission factors for mobile on-road vehicles specific to Jefferson County from USEPA's MOVES model (USEPA, 2014b). The emission factors were used along with the other inputs described to create an estimate of the worker vehicle emissions. The air emissions estimated from construction worker vehicles are provided in Table 3.5.1-4 for each year of construction.

Haul/Delivery Trucks. During tree and brush clearing, site preparation, and construction activities, there would be on-road trucks that remove dirt and other construction waste materials from the construction site and deliver them to off-base locations, as well as deliver dirt and construction materials needed for certain construction activities.

For on-road haul/delivery trucks, the analysis assumed the following:

- The on-road haul/delivery trucks would make 90 trips per day.
- The on-road haul/delivery trucks would operate 6 days per week.
- The on-road haul/delivery trucks would travel a roundtrip distance of 20 miles for each trip.

The emission factors used to estimate the emissions from the on-road truck activities are from the U.S. Air Force ACAM. As discussed for the worker vehicle emissions, ACAM utilizes emission factors for heavy-duty trucks from USEPA's MOVES model. The emission factors for the on-road truck were used along with the other inputs described to create an estimate of on-road truck emissions. The air emissions estimated from the on-road haul/delivery trucks is provided in Table 3.5.1-4 for each year of construction.

Air Quality Impacts

Should a decision be made to deploy and FTD is selected, the CIS would be entirely located within the boundaries of Jefferson County, New York. The criteria pollutant and CO_2e emissions for Jefferson County are provided in Table 3.5.1-5. The annual emissions data for Jefferson County is from the NEI databases for the year 2011 (USEPA, 2013d). Table 3.5.1-5 also contains, for comparison purposes, the maximum annual emissions for each pollutant displayed in Table 3.5.1-4. Although there would be emissions that occur outside of Jefferson County due to worker commuting and delivery of equipment and materials, the magnitude of such emissions and associated impacts would be negligible compared to the Jefferson County emissions.

Table 3.5.1-5 Comparison of Construction Emissions to Existing Jefferson County Annual Emissions - Baseline Schedule - FTD

Location	Emissions (tons)						
	VOC	CO	PM_{10}	$PM_{2.5}$	NO_x	CO_2e	SO_2
Jefferson County (1)	15,268	29,138	6,014	1,802	5,278	741,503	852
FTD Maximum Annual Emissions During Construction (2)	8.5	62.9	4573.9	2.0	38.5	9,110	0.09
Percentage of FTD Construction Emissions to Jefferson County Emissions	0.06	0.22	76.06	0.11	0.73	1.23	0.01

Notes:

1. Annual air emissions for Jefferson County are from USEPA's NEI database representing the 2011 annual period.
2. Maximum annual construction emissions for FTD potential CIS deployment are the maximum emission values for each air pollutant from Table 3.5.1-4. CO_2e given in metric tons.

As listed in Table 3.5.1-5, the maximum annual emissions estimated for criteria pollutants and CO_2e from the construction of the CIS at FTD would be a small percentage of the existing total emissions currently emitted within Jefferson County. The emissions of PM_{10} presented in Table 3.5.1-4 would be mostly associated with site grading activities that generate fugitive dust emissions during the site preparation phase of construction (Months 7-18). A BMP for controlling fugitive dust emissions during construction would be developed and used to reduce the estimated PM_{10} air emissions. Overall, the air quality impacts from the construction of the CIS would be temporary, local to the construction area and nearby surrounding area, and would be minor for each year of construction.

Considerations for Greenhouse Gas

Table 3.5.1-4 provides the estimated annual emissions of CO_2e associated with construction activities during the baseline schedule of the potential deployment at FTD. The CEQ has published guidance that recommends that direct and indirect CO_2e emissions be quantified from a proposed action to assess the level of effects on climate change (CEQ, 2016). Previously the CEQ draft guidance provided a reference point of 25,000 metric tons of CO_2e on an annual basis that was an indicator of which projects are potentially large enough to warrant a quantitative GHG emission analysis (CEQ, 2014). The annual emissions of CO_2e quantified in Table 3.5.1-4 includes direct and indirect emissions generated by operation of non-road construction equipment, worker vehicles that commute to and from FTD, and on-road trucks that transport materials to and from FTD for construction. The estimated CO_2e annual emissions during construction are below 25,000 metric tons indicating the minor nature of the potential CIS deployment's GHG impacts.

3.5.1.3.1.3 Mitigation – Baseline Schedule

No impacts requiring mitigation would occur. BMPs would be implemented during construction to reduce any impacts to the air quality. Examples of such measures could include, but not be limited to, the following:

- Re-vegetating disturbed areas.
- Properly maintaining construction vehicles and equipment.
- Mandating in contract for construction use of newer construction equipment or construction equipment retrofitted with exhaust control technologies.
- Using cleaner fuels in construction vehicles and equipment.
- Application of anti-idling procedures.

Although the construction activities would cause an increase in air pollutants, the impact would be both temporary and local to the construction area and surrounding area. The specific measures that could be used should be determined during the project's air permitting process.

3.5.1.3.2 Construction – Expedited Schedule

Another possibility for the potential CIS deployment could be to expedite the construction schedule and complete construction within 3 years. Under this expedited construction scenario certain assumptions discussed for the baseline schedule would change and result in different estimated annual air emissions.

This section discusses the methods for assessing potential impacts, the types of potential impacts to the air quality surrounding FTD, and possible mitigation measures for reducing such impacts associated with the expedited schedule. The focus of the following discussion is relevant to the assumptions that change, should the expedited schedule be chosen for the potential CIS deployment.

3.5.1.3.2.1 Methods for Assessing Construction Impacts

The methods considered for assessing construction impacts for the expedited schedule are the same as those discussed for the baseline schedule.

3.5.1.3.2.2 Environmental Consequences

The assumptions and characteristics for the expedited construction schedule would be the same as that described in the baseline construction schedule except for those discussed in the following paragraphs.

Emission Sources

Effects of Construction Schedule on Emissions Estimates. The expedited schedule assumes that construction of the CIS would be completed within approximately a 3-year period. The expedited schedule assumes that the final design and required air permits would be obtained during Year 1 (i.e., Months 1-3). The emissions analysis assumed the following expedited construction schedule:

- Tree clearing: Months 4 through 7, Begins January of Year 2.
- Site preparation: Months 8 through 14, Begins May of Year 2.
- Heavy/intrusive construction: Months 15 through 29, Begins December of Year 2.
- Buildout and completion: Months 30 through 36, begins March of Year 4.

The expedited schedule assumes that all construction activities would occur 7 days per week and with two 10-hour shifts per day.

Emissions Estimates

Construction Equipment. The construction equipment assumptions for the expedited schedule would be the same as that described in the baseline schedule, except for the number of hours per day each piece of equipment would operate on a daily basis and the number of days per week construction activities would occur. The expedited schedule assumes that construction activities would occur 7 days per week and with two 10-hour shifts per day. The preliminary equipment list that includes the number and hours per day for each type of construction equipment is contained in Appendix D.1.The fugitive and combustion source air emissions from construction equipment for the expedited schedule are provided in Table 3.5.1-6 for each year of construction.

Worker Vehicles. The expedited schedule assumes construction activities would occur 7 days per week and that two shifts per day would be necessary to complete the construction of the CIS within 3 years. The number of construction workers and site activation personnel for the expedited schedule is assumed to be twice the number of workers as discussed for the baseline schedule. The emissions estimate for worker vehicles traveling to FTD each day of construction assumes 200 workers during tree and brush clearing, 800 workers during site preparation, 1,200 workers during heavy/intrusive construction activities, and 800 workers during buildout. The air emissions from worker vehicles are provided in Table 3.5.1-6 for each year of construction.

Haul/Delivery Trucks. The haul/delivery truck assumptions such as miles per trip and number of trips per day for the expedited schedule would remain the same as the baseline schedule. However, for the expedited schedule the haul/delivery truck would operate 7 days per week. The air emissions from haul/delivery trucks are provided in Table 3.5.1-6 for each year of construction.

Table 3.5.1-6 Estimated Annual Emissions from Construction Activities - Expedited Schedule - FTD

Emission Activity [(1)(2)(3)]	Annual Period [(4)]		
	Year 2	Year 3	Year 4
	VOC (tons)		
Construction Equipment	7.71	13.80	2.54
Worker Vehicles	4.99	8.46	4.22
On-Road Haul/Delivery Trucks	0.39	0.35	0.24
Total Annual Emissions	13.1	22.6	7.0
	CO (tons)		
Construction Equipment	39.55	65.38	15.09
Worker Vehicles	53.85	94.53	48.73
On-Road Haul/Delivery Trucks	1.43	1.30	0.89
Total Annual Emissions	94.8	161.2	64.7
	PM_{10} (tons)		
Construction Equipment	4,067.13	2,037.24	0.82
Worker Vehicles	0.16	0.28	0.14
On-Road Haul/Delivery Trucks	0.18	0.16	0.10
Total Annual Emissions	4,067.5	2,037.7	1.1
	$PM_{2.5}$ (tons)		
Construction Equipment	2.84	5.10	0.82
Worker Vehicles	0.14	0.24	0.12
On-Road Haul/Delivery Trucks	0.17	0.15	0.10
Total Annual Emissions	3.2	5.5	1.0
	NO_x (tons)		
Construction Equipment	51.36	90.65	17.17
Worker Vehicles	5.21	8.46	4.03
On-Road Haul/Delivery Trucks	4.38	3.94	2.65
Total Annual Emissions	61.0	103.0	23.9
	CO_2e [(5)] (metric tons)		
Construction Equipment	8,102	10,996	4,032
Worker Vehicles	4,704	8,625	4,634
On-Road Haul/Delivery Trucks	985	976	724
Total Annual Emissions	13,790	20,596	9,389
	SO_2 (tons)		
Construction Equipment	0.090	0.147	0.040
Worker Vehicles	0.032	0.060	0.033
On-Road Haul/Delivery Trucks	0.009	0.009	0.007
Total Annual Emissions	0.13	0.22	0.08

Notes:

1. The annual air emissions of criteria pollutants for construction equipment include both fugitive and combustion source related emissions from non-road type construction equipment.
2. The annual emissions for worker vehicles are based on the maximum number of construction workers that would commute to and from FTD for the construction phase of the CIS.
3. The annual emissions from on-road trucks represents the activities for heavy-duty trucks that 1) remove dirt, debris, and construction waste from FTD to an off-base location and 2) deliver dirt and construction-related materials to FTD.
4. The preliminary expedited schedule assumes that tree clearing would commence in January of Year 2 and last for 4 months. The start of site preparation activities commences during May of Year 2 and would last 7 months. The heavy intrusive construction activities would start during December of Year 2 and continue until February of Year 4. Build-out would start during March of Year 4 and continue until September of Year 4.
5. The air emissions of carbon dioxide equivalents are provided in metric tpy. The air emissions of criteria pollutants are provided in tpy.

Air Quality Impacts

The comparisons of the maximum annual emissions for each pollutant displayed in Table 3.5.1-6 to the Jefferson County emissions are provided in Table 3.5.1-7. As illustrated in Table 3.5.1-7, the maximum annual emissions estimated for criteria pollutants and CO_2e from construction of the potential deployment at FTD would be a small percentage of the existing total emissions currently emitted within Jefferson County. The unmitigated emissions of PM_{10} would be mostly associated with site grading activities during site preparation. A best management plan for controlling fugitive dust emissions during construction would be developed and used to reduce the estimated PM_{10} air emissions. Overall, the air quality impacts from the construction of the potential CIS deployment would be temporary, local to the construction area and surrounding area, and would be minor for each year of construction.

Table 3.5.1-7 Comparison of Construction Emissions to Existing Jefferson County Annual Emissions - Expedited Schedule – FTD

Location	**Emissions (tons)**						
	VOC	**CO**	**PM_{10}**	**$PM_{2.5}$**	**NOx**	**CO_2e**	**SO_2**
Jefferson County (1)	15,268	29,138	6,014	1,802	5,278	741,503	852
FTD Maximum Annual Emissions During Construction (2)	22.6	161.2	4,067.5	5.5	103.1	20,596	0.22
Percentage of FTD Construction Emissions to Jefferson County Emissions	0.15	0.55	67.64	0.30	1.95	2.78	0.03

Notes:
1. Annual air emissions for Jefferson County are from USEPA's NEI database representing the 2011 annual period.
2. Maximum annual expedited construction emissions for CIS at FTD are the maximum emission values for each air pollutant from Table 3.5.1-6. CO_2e given in metric tons.

Consideration for Greenhouse Gas

Table 3.5.1-6 provides the estimated annual emissions of CO_2e associated with construction activities during the expedited construction schedule at FTD. Although the annual CO_2e emissions are higher in the expedited schedule than the emissions in the baseline schedule, they are below 25,000 metric tons indicating the minor nature of the potential CIS deployment's GHG impacts.

3.5.1.3.2.3 Mitigation

Because only minor impacts would occur, no mitigation would be required. BMPs would be implemented during construction to reduce any impacts to the air quality as the need could arise during actual construction. Examples of such measures could include, but not be limited to, the following:

- Re-vegetating disturbed areas.
- Properly maintaining construction vehicles and equipment.
- Mandating in contract for construction use of newer construction equipment or construction equipment retrofitted with exhaust control technologies.
- Using cleaner fuels in construction vehicles and equipment.
- Application of anti-idling procedures.

Although the construction activities would cause an increase in air pollutants, the impact would be both temporary and local to the construction area and surrounding area. The specific measures that could be used should be determined during the project's air permitting process.

3.5.1.3.3 Operation

If a decision is made to deploy and if FTD is selected then stationary and mobile sources (both combustion and non-combustion) would emit both criteria and GHG air pollutants during each year of operation for the potential CIS deployment. The air pollutant emissions from operation of the CIS would be a long-term impact on an on-going annual basis; however, the impacts would be limited to the local and regional area. The following sections discuss the methods for assessing potential impacts, the types of potential impacts to the air quality surrounding FTD, and possible mitigation measures for reducing such air quality impacts for the baseline schedule due to the operation.

3.5.1.3.3.1 Methods for Assessing Operation Impacts

<u>Factors Considered in Air Quality Impact Analysis</u>

The following key emission sources and factors were considered in assessing the type and significance of operation-related air quality impacts:

- Backup power plant operating characteristics.
- Comfort Heating Boiler.
- Commuter/work vehicles.
- Operation schedule.
- Fuel storage tanks.

The respective contributions of these factors to the project's air quality analysis modeling and any respective assumptions used in the analysis are further described in Section 3.5.1.3.3.2.

Air Quality Impact Analysis Modeling

The ACAM Version 5.06 (USAF, 2016) model was used in this analysis to estimate source emissions from operation. The ACAM model was utilized because it has the capability to develop an air emission estimate based on certain assumptions regarding the schedule, equipment and other variables.

3.5.1.3.3.2 Environmental Consequences – Baseline Schedule

Air emissions from the operation of the CIS can be categorized as being either direct or indirect emissions. As discussed in Section 3.5.1.3.1.2, both direct and indirect emissions are those emissions of criteria pollutants and precursors that are initiated by the federal approval of the potential deployment, originate in the nonattainment area, and are reasonably foreseeable. Direct emissions are those that occur at the same time and place as the CIS. Air emissions resulting from operation of the backup power plant, other stationary emission sources (i.e., generators, boilers, air compressors, etc.), and fuel storage tanks would be considered direct emissions.

Indirect emissions are those emissions that occur at a different time or place as the location of the CIS. Indirect air emissions resulting from operation activities include operational staff vehicles that occur off-base. These types of operational activities have the potential to occur away from the CIS and within the nonattainment area.

The following paragraphs describe the emission sources and assumptions for the baseline schedule that would produce direct and indirect emissions from operation.

Power Plant and Heating Boiler

Commercial electrical power would be the primary source of power which would be supplied by off-base public power generation sources. The GBI field and structures associated with the CIS would, however, require backup power to ensure continuous operation abilities. The backup power would be supplied by four 3-MW RICE. The purpose of the backup RICE would be to provide power to the CIS when utility power is lost or possibly when there is a potential for the power at the facility to be lost. The backup generators would be designed to handle backup power to operate up to 60 GBIs total.

The CIS would also include installation of a 7-MBtu diesel-fired boiler that would generate heat for the buildings and structures of the CIS on an as-needed basis.

The air permitting effort for the four 3-MW backup RICE and comfort heating boiler would be conducted at a later time prior to construction of the facility to ensure compliance with all federal and state air permit regulations. The air permitting assessment would determine the categorization of the engines (i.e., emergency, non-emergency) as defined by the federal

NESHAP[15] and NSPS[16] regulations that cover these types of engines. The categorization of the engines in combination with the air permitting assessment that would be conducted prior to construction of the CIS would determine the annual number of hours each engine would be allowed to operate. The permitting assessment would also determine any regulations that may be applicable to the diesel-fired comfort heating boiler. The following bullets provide the major assumptions currently used to estimate emissions for the four 3-MW engines and 7-MBtu comfort heating boiler planned for the CIS.

- The engines would be categorized as emergency engines (i.e., subject to, and therefore not exempt from, the applicable NSPS).
- The air emissions assessment used 500 hours per year of operation for the emergency engines, which includes hours for emergencies, emergency-related operations (i.e., maintenance and readiness testing), and non-emergency operations allowed by USEPA's regulations.
- The four 3-MW engines would be subject to the emission standards for Tier 2 engines manufactured after 2010 and greater than 900 kW, as prescribed in 40 CFR Part 89.112(a). Using these emission factors to estimate the emissions from the four 3-MW engines is conservative because they are higher emission factors for NO_x, VOC, and PM2.5 than using the emission standards for a Tier 4 engine, which are more stringent.
- The comfort heating boiler would be permitted to operate up to 8,760 hours per year.
- The air emissions estimate for the comfort heating boiler is based on emission factors for boilers with heat input of less than 100 MBtu/hr from USEPA's AP-42.
- The sulfur dioxide emission estimate was based on the assumption that the four 3-MW engines and comfort heating boiler would use ULSFO with a sulfur content of no more than 0.0015 percent.
- GHG emission factors for the engines and comfort heating boiler were based on emission factors contained in Tables C-1 and C-2 of 40 CFR Part 98, Subpart C.

Mobile Vehicles

During operation, various types of mobile vehicles would emit air pollutants. The potential mobile vehicle activities would primarily include staff arrivals and dismissals. The estimated emissions from the types of mobile vehicles and activities for the operation of the CIS were developed using emission factors derived from the ACAM model, which utilizes emission factors from USEPA's MOVES model (USEPA, 2014b). The emissions estimate for the mobile vehicles assumed the staff would travel 50 miles roundtrip with vehicle types divided between

[15] 40 CFR Part 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

[16] 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

50 percent passenger cars and 50 percent light-duty trucks fueled by gasoline. The vehicle emissions estimate was also based on the estimated maximum number of staff that would be expected to travel to and from FTD per day, which is a total of 850 military, civilian and contractor support maintenance personnel. This provides a bounding estimate of potential air emissions emitted annually for the staff vehicles, because the analysis does not consider carpooling or the fact that not all staff would be required to travel to FTD each day. The emission factors and inputs described were used to create an estimate of the potential staff vehicle emissions which are provided in Table 3.5.1-8 for each annual period of operation.

Fuel Storage Tanks

Each of the four 3-MW backup RICE would have dedicated AST for fuel ranging in capacity from approximately 300 to 1,500 gallons. Three larger fuel storage tanks (each 30,000 gallons) would also be built to store fuel for the backup RICE for longer term operations. The fuel storage tanks and associated fuel loading operations to fill the tanks would be fugitive sources of VOCs. Air emissions from storage tanks are created by breathing and working loss activities. Breathing losses are produced by pressure variations that occur as the temperature of the stored fuel changes based on ambient conditions. Working losses occur due to the filling of the storage tank or as liquid is withdrawn from the storage tank. The ACAM model was utilized to estimate potential fugitive VOC emissions from the AST and larger fuel storage tanks (USAF, 2015). Table 3.5.1-8 contains the estimated emissions of VOCs from the fuel storage tanks during operation of the potential deployment.

Schedule of Operation Activities

The air emission analysis for the baseline schedule assumed operation of the CIS would begin during April of Year 6, which would be the month after construction of the potential deployment would be completed. The operation of the CIS would be 24 hours per day for each day of the year.

Air Quality Impacts

Should the decision be made to deploy and FTD be selected, the CIS would be entirely located within the boundaries of Jefferson County, New York. The criteria pollutant and CO_2e emissions for Jefferson County are provided in Table 3.5.1-9. The annual emissions data for Jefferson County were from the NEI databases for the year 2011 (USEPA, 2013d). Table 3.5.1-9 also contains, for comparison purposes, the maximum annual emissions for each pollutant from Table 3.5.1-8. The maximum annual emissions estimated for criteria pollutant and CO_2e from operation for the baseline schedule would be a small percentage of the existing total emissions currently emitted within Jefferson County. Overall, the air quality impacts from the operation of the CIS would be minor for each year of operation.

Table 3.5.1-8 Estimated Emissions from Operation – Baseline Schedule - FTD

Emission Activity [1][2]	Annual Period [3]	
	Year 6	Year 7
	VOC (tons)	
Power Plant and Heating Boiler	31.79	42.39
Staff Vehicles	3.71	4.92
Fuel Storage Tanks	0.05	0.06
Total Annual Emissions	35.5	47.4
	CO (tons)	
Power Plant and Heating Boiler	18.20	24.27
Staff Vehicles	44.19	58.65
Fuel Storage Tanks	--	--
Total Annual Emissions	62.4	82.9
	PM_{10} (tons)	
Power Plant and Heating Boiler	1.27	1.69
Staff Vehicles	0.12	0.16
Fuel Storage Tanks	--	--
Total Annual Emissions	1.4	1.9
	$PM_{2.5}$ (tons)	
Power Plant and Heating Boiler	1.06	1.41
Staff Vehicles	0.12	0.15
Fuel Storage Tanks	--	--
Total Annual Emissions	1.2	1.6
	NO_x (tons)	
Power Plant and Heating Boiler	35.10	46.80
Staff Vehicles	3.39	4.50
Fuel Storage Tanks	--	--
Total Annual Emissions	38.5	51.3
	CO_2e [4] (metric tons)	
Power Plant and Heating Boiler	6,626	8,835
Staff Vehicles	4,349	5,772
Fuel Storage Tanks	--	--
Total Annual Emissions	10,975	14,607
	SO_2 (tons)	
Power Plant and Heating Boiler	0.069	0.092
Staff Vehicles	0.032	0.043
Fuel Storage Tanks	--	--
Total Annual Emissions (tons)	0.10	0.13

Notes:
1. The annual emissions for vehicles are based on the maximum number of staff that would commute to and from FTD for the operation of the CIS.
2. The preliminary baseline schedule assumes the start of operation would commence during April of Year 6.
3. The annual air emissions estimated for Year 7 are representative of a full year of operation of the CIS and does not include any concurrent future projects and as such represents emissions from all remaining years of operation.
4. The air emissions of carbon dioxide equivalents are provided in metric tpy. The air emissions of criteria pollutants are provided in tpy.

Table 3.5.1-9 Comparison of Operation Emissions to Existing Jefferson County Annual Emissions – Baseline Schedule – FTD

Location	Emissions (tons)						
	VOC	CO	PM_{10}	$PM_{2.5}$	NO_x	CO_2e	SO_2
Jefferson County (1)	15,268	29,138	6,014	1,802	5,278	741,503	852
FTD Maximum Annual Emissions During Operation (2)	47.4	82.9	1.9	1.6	51.3	14,607	0.13
Percentage of FTD Operation Emissions to Jefferson County Emissions	0.31	0.28	0.03	0.09	0.97	1.97	0.02

Notes:

1. Annual air emissions for Jefferson County are from USEPA's NEI database representing the 2011 annual period.
2. Maximum annual operation emissions for the CIS at FTD are the maximum emission values for each air pollutant from Table 3.5.1-8. CO_2e given in metric tons.

Considerations for Greenhouse Gas

Table 3.5.1-8 provides the estimated annual emissions of CO_2e associated with operation activities during the baseline schedule of the potential deployment at FTD. The CEQ has published guidance that recommends that direct and indirect CO_2e emissions be quantified from a proposed action to assess the level of effects on climate change (CEQ, 2016). Previously the CEQ draft guidance provided a reference point of 25,000 metric tons of CO_2e on an annual basis that was an indicator of which projects are potentially large enough to warrant a quantitative GHG emission analysis (CEQ, 2014). The annual emission of CO_2e quantified in Table 3.5.1-8 includes direct and indirect emissions generated by operation of the power plant, heating boiler, and staff vehicles that commute to and from the FTD. The CO_2e emissions from the power plant's emergency engines would be limited in operation (i.e., 500 hours per year). The engines will use diesel fuel since the potential deployment at FTD will require a reliable and immediate source of backup power. The estimated annual emissions from operation of the potential deployment at FTD under the baseline schedule would be below 25,000 metric tons indicating the minor nature of the potential CIS deployment's GHG impacts.

Summary

Finally, the CIS would be required to obtain all required air operation permits at a later date that would allow operation of the emission sources for the CIS. Ultimately, the air operating permit that would be required for the CIS is stipulated by the CAA and the state's air regulations to prevent the degradation of the local and regional air quality. The air permits that could be required would ensure the CIS air emissions would not cause exceedances of the national and New York ambient air quality standards or conflict with any local or regional air quality management plans. Due to the nature of the air emissions for the CIS for the baseline schedule and the air quality regulations that would be applicable to the emissions sources, the impacts related to the operation phase of the CIS would be minor.

3.5.1.3.3.3 Mitigation

No impacts requiring mitigation would occur. BMPs to reduce air quality impacts from emission sources during operation of the CIS would be implemented as necessary. Examples of such measures could include maintaining equipment in working order, voluntarily accepting enforceable limits on the number of hours the power plant engines can operate per year, and installing air emission controls to the engines. However, the emission sources for the CIS would be required to obtain the appropriate air operating permits and operate in accordance with all state and federal air quality regulations which would ensure air quality impacts to the local and regional air quality from the operation of the CIS would be small. The specific measures that would be used should be determined during the air permitting process.

3.5.1.3.4 Operation – Expedited Schedule

The following sections discuss the methods for assessing potential impacts, the types of potential impacts to the air quality surrounding FTD, and mitigation measures for reducing such impacts due to operation of the CIS with the expedited schedule. The focus of the following discussion is relevant to the assumptions and characteristics that change, would the expedited schedule be chosen for the CIS.

3.5.1.3.4.1 Methods for Assessing Operation Impacts

The methods considered for assessing air quality impacts during operation for the expedited schedule are the same as those discussed for the baseline schedule.

3.5.1.3.4.2 Environmental Consequences

The assumptions and characteristics for the expedited schedule would be the same as that described in the baseline schedule except for certain assumptions regarding when operation would commence.

The following paragraphs describe the changes in the assumptions and characteristics associated with the expedited schedule.

<u>Schedule of Operation Activities</u>

The expedited schedule assumes that construction of the CIS would be completed within approximately a 3-year period. The expedited schedule assumes construction of the CIS could be completed during September of Year 4 and that operation could begin the month after construction ends, which would be October of Year 4. The first full year of operation is expected to be during Year 5. The total estimated air emissions for the expedited schedule are provided in Table 3.5.1-10.

Table 3.5.1-10 Estimated Emissions from Operation - Expedited Schedule - FTD

Emission Activity (1)(2)(3)	**Annual Period** (3)	
	Year 4	**Year 5**
	VOC **(tons)**	
Power Plant and Heating Boiler	10.60	42.39
Staff Vehicles	1.36	5.41
Fuel Storage Tanks	0.02	0.06
Total Annual Emissions	12.0	47.9
	CO (tons)	
Power Plant and Heating Boiler	6.07	24.27
Staff Vehicles	15.75	62.47
Fuel Storage Tanks	--	--
Total Annual Emissions	21.8	86.7
	PM_{10} (tons)	
Power Plant and Heating Boiler	0.42	1.69
Staff Vehicles	0.05	0.18
Fuel Storage Tanks	--	--
Total Annual Emissions	0.5	1.9
	$PM_{2.5}$ (tons)	
Power Plant and Heating Boiler	0.35	1.41
Staff Vehicles	0.04	0.15
Fuel Storage Tanks	--	--
Total Annual Emissions	0.4	1.6
	NO_x (tons)	
Power Plant and Heating Boiler	11.70	46.80
Staff Vehicles	1.3	5.17
Fuel Storage Tanks	--	--
Total Annual Emissions	13.0	52.0
	CO_2e (4) (metric tons)	
Power Plant and Heating Boiler	2,209	8,835
Staff Vehicles	1,497	5,941
Fuel Storage Tanks	--	--
Total Annual Emissions	3,706	14,776
	SO_2 (tons)	
Power Plant and Heating Boiler	0.023	0.092
Staff Vehicles	0.011	0.043
Fuel Storage Tanks	--	--
Total Annual Emissions	0.03	0.13

Notes:
1. The annual emissions for vehicles are based on the maximum number of staff that would commute to and from FTD for the operation of the CIS.
2. The preliminary expedited schedule assumes the start of operation would commence during October of Year 4.
3. The annual air emissions estimated for Year 5 are representative of a full year of operation of the CIS and does not include any concurrent future projects and as such represents emissions from all remaining years of operation.
4. The air emissions of carbon dioxide equivalents are provided in metric tpy. The air emissions of criteria pollutants are provided in tpy.

Mobile Vehicles

The assumptions for mobile vehicles for the expedited schedule are the same as those used in the baseline schedule, except for the emission factors used to estimate air emissions from mobile vehicles. The emission factors for the operation staff vehicles traveling to and from the FTD site from ACAM reduce slightly in future annual periods. It is assumed that the start year of operation for the expedited schedule would be earlier than the baseline schedule; as such the air emission estimate uses different emission factors for the mobile equipment. The total estimated air emissions from mobile vehicles for the expedited schedule are provided in Table 3.5.1-10.

Air Quality Impacts

Table 3.5.1-11 contains the comparison of the maximum annual emissions for each pollutant displayed in Table 3.5.1-10 with the Jefferson County existing air emissions. As illustrated in the table, although the estimated annual emissions are higher with the expedited schedule, they would be a small percentage of the existing total emissions currently emitted within Jefferson County. The air quality impacts during operation for the expedited schedule are the same as those discussed for the baseline schedule.

Considerations for Greenhouse Gas

Table 3.5.1-10 provides the estimated annual emissions of CO_2e associated with operation activities during the expedited schedule of the potential deployment at FTD. Although the annual CO_2e emissions are slightly higher in the expedited schedule than the emissions in the baseline schedule, they would be below 25,000 metric tons indicating the minor nature of the potential CIS deployment's GHG impacts.

Table 3.5.1-11 Comparison of Operation Emissions to Existing Jefferson County Annual Emissions - Expedited Schedule - FTD

Location	Emissions(tons)						
	VOC	CO	PM_{10}	$PM_{2.5}$	NO_x	CO_2e	SO_2
Jefferson County [(1)]	15,268	29,138	6,014	1,802	5,278	741,503	852
FTD Maximum Annual Emissions During Operation [(2)]	47.9	86.7	1.9	1.6	52.0	14,776	0.13
Percentage of FTD Operation Emissions to Jefferson County Emissions	0.31	0.30	0.03	0.09	0.98	1.99	0.02

Notes:
1. Annual air emissions for Jefferson County are from USEPA's NEI database representing the 2011 annual period.
2. Maximum annual expedited operation emissions for FTD CIS are the maximum emission values for each air pollutant from Table 3.5.1-10. CO_2e given in metric tons.

3.5.1.3.4.3 Mitigation

No impacts requiring mitigation would occur. BMPs to reduce air quality impacts from emission sources during operation of the potential deployment would be implemented. The operation BMPs for air quality for the expedited schedule would be the same as those described for the baseline schedule.

3.5.1.3.5 General Conformity Related Discussion – Air Quality - FTD

The CAA requires federal agencies to ensure their actions (i.e., license, permit, or approval) conform the applicable SIP. The purpose of the conformity regulation is to ensure federal actions: 1) do not interfere with the SIP; 2) do not cause or contribute to new violations of the NAAQS; and 3) do not impede the ability to attain or maintain the NAAQS. The SIP is a plan that provides for implementation, maintenance, and enforcement of the NAAQs, and includes emission budgets and control measure to attain (for non-attainment areas) and maintain (for maintenance areas) the NAAQS. 40 CFR Part 93, Subpart B requires that a federal action undergo a general conformity determination for non-attainment or maintenance areas[17] where the emissions of the affected criteria pollutant or its precursor(s) would be equal or exceed emission thresholds set forth in the regulation.

The CIS would be constructed within Jefferson County, which, as discussed previously, is designated by USEPA as moderate non-attainment area with the 1997 8-hour ozone standard and is located within the ozone transport region. As such, a general conformity determination would be required for this federal action if the CIS-related emissions of the non-attainment area pollutants or the precursors (i.e., NO_x, SO_2, or VOC) equal or exceed the conformity determination thresholds stated in 40 CFR Part 93.153(b)(1) on a pollutant-by-pollutant basis. This estimate of emissions is also known as the conformity applicability analysis and determines if 40 CFR Part 93, Subpart B is triggered and a general conformity determination is required for the CIS.

3.5.1.3.5.1 Baseline Schedule

The annual air emissions for the baseline schedule from construction and operation of the CIS were developed and discussed in previous sections. Table 3.5.1-12 shows the comparison of the estimated total direct and indirect air emissions associated for the baseline schedule from construction and operation of the potential CIS deployment with the general conformity thresholds. The table shows that the direct and indirect air emissions during each calendar year of construction and operation would be expected to be below the general conformity thresholds. This indicates the project would not be required to undergo a general conformity determination

[17] For areas that were non-attainment but have attained the NAAQS, EPA requires as part of the re-designation process that states develop a 10-year plan (i.e., SIP) to ensure maintenance (or continued attainment) of the NAAQS. During this 10-year period these re-designated areas are known as maintenance areas.

for the baseline schedule. Also, because the estimated air emissions for the baseline schedule from construction and operation of the CIS would not exceed the general conformity thresholds, no mitigations or offsets based on general conformity would be required.

Table 3.5.1-12 Estimated Annual Emissions from Construction and Operation in Comparison to General Conformity Thresholds - Baseline Schedule - FTD

Emission Activity [1]	Annual Period [2]							Conformity Threshold [3] (tpy)
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
VOC (tons)								
Construction	0.5	6.3	8.4	8.5	4.2	0.7	--	--
Operation	--	--	--	--	--	35.5	47.4	--
Total Annual Emissions	0.5	6.3	8.4	8.5	4.2	36.2	47.4	50
NO_x (tons)								
Construction	2.9	31.1	38.5	38.3	16.1	2.2	--	--
Operation	--	--	--	--	--	38.5	51.3	--
Total Annual Emissions	2.9	31.1	38.5	38.3	16.1	40.7	51.3	100
SO_2 (tons)								
Construction	0.01	0.07	0.09	0.09	0.06	0.01	--	--
Operation	--	--	--	--	--	0.10	0.13	--
Total Annual Emissions	0.01	0.07	0.09	0.09	0.06	0.11	0.13	100

Notes:
1. The annual air emissions of criteria pollutants for the baseline schedule from construction and operation of the CIS are from Tables 3.5.1-4 and 3.5.1-8, respectively.
2. The preliminary baseline construction schedule assumes the start of tree clearing commences during October of Year 1. Site preparation activities commences during April of Year 2 and would last a full 12 months, the heavy/intrusive construction activities start during April of Year 3 and continues until March of Year 5. Build-out construction activities start during April of Year 5 and ends during March of Year 6. Operation commences during April of Year 6. The estimated annual air emissions during Year 7 are representative of a full year of operations for the CIS.
3. The general conformity thresholds are from 40 CFR Part 93.153(b)(1).

3.5.1.3.5.2 Expedited Schedule

The annual air emissions for the expedited schedule from construction and operation of the CIS were developed and discussed in previous sections. Table 3.5.1-13 shows the comparison of the estimated total direct and indirect air emissions associated with the expedited schedule from construction and operation of the CIS with the general conformity thresholds. The table demonstrates that the direct and indirect air emissions of NO_x for Year 3 (construction) would be expected to exceed the general conformity thresholds, which indicates the project would be required to undergo a general conformity determination for these pollutants. Should the decision be made to deploy and FTD be selected, MDA would comply with the requirements of the general conformity regulation to demonstrate compliance with the State of New York SIP, which could include applying mitigation or securing offsets such that the estimated air emissions of NO_X during construction are reduced below the general conformity thresholds.

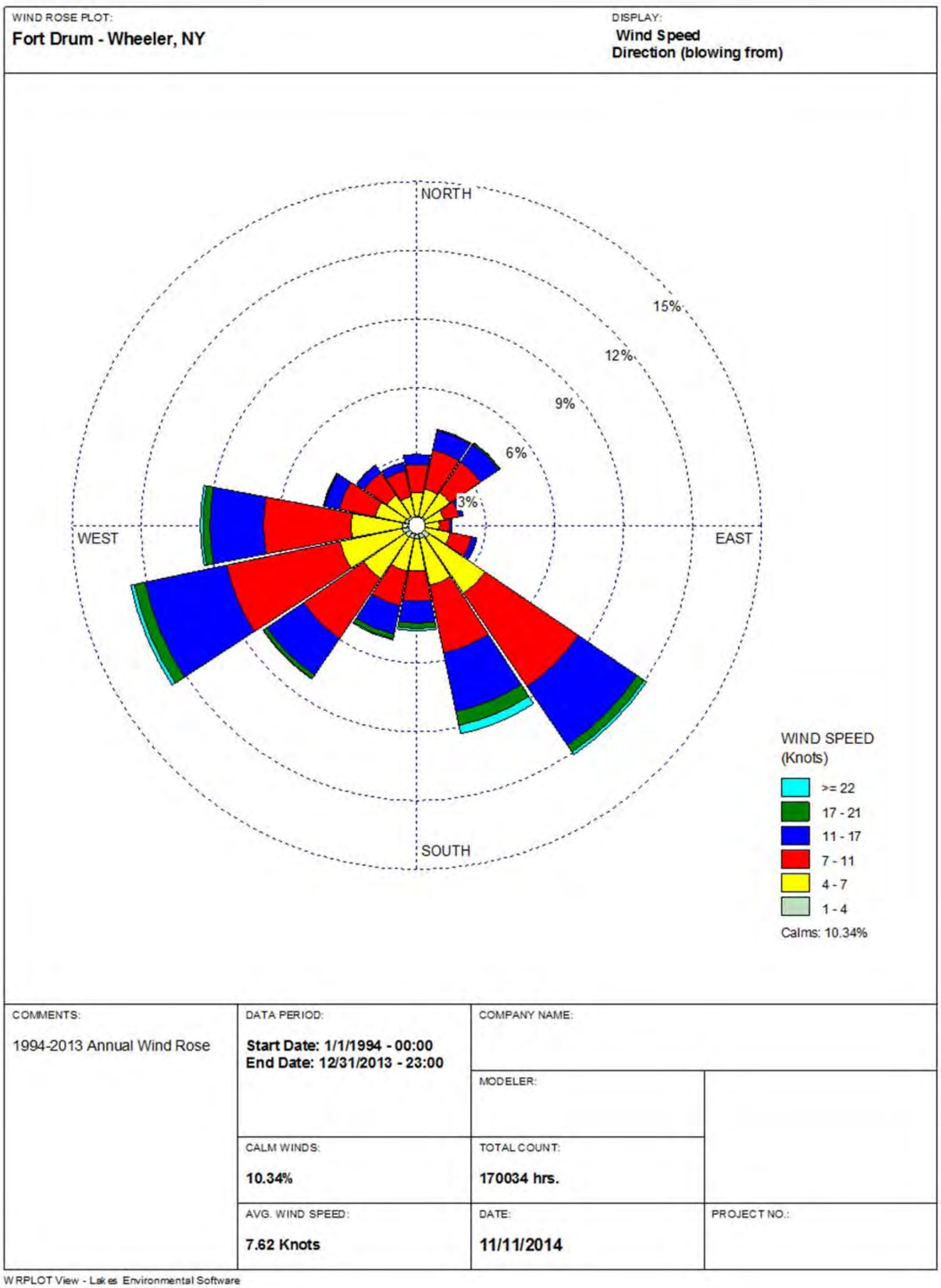
Table 3.5.1-13 Estimated Annual Emissions from Construction and Operation in Comparison to General Conformity Thresholds – Expedited Schedule - FTD

Emission Activity (1)	**Annual Period (2)**				**Conformity Threshold (3) (tpy)**
	Year 2	**Year 3**	**Year 4**	**Year 5**	
			VOC (tons)		
Construction	13.1	22.6	7.0	--	--
Operation	--	--	12.0	47.9	--
Total Annual Emissions	13.1	22.6	19.0	47.9	50
			NO_x (tons)		
Construction	61.0	103.0	23.9	--	--
Operation	--	--	13.0	52.0	--
Total Annual Emissions	61.0	103.0	36.9	52.0	100
			SO_2 (tons)		
Construction	0.13	0.22	0.08	--	--
Operation	--	--	0.03	0.13	--
Total Annual Emissions	0.13	0.22	0.11	0.13	100

Notes:

1. The annual air emissions of criteria pollutants for the expedited schedule from construction and operation of the CIS are from Tables 3.5.1-6 and 3.5.1-10, respectively.
2. The preliminary expedited construction schedule assumes the start of tree clearing commences during January of Year 2. Site preparation activities commences during May of Year 2 and would last 7 months, the heavy/intrusive construction activities start during December of Year 2 and continues through February of Year 4. Build-out construction activities start during March of Year 4 and continue through September of Year 4. Operation commences during October of Year 4. The estimated annual emissions during Year 5 are representative of a full year of operations of the CIS.
3. The general conformity thresholds are from 40 CFR Part 93.153(b)(1).

Figure 3.5.1-1 Annual Wind Rose Fort Drum, NY, 1994-2013 - FTD



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3.5.2 Airspace – FTD

Airspace is defined as that ordinate space which lies above a nation and considered part of that nation's jurisdiction. Airspace, in this context, is a finite resource designated by vertical and horizontal boundaries. It can also consist of a time component and can be considered transient, in regards to its use for aviation purposes, which is a very substantial factor in airspace management and ATC.

3.5.2.1 Regulatory Framework – Airspace - FTD

Under the Federal Aviation Act of 1958, as amended (42 USC 1301 et seq.), the FAA is charged with the safe and efficient use of our nation's airspace.

In the U.S., airspace is categorized as regulatory and non-regulatory. Within these categories exist regulatory controlled (Classes A, B, C, D, and E) and non-regulatory uncontrolled (Class G) airspace. These designations are determined on which ATC service is provided to IFR flights and certain VFR flights. Class F is not used in the U.S. Other airspace type designations include Special Use and Other Airspace.

3.5.2.2 Affected Environment– Airspace - FTD

For the purpose of this document, the existing state of controlled and uncontrolled airspace and the requirements for airspace above critical system facilities within the CIS footprint are evaluated for potential impacts related to the applicable principal airspace attribute type listed and described in the applicable sections. The ROI is defined as that which could be affected by either the ongoing No Action Alternative or which could potentially be affected by the CIS deployment. Applicable for this document, the ROI is defined as that airspace within 50 nautical miles of the CIS footprint in addition to no air traffic generated by commercial and military airports within 10 miles and flight patterns which bring aircraft within 5/8 miles of the CIS footprint is considered.

3.5.2.2.1 Controlled and Uncontrolled Airspace

Controlled and uncontrolled airspace is divided into six classes, dependent upon location, use, and degree of control. Class A airspace, which is not specifically charted, is generally, that airspace from 18,000 ft MSL up to 60,000 ft. Unless otherwise authorized, all aircraft must be operated under instrument flight rules. Class B airspace is generally that airspace from the surface to 10,000 ft MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are cleared receive separation services within the airspace. Class C airspace is generally that airspace from the surface to 4,000 ft above the airport elevation. It surrounds those airports that have an operational control tower, are serviced by a radar approach control, and have a certain number of IFR operations or passenger enplanements. Class D airspace is generally that airspace from the surface to 2,500 ft above the airport elevation that surrounds those airports having an operational control tower. Class E airspace is controlled airspace that is not Class A, Class B, Class C, or Class D airspace.

Uncontrolled airspace, or Class G airspace, has no specific definition but generally refers to airspace not otherwise designated. No ATC service to aircraft operating under either instrument or visual flight rules is provided other than possible traffic advisories when the ATC workload permits and radio communications can be established (Illman, 1993).

The airspace over the CIS footprint is located within the controlled airspace established at Wheeler -Sack Army Airfield (FTD) for both Wheeler-Sack Army Airfield and Watertown International Airport (Airnav, 2015).

3.5.2.2.2 Special Use Airspace

Complementing the classes of controlled and uncontrolled airspace described previously are several types of special use airspace used by the military to meet its particular needs. Special use airspace consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of these activities, or both. Except for controlled firing areas, special use airspace areas are depicted on aeronautical charts, which also include hours of operation, altitudes, and the controlling agency. Typical kinds of special use airspace include:

- <u>Restricted Areas</u>: Restricted Areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Activities within these areas must be confined because of their nature, or limitations imposed upon aircraft operations that are not a part of these activities, or both. Restricted Areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Restricted Areas are published in the FR and constitute FAR Part 73 Aeronautical Information Manual (FAR/AIM, 1998).
- <u>Military Operations Areas</u>: Military Operations Areas consist of airspace of defined vertical and lateral limits established for the purpose of separating certain non-hazardous military training activities from IFR traffic and to identify (for visual flight rules) traffic where these activities are conducted. Whenever a military operations area is being used, non-participating IFR traffic may be cleared through a military operations area if IFR separation can be provided by ATC. Otherwise, ATC would reroute or restrict non-participating instrument flight rules traffic (FAR/AIM, 1998).

The airspace directly over the CIS footprint is currently designated as restricted airspace, (R-5201) established for separating military operations associated with FTD (Airnav, 2015).

3.5.2.2.3 Other Airspace Areas

Other types of airspace include airport advisory area, military training routes, temporary flight restrictions areas, flight limitations/prohibitions areas, parachute jump aircraft operations areas, published visual flight rules routes, and terminal radar service areas (FAR/AIM, 1998).

There are currently several military operations areas and other restricted airspace areas associated with FTD activities within the vicinity of the CIS footprint.

Enroute Airways and Jet Routes

There are a few air traffic corridors from New York to Toronto within the airspace vicinity of the FTD installation and CIS footprint. The low and high altitude air and jet routes in the vicinity of FTD are shown on Figures 3.5.2-1 and 3.5.2-2, respectively.

Airports and Airfields

There are only two airports and airfields located in the vicinity of the FTD installation: Wheeler-Sack Army Airfield and Watertown International. As indicated previously, the CIS footprint is within the controlled airspace by Wheeler-Sack Army Airfield, which also controls the airspace for the Watertown International Airport (Airnav, 2015). The following are the distances between the CIS footprint and controlled air classification for these two airfields/airports (Airnav, 2015):

- Wheeler Sack Army Airfield, 4.5 nautical miles, Class D airspace.
- Watertown International Airport, 20 nautical miles, Class E airspace.

3.5.2.3 Environmental Consequences and Mitigation – Airspace – FTD

3.5.2.3.1 Construction – Baseline Schedule

3.5.2.3.1.1 Environmental Consequences

No CIS-related structures or equipment would occur at heights that would affect airspace during construction. Therefore, no impacts from, or during, construction would occur within the ROI for the FTD CIS footprint related to principal airspace attributes.

3.5.2.3.1.2 Mitigation

No impacts to airspace would occur due to CIS construction. Therefore, no mitigation measures would be required for airspace during construction.

3.5.2.3.2 Construction – Expedited Schedule

3.5.2.3.2.1 Environmental Consequences

As with the baseline schedule, no impacts from, or during, construction would occur within the ROI for the CIS footprint related to principal airspace attributes.

3.5.2.3.2.2 Mitigation

No mitigation measures would be required for airspace during construction.

3.5.2.3.3 Operations

Anticipated operations impacts and potential mitigations to the applicable principal airspace attributes are described in the following sections.

3.5.2.3.3.1 Environmental Consequences

Controlled and Uncontrolled Airspace

Airspace encroachment could exist at the CIS footprint due to air traffic associated with proximity airports and airfields. Airspace over the CIS footprint is controlled by Wheeler- Sack Army Airfield (FTD). Functional operations related to the CIS (refer to "other airspace areas" section), would need to be coordinated with FTD and Wheeler-Sack Army Airfield.

Special Use Airspace

As indicated previously, the airspace above the CIS footprint is within restricted airspace R-5201, related to military operations associated with FTD. Operations efforts related to the CIS facilities, such as the operation and testing of the IDT would need to be coordinated with FTD and Wheeler- Sack Army Airfield. However, no adverse impacts or mitigation measures related to these facilities for airspace would occur.

Other Airspace Areas

Additional navigation warnings and controls could be required for the potential CIS deployment to separate activities related to CIS operations from current FTD activities and operations, and to prohibit the overhead flight of aircraft. The establishment of prohibited and restricted areas in coordination with the FAA and local ATC facilities is an effective means of mitigation. Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Flight restrictions are a measure established to protect persons and property in the air or on the surface from an existing or imminent hazard associated with an incident on the surface when the presence of low-flying aircraft would magnify, alter, spread, or compound that hazard. The ATC Center having jurisdiction would enforce the flight restriction.

A supplemental measure where current airspace restrictions exist would be to designate a pre-established avoidance zone. In the absence of a flight restriction, a pre-established avoidance zone would be considered more effective than attempting to divert aircraft in the event of a test, exercise, or real world event. The avoidance zone would be published in the NOTAMS and coordinated directly with FTD's Wheeler-Sack Army Airfield.

"Other airspaces" for the FTD CIS where pre-established avoidance zones and associated NOTAMs may be provided would include the following (MDA, 2015a):

IDT. Based on electromagnetic modeling, avoidance zones would need to be established over the IDT due to the associated energy being transmitted vertically above the facility. No adverse health impacts from the potential deployment of the IDTs would occur as the energy produced by the maximum radiation of the IDT would be less than 200 volts per meter, a level safe for any civilian or military aircraft, fixed-wing or rotorcraft; however, EMR could adversely affect or cause interference with aircraft guidance and instrumentation systems. IDTs are typically tested daily and during heightened periods of threat. The anticipated cone would be up to 10,000 feet AGL. Establishing an avoidance zone would allow aircraft pilots time to divert or keep clear of impending radar beaming and protect against interference. A permanently established avoidance zone, based on the volume of air traffic, would need to be negotiated with the local FAA and Wheeler-Sack Airfield (air space controller in the vicinity of the CIS footprint).

Although up to a 10,000 ft AGL restriction would be established for new IDTs, currently there is an IDT present at FTD, which has a no fly area limit of 700 ft established over it, specifically for helicopter flights and low flying aircraft (SMDC, 2002). This limit was established based on coordination with the Joint Spectrum Center, Army Aviation Missile Command, Army Aeronautical Services Agency to avoid EMR-related issues when the IDT is operating or being tested.

Overall minor impacts would occur from establishing this avoidance zone.

SATCOM Facilities. An avoidance zone would need to be established over the SATCOM antennas to facilitate the functional requirements of the R&CF. The anticipated cone would be up to 10,000 feet AGL. The airspace above these antennas would be allowed for over flights above 10,000 feet except for security and preapproved flights with ground controllers.

Overall minor impacts would occur from establishing this avoidance zone.

GBI Site. Although no designated airspace restriction would be established above the interceptor field and support facilities at the CIS footprint under normal conditions, temporary airspace sanitization procedures in the form of a Joint Letter of Procedure would need to be developed to establish authorities, responsibilities, and procedures for activation of a temporary flight restriction during homeland defense operations.

The Joint Letter of Procedure and Flight Safety Advisory would be developed in accordance with similar policies and procedures as those established at the Fort Greely, Alaska, GMD site.

Negligible impacts would occur over the GBI site, therefore no mitigation would be required.

Enroute Airways and Jet Routes

Although there are air traffic corridors from New York to Toronto within the general vicinity of FTD airspace (Airnav, 2015), due to the restricted and controlled airspace already in place at FTD (including over the CIS footprint), there are no direct airway or jet routes over this area. Therefore, impacts would be negligible, and no mitigation measures would be required.

Airports and Airfields

As indicated previously, airports which are located in close proximity of FTD and have relevant significance in regards to the CIS deployment include Wheeler-Sack Airfield (FTD-operated) and Watertown International Airport. Due to the existing controlled and restricted airspace associated with these airports, any impacts from potential operation of the CIS would be negligible. No mitigation measures would be required.

3.5.2.3.3.2 Mitigation

Overall because the impacts identified are negligible to minor, no mitigation would be required.

Figure 3.5.2-1 Low Altitude Airspace Routes – FTD

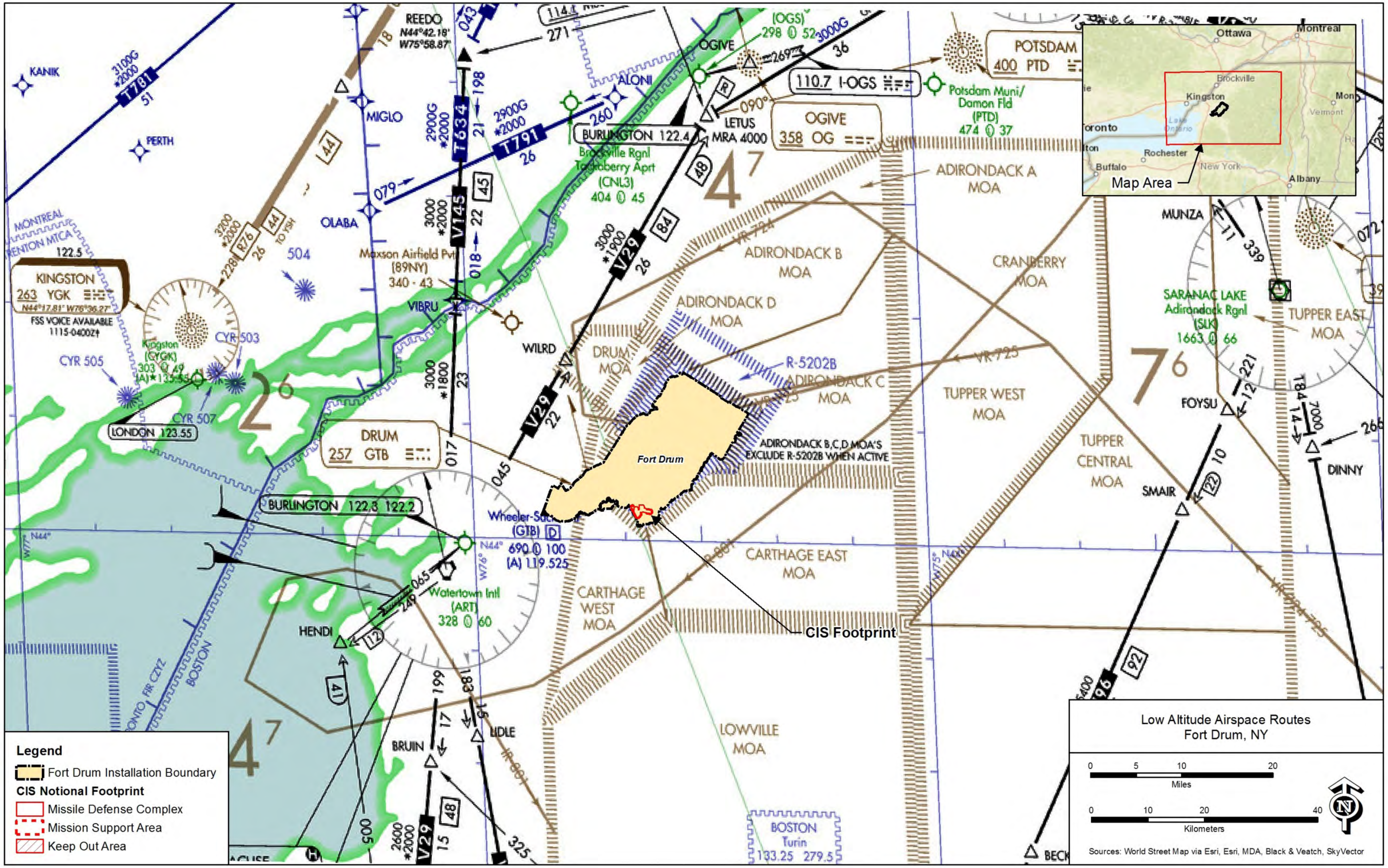
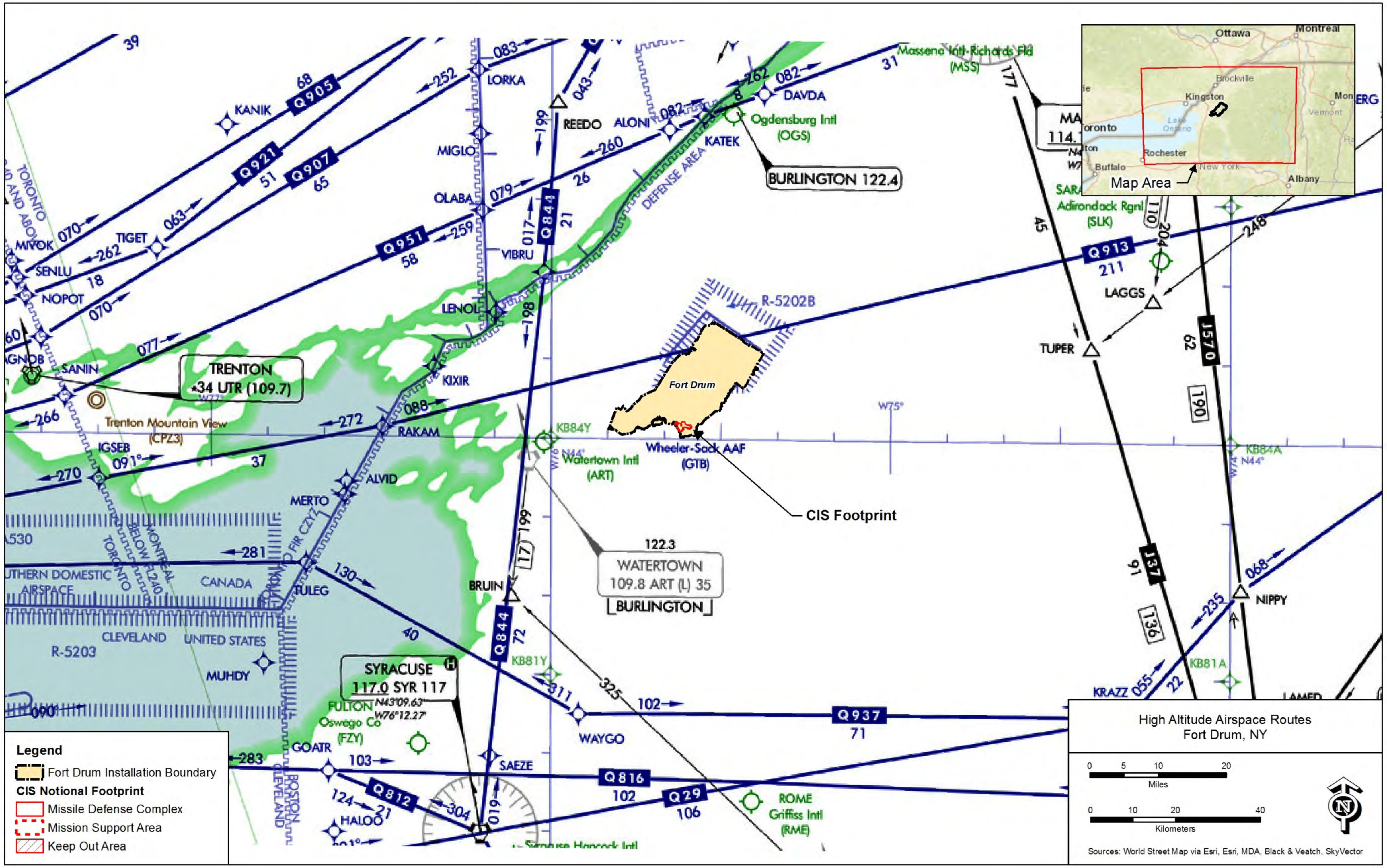


Figure 3.5.2-2 High Altitude Airspace Routes – FTD



3.5.3 Biological Resources – FTD

Biological resources include flora, fauna, and terrestrial and aquatic habitats. Existing and site-specific information on flora and fauna species and habitat types on and near the candidate CIS footprint at FTD was reviewed for this EIS.

The general intent in the EIS is to assess the impacts of the deployment of the CIS on biological resources within the CIS footprint and surrounding areas.

This section includes an overview of regulatory framework, a description of the terrestrial and aquatic resources present within the CIS footprint and surrounding area, and identification of federal and state-listed special status species listed as rare, threatened, or endangered.

3.5.3.1 Regulatory Framework – Biological Resources - FTD

The following are statutes with specific regulatory requirements pertaining to biological resources located at FTD. This list is not exhaustive, but it characterizes those regulations with the greatest influence on the project at the FTD.

<u>Federal</u>

- ESA of 1973, as amended by the NADA Act of 2004 (16 USC 1531 et seq.). The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. Under Section 7 of the ESA, federal agencies are required to coordinate their actions with the USFWS and the NOAA to prevent jeopardizing the continued existence of species. The ESA protects endangered and threatened species and their habitats by prohibiting the "take" of listed animals and the interstate or international trade in listed plants and animals, including their parts and products, except under federal permit.
- MBTA of 1918 (16 USC 703-712). The MBTA prohibits take of migratory bird species, including nests, parts of migratory birds or products derived from migratory birds, and implements a series of international treaties protecting migratory birds that cross international boundaries on migration.
- FWCA of 1980 (16 USC 2901-2911). The FWCA authorizes financial and technical assistance to the states for development, revision, and implementation of conservation plans and programs for nongame fish and wildlife.
- BGEPA of 1940 (16 USC 668-668c). The BGEPA contains provisions for the protection of Bald Eagles and Golden Eagles, including prohibitions of take, habitat destruction including nests, or use of eagle parts and products without a permit.
- Sikes Act. The Sikes Act seeks to ensure that ecosystems on military lands are protected and enhanced while allowing military lands to meet the needs of military operations. The Sikes Act includes provisions for preparation and implementation of INRMPs in cooperation with the USFWS, NMFS, and the applicable state fish and wildlife agency.

- AR 200-1, Environmental Protection and Enhancement (Chapter 4; 13 December 2007). This regulation covers U.S. Army environmental protection and enhancement for all Army organizations and agencies (except civil works under USACE jurisdiction) and provides the framework for the Army Environmental Management System.

New York State

- Environmental Conservation Law - New York's Environmental Conservation Law establishes a state policy on environmental protection (Article 1), establishes the NYSDEC (NYSDEC; Article 3), and includes provisions for protection of land and forests (Article 9), fish and wildlife (Article 11), pollution control (Article 17), and freshwater wetlands (Article 24).

3.5.3.2 Affected Environment – Biological Resources – FTD

The affected environment for biological resources includes a description of terrestrial resources (vegetation communities and wildlife), aquatic resources, and special status species.

3.5.3.2.1 Terrestrial Resources

Terrestrial resources include vegetation communities and wildlife such as birds, mammals, reptiles, amphibians, and insects.

3.5.3.2.1.1 Vegetation Communities

The general discussion on vegetation at FTD that follows is adapted from the 2011 INRMP (Army, 2011). The breakdown of land cover at FTD is in Table 3.5.3-1. The vegetation communities and alliances listed in Table 3.5.3-1 for the FTD CIS Footprint are shown on Figure 3.5.3-1.

Table 3.5.3-1 Land Cover at FTD

Cover Types	Acres	Hectares
Forest Upland	58,299.37	23,592.92
Forest Wetland	3,886.57	1,572.84
Shrub Upland	9,558.77	3,868.30
Shrub Wetland	3,823.14	1,547.27
Graminoid Community Upland	12,548.68	5,078.27
Graminoid Community Wetland	2,898.17	1,172.85
Forb Community Upland	987.08	399.46
Forb Community Wetland	122.26	49.48
Surface Water Lake	666.85	269.86
Surface Water Stream	617.79	250.01
Surface Water Drainage	3,050.06	1,234.32
Flooded Trees	568.94	230.24
Developed Hardscape	3,630.02	1,469.02
Pavement with Sparse Vegetation	35,54.53	1,438.47
Developed Landscaped	4,274.20	1,729.71
Other Bedrock	113.14	45.79
Other Sand	423.79	171.50
Unclassified	1.98	0.80
FTD (Total)	109,025.34*	44,120.99
Source: * Adapted from Table 2.5 in (Army, 2011).		

The CIS footprint at FTD encompasses approximately 1,200 acres, of which 977 acres would be cleared of vegetation for construction. Table 3.5.3-2 summarizes the vegetation associations specifically within the FTD CIS footprint based on National Vegetation Classification Standard vegetation formations (FGDC, 2008).

Forested land has become the dominant land cover across the installation. Within the overall deciduous forest community, vegetation types range from successional northern hardwood species such as gray birch (*Betula populifolia*), red maple (*Acer rubrum*), and quaking aspen (*Populus tremuloides*) to more mature, rich forests with sugar maple (*Acre saccharum*), black cherry (*Prunus serotina*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americanus*), and butternut (*Juglans cinerea*).

Conifer forests also are present across the installation. Eastern hemlock (*Tsuga canadensis*) and white pine (*Pinus strobus*) are the dominant tree species in these forests.

Table 3.5.3-2 National Vegetation Classification Standard Vegetation Formations within the FTD Site Footprint

Vegetation Formation	Acreage
Rounded-crowned temperate or subpolar needle-leaved evergreen closed tree canopy (e.g., pines, western juniper)	55.5
Rounded-crowned temperate or subpolar needle-leaved evergreen open tree canopy (e.g., pine, Western juniper)	29.8
Plantations	145.5
Lowland or submontane cold-deciduous closed tree canopy (e.g., broadleaf forests of the Midwest)	265.6
Cold-deciduous open tree canopy	57.2
Medium-tall temperate or subpolar grassland with a sparse needle-leaved evergreen or mixed tree layer	0.2
Short bunch temperate or subpolar grassland	35.8
Short temperate or subpolar grassland with a sparse broad-leaved evergreen or semi-evergreen tree layer	169.8
Short temperate or subpolar grassland with a sparse cold-deciduous tree layer	30.5
Landscaped urban/suburban/rural (residential yards, nurseries)	17.9
Mixed needle-leaved evergreen - cold-deciduous closed tree canopy	94.6
Wet closed deciduous forest	5.1
Wet open deciduous forest	2.2
Wet deciduous shrublands	7.8
Wet open grasslands	0.1
Wet closed mixed forest	0.1
Low temperate or subpolar perennial forb vegetation (e.g., Aleutian forb meadows)	0.3
Dunes with sparse herbaceous vegetation	19
Temperate cold-deciduous shrubland (e.g., serviceberry, some oaks)	6.6
Mixed needle-leaved evergreen – cold deciduous open tree canopy	12.5
Small drainage	5.9
No vegetation formations (roads)	13.9
Total Vegetation to be Cleared in CIS Footprint	**976**
Source: FGDC, 2008 Note: The total area to be cleared by GIS calculations is noted to be 977 acres. Since the GIS total is slightly more conservative it is typically used for clearing totals.	

Deciduous wetland forests occur most commonly in riparian zones, drainages, and seasonal floodplains. These riparian wetland forests generally are colonized by American elm (*Ulmus americana*), willows (*Salix* spp.), and red maple, and are typically open canopy with a speckled alder (*Alnus incana* ssp. *rugosa*) shrub understory. Forested drainages are generally dominated by willows (*Salix* spp.). The floodplains on FTD are typically populated with green ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), red maple, silver maple (*Acer saccharum*), and American elm.

In the Training Areas, mixed conifer and hardwood stands are common. Typically, the spruce-northern hardwood forests are prevalent in the rockier locations, while pine-northern hardwood stands are more common in the sandier areas. Pine plantations were historically established using Scotch pine (*Pinus sylvestris*) and red pine (*Pinus resinosa*) to aid in reducing wind erosion in areas with sandy soils.

Wetlands dominated by shrubs are typical in surface water features across FTD. Slender willow (*Salix petiolaris*) and speckled alder are common wetland shrubs. Meadowsweet (*Spiraea alba*), pussy willow (*Salix discolor*), red-osier dogwood (*Cornus sericea*), and silky dogwood (*Cornus amomum*) are more commonly found in seasonally flooded wetlands.

The CIS footprint predominately lies within Training Area 7, which is part of the Eastern Ontario Plains (EOP) ecoregion (Army, 2011). The ecoregion has an average elevation of 682 feet, ranging from 492 to 862 feet with an average slope of 3.5 percent. The ecoregion is characterized by hillocks formed from recessional moraines and drumlins, and small plains dominated by sandy soils (Army, 2011).

Vegetation Alliances

The vegetative communities in the EOP generally are northern successional sandplain grasslands and oak savannah.

Sandplain Grasslands. This vegetation alliance is characterized by low growing sedges and grasses less than 12 inches tall with widely scattered trees. Native grasses and forbs found in the grasslands typically consist of wavy hairgrass (*Deschampsia flexuosa*), Blue Ridge sedge (*Carex lucorum*), parachute sedge (*Carex tonsa var. rugosperma*), and stiff-leaf aster (*Ionactis linariifolius*).

Oak Savannah. This vegetation alliance is characterized by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*) that dominate the savannah areas. Associated with the oaks are white pine, lowbush blueberry (*Vaccinium angustifolium*), northern bush honeysuckle (*Diervilla lonicera*), and whorled loosestrife (*Lysimachia quadrifolia*).

Plants

On FTD, approximately 997 plant species have been recorded (Army, 2011). In general, floristic surveys within the CIS footprint have been limited and additional species continue to be documented.

3.5.3.2.1.2 Wildlife

Birds. While up to 242 bird species have been recorded at FTD (Army, 2011), most reports are from locations outside the CIS footprint. However, two watchlist bird species, common nighthawk (*Chordeiles minor*) and grasshopper sparrow (*Ammodramus savannarum*), were observed in Training Area 7D and Training Area 7G, respectively (Edinger et al., 2013).

Mammals. Commonly encountered species such as white-tailed deer (*Odocoileus virginianus*), American black bear (*Ursus americanus*), river otter (*Ondatra zibethicus*), and beaver (*Castor canadensis*) are known to be present throughout FTD, but mammal surveys at FTD have been largely targeted at areas proposed for projects, or targeted at specific species (Army, 2011). Although survey work began as early as 1991, a comprehensive installation-wide survey conducted continuously over some time has not occurred.

All nine bat species known to reside in New York State have been documented on FTD. The bat species detected are big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), eastern small-footed bat (*Myotis leibii*), tri-colored bat (*Perimyotis subflavus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and silver-haired bat (*Lasionycteris noctivagans*) (Army, 2011). Indiana bat and northern long-eared bat are federally listed as endangered and threatened, respectively.

The 2015 listing of the northern long-eared bat as a threatened species was precipitated by a significant population decline of the species due to WNS. WNS is a term used to describe unusual behavior and mortality associated with certain bat species infection from the fungus *Pseudogymnoascus destructans* (USFWS, 2015d). First discovered in New York in the winter of 2006/2007, this fungus has since rapidly spread in the eastern United States and now threatens the existence of many species of bats, including the northern long-eared bat (USFWS, 2015a; USFWS, 2015d). In the northeast United States up to 99 percent population decline has been documented for the species, based on hibernacula population count surveys (USFWS, 2015d). Though the Indiana bat is also susceptible, WNS was not the primary cause for the 1967 listing of the species as endangered, as the primary cause was human disturbance and habitat loss (USFWS, 2006b). For the Indiana bat, WNS is a contributing factor to the species decline.

The concentration of Indiana bat at FTD is in the Cantonment Area and Training Areas 3 and 4 where a Bat Conservation Area has been established to protect known roost sites on the installation. The Indiana bat has been detected in acoustic surveys conducted in Training Area 7.

The nearest known Indiana bat winter refuges are outside FTD, approximately 5.4 miles west of the installation (Army, 2011). Detections of the Indiana bat within the vicinity of the CIS footprint are shown on Figure 3.5.3-2.

Northern long-eared bat has been detected in both acoustic and mist netting surveys conducted in Training Area 7. There are no known northern long-eared bat roost trees or hibernacula in the area (USFWS, 2015a). As such, northern long-eared bats have not been captured in bat surveys since 2011, although acoustic detections still occur (USAG, 2014). Given this, finding new maternity colonies of northern long-eared bat at FTD is unlikely (USAG, 2014). Detections of the northern long-eared bat within the vicinity of the CIS footprint are shown on Figure 3.5.3-3.

Reptiles. Although up to nine species of snakes are present at FTD (Army, 2011), none has been reported within the CIS footprint or Training Area 7 (Edinger et al., 2013).

Common turtle species at FTD include painted turtle (*Chrysemys picta*) and snapping turtle (*Chelydra serpentina*) (Army, 2011; Edinger et al., 2013). Wood turtle (*Clemmys insculpta*) has been found infrequently through the installation (Army, 2011), but it has not been reported in the CIS footprint (Edinger et al., 2013). Blanding's turtle (*Emydoidea blandingii*) has been reported from Training Areas 13 and 14, but it has not been found during surveys on the rest of the installation (Edinger et al., 2013; Army, 2011).

Amphibians. Spotted salamander (*Ambystoma maculatum*) was found in a possible vernal pool complex located approximately 0.5 mile south of the CIS footprint (Edinger et al., 2013). This is a common salamander species in hardwood forests containing vernal pools. Although many other salamander species are present at FTD (refer to Appendix 6 in the INRMP (Army, 2011) for a complete list), spotted salamander was the only species found near the CIS footprint. Similarly, frogs and toads, abundant elsewhere at FTD, were not reported specifically from the CIS footprint because wildlife inventory surveys were not conducted. However, based on the INRMP, it can be assumed that many of the same species found elsewhere on FTD with similar habitat to that found within the CIS footprint would occur within the CIS footprint (Edinger et al., 2013).

Insects. Moth species captured in a recent trap survey in Training Area 7D included 99 individuals from 24 different species, one of which was the rare orange holomelina moth (*Virbia aurtantiaca*). Also present were more common species such as the knee-joint dart (*Feltia geniculata*) and white underwing moth (*Catocala relicta*) (Edinger et al., 2013).

Targeted surveys for rare butterfly species were unsuccessful (Edinger et al., 2013), although several common species were encountered (USAG, 2011).

Monarch Butterfly. The monarch butterfly (*Danaus plexippus plexippus*) currently is under status review to determine if the species warrants listing under the ESA. The 90-day finding on the petition to list the monarch butterfly was that the petition presented substantial information indicating that the petition action may be warranted. On December 31, 2014, the USFWS initiated a status review of the species (79 FR 78775). This species has been documented to occur at FTD (Army, 2011) and was, therefore, considered for inclusion in this document, though the future listing status is yet to be determined. The monarch butterfly has no listing status in New York State.

The latitude of FTD is approximately 44.06 decimal degrees, which according to Table 3.5.3-3 indicates that the peak in monarch abundance (fall migration) occurs from August 29 through September 15 of any given year. During the fall migration, monarchs cease to breed and head for their overwintering roost sites, which for the monarchs coming from the eastern U.S. are several high altitude mountain forests in Mexico (Monarch Watch, 2016).

Table 3.5.3-3 Monarch Peak Abundance – FTD

Latitude	Peak in Monarch Abundance
45	August 29 – September 10
44.06	*FTD dates approximated between latitudes 43 and 45*
43	September 3 – September 15
41	September 8 – September 20
39	September 14 – September 26
Source: Monarch Watch, 2016.	

Milkweed species, which supply food for the monarch butterfly larva (Monarch Joint Venture, 2016), documented as occurring within the FTD boundary are common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnata*), and butterfly milkweed (*Asclepias tuberosa*).

Adult monarchs feed on nectaring plants. This includes a wide variety of wildflower species that can supply nectar that can be taken up by the butterfly's proboscis. The available monarch migration data is inconclusive as to whether the CIS footprint occurs within a distinct migration route. Regardless, the FTD CIS footprint likely contains nectaring plants that could be used by adult monarchs during fall migration.

3.5.3.2.2 Aquatic Resources

This section focuses on the fauna that is associated with FTD aquatic resources. Aquatic resources include the fauna dependent on the hydrologic regimes of wetland and open water resources.

3.5.3.2.2.1 Aquatic Habitat

FTD contains a variety of aquatic habitats. A discussion of water resources and wetlands within the FTD footprint is provided in Sections 3.5.14 Water Resources and 3.5.15 Wetlands.

3.5.3.2.2.2 Aquatic Organisms

Fish. Fish surveys to date at FTD have focused on lakes and ponds (USAG, 2011). None of these types of surface water features are present in the CIS footprint. However, there are several streams within the CIS footprint that are stocked with brook trout by the NYSDEC (e.g., West Branch of Black Creek). Two (one cold water and one mixed water) angling sites are located within the CIS footprint (FTD, 2013) and are described in more detail in Section 3.5.9 Land Use.

Molluscs. Mollusc surveys to date at FTD have focused on lakes and ponds (USAG, 2011). None of these features are present within the CIS footprint. However, as discussed for fish, there are several streams that traverse the CIS footprint that are stocked for fishing and molluscs would also be present.

3.5.3.2.3 Special Status Species

Federally-listed species, state-listed species, and species of special concern documented to occur within FTD are presented in Table 3.5.3-4. No critical habitat occurs within FTD. Designated critical habitat is defined by the USFWS as "a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery" (USFWS, 2015b).

3.5.3.2.3.1 Federally-Listed Species

Northern Long-Eared Bat. The northern long-eared bat is a federally-listed threatened species. This species has been previously observed in the vicinity of the CIS footprint, but has not been captured since 2011, although acoustic detections still occur (USAG, 2014). The detection locations of the northern long-eared bat on FTD are shown on Figure 3.5.3-1.

Indiana Bat. The Indiana bat is a federally-listed endangered species. This bat has been documented to occur in Training Areas 3 and 4 and in the Cantonment Area, outside of the CIS footprint. The nearest known Indiana bat hibernaculum (winter refuge cave) is outside FTD, approximately 5.4 miles west of the CIS footprint (USAG, 2014). The detection locations of the northern long-eared bat on FTD are shown on Figure 3.5.3-2.

Table 3.5.3-4 Listed Species Reported at FTD

Common Name	Scientific Name	Federal Status	State Status
Birds			
Cooper's hawk	*Accipiter cooperiiacoutic*	--	SSC
Northern goshawk	*Accipiter gentilis*	--	SSC
Sharp-shinned hawk	*Accipiter striatus*	--	SSC
Henslow's sparrow	*Ammodramus henslowii*	--	T
Grasshopper sparrow	*Ammodramus savannarum*	--	SSC
Golden eagle*	*Aquila chrysaetos*	--	E
Short-eared owl	*Asio flammeus*	--	E
Upland sandpiper	*Bartramia longicauda*	--	T
American bittern	*Botaurus lentiginosus*	--	SSC
Red-shouldered hawk	*Buteo lineatus*	--	SSC
Whip-poor-will	*Caprimulgus vociferus*	--	SSC
Black tern	*Chlidonias niger*	--	E
Common nighthawk	*Chordeiles minor*	--	SSC
Northern harrier	*Circus cyaneus*	--	T
Sedge wren	*Cistothorus platensis*	--	T
Cerulean warbler	*Dendroica cerulea*	--	SSC
Horned lark	*Eremophila alpestris*	--	SSC
Peregrine falcon	*Falco peregrinus*	DL	E
Common loon	*Gavia immer*	--	SSC
Bald eagle*	*Halieeliatus leucocephalis*	DL	T
Yellow-breasted chat	*Icteria virens*	--	SSC
Least bittern	*Ixobrychus exilis*	--	T
Red-headed woodpecker	*Melanerpes erythrocephalus*	--	SSC
Osprey	*Pandion haliaetus*	--	SSC
Pied-billed grebe	*Podilymbus podiceps*	--	T
Vesper sparrow	*Pooecetes gramineus*	--	SSC
Golden-winged warbler	*Vermivora chrysoptera*	UR	SSC
Mammals			
Northern long-eared bat	*Myotis septentrionalis*	LT	T
Indiana bat	*Myotis sodalis*	LE	E

Common Name	Scientific Name	Federal Status	State Status
Reptiles			
Blanding's turtle	*Emydoidea blandingii*	UR	T
Wood turtle	*Clemmys insculpta*	--	SSC
Amphibians			
Jefferson salamander	*Ambystoma jeffersonianum*	--	SSC
Plants			
Three-seeded mercury	*Acalypha virginica*	--	E
Swamp pink	*Arethusa bulbosa*	--	T
Beck Water marigold	*Bidens beckii*	--	T
Rock-cress	*Boechera stricta*	--	E
Slim-stem reedgrass	*Calamagrostis stricta*	--	T
Buxbaum's sedge	*Carex buxbaumii*	--	T
Hitchcock's sedge	*Carex hitchcockiana*	--	T
Houghton's sedge	*Carex houghtoniana*	--	T
Prickly hornwort	*Ceratophyllum echinatum*	--	T
Northern wild comfrey	*Cynoglossum virginianum*	--	E
Trailing clubmoss	*Diphasiastrum complanatum*	--	E
Common mare's-tail	*Hippuris vulgaris*	--	E
Lakecress	*Neobeckia aquatica*	--	T
Hornleaf riverweed	*Podostemum ceratophyllum*	--	T
Hill's pondweed	*Potamogeton hillii*	--	T
Balsam willow	*Salix pyrifolia*	--	T
Small bur-reed	*Sparganium natans*	--	T
Boreal aster	*Symphyotrichum boreale*	--	T
Rock elm	*Ulmus thomasii*	--	T
Lesser bladderwort	*Utricularia minor*	--	T

* Protected under the MBTA and the BGEPA.
Federal Status: LE = endangered; UR = under review; DL = delisted
State Status: E = endangered; T = threatened; SSC=species of special concern

3.5.3.2.3.2 State-Listed Species

State endangered plant species at FTD include trailing clubmoss (*Diphasiastrum complanatum*), three-seeded mercury (*Acalypha virginica*), rock-cress (*Boechera stricta*), northern wild comfrey (*Cynoglossum virginianum*), and common mare's-tail (*Hippuris vulgaris*). State threatened species include slim-stem small-reedgrass (*Calamagrostis stricta*), Buxbaum's sedge (*Carex buxbaumii*), Hitchcock's sedge (*Carex hitchcockiana*), Houghton's sedge (*Carex houghtoniana*), swamp pink (*Arethusa bulbosa*), Beck water marigold (*Bidens beckii*), prickly hornwort (*Ceratophyllum echinatum*), lakecress (*Neobeckia aquatica*), hornleaf riverweed (*Podostemum ceratophyllum*), Hill's pondweed (*Potamogeton hillii*), small bur-reed (*Sparganium natans*), boreal aster (*Symphyotrichum boreale*), lesser bladderwort (*Utricularia minor*), balsam willow (*Salix pyrifolia*), and rock elm (*Ulmus thomasii*) (Edinger et al., 2013).

FTD has 31 known state-listed wildlife species (5 endangered, 9 threatened, and 18 species of special concern). The state endangered species at FTD are Indiana bat, golden eagle (*Aquila chrysaetos*), short-eared owl (*Asio flammeus*), black tern (*Chlidonias niger*), and peregrine falcon (*Falco peregrinus*). The state threatened species at FTD are Henslow's sparrow (*Ammodramus henslowii*), upland sandpiper (*Bartramia longicauda*), northern harrier (*Circus cyaneus*), sedge wren (*Cistothorus platensis*), bald eagle (Haliceliatus lencocephalis), least bittern (*Ixobrychus exilis*), pied-billed grebe (*Podilymbus podiceps*), northern long-eared bat, and Blanding's turtle. See Appendix 7 of the INRMP (Army, 2011) for a list of species of special concern.

Several rare plant species are present within the northern sandplain grassland communities in Training Area 7, including the CIS footprint (Edinger et al., 2013) and elsewhere at FTD. These include Drummond's Rock-cress (*Boechera stricta*) and Houghton's Sedge at the feature known as Oliphant's Hill and in Training Area 7G. However, invasive plants such as spotted knapweed (*Centaurea maculosa*) have established colonies in some sandplains along roadsides where disturbances have occurred from bivouac activities (Edinger et al., 2013). The community is codominated by, in descending order, wavy hairgrass, Pennsylvania sedge (*Carex pensylvanica*), stiff-leaf, and reindeer lichen (*Cladonia rangiferina*) (Edinger et al., 2013).

The state-endangered and globally rare tomah mayfly (*Siphlonisca aerodromia*) was found in the black river (Training Area 6A) upstream of the CIS footprint.

The spatterdock darner (*Rhionaeschna mutata*), a rare species of dragonfly, has been documented to occur near Indian Lake. This species is not listed at the federal or state level. This location at the installation is one of the northernmost known locales in the entire species' range (Edinger et al., 2013).

3.5.3.3 Environmental Consequences and Mitigation – Biological Resources – FTD

3.5.3.3.1 Construction - Baseline Schedule

3.5.3.3.1.1 Environmental Consequences

The FTD CIS footprint consists of 1,200 acres, of which 977 acres would be cleared and graded during construction. Existing vegetation would be cleared, including grubbing tree roots, and the site would be graded (cut/fill) during CIS construction to produce a level site. The cut and fill activities would result in the direct loss or alteration of all current terrestrial and aquatic habitats within the 1,200-acre CIS footprint. The 977 acres to be cleared at the FTD Site consists of 523 forested acres, 14 shrubland acres, 256 herbaceous (grassland) acres, 146 evergreen plantation acres, 18 landscaped acres, and 20 non-vegetated acres.

<u>Terrestrial Resources</u>

Vegetation Alliances. 977 acres would be cleared by construction activities (see Table 3.5.3-2 for breakdown). This acreage is represented by Sandplain Grassland, and Oak Savannah, vegetation alliances. Vegetation communities and alliances within the area of the CIS footprint are shown on Figure 3.5.3-1.

Plants. An indirect minor impact to plant diversity at FTD may result from increasing edge habitat resulting from clearing 977 acres for the CIS footprint. Edge habitat often provides adequate opportunities for the establishment of non-native species. Non-native species could have the ability to increase in disturbed habitats and spread into conservative vegetation alliances.

Birds. The loss of all vegetation alliances within the FTD CIS footprint would result in negligible indirect impacts to avian species at the population level due to the generally widespread population range of the species. Most notable would be the loss of interior forest areas.

Grassland areas converted to maintained turf grasses may not be able to provide essential habitat for grassland birds, though the loss of such habitat would be considered a negligible impact to these widespread species.

A list of the 242 bird species known to inhabit FTD is provided in the FTD INRMP (Army, 2011). Migratory birds of conservation concern known to use habitats in or near Training Area 7 and the CIS footprint are listed in Table 3.5.3-5.

Table 3.5.3-5 Migratory Birds of Conservation Concern at FTD

Common Name	Scientific Name	Seasonal Occurrence	Species Status
Short-eared owl	*Asio flammeus*	Wintering	SE
Bald eagle	*Haliaeetus leucocephalus*	Year-round	ST
Cooper's hawk	*Accipiter cooperii*	Breeding	SSC
Northern goshawk	*Accipiter gentilis*	Breeding	SSC
Sharp-shinned hawk	*Accipiter striatus*	Breeding	SSC
Henslow's sparrow	*Ammodramus henslowii*	Breeding	ST
Grasshopper sparrow	*Ammodramus savannarum*	Breeding	SSC
Golden eagle	*Aquila chrysaetos*	Breeding	SE
Upland sandpiper	*Bartramia longicauda*	Breeding	ST
American bittern	*Botaurus lentiginosus*	Breeding	SSC
Red-shouldered hawk	*Buteo lineatus*	Breeding	SSC
Eastern whip-poor-will	*Caprimulgus vociferous*	Breeding	SSC
Black tern	*Chlidonias niger*	Breeding	BCC
Common nighthawk	*Chordeiles minor*	Breeding	SSC
Northern harrier	*Circus cyaneus*	Breeding	ST
Sedge wren	*Cistothorus platensis*	Breeding	ST
Black-billed cuckoo	*Coccyzus erythropthalmus*	Breeding	BCC
Olive-sided flycatcher	*Contopus cooperi*	Breeding	BCC
Cerulean warbler	*Dendroica cerulea*	Breeding	SSC
Prairie warbler	*Dendroica discolor*	Breeding	BCC
Horned lark	*Eremophila alpestris*	Breeding	SSC
Common loon	*Gavia immer*	Breeding	SSC
Wood thrush	*Hylocichla mustelina*	Breeding	BCC
Yellow-breasted chat	*Icteria virens*	Breeding	SSC
Least bittern	*Ixobrychus exilis*	Breeding	ST
Red-headed woodpecker	*Melanerpes erythrocephalus*	Breeding	BCC
Black-crowned night-heron	*Nycticorax nycticorax*	Breeding	BCC
Osprey	*Pandion haliaetus*	Breeding	SSC
Pied-billed grebe	*Podilymbus podiceps*	Breeding	ST
Vesper sparrow	*Pooecetes gramineus*	Breeding	SSC
Common tern	*Sterna hirundo*	Breeding	BCC
Golden-winged warbler	*Vermivora chrysoptera*	Breeding	SSC
Blue-winged warbler	*Vermivora pinus*	Breeding	BCC
Canada warbler	*Wilsonia canadensis*	Breeding	BCC
Status: BCC = bird of conservation concern; ST = state threatened; LE = federal threatened; SSC = species of special concern Sources: USFWS, 2016; Army, 2011.			

Mammals. The removal of all vegetation alliances within the CIS footprint would result in the displacement of many mammal species. Perimeter fencing would directly impede the movement of larger mammals. Mammal species affected by fencing would include, but not be limited to deer, coyote (*Canis latrans*), raccoon, red fox (*Vulpes vulpes volva*) and opossum (*Didelphus virginiana*). Small, grassland mammal species would be directly impacted by land clearing activities.

Reptiles. Impacts to reptiles within the CIS footprint would be minor, in part because the known occurrences by this group within the CIS footprint are low. Construction would directly affect the reptile species. Indirect impacts would include habitat conversion to a managed turf grass area, and perimeter fencing would present a barrier to the movement of turtle species, resulting in habitat fragmentation.

Amphibians. The loss of wetland vegetation alliances and open water (non-alliances) within the FTD footprint would result in direct and indirect impacts to all amphibian species currently using wetland and open water habitats within the CIS footprint. If present, construction would directly impact amphibian species. Indirect impacts would include habitat conversion to a managed lawn within the cleared area of the CIS. Amphibians are susceptible to adverse impacts resulting from water quality degradation. During construction BMPs would be implemented for controlling offsite sedimentation and runoff in order to minimize adverse impacts to offsite water quality.

Insects. Conversion of forested and grassland habitat to a maintained turf grass area would reduce the available larval host and adult nectaring plants for butterflies and moths.

Lighting. Nighttime construction activities and associated temporary construction lighting are not expected to be part of CIS construction for most of the baseline construction period. However, for safety reasons construction activities would require lighting during portions of the fall, winter, and early spring when the length of natural daylight is decreased. Seasonal construction lighting would be used for an estimated 1 to 2 hours in the early morning and 1 to 2 hours in the late afternoon and early evening each workday. Artificial lighting could affect wildlife by altering behaviors and possibly circadian rhythm (Frank, 2006; Beier, 2006).

Lighting effects on wildlife tend to vary considerably, with some individuals and species more sensitive than others. Most wildlife evolved under a reliable cycle of day and night and behavior, certain cycles, predator/prey relationships, and reproduction can be affected by light pollution. Lighting effects can be generalized as follows, artificial lighting tends to:

- Attract some organisms (e.g., moths, mayflies), concentrating them as a food source to be preyed upon. Among those organisms not predated, they can be caught in a light trap that eventually exhausts or kills the trapped animals (Frank, 2006).
- Displace some animals, excluding them from habitat where they might otherwise successfully forage. For example, seed collection by small mammals is reduced in lit

areas because of the higher risk of predation (Beier, 2006). The effect is a reduction in the extent of suitable habitat.

- Disrupt foraging behaviors and increase the risk of predation (Beier, 2006; Rydell, 2006).
- Affect the time available for finding forage, shelter, or mates (Wise and Buchanan, 2006).
- Disorient animals that use the stars for navigation, losing their way when exposed to artificial lights (Gauthreaux and Belser, 2006).
- Alter day/night (circadian) patterns, resulting in disturbed sleep patterns, reproductive cycles, and mistiming of certain behaviors, such as foraging (Frank, 2006; Beier, 2006).

For animals that are highly habitat specific, relocation or displacement may not be an option. Under conditions of artificial light these animals may be predated or fail to reproduce at levels that can affect population growth and stability (Wise and Buchanan 2006). For species that can move to new areas, as lighting encroaches on dark areas, the areas dark enough to move to become fewer, ultimately reducing the available habitat.

The use of security lighting or temporary construction lighting would affect wildlife near the CIS footprint. Because construction activities requiring lighting would be temporary and would largely occur seasonally during the second through fourth years of construction, there would be minimal impact to wildlife from lighting during construction. Much of this impact would be in the form of formerly dark areas and by skyglow, which would be most visible on cloudy nights and would have the same effects as a full moon, reducing prey and predator species activity. It is not expected that constant security lighting would be used during construction because under the baseline construction schedule most work would cease shortly after sundown.

Moths attracted to security lights would be selectively predated by some bat species, but not others. *Myotis* spp. (such as northern long-eared bat) typically avoid lights, so these species would not benefit and they could be adversely affected as a result because of reduced prey species availability. Owl hunting could be reduced in lit areas, potentially affecting reproductive success if additional foraging areas are not available to individuals.

Noise. Wildlife species rely on biologically meaningful sounds for communication, navigation, avoiding danger, and finding food. Noise is any sound generated that alters or interferes with these activities. Disruption from noise may be characterized as disturbance (causing a detectable adverse change in behavior) or harm (adversely affecting health, reproduction, survivorship, habitat use, distribution, or abundance). There are four primary ways animals are adversely affected by noise pollution:

- Hearing loss, resulting from (chronic) noise levels of 85 dB or greater;
- Masking, which is the inability to hear important environmental cues and signals;

- Physiological effects, such as increased heart rate and respiration and general stress reaction; and,
- Behavioral effects resulting in abandonment of territory or lost reproduction opportunities (NSS, 2003).

Site preparation, construction, and utility line installation may temporarily disturb wildlife in the immediate area of construction activities. However, these activities would be limited and intermittent (daily halt to activities and inactive overnight) in duration under the baseline construction schedule, and long-term wildlife disturbance or harm arising from direct auditory impacts are not anticipated. The effects of noise on wildlife vary from no effect to serious in different species and different situations. Behavioral responses to noise also vary from alarm to departure from favorable habitat, due partly to the fact that wildlife can be very sensitive to sounds in some situations (e.g., during breeding) and insensitive to the same sounds in other situations (Larkin et. al, 1996).

Most of the site preparation and construction noise and human activity would be caused by heavy traffic to and from the CIS footprint and the short-term, intermittent use of heavy machinery during construction. The increased human presence may cause birds and other mobile wildlife species to temporarily evacuate areas subject to the highest level of noise and activity. However, noise tends to attenuate with distance (Larkin et al., 1996) so long-term impacts to wildlife from construction noise affecting populations are not anticipated.

Aquatic Resources

Fish and Molluscs. Due to the potential modifications (filling and rerouting) of streams within the CIS footprint, fish and molluscs may be affected, but are not likely to be adversely affected, primarily due to the availability of several other locations within FTD where suitable fish and mollusc habitats would be present. Therefore, overall impacts to fish and molluscs would be minor.

Federal Status Species (Federal and State)

Plants. Successional northern sandplain grasslands in the CIS vicinity may contain two state-listed plant species; Houghton's sedge and Drummond's rock-cress. Both species are listed as state threatened and they are sandplain grassland indicator species (Edinger et al., 2013). Clearing activities to prepare the CIS footprint would uproot, crush, and alter the environment sufficiently to kill the remaining plants.

Northern Long-Eared Bat. The northern long-eared bat may be indirectly affected by loss of available foraging/roosting habitat by converting the CIS footprint to a managed turf grass area. Considering the major threat to the species long-term conservation is white-nose syndrome, and that a biological opinion issued by the USFWS (USFWS, 2015c) noted that the incidental loss of the species due to otherwise lawful activities (tree clearing, etc.) would not culminate in a major threat to the species conservation, the impacts to the northern long-eared bat due to loss of habitat would be considered minor. Based on available survey data, there is potential presence of the northern long-eared bat and the loss of wooded habitat may affect the species. Due to the uncertainty of the deployment schedule and the potential for the future listing of the little brown bat (*Myotis lucifugus*) and tri-colored bat (*Perimyotis subflavus*), additional consultation with the USFWS would be conducted as necessary. Consultation would determine the need for any additional bat surveys if a decision to deploy is made and the FTD site is selected.

Indiana Bat. The Indiana bat may be indirectly affected by loss of available foraging/roosting habitat by converting the CIS footprint to a managed turf grass area. Considering the major threat to the species long-term conservation is white-nose syndrome, hibernacula disturbance, and direct impacts to occupied nursery roosts, the impacts to the Indiana bat due to loss of habitat would be considered minor. Based on available survey data, there is probable presence of the Indiana bat and the loss of wooded habitat may result in adverse impacts to the species.

Monarch Butterfly. The monarch butterfly may be directly impacted by development in the CIS footprint. Adverse direct impacts to the species may include the destruction of monarch caterpillars if present on larval food plants within areas scheduled for land grading activities. Land clearing activities may result in indirect adverse impacts to the species by the destruction of nectaring and larval plant species, which would result in loss of available habitat for the species. If land clearing were completed in the winter months, direct impacts would be limited, but loss of larval and adult habitat could occur. Nectaring adults would be forced to forage outside the CIS footprint for wildflowers on which to feed.

Cerulean Warbler. The cerulean warbler has been documented to occur within the FTD CIS footprint. The cerulean warbler (*Dendroica cerulea*) is noted as a USFWS species of concern, and is also a New York State-listed species of special concern. The species has been noted to be in a general population decline over the last 50 years within its entire summer and winter range, with a variety of factors hypothesized as contributing to the decline (USFWS, 2006). The cerulean warbler is provided federal protection under the MBTA. The species winters in South America, and during the summer breeding season migrates north to the eastern United States and Canada. Migration is nocturnal.

Suitable breeding habitat has been generally described as mature, closed canopy deciduous forest, occurring in a landscape which is predominately surrounded by forest. Life history of the species notes that the cerulean warbler typically raises a single brood of three to four in a nest built high in the tree canopy, 30 to 60 feet above the ground (USFWS, 2006). Mapping efforts documenting nest locations within a research site in West Virginia shows that the species prefers ridgetop locations within mature forest, and are often associated with canopy gaps (Wood et al., 2013).

Breeding territory size is variable, though studies have been done which have documented the male's defense of territory ranging from 0.25 to 10 acres (GDNR, 2016). Other studies have shown that breeding population densities can be up to 5 breeding pairs/25 acres in suitable habitat (Wood et al., 2013), though such density would only be expected within areas of exceptional habitat. Limiting factors for nest density are likely the size and distribution of canopy gaps within closed canopy deciduous forest, and the availability of large forested tracts. According to the MNFI factsheet for the cerulean warbler, the species is most often found in forested tracts exceeding 7,400 acres, with a probability of occurrence reduced by 50 percent when forest tract size falls below 1,700 acres (MNFI, 2016).

Factors hypothesized as contributing to population decline are ultimately all anthropogenic, and within the summer breeding territory include: forest clearing, habitat fragmentation, timber harvest practices unfavorable to the species, loss of canopy trees due to disease, and structure collision (MNFI, 2016).

The FTD CIS footprint is approximately 977 acres in total, and contains approximately 330 acres of deciduous forest. The cerulean warbler occurrence record within FTD did not state whether the sighting was an active nesting pair, or a migratory occurrence. Based on guidance from the MNFI (MNFI, 2016), the FTD boundary encompasses approximately 109,000 acres and contains numerous blocks of deciduous forest within a predominately forested landscape, and would be considered to have potential for nesting cerulean warblers.

A review of literature and conservation efforts clearly indicate that the cerulean warbler is vulnerable to habitat loss, and any action that results in loss of suitable habitat (breeding or wintering) cumulatively results in a negative impact to the species. To put this into a larger context, New York occurs within the northern region of the breeding range of the species, and by default, would have low population numbers of cerulean warblers. The state with the highest number of breeding cerulean warblers is Tennessee (TWRA, 2016). Cumulatively, the loss of 330 acres of deciduous forest within the FTD CIS footprint is not expected to have negative results to the species population at a regional scale, as there is no evidence active breeding is occurring within FTD.

<u>Summary of Environmental Consequences</u>

Loss of suitable habitat for several federally-listed threatened and endangered species would occur from construction of a CIS at FTD. Although seasonal restrictions on tree clearing would be implemented to the maximum extent practicable, CIS construction under the baseline schedule may affect federally-listed threatened and endangered species including the northern long-eared bat or Indiana bat through loss of suitable habitat.

3.5.3.3.1.2 Mitigation

During baseline construction schedule activities, implementation of conservation measures identified in FTD's INRMP would be implemented to the extent practicable. Outside of measures identified in the INRMP, no additional mitigation measures (compensatory, offsetting activities, or otherwise) have been identified for biological resources that would be impacted by baseline construction schedule activities within the CIS footprint. If a decision is made to deploy and this site is selected, then consultations with applicable regulatory agencies would be held and specific mitigation options would be developed as appropriate.

If circumstances would occur requiring site clearing during the nesting season, MBTA Regulations implementing Section 315 of the NDAA (2003) authorizes incidental take of migratory birds for military readiness activities. If a decision to deploy a CIS is made, the construction of the Mission Facilities would be considered military readiness and MDA would invoke Section 315 of the NDAA (2003). The MBTA military readiness exemption also requires that for activities that may result in a significant adverse effect on a population of a migratory bird species, consultation with the USFWS would be needed to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects (50 CFR Part 21.15). To address this issue, MBTA-protected species noted to use habitats on FTD were reviewed to determine if any such species populations would be significantly adversely affected by the development and operation of the FTD CIS. A list of all avian species noted to utilize FTD habitats is summarized in the FTD INRMP, and is based on both breeding bird and raptor surveys conducted within the FTD boundary. It was determined that of the MBTA protected species noted to utilize FTD habitats none would be subject to significant adverse effects at the population level considering construction and operational activities for the CIS.

3.5.3.3.2 Construction - Expedited Schedule

Under the expedited construction schedule, the types and amounts of habitat clearing would remain the same, but the timing of the clearing and other construction activities would be compressed. As such, the types of biological impacts would largely be the same as those that would occur under the baseline schedule, but the intensity and timing of the impacts would differ.

3.5.3.3.2.1 Environmental Consequences

Similar to the baseline construction schedule, the expedited construction schedule may affect federal threatened and endangerd species (i.e., northern long-eared bat and Indiana bat) due to loss of potential habitat. In general, other impacts for the baseline schedule and the expedited schedule would be similar with the exception that the season timing of vegetation clearing/grubbing may result in impacts to nesting songbirds and monarch butterflies.

Lighting effects from an expedited construction schedule may be more extensive than the baseline construction schedule because of the longer period when lighting would be used for construction. This would have the effect of further displacing some species, forcing them to seek new dark areas in which to forage and carry out other activities under the cover of darkness. Insects would be affected through an attraction to the lights, which may benefit bats as they exploit the concentrated prey. Some moth species react to light by failing to fly, seek mates, or other essential activities (Frank, 2006). Because of the extended period in which lighting would be used, some effects could be major, altering population dynamics of some species, particularly insects.

Noise impacts during the expedited schedule, would be similar to the baseline similar, but intensified due to the around the clock and nighttime work activities. The extended noise may indirectly affect northern long-eared bat and Indiana bat more than the baseline construction schedule because of the added nighttime noise. Additionally, to further minimize noise impacts to wildlife and birds, the more noise-intense construction activities would be limited during nighttime hours.

3.5.3.3.2.2 Mitigation

During expedited construction schedule activities, implementation of conservation measures identified in FTD's INRMP would be implemented to the extent practicable. Outside of measures identified in the INRMP, no additional mitigation measures (compensatory, offsetting activities, or otherwise) have been identified for biological resources that would be impacted by expedited construction schedule activities of the potential CIS. If a decision is made to deploy and this site is selected, then consultations with applicable regulatory agencies would be held and specific mitigation options would be developed as appropriate.

Under the expedited schedule, it is anticipated that construction would occur during breeding and nesting season. Therefore, the MBTA military readiness exemption review described in the construction baseline schedule would apply to the expedited construction schedule and adverse effects to birds of conservation concern at a population level would not be anticipated.

To minimize the effects of lighting on wildlife, positioning the light source at lower heights and using longer wavelength lighting (ambers and reds rather than blues or white light) are the preferred measures. Light fixtures should be mounted as low as possible to illuminate just the area needed for safety and comfort with minimal overlap into the surrounding areas. Where necessary, lighting should be shielded to prevent overlap into the surrounding areas where light is not required. Shielding also should be used to reduce skyglow. Wherever feasible, long wavelength light sources should be used. Long wavelength light alters the exposure of wildlife to lighting effects at night while providing illumination. The use of reflective surfaces under lights should be avoided as wildlife may be confused and attracted to what appears to be water.

3.5.3.3.3 Operation

3.5.3.3.3.1 Environmental Consequences

Following construction, the CIS would be relatively static except periodically for maintenance of various structures during the service life of the CIS. Flight testing of missiles is not a planned operational activity, although in-ground tests and other hardware-in-the-loop exercises could occur. Testing activities would not result in measurable impacts to biological resources, because most tests would occur inside structures and they would not result in environmental releases that could affect biological resources.

The primary impacts from CIS operation on vegetation management would be related to maintenance of the clear zone and landscaping within the CIS and its perimeter. Specific activities may include selective use of mowing, herbicides, fertilizers, etc. These impacts would be minor. The application of herbicide and mechanical trimming of the perimeter could result in the establishment of a variety of non-native plant species. These non-native plant species would have the ability to increase in disturbed habitats and spread into adjacent vegetation communities. In the event of herbicide spills, the CIS maintenance and spill response team would follow established SPCC plans to contain and clean up a spill.

In addition to vegetation, minor impacts from facility and security lighting and some noise due to the impacts from backup power generation equipment would occur. Impacts from lighting would be minimized by the use of fully recessed lighting that directs lighting downward. Noise impacts would occur during temporary back-up situations (power outages or during test and maintenance activities).

3.5.3.3.3.2 Mitigation

No mitigation measures (compensatory, offsetting activities, or otherwise) have been identified for biological resources that would be impacted by operation of the CIS at FTD.

Figure 3.5.3-1 Vegetation Communities and Alliances – FTD

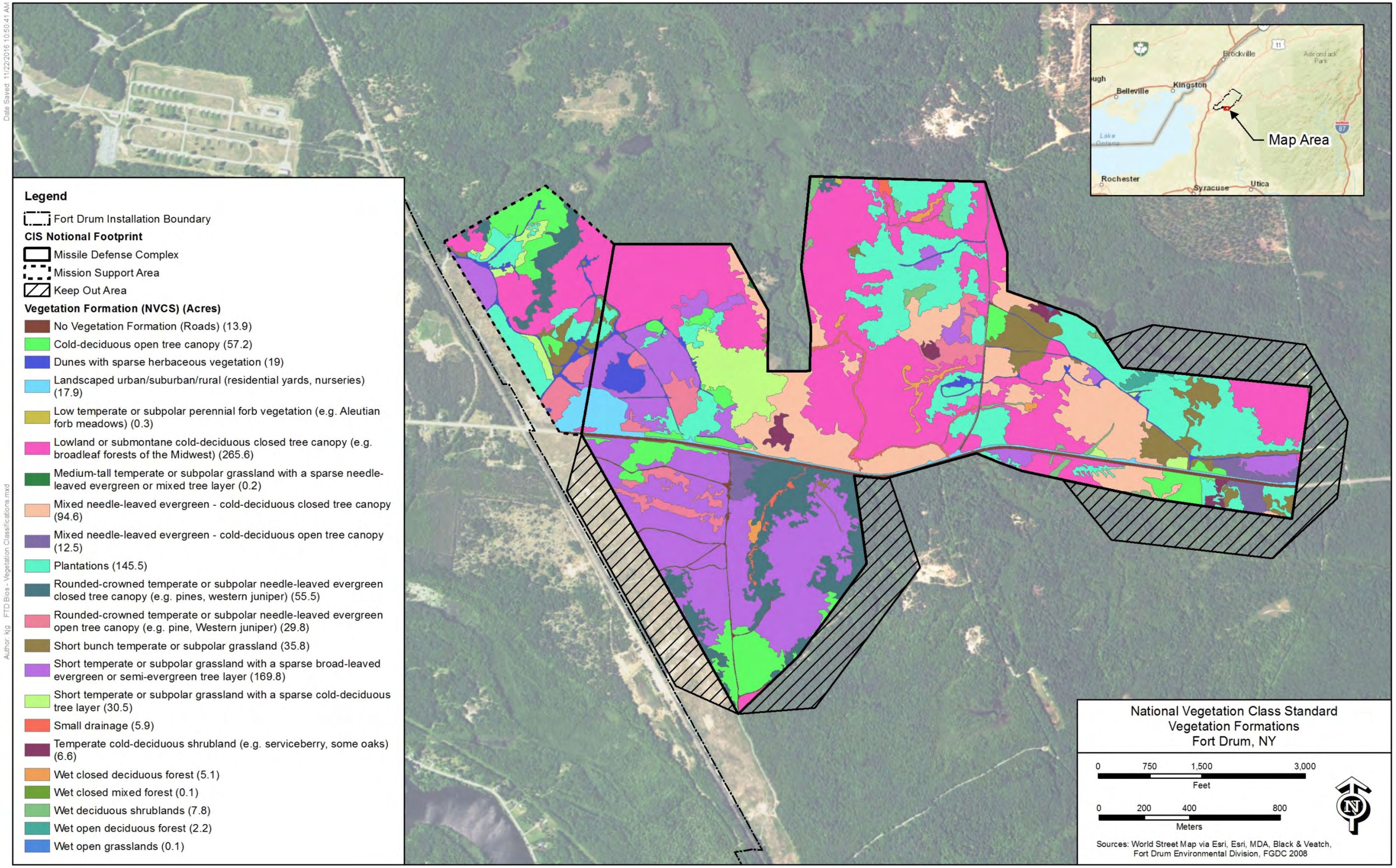


Figure 3.5.3-2 Indiana Bat Detections at FTD

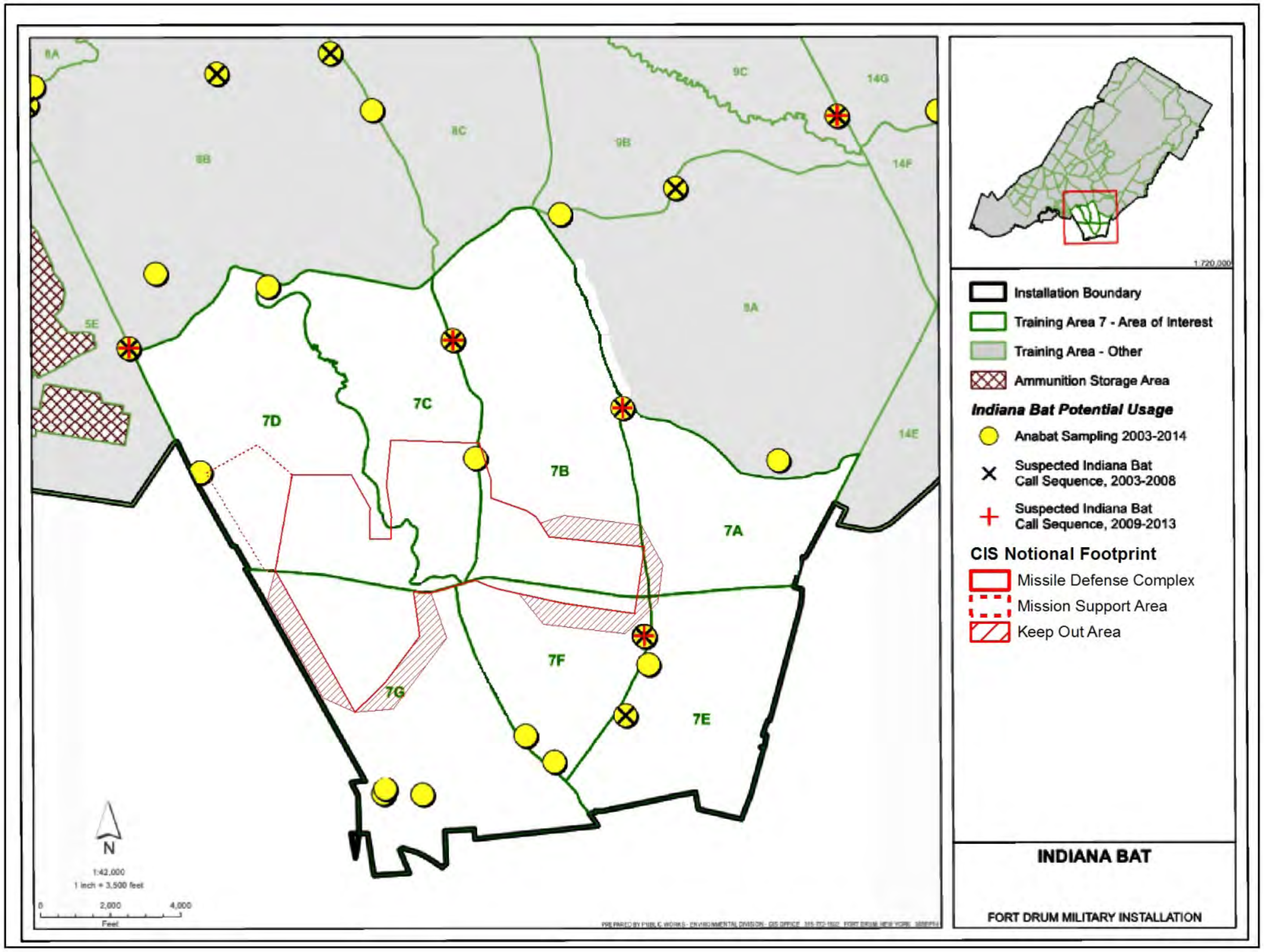
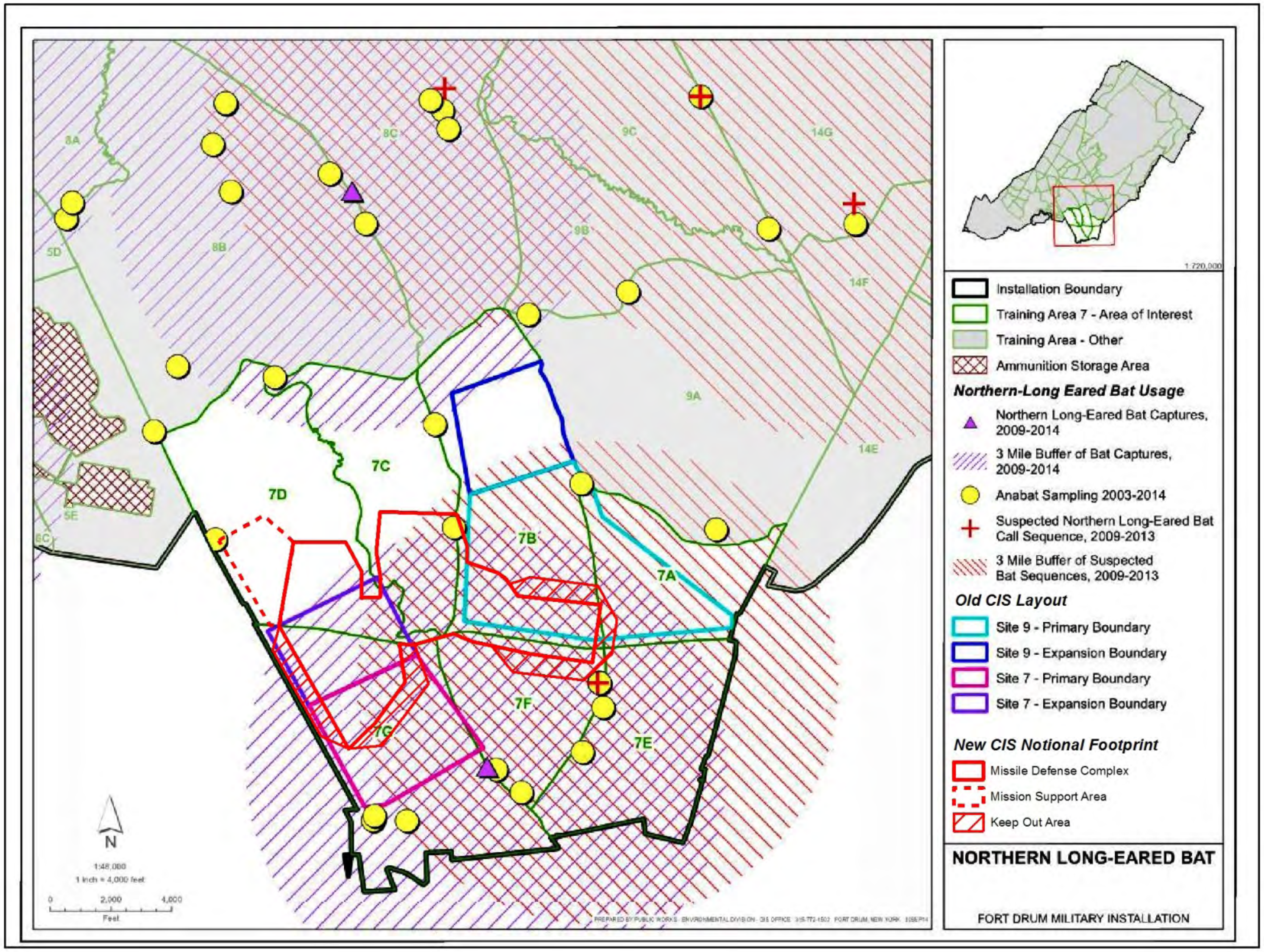


Figure 3.5.3-3 Northern Long-Eared Bat Detections at FTD



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3.5.4 Cultural Resources – FTD

Cultural resources include prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. Cultural resources are typically discussed in terms of archaeological resources (prehistoric and historic), historic buildings and structures, and native populations/ traditional resources (e.g., Native American sacred or ceremonial sites). Prehistoric and historic archaeological resources are the physical remnants of human activity. They include archaeological sites, features, ruins, artifacts, and other evidence of prehistoric or historic human behavior. Historic buildings and structures (i.e., architectural features) consist of aboveground, standing properties postdating the advent of written records (e.g., homesteads, ranchsteads, World War II buildings, Cold War structures). Traditional resources may be prehistoric sites and artifacts, historic areas of occupation and events, historic and contemporary sacred areas, materials used to produce implements and sacred objects, hunting and gathering areas, and other botanical, biological, and geological resources of importance to contemporary culture groups.

This section discusses the existing cultural resources at and in the vicinity of the CIS footprint, the potential project impacts, and potential mitigation measures associated with the project.

3.5.4.1 Regulatory Framework – Cultural Resources - FTD

There are several laws, regulations, EOs, and other requirements that must be taken into consideration with determining effects of a potential deployment or its alternatives on cultural resources, including, but not limited to the following:

- NEPA – The NEPA requires that cultural resources are fully considered prior to undertaking any major federal action that significantly affects the environment.
- NHPA, as amended (16 USC 470 et seq.) – The NHPA is legislation intended to preserve historical and archaeological sites in the U.S. The act authorized the creation of the NRHP, the list of National Historic Landmarks, and the SHPOs.
- ARPA of 1979, as amended (16 USC 470aa-470mm) – The ARPA strengthened the permitting procedures required for conducting archeological fieldwork on federal lands, originally mandated by the Antiquities Act. It also establishes more rigorous fines and penalties for unauthorized excavation on federal land.
- Antiquities Act of 1906 (16 USC 431–433) - Provides for the protection of historic and prehistoric ruins and objects of antiquity on federal lands, and authorizes scientific investigation of antiquities on federal lands subject to permits and other regulatory requirements. This act also provides information on penalties for damage and destruction of antiquities.
- Archeological and Historic Data Preservation Act of 1974 (16 USC 469-469c) - This statute requires that federal agencies provide for the preservation of historical and

archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of any alteration of the terrain caused as a result of any federal construction project of federally-licensed activity or program.

- AIRFA of 1978 (42 USC 1996) – The AIRFA was enacted to protect and preserve the traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts, and Native Hawaiians.
- NAGPRA (25 USC 3001 et seq.) - The Act requires federal agencies and institutions that receive federal funding to return Native American cultural items to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations. Cultural items include human remains, funerary objects, sacred objects, and objects of cultural patrimony.
- Curation of Federally Owned and Administered Archeological Collections (36 CFR Part 79) – These regulations provide minimum standards for the long-term management and care of archeological collections, including the associated records and reports.
- Presidential Memorandum for Heads of Executive Departments and Agencies on Government-to-Government Relations with Native American Tribal Governments (1994) – The purpose of this memorandum was to clarify the responsibility of the federal government during interactions with Native American Tribal governments.
- EO 13175, Consultation and Coordination with Indian Tribal Governments – This EO requires consultation and collaboration with Indian tribal governments; strengthening of the government-to-government relationship between the U.S. and Indian tribes; and reducing the imposition of unfunded mandates upon Indian tribes.
- EO 13007, Indian Sacred Sites – This EO requires executive agencies with administrative responsibility of federal land management to accommodate access to and ceremonial use of Indian sacred sites and avoid adversely affecting the physical integrity of sacred sites.
- EO 13084, Consultation and Coordination with Indian Tribal Governments – This EO reaffirms the unique legal relationship between the U.S. and Indian tribal governments; stressing that federal agencies maintain regular and meaningful collaboration with Indian tribal governments when formulating policies that would uniquely affect such governments being guided by the principle of respect for their self-government and sovereignty.
- EO 13287, Preserve America – This EO establishes a federal policy to provide leadership in preserving the nation's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties owned by the federal government and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties.
- DoD Instruction 4710.02, Interactions with Federally Recognized Tribes – This DoD Instruction implements DoD policy, assigns responsibilities, and provides procedures for DoD interactions with federally-recognized tribes as required by federal regulations.

- DoD Instruction 4715.16, Cultural Resources Management – This Instruction establishes DoD policy and assigns responsibilities to comply with applicable federal statutory and regulatory requirements, EOs, and Presidential memorandums for the integrated management of cultural resources on DoD-managed lands.
- DoD Instruction 4715.3, Environmental Conservation Program - Promotes DoD-wide conservation program cooperation to guarantee continued access to land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources, air and water continue to be sustained for future generations. Includes the requirement that all installations have an INRMP and/or ICRMP.
- AR 200-1, Environmental Protection and Enhancement - This regulation addresses the environmental responsibilities of all Army organizations and agencies. It covers environmental protection and enhancement and provides the framework for the Army Environmental Management System.

These laws, regulations, EOs, and requirements outline the process of compliance, define responsibilities of the federal agency proposing an undertaking, and prescribe the relationships among other federal, state, and local agencies and stakeholders. An "undertaking" is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency, those carried out with federal financial assistance, or those requiring a federal permit, license, or approval (36 CFR Part 800.16).

Sections 106 and 110 (16 USC 470 et seq.) of the NHPA require that for any federal undertaking, prior to the approval of the expenditure of any Federal funds on that undertaking, the effect of the undertaking on any district, site, building, structure of object that is included in or eligible for inclusion in the NRHP must be taken into account. To be considered eligible for inclusion in the NRHP, a property must meet the NRHP listing criteria, which is specified in the DOI regulations (36 CFR Part 60.4 and NRHP, 1990). To determine NRHP eligibility, all potential prehistoric, historic, Native American, and traditional historic properties in the footprint and vicinity of the undertaking (e.g., potential deployment or its alternatives) must be evaluated. "Historic properties" include any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This includes artifacts, records, and remains that are related to, and located within, such properties and properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization, and that meet the NRHP criteria (36 CFR Part 800.16). In addition to identification and evaluation of historic properties, the regulations also state the need to determine what potential affects could occur to historic properties if the potential deployment or its alternatives were implemented.

Compliance under Section 106 of the NHPA requires consultation with the SHPO, local governments, associated federal agencies, federally recognized Native American tribes and the interested public, as appropriate.

3.5.4.2 Affected Environment – Cultural Resources – FTD

The affected environment for cultural resources is identified through determination of APE. The APE is defined by 36 CFR Part 800.16 as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.

The APE of the potential CIS deployment at FTD includes an approximate 1,200-acre CIS footprint area (referred to herein as the CIS APE). Within the CIS APE, approximately 977 acres would be cleared and graded. The CIS APE is presented on Figure 3.5.4-1.

In addition to activities that would occur within the CIS APE, SIV/silos, materials and equipment necessary for the construction of the CIS would be transported via interstate, state, and local roads as described in Section 3.5.12.

For the purposes of this EIS, cultural resources have been divided into the following categories:

- Prehistoric and historic archaeological resources.
- Architectural resources.
- Native populations/traditional resources.

The following sections describe: 1) the prehistoric and historic background for FTD and the region; and 2) the affected environment for cultural resources within the CIS APE based on review of the ICRMP and previous cultural resource investigations conducted at FTD.

3.5.4.2.1 Prehistoric and Historic Background – FTD

Managing cultural resources at FTD is guided, in accordance with AR 200-1, by an ICRMP, which is required to be updated every 5 years. The most recent FTD ICRMP was completed in 2010 and contains detailed information on area prehistory and history, a discussion of regulatory frameworks and compliance status, party and agency roles and responsibilities, studies conducted to date, known site data, SOPs, and memoranda and agreements applicable to managing cultural resources. FTD currently tracks a total of 940 archeological sites, 1 historic district with standing structures, and 5 archeological districts, and supports management of 13 historic cemeteries (Army, 2010).

3.5.4.2.1.1 Prehistoric Background

This section provides a brief prehistoric background of the northeast U.S. (the Northeast) and of FTD based on a review of the FTD ICRMP and summary information provided by FTD cultural resources staff (Rush, 2015). Additional detail is provided in the FTD ICRMP (Army, 2010).

The prehistoric occupation of the Northeast and area of FTD is generally divided into the following major periods (Army, 2010; Rush, 2015):

- Paleo-Indian.
- Archaic.
- Transitional.
- Woodland.
- Saint Lawrence Iroquois Period.
- Contact Period.

The earliest dates for the arrival of the first Americans in the Northeast are complex and controversial. Based on early archaeological evidence and the dates for the existence of the ice-free corridor, it was assumed that no humans were present in the Americas prior to 12,500 B.P. However, in recent years, through archaeological studies conducted in North and South America (including sites in Pennsylvania, Virginia, and South Carolina), a new understanding of the Paleo-Indian dates has begun to emerge that suggest presence much earlier than originally thought (Rush, 2015; Virginia DHR, 1997; Toner, 2006). Studies conducted at FTD in 1999 and 2002 recovered artifacts that potentially support this new understanding (Rush, 2015).

In general, Paleo-Indian culture in the Northeast is traditionally recognized as spanning from approximately 10,800 to 9,000 B.P. Paleo-Indians were nomadic groups comprised of small kin-based bands that primarily practiced a foraging subsistence strategy. These Paleo-Indian bands repetitively moved within a circumscribed geographic range to intercept large herd animals during their migratory cycles (Gramly, 1988; Stothers, et. al, 1996). Over time, the focus of these groups likely shifted from large-scale hunting expeditions to a more regular procurement of game accompanied by a decrease in the overall size of territory encompassed by these groups. Paleo-Indian sites are most easily recognized in the archaeological record by the presence of lanceolate spear points (MSG, 2015).

The Archaic Period is defined by cultural adaptation to changing environmental conditions beginning around 10,000 B.P. and extending through approximately 2,500 B.P. in which localized seasonal settlement and subsistence patterns replaced the broad seasonal migration patterns of the Paleo-Indian Period (Cardno JFNew, 2014). In New York, the Archaic Period is somewhat chronologically undefined; originally thought to occur between 4,500 and 1,300 B.P. (Rush, 2015; Richie, 1957). However, more recent information from archaeological investigations conducted in New York has demonstrated a much earlier date of 8,300-8,200 B.P.

for occupation (Rush, 2015; Smith, 1998). The Archaic Period is generally broken into three time periods, Early, Middle, and Late, which generally reflects the transition from highly nomadic to more sedentary lifestyles. Lithic tools recovered from the Archaic Period suggest that vegetable foods were becoming a more important staple in the diet of these early Native Americans (Dragoo, D.W., 1976). A gradual warming of the climate took place in the Middle Archaic Period, (8,000 to 5,000 B.P.), and the regional development of Native American cultures began to take place. The primary focus of subsistence activities became the deer, turkey, other small mammals, fish, and shellfish. Small upland camps as well as villages in riverine environments are site types associated with the Middle Archaic Period. Artifacts of the Middle Archaic Period include side-notched and stemmed projectile points/knives as well as ground stone tools. The Late Archaic Period (5,000 to 2,500 B.P.) reflects the increasing complexity of Native American cultural groups resulting in decreased movement and individuals occupying an area for longer periods of time. The primary focus of subsistence activities during the Late Archaic Period focused on shellfish, fish, migratory birds, and other aquatic resources primarily obtained during spring and summer and nuts and floral resources obtained during the fall. Hunting occurred year-round, with the primary focus on the white-tailed deer (Cardno JFNew, 2014; AMEC E&I, 2016).

The Woodland Period, occurring approximately 3,500 to 1,350 B.P. (Rush, 2015) is broadly associated with innovations such as pottery, bow and arrow, and plant domestication. Occupations during the Woodland Period were typically centered in more riverine environments and represent the transition from the nomadic Archaic subsistence agricultural strategy to a more localized, semi-sedentary subsistence strategy (MSG, 2015). The Woodland Period is generally broken into three periods, Early, Middle, and Late. The majority of Early and Middle Woodland archeological investigations in the Northeast and Midwest have been burial components, which radiate around the Great Lakes Region and its attendant river systems, clustering in religious/ceremonial centers (Rush, 2015). The change to subsistence agriculture introduced a new social paradigm that called for labor division and segregating sex and age which encouraged a culture that supported the rise of the individual. Burial traditions also indicated that a hierarchy or class structure was beginning to develop. Acquisition of resources that were in demand throughout the region raised the status of the controlling group and trade networks began to develop. By the Late Woodland Period domesticated flora became a staple food source which resulted in agricultural fields becoming a more permanent feature of the landscape. Prime agricultural lands in close proximity to village sites were sought out for cultivation; these villages became larger and more heavily populated (Army, 2010).

The Saint Lawrence Iroquois Period occurred from approximately 650 to 400 B.P. during which the St. Lawrence Iroquoians inhabited several large villages in the Jefferson County area, including the location of FTD. This period was characterized by a rise in agriculture (in particular intensive cultivation of maize, squash, and beans) which led to slash and burn practices within forests to make room for crops. Hunting, fishing, and gathering of wild plants continued to be important. Two St. Lawrence Iroquois villages were located on FTD with a possible third based on research. By 1540, the Saint Lawrence Iroquoian villages were abandoned; the cause (e.g., European diseases or war) is unknown (Army, 2010).

The Contact Period occurred from circa 410 through 153 B.P. and covers archeological sites, artifacts, and landscapes related to contact between Native American governments, societies and residents, and European explorers, missionaries, traders, fur trappers, and settlers (Army, 2010).

3.5.4.2.1.2 Historic Background – New York State, Jefferson County, and FTD

The following paragraphs provide a brief summary of the historic background of New York State (though statehood), Jefferson County, and FTD.

New York State

The land which is now known as New York was once occupied by two groups of Native American Indians. Algonquin controlled what is now the Hudson Valley through Long Island, and the Iroquois controlled the western lands. The North Country region of Upstate New York spans an area of 11,420 mi^2 from the eastern shore of Lake Ontario to the western edge of Lake Champlain and from the shared border with Canada in the north to the southern end of Hamilton County (NYSREDC, 2015).

The Dutch began settling in the Hudson Valley in the 1600s, with the first settlement, called New Amsterdam, established on the site of present-day Manhattan. The Netherlands controlled the Hudson Valley until 1664, when the British took control. New York was the center of ongoing conflicts between the British and French who drew European powers and native peoples into a global conflict, resulting in the French and Indian War. The war ended in 1763, the British had won and were dominating North America. Tensions continued to rise between the British and the colonies which spurred the Revolutionary War (OPRHP, 2015).

The vast majority of Northern New York was not settled until the end of the Revolutionary War. Due to the proximity of the British in Canada and tension along the border, European settlement of the FTD region did not begin until the early nineteenth century (Army, 2010).

New York adopted its state constitution in 1777. In 1788, New York became the 11th state to ratify the U.S. Constitution.

Jefferson County

Jefferson County is located at the east end of Lake Ontario, in the North Country region of New York. It is bordered on the northwest by the St. Lawrence River, on the northeast by St. Lawrence County, on the east by Lewis County, and on the south by Oswego County.

Counties were established in the Province of New York in 1683. At that time, present-day Jefferson County was part of Albany County. Over serval years, Albany County was split into several counties, some of which were split again, into several additional counties. Jefferson County was created in 1805 from Oneida County and was named in honor of President Thomas Jefferson. Settlement in Jefferson County started as early as 1794 (USGenNet, 2015).

Fort Drum

In the early 1900s, the U.S. military outgrew its post at Sackets Harbor, New York. This prompted the purchase of over 35,000 acres of land east of Watertown, New York and establishment of the much larger Pine Plains training facility in 1908. The facility was later renamed Pine Camp in 1940. With the outbreak of World War II, an additional 75,000 acres of land was acquired in 1941 and over 600 temporary buildings were constructed. Pine Camp was used during World War II as a training facility and prisoner-of-war camp. In 1951, Pine Camp was renamed Camp Drum, which was then designated FTD in 1974 (Army, 2010).

In 1984, FTD became the headquarters for the Army 10th Mountain Division, Light Infantry.

3.5.4.2.2 Prehistoric, Historic, and Architectural Resources within Area of Potential Effects

Prehistoric and historic archaeological resources include any material remains of past human life or activities which are of archeological interest such as pottery, basketry, bottles, weapons, tools, structures/foundations, cemeteries, rock paintings, rock carvings, graves, human skeletal material or any portion or piece of such items.

Architectural resources include aboveground historic structures and buildings.

Traditional resources include burial grounds, sacred or religious sites, and/or artifacts (tools, arrowheads, pottery, etc.) that are related to native populations that have had an affiliation with a site.

3.5.4.2.2.1 Prehistoric and Historic Resources

Summaries of previous archaeological investigations conducted within portions the CIS APE were provided by the FTD cultural resources department for evaluation in this EIS (Rush, 2014; Rush, 2015; Wagner, 2016b). To date, there have been several archaeological surveys performed completely or partially within the CIS APE. The information provided by FTD covered approximately 656 acres of the 977-acre area to be cleared within the CIS APE as presented on Figure 3.5.4-2. This information was based on the two potential CIS deployment options that were later consolidated into one option as discussed in Section 2.9.3. If a decision is made to deploy the CIS and FTD is selected, and because the two options were consolidated into one option, an additional 321 acres within the area to be cleared would require further study to determine if archaeological resources are present and eligible for listing in the NRHP.

A total of 58 archaeological sites have been identified within the CIS APE based on the information provided by FTD. Of these sites, 21 are associated with historic contexts and 37 sites are prehistoric as summarized in Table 3.5.4-1 (Wagner, 2016b).

Table 3.5.4-1 Summary of Archaeological Sites Identified within FTD Site Footprint

Site Type	Number of Sites	General Site Description	Site Status (eligibility for listing in NRHP)
Prehistoric	2	Lithic scatter	Eligible
	5		Not eligible
	28		Further evaluation required
	1	Fire (subsurface charcoal and oxidized sand)	Not eligible
	1	Isolated find (lithics)	Not eligible
Historic	2	Concrete Observation Bunker (Military)	Eligible
	1	Culvert	Not eligible
	1	Earthen berm (Military)	Not eligible
	12	Farmsteads	Not eligible
	3	Maple Processing Site	Not eligible
	1	Schoolhouse	Not eligible
	1	Trash dump	Not eligible

If a decision is made to deploy and FTD is selected, 28 prehistoric sites would require additional evaluation to determine eligibility for listing in the NRHP. At least four sites (two prehistoric lithic scatters and two historic concrete bunkers) identified within the CIS APE are eligible for listing in the NRHP.

3.5.4.2.2.2 Architectural Resources

There are five designated historic buildings on FTD and all occur together in the LeRay Mansion Historic District which was placed in the NRHP in 1974. These buildings include the LeRay Mansion, the LeRay Mansion Farm Manager’s House, the LeRay Mansion Servant’s Quarters, a possible chapel or icehouse, and possibly James LeRay’s land office that currently serves as a garage. FTD also has 13 historic cemeteries, a Memorial Park, and numerous monuments, memorials, and dedications found throughout the installation. (Rush, 2014; Rush, 2015). None of these sites occur within the CIS APE. There are no other architectural sites that are listed in the NRHP, potentially eligible for listing, or eligible for listing present within the CIS APE.

One historic property occurs along the potential transportation route (discussed in Section 3.5.12) on State Street/Route 812 south in Heuvelton, New York. This property, Pickens Hall (04001205), was listed in the NRHP on October 27, 2004 (NRHP, 2015).

3.5.4.2.3 Native Populations/Traditional Resources

In 1998, five federally recognized tribal governments were identified as having potential cultural affiliations to the land where FTD is located. At the time of European settlement of the FTD region, there were no known permanent settlements of Native Americans in the area.

In 2002, the Commanding General of the 10th Mountain Division invited the chiefs of these nations to enter into consultation with FTD concerning cultural resource issues. Three nations accepted these invitations, the Oneida Indian Nation, The St. Regis Mohawk Tribe, and the Onondaga Nation.

Federally recognized tribes with historic or current affiliation to FTD were invited to participate in the consultation process for the potential CIS deployment. Initial consultation letters were mailed in 2014 from FTD to the affiliated tribes to initiate dialogue regarding the potential CIS deployment. All three affiliated tribes have acknowledged receipt of the consultation letters (Rush, 2014).

There are currently two sites on FTD that have been identified as traditional cultural properties. They include an Iroquoian Village site and a feature of aligned stones known as the Calendar site. Neither of these properties occurs within or near the CIS APE.

3.5.4.3 Environmental Consequences and Mitigation – Cultural Resources – FTD

The following sections provide an evaluation of the environmental consequences that would occur and the mitigation that would be required as a result of construction, operation, and decommissioning of the potential CIS at FTD.

3.5.4.3.1 Construction – Baseline Schedule

3.5.4.3.1.1 Environmental Consequences

Nearly all of the impacts to cultural resources would occur during construction of the CIS, specifically during ground disturbing activities (e.g., extensive clearing and grading). Any cultural resources that occur within the limits the disturbance would likely be permanently altered or destroyed during construction of the CIS.

Based on the information provided by FTD, there are archaeological resources present (prehistoric and historic) within the CIS APE that are potentially eligible or eligible for listing in the NRHP. Approximately 28 prehistoric sites require further investigation in order to determine eligibility for listing. Any sites that are determined to be eligible for listing would be affected by the construction of the potential CIS due to ground disturbance and would require mitigation. In addition, and due to the consolidation of two CIS options into one, approximately 321 acres within the CIS APE would require additional investigation as the presence of cultural resources within these areas is currently unknown (Figure 3.4.4-2). This additional investigation would be conducted during the first year of the baseline construction schedule.

As discussed in Section 3.5.16 Visual/Aesthetics, there would be no visual impacts to cultural resources within FTD or the vicinity. The existing historic buildings that occur within the LeRay Mansion Historic District at FTD are over 6 miles away from the CIS APE. The CIS would not be visible from the LeRay Historic District; therefore, the aesthetics of the historic buildings within the District would not be impacted by construction of the CIS.

Based on the information provided by FTD, no traditional cultural properties of concern occur within the CIS APE. As a result, no traditional resources would be impacted by construction of the CIS. Should traditional resources be identified during the additional study that would be required to fully characterize the CIS APE, impacts to those resources would be determined at that time. In the event of an inadvertent discovery of artifacts, human remains, or funerary items during construction, all ground disturbing activities would stop and the SOP as outlined in FTD's ICRMP would be followed in coordination with the New York SHPO (Army, 2010).

No ground disturbance or road widening would be required along Route 812 for transportation of SIV/silos and materials during the CIS construction; therefore, no impacts to the historic property (Pickens Hall) located along the route would occur.

Overall, based on the impacts noted, adverse (moderate/major) impacts may occur.

3.5.4.3.1.2 Mitigation

Mitigation would be required for impacts to historic properties that are destroyed or altered during construction of the CIS. It is anticipated that mitigation could be required for several sites within the CIS APE. It is the policy of the FTD Cultural Resources Program to preserve archaeological properties in-situ whenever possible; however, given the extensive ground disturbance that would occur during construction, alternative mitigation measures would also need to be considered. These options could include but are not limited to any or a combination of the following:

- Review of all data for sites eligible for listing in the NRHP in partnership with the Tribes and the New York SHPO and a subsequent selection of a portion of these sites for data recovery.
- Monitoring of the remaining eligible sites during ground clearing and grading for construction.

- Development and implementation of a regional educational outreach curriculum in partnership with the Tribes concerning their history within in the eastern Great Lakes region.

All mitigation measures would be conducted in close coordination with FTD's cultural resource partners including the New York SHPO and affiliated Tribes.

3.5.4.3.2 Construction – Expedited Schedule

3.5.4.3.2.1 Environmental Consequences

The environmental consequences of implementing the expedited schedule during construction would be the same for affects to cultural resources as those described for the baseline schedule (Section 3.5.4.3.1.1). The only difference would be in regards to conducting additional archaeological investigations on approximately 321 acres in order to fully characterize the CIS footprint and additional study to determine presences of cultural resources. This work would need to be conducted during a shorter timeframe (during Months 1 through 6 of the expedited schedule), concurrent with design and permitting.

3.5.4.3.2.2 Mitigation

Mitigation requirements for affects to cultural resources during construction would be the same during construction as those described for the baseline schedule (Section 3.5.4.3.1.2).

3.5.4.3.3 Operation

3.5.4.3.3.1 Environmental Consequences

During construction, any cultural resources present within the CIS APE would be destroyed, protected, or excavated and removed for preservation; therefore, the potential for impacts to occur during operation would be negligible.

The completed CIS would not be visible from any known historic properties at FTD; therefore, no visual or noise impacts would occur during operation of the potential CIS.

3.5.4.3.3.2 Mitigation

Impacts to cultural resources during operation of the potential CIS would not occur; therefore, no mitigation would be required.

Figure 3.5.4-1 Area of Potential Effects – FTD

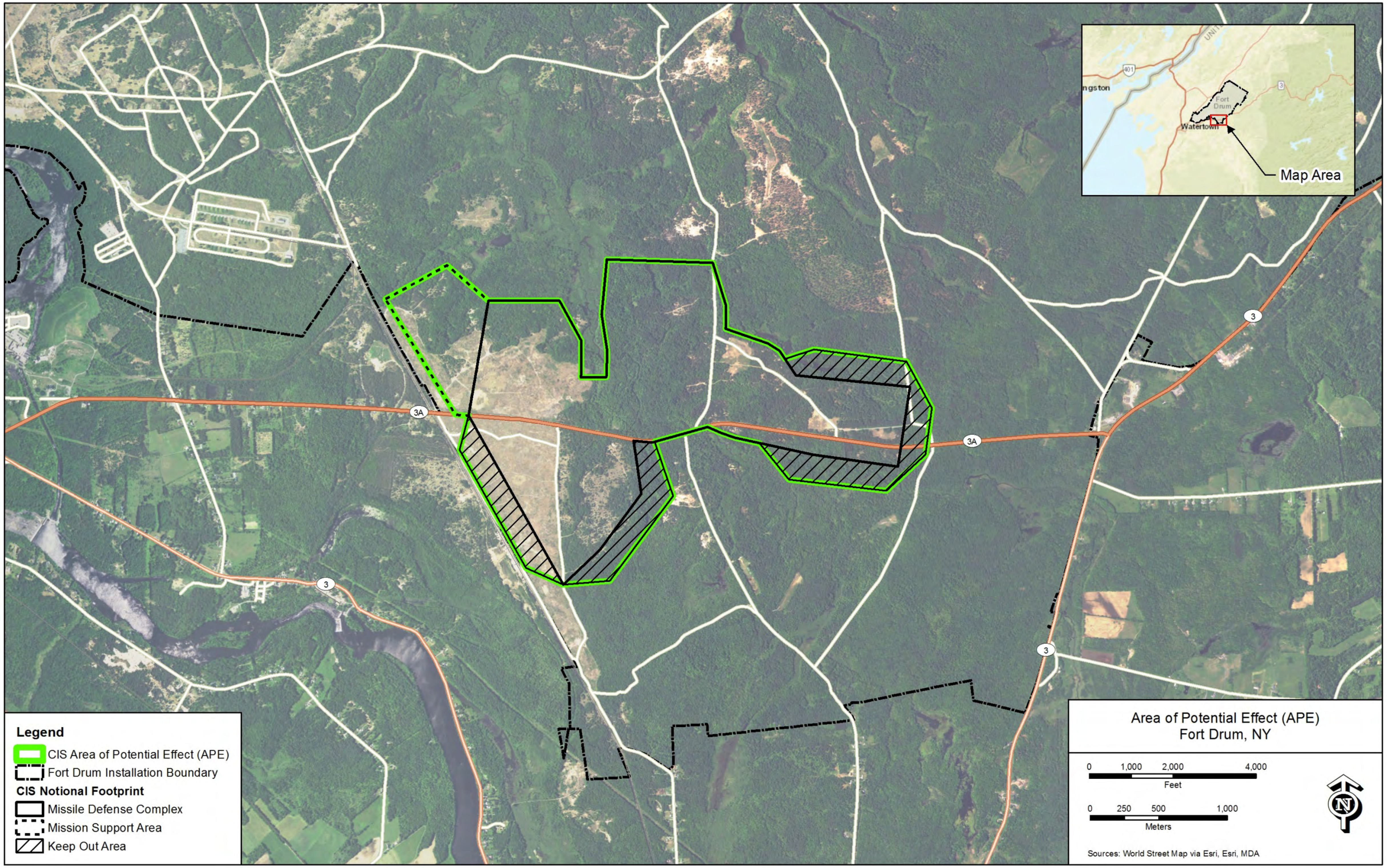
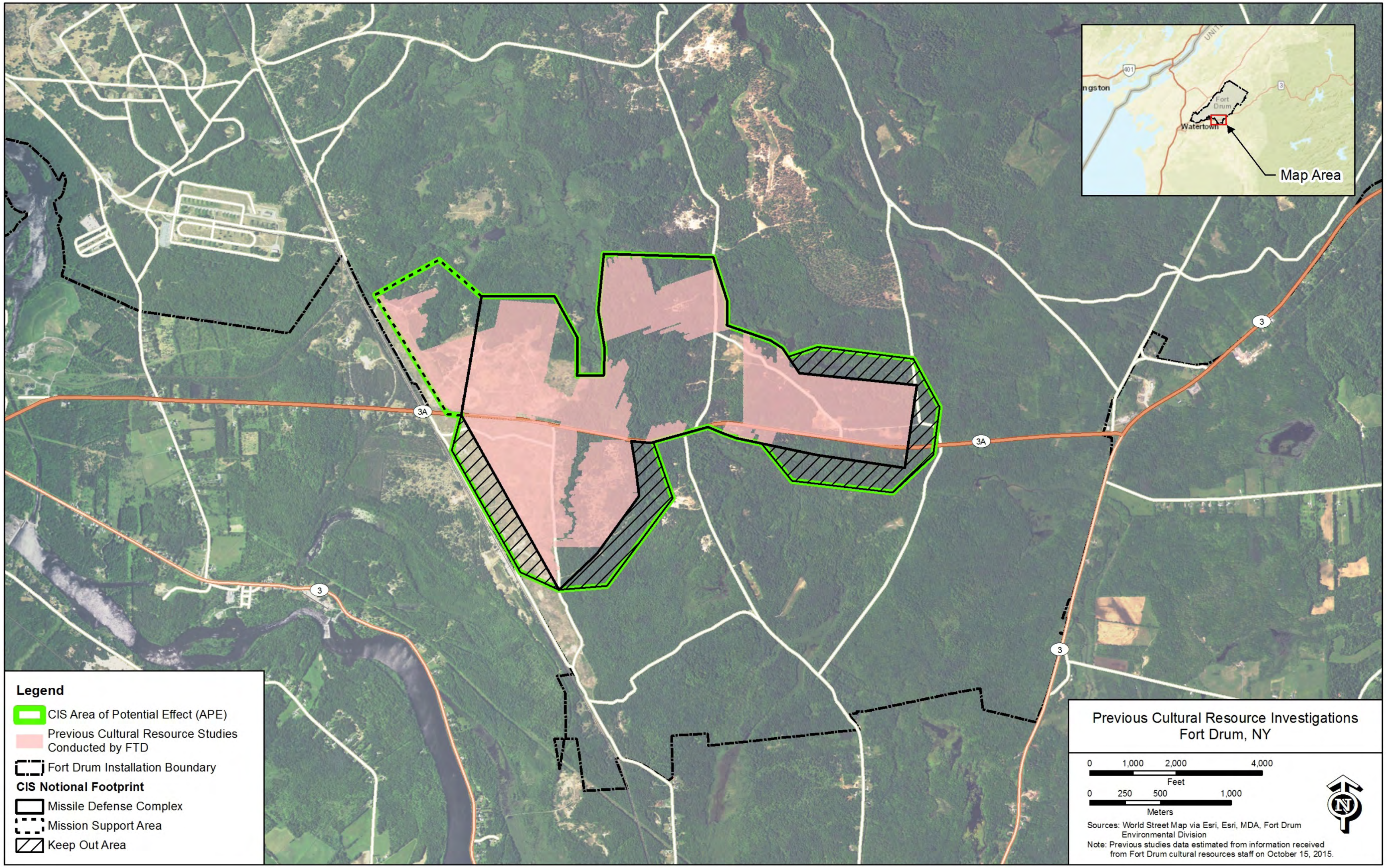


Figure 3.5.4-2 Previous Cultural Resource Investigations – Study Areas within the FTD Site Area of Potential Effects



3.5.5 Environmental Justice – FTD

Environmental justice reviews involve identification of offsite environmental impacts, their geographic locations, minority and low-income populations that may be affected, community health, the significance of such effects, and whether they are disproportionately high and adverse compared to the population within the geographic area. Available mitigation measures and those that could be implemented are also part of the review and analysis.

The first step in analyzing this issue is to identify minority and low-income populations that might be affected by implementation of the potential CIS project or its considered alternatives. Demographic information on ethnicity, race, and economic status is provided in this section as the baseline against which potential environmental justice effects can be identified and analyzed.

3.5.5.1 Regulatory Framework – Environmental Justice – FTD

On February 11, 1994, President Clinton issued EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. The purpose of the EO is to avoid the disproportionate placement of adverse environmental, economic, social, or health effects from federal Potential deployments and policies on minority and low-income populations.

On February 27, 2012, federal agencies, led by the CEQ and the USEPA, released environmental justice strategies, implementation plans, and progress reports outlining the steps that agencies would take to protect certain communities facing health and environmental risks. Through the NEPA environmental impact analysis process, federal agencies incorporate compliance with EO 12898 to ensure that their potential deployments would not have disproportionate impacts on minority and low-income populations.

This approach is consistent with the USEPA objectives concerning environmental justice, which include "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (USEPA, 2012).

3.5.5.2 Affected Environment – Environmental Justice – FTD

3.5.5.2.1 Environmental Justice Methods

The FTD CIS environmental justice analysis was based on screening level information available from public resources such as the Census block data and the USEPA's EJSCREEN environmental justice online database and associated tools. Jefferson, Lewis, and St. Lawrence County comprised the study area, although Jefferson County is the primary focus.

Census blocks are the smallest unit of geographic area for which the Census Bureau collects and tabulates 10-year census data. Census block boundaries are defined by streets, roads, railroads, streams and other bodies of water, other visible physical and cultural features, and the legal boundaries shown on Census Bureau maps.

Census block groups are the next larger geographic unit above census blocks; block groups are combinations of census blocks. They are comprised of Census blocks and are the units that make up a Census tract. Block groups can include varying numbers and sizes of blocks depending on their boundaries, which themselves can vary based on topographic or other geographic features. Based on 1990s Census guidelines, an ideal size for a block group is 400 housing units, but can range between 250 and 550 units. This analysis used Census block group level data because they were sufficient to support a meaningful environmental justice analysis.

The Census American FactFinder reports numbers of both minorities and people with incomes below poverty level (individuals and families). Minority populations included in the census are identified as Black; American Indian, Eskimo or Aleut; Asian or Pacific Islander; Hispanic; or other/multiple races. For purposes of this environmental justice analysis, low income is considered the same as income below the poverty level.

Persons and organizations known or thought to have a potential interest in the CIS project, including minority, low-income, disadvantaged, and Native American groups, were identified, informed, and given the opportunity to participate in scoping meetings and public information sessions. Refer to Section 1.7 for a summary of the Scoping Report and for further information on consideration of potential environmental justice concerns.

3.5.5.2.2 Minority Populations

Generally, to qualify as a minority area, the associated population would need to be either 50 percent or more minority, or the minority population in an area would need to be 20 percent or more larger than the minority population in an area of comparison, such as another nearby community, county, or the state.

Private residences in the vicinity of FTD are primarily rural in nature, and evidence of substantial minority populations was not found in Census or other data except on the FTD installation itself, which would be expected because many military personnel from a wide variety of areas live in the onsite housing. The percentage of minorities in Jefferson County was 11.8; in all of New York, it was 29.1 percent. Lewis County had 2.7 percent minority population, and St. Lawrence County had 6 percent (Census, 2014b). Percentages of minorities in the FTD CIS area are substantially lower than those of the state.

According to Census data at the block group level, the nearest minority (50 percent or more minority) block groups in the area in or around FTD are overlapping the majority of the FTD site, excluding the main quarters and part of the developed area. Census data show that only ten people live in this area versus the thousands of people living in the block groups that cover the remaining FTD populated areas on the installation and areas outside FTD. One other minority block group is present in the eastern part of the City of Gouverneur, about 8 miles northeast of the closest point of the FTD boundary and approximately 20 miles north of the nearest portion of the CIS footprint. Other than those areas surrounding Watertown, Evans Mills, Gouverneur, and the military quarters in the southwest portion of FTD, almost the entire area overlapping and around FTD has a very low percentage of minority residents (between 0 and 10 percent) (USEPA, 2013b).

3.5.5.2.3 Low Income Populations

For an area to be termed low income, it would have to meet one of the following criteria:

- Its population would need to have either 50 percent or more of its residents living with incomes below poverty level, or
- The proportion of its population that is living below the poverty level would have to be at least 20 percentage points more than that of a comparable area's population (e.g., from another nearby community, county, or the state).

The 2015 federal poverty level for an individual is $11,770. For each additional person in a household, there is a determined poverty level that is incrementally increased from the individual level. For a family of four people, the poverty level in 2015 is $24,250 (FR, 2015).

Private residences in the vicinity of FTD are primarily rural in nature, and evidence of substantial low income populations was not found in Census or other data. More than 46 percent of people in Jefferson County have incomes of $50,000 or more per year (Census, 2014b).

The overall percentages of people and families with incomes below poverty level in the area around FTD are roughly equivalent to or slightly higher than the percentages for the state, but appear to be trending slightly higher, especially in St. Lawrence County to the northwest of FTD.

The percentage of all people in Jefferson County with incomes below poverty level was 15.4, while the percentage of all people in New York State was 15.3. For families in Jefferson County, the below-poverty percentages are 12.2 in Jefferson County and 11.7 in the state. In Lewis County, the percentage of all people with incomes below poverty level was 13.5, and 9.5 for below-poverty families (Census, 2014b). St. Lawrence County north of FTD has 19.7 percent of its residents and 14.1 percent of its families reporting incomes below poverty level.

According to data at the Census block group level, the nearest low income (50 percent or more of the people having incomes below the poverty level) block group was about 38 miles north of the closest FTD boundary in the southern part of the town of Potsdam. A low income block group is also present in northern Syracuse, about 68 miles south of the closest point of the FTD installation boundary. The region overlapping and around FTD generally has less than 20 percent of residents with low incomes. The area of the CIS footprint is reported as having no low income residents.

3.5.5.2.4 Environmental Justice Factors Data by Census Block

Table 3.5.5-1 shows both the percentages of minorities and people living with incomes below poverty level for each individual census block group that overlaps the FTD installation, which gives a more site-specific picture of these factors. With reference to a map of FTD, the block groups in Table 3.5.5-1 are listed in counterclockwise order beginning with the block group covering the area of the CIS footprint. Refer to Figure 3.5.5-1 for visual representation of the sizes and locations of these Census block groups.

Table 3.5.5-1 Summary of Environmental Justice Factors in FTD Area

Census Block Group	Percent Minority	Percent Below Poverty	County	Portion of FTD Within Block Group
360459800001	60	0	Jefferson	Entire CIS and majority of FTD installation
360450609001	9	27	Jefferson	East and southeast of FTD southern installation boundary
360450609002	4	27	Jefferson	South and west of CIS and FTD southern installation boundary
360450608041	47	18	Jefferson	Northwest of CIS and within FTD installation boundary
360450606003	8	17	Jefferson	Just northwest of FTD installation boundary
360450606002	8	17	Jefferson	Just northwest of FTD installation boundary
360450607002	3	13	Jefferson	Just northwest of FTD installation boundary
360450607004	5	13	Jefferson	Just northwest of northwestern FTD installation boundary
360894929001	1	15	St. Lawrence	Just northwest of northern FTD installation boundary
360894926001	2	15	St. Lawrence	Just northeast of northern FTD installation boundary
360894926004	4	15	St. Lawrence	Just northeast of northeast FTD installation boundary
360499502002	2	13	Lewis	Borders almost the entire eastern extent of FTD installation boundary and overlaps a small eastern portion of the installation
Source: USEPA, 2013b.				

Often, individuals or groups of people who rely on natural resources for food and/or income, or live at a subsistence level, may be associated with very low income areas. Information about these groups and individuals is not typically captured in Census or other population data. Based on socioeconomic data and information reviewed and input from FTD personnel, no populations or local groups are known to principally rely on fish or wildlife for subsistence on FTD or in the surrounding vicinity (Wagner, 2016a).

3.5.5.2.5 Community Health

Community health was evaluated primarily using county and state health department information and was supplemented with information from USEPA's EJSCREEN database (USEPA, 2013b; NCHCP, 2013). Using information compiled by the County Health Rankings & Roadmaps database, the statistics in Table 3.5.5-2 describe the overall health of Jefferson and Lewis Counties.

Table 3.5.5-2 Community Health Indicators for Jefferson and Lewis Counties – FTD

Jefferson County	Lewis County
No health insurance: 11 percent of residents	No health insurance: 12 percent of residents
1,131 deaths per year that are deemed premature (before age 75)	269 deaths per year that are deemed premature (before age 75)
Chronic disease risk factors: --26 percent smoke cigarettes (adults) --30 percent obese	Chronic disease risk factors: --20 percent smoke cigarettes (adults) --27 percent obese
Heart disease is the leading cause of death	Heart disease is the leading cause of death
Source: UW, 2015a.	

In addition, data provided by the USEPA in their EJSCREEN online tool was used to compile information on several general indicators of community health status in the area around FTD in Jefferson, St. Lawrence, and Lewis Counties. This data includes the most recent available statistics for cancer risk, respiratory risk, and neurological risk in accordance with the NATA, which is USEPA's ongoing comprehensive evaluation of air toxics that is used to prioritize pollutants, emission sources, and locations of interest and to better understand potential health risks. The NATA results have been reported every 3 years by the USEPA in the past; however, the information in the most current NATA dates to 2004 and 2005 (USEPA, 2013b; USEPA, 2013a).

The NATA-determined health risks for the region around FTD are included in Table 3.5.5-3. As can be seen in the table, Jefferson, St. Lawrence, and Lewis Counties have lower potential health risks overall than the state averages.

Table 3.5.5-3 Estimated Health Risks for FTD Region

Area	Cancer Risk (Persons per Million)	Neurological Hazard Risk	Respiratory Hazard Risk
Jefferson County	24.47 (33.1 Percentile)	0.03 (53.7 Percentile)	0.5 (28.3 Percentile)
Lewis County	20.32 (20.7 Percentile)	0.02 (13.3 Percentile)	0.31 (11.1 Percentile)
St. Lawrence County	24.38 (32.8 Percentile)	0.02 (31.1 Percentile)	0.38 (17.5 Percentile)
New York	72.34 (96.2 Percentile)	0.12 (96.2 Percentile)	4.31 (96.2 Percentile)
Note: Values are derived from 2005 NATA Cancer Risk Estimates and Non-Cancer Hazard Index Scores. Percentiles are ranking of counties and states from 0 (lowest) to 100 (highest). Source: USEPA, 2013b.			

USEPA information about the FTD area shows the following numbers of sites with health-related emissions that are located within approximately one mile of the FTD installation boundary. The information indicates that most emission sources are congregated near the towns of Watertown and Carthage (USEPA, 2013b):

- 142 sites around FTD reporting hazardous waste generation.
- 35 sites with reported air emissions.
- 46 sites reporting water discharges in addition to FTD.
- 17 sites reporting release of toxics in addition to FTD.

3.5.5.2.6 Presence of Contamination at FTD

FTD as a whole has had previous contamination, including an oil spill near the potential IDT area. Currently, there are 14 AOCs throughout FTD from past operations on the installation, including operation of USTs, leaching materials in landfills, pesticides, battery acid and other hazardous materials. These areas are managed by the IRP. No AOCs are present in the CIS footprint.

3.5.5.3 Environmental Consequences and Mitigation – Environmental Justice – FTD

For there to be a major concern that low income or minority populations would be subject to a disproportionate share of negative impacts from a facility, the following statements generally need to be true: 1) high percentages of minority and low income populations would be in close proximity to the site; 2) negative cultural, economic, or health impacts on such populations would be expected; and 3) minority and low-income areas would bear a disproportionate share of negative impacts from the facility.

3.5.5.3.1 Construction – Baseline Schedule

3.5.5.3.1.1 Environmental Consequences

3.5.5.3.1.1.1 Impacts on Minority Populations

Given the expectation that most negative impacts to all populations in the area would be temporary and related to noise and traffic near the site, minority areas would not be directly affected by CIS construction. If the approximately 60 to 90 construction workers (approximately 15 percent of the estimated 400 to 600 total construction workers) assumed to relocate to the FTD area do so in a distribution pattern that is reflective of the current demographics of the population in the region, very few workers and their families would be expected to establish residences in one of the closest minority areas. Because the estimated number of relocating construction workers would be a very minimal change in population for the FTD surrounding area, the impacts on health and culture would be negligible.

Neither Jefferson nor Lewis County would be considered a minority area, nor would any except two of the Census block groups that overlap the FTD installation or the CIS. These two minority block groups are both within FTD in military housing and operations areas and are not considered part of the general public for the purposes of this EIS. Most impacts from residential construction of the CIS would be limited to the CIS, the FTD installation and associated military personnel, and the immediate surrounding area, with Jefferson County being the focus because the CIS location is within its boundaries. Lewis County, which is the closest neighboring county to the FTD installation and does not contain any of the CIS facilities, is expected to experience negligible negative impacts. Disproportionate impacts to the small minority populations in these two counties would not occur.

As described throughout this EIS document, any air, water, noise, dust, or other emissions from construction of the CIS that could have an impact on community health would be minimized through the use of BMP and potential mitigation measures. These measures would ensure that emissions from CIS construction would have negligible contributions to the existing level of emissions in the FTD vicinity or to the potential impact from those emissions on community health.

In summary, any negative impacts on minority populations would be negligible and not disproportional compared to non-minority population segments. Therefore, no mitigation measures would be required.

3.5.5.3.1.1.2 Impacts on Low Income Populations

As previously discussed there are no low-income areas in the immediate FTD vicinity, and the nearest area that qualifies as low income is a Census block group about 38 miles north near the town of Potsdam, off FTD property.

As discussed in Section 3.5.8 Health and Safety, the potential health impacts on local populations from construction of the CIS would be limited to minor noise impacts and possibly impacts related to the increased emissions and traffic delays associated with worker vehicles and transportation of materials and supplies to the site. These impacts would be temporary and largely limited to the CIS and areas near the FTD construction entrance. Because of the limited geographic nature of such impacts, the nearest low income area near the town of Potsdam would not be disproportionately impacted.

No known subsistence level hunting, fishing, or trapping occurs at FTD. Therefore, no impacts to subsistence populations would occur.

The socioeconomic impact analysis in Section 3.5.11 for CIS construction concluded that the impacts from CIS construction would be major and largely positive and beneficial to the FTD surrounding region. Primary among these positive impacts would be employment and income benefits and increased tax revenues to local jurisdictions. Although the most extensive economic benefit would likely occur in Jefferson County because of increased property and sales tax revenues, it is expected that the wider surrounding area would also benefit economically as a result of the CIS project. Generally, low income populations could be assumed to benefit from these impacts to a comparable degree as other regional populations. In summary, the impacts on low income populations would be projected to be positive, yet negligible, and no mitigation measures would be required.

3.5.5.3.1.1.3 Impacts on Community Health

General Community Health

Potential construction activities at the CIS could disturb existing areas of contamination because the soil surface, surface waters, and groundwater would be disturbed during filling and grading of the site as well as excavation of the deep vaults needed for placement of the interceptors in the interceptor field areas. However, there is no known contamination in the CIS footprint or the surrounding area. Areas of known contamination on the FTD installation are several miles from the CIS footprint. Therefore, no impacts on community health related to potential mobilization of contamination would occur.

Likewise, the overall health of the community surrounding FTD would not be substantially impacted by construction of the CIS. The majority of potential impacts on community health from CIS construction would be temporary. Measures to protect air quality, water quality, pollution prevention, BMPs, distance from residential and other sensitive receptors, and other mitigation measures discussed throughout this EIS would ensure that CIS construction impacts to community health would be minimized and remain negligible.

Children's Health

There are two important areas of difference between children and adults regarding potential health impacts. First, the risk, nature, and magnitude of health effects resulting from pollutant exposure can be more severe in children due to their physical maturity (children's body systems still in development) and behaviors (crawling, ingestion, etc.). For example, short-term exposure of children to environmental contaminants such as lead or mercury can lead to life-long health consequences (USEPA, 2014a). Second, there may be a different economic value placed on reducing health risks to children compared to reducing such risks to adults.

Disproportionate impacts to children's health (compared to adults) would not occur from construction of the CIS project at FTD. First, children are present at FTD; however, families and children are present only in the housing developments and child care centers on the installation and not in training ranges or other active training areas. Residential areas are concentrated in the western portion of the installation, while the CIS could be located approximately 6 miles east on the opposite side of the installation. The nearest school to the site is Carthage Middle School, 3.7 miles south of the nearest part of the CIS. Carthage Elementary School is 4.1 miles south of the main portion of the CIS. The buffering effect of the distance would reduce or eliminate the potential for impacts to children living in residences inside or outside the FTD site or attending schools in the surrounding area.

Second, because of the large size of the project site, many of the impacts such as air emissions from construction equipment, noise, VOCs from paints, chemicals, and fuel tanks, and similar activities would be likely to remain largely within the CIS and FTD installation boundary. Although these emissions may travel the short distance to the residential areas west of the CIS and south of FTD, air and other emissions would dissipate to undetectable levels before reaching these areas.

Transportation

If a decision was made to deploy and FTD selected, part of the initial construction activity would be the closure of Highway 3A so that there would cease to be a public highway through the CIS area of FTD. To provide an alternative route for the traffic that had used Highway 3A, public through-traffic would be directed to proceed south on Highway 3 at a point near the Village of Deferiet (2 miles west of the FTD western boundary in the CIS area), where Highway 3 begins to turn south. Traffic would follow Highway 3 on its existing route south through the town of Herrings and the town of Carthage, where Highway 3 turns back north. This measure would route traffic around the southern portion of FTD rather than through the FTD property.

The existing average traffic level on Highway 3A is 2,298 vehicles per day (NYSDOT, 2013). If the CIS were to be deployed at FTD, Highway 3A would be closed to the public in preparation for project construction. All traffic that formerly used Highway 3A would be expected to use Highway 3, which is the replacement route for east-west public travel through the FTD area.

Highway 3 branches into Highway 3A across FTD and the portion of Highway 3 that continues through Carthage. The existing average traffic level on the portion of Highway 3 before the split is 5,470 vehicles per day, which is likely representative of what the total load on Highway 3 may be without public access to Highway 3A. The combined traffic levels on Highway 3 after the Highway 3A closure would almost double the traffic on the west side of Highway 3 (2,850 vehicles per day) and more than double that on the east side (2,060 vehicles per day) assuming that vehicles travel the whole route around FTD. This level of traffic equates to almost five vehicles per minute on Highway 3, assuming for purposes of estimation only that most traffic is spread evenly throughout 20 hours of each 24-hour day.

The area along Highway 3 where traffic would be rerouted, including the Village of Carthage, has minority population percentages ranging from 3 percent to 20 percent, and so would not be considered a minority area. The percentage of people with income below poverty level for this area is 27 percent over the entire Census tract that covers the route. Environmental justice impacts would not occur as a result of rerouting traffic onto Highway 3 and through the Carthage area because none of the areas along the route would meet the definition of a minority or a low income area as used in this EIS (50 percent or more minority or 50 percent or more with income below poverty level). In addition, traffic would follow an existing highway and, although increased traffic levels and their associated impacts would be noticeable to residents along the highway, these impacts would not disproportionately affect minority or low income populations because of the absence of these populations and because the impacts would be spread among all residents along Highway 3. The small amount of additional congestion in Carthage as a result of this reroute would be manageable with the current road infrastructure and would not rise to a level that could cause substantial congestion over a wider area.

3.5.5.3.1.1.4 Summary

The potential for negative environmental impacts during construction would largely be minimized through the application of routine construction procedures, BMPs, and the location of the CIS at an existing military installation that includes a large buffer area. Routine procedures include those in the areas of site security, employment screening, fire protection, medical preparedness, spill containment measures, dust suppression, noise minimization, traffic control, and other measures that would minimize negative impacts to the surrounding area. Overall, no specific populations, including minority, low income, or children, would be disproportionately impacted by construction of the CIS.

3.5.5.3.1.2 Mitigation

Because no environmental justice impacts would occur during CIS construction, no mitigation measures would be required. Construction measures discussed throughout this EIS to minimize impacts to air quality, water quality, traffic, ambient noise environment, health and safety, socioeconomics, and land use would also serve to minimize the potential for adverse impacts to community health in the area around FTD.

3.5.5.3.2 Construction – Expedited Schedule

3.5.5.3.2.1 Environmental Consequences

Environmental justice impacts for the expedited schedule would be similar to the baseline case because, although impacts from the overall project would occur faster and with greater intensity, the impacts would occur to the same area as that evaluated in the baseline scenario and would not disproportionately impact low income and minority areas. With the more urgent need to hire construction workers so that construction could begin and progress more quickly, there may be an increased perception on the part of people seeking employment in the area surrounding the CIS project that they are being denied job opportunities if an effort is not made to hire local labor for construction of the project. However, the number of direct jobs that a project provides to the local community is not a regulated factor, depends on the skills of the job-seekers, and is outside the environmental justice focus on low income and minority population impacts.

3.5.5.3.2.2 Mitigation

Mitigation under the expedited schedule for environmental justice would be the same as for the baseline schedule.

3.5.5.3.3 Operation

3.5.5.3.3.1 Environmental Consequences

Based on the information in Section 3.5.5.2, the nearest areas to FTD that qualify as minority and low income areas (other than minority areas on FTD) are specific Census block groups in the vicinity of the City of Gouverneur, 8 miles northeast, and Potsdam, 38 miles north. In light of these characteristics of the area in the region around FTD and the expectation that any impacts during operation of the CIS would be largely contained within the CIS and FTD installation boundaries, it is reasonable to conclude that there would not be specific populations near the site that would raise environmental justice concerns.

Because Highway 3A would remain closed to the public permanently during operation, traffic that formerly used Highway 3A before and during construction would continue to use the Highway 3 reroute through the towns of Herrings and Carthage. Operational worker traffic, especially during the peak morning and evening rush hours, would add slightly to this impact. The minority population and levels of income in the Highway 3 route area may fluctuate over time and be somewhat different during operation; however, these changes would not be large enough to shift the area to more than 50 percent minority population or more than 50 percent of the population with incomes below the poverty level. As during construction, no disproportionate share of the impacts from the traffic reroute would occur to minority or low income populations.

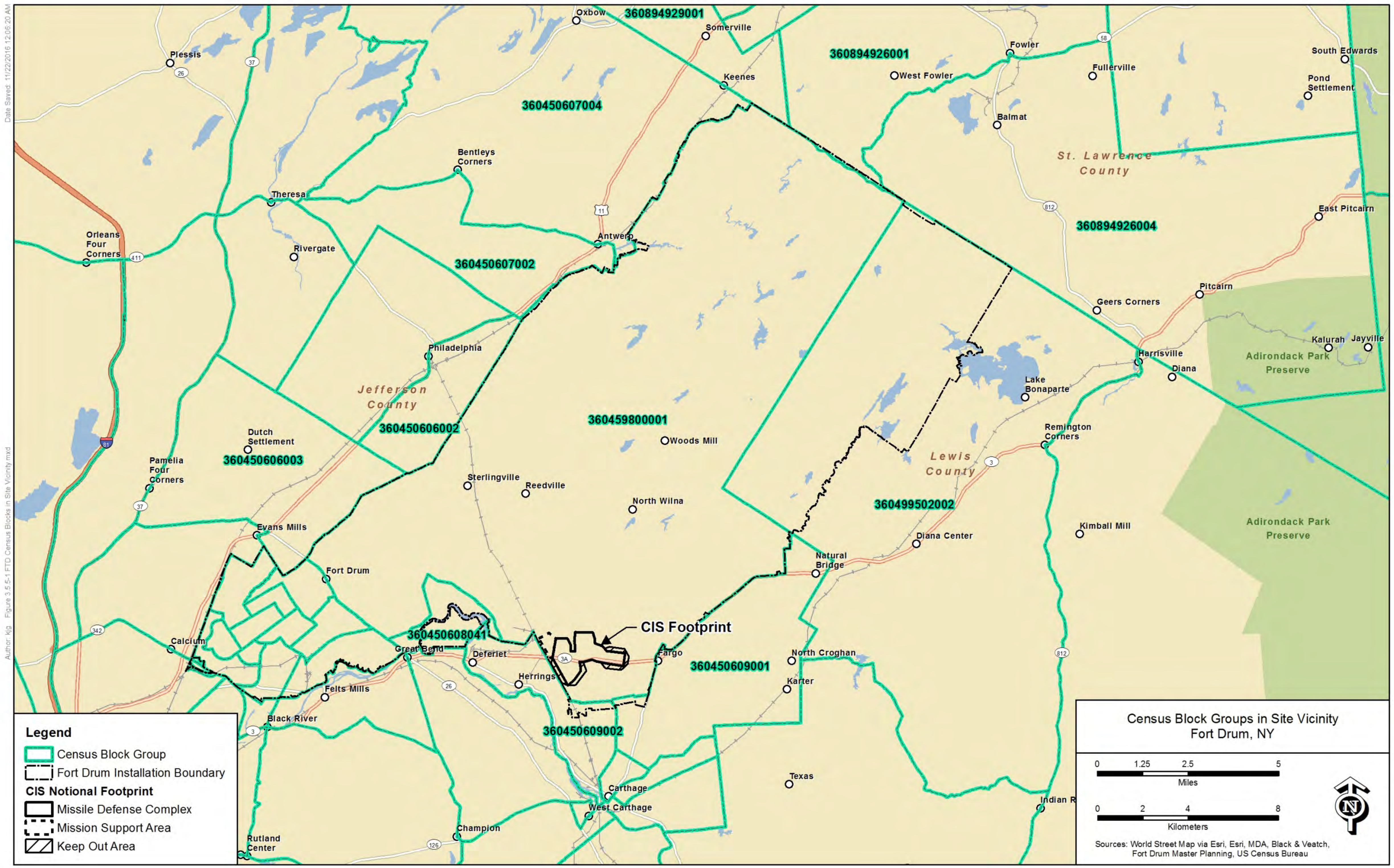
The absence of major minority or low income populations, and the general absence of children from an active military range, further reduces the potential for impacts from CIS operational activities.

Based on this information, the three conditions required for environmental justice impacts are not present in the FTD CIS area. Namely, 1) low income or minority populations are not in close proximity to the site, 2) during operation, only negligible, negative impacts would be occur, other than potentially larger traffic impacts near the FTD CIS entrance and Highway, and 3) low income and minority populations would not encounter a disproportionate share of any negative impacts from the operation of the CIS because substantial low income, minority, or subsistence populations are not located near the site.

3.5.5.3.3.2 Mitigation

Because environmental justice impacts from CIS operation would not occur, no mitigation measures would be required. Operational BMPs and other measures discussed throughout this EIS to minimize impacts to air quality, water quality, traffic, ambient noise environment, health and safety, socioeconomics, and land use would also serve to reduce the potential for adverse impacts to community health in the area around FTD.

Figure 3.5.5-1 Census Block Groups in the FTD Vicinity



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3.5.6 Geology and Soils – FTD

Geology and soils are those earth resources that may be described in terms of landforms, geology, and soil conditions. The makeup of geology and soils, including freshwater and marine sediments, could influence erosion, depletion of mineral or energy resources, seismic risk or landslide, structural design, and soil and groundwater contamination resulting from proposed construction and operational activities (DoD, 2007).

3.5.6.1 Regulatory Framework – Geology and Soils – FTD

The following Army regulation applies to geology and soils at FTD:

- AR 200-1, Environmental Protection and Enhancement - Covers environmental protection and enhancement and provides the framework for the U.S. Army Environmental Management System.

3.5.6.2 Affected Environment – Geology and Soils – FTD

3.5.6.2.1 Physiography and Topography

The following regional and local geology information was obtained from the EA for Construction and Operation of a COCO Fuel Facility at FTD (MPI, 2011). The majority of the land (up to 98 percent) on FTD is classified as low plains. Surface elevations range from 490 to 690 ft above MSL. Surface topography is predominantly flat to moderately rolling hills with slopes of generally 8 percent or less. Numerous streams and erosion channels provide pathways of surface run-off from the plains. Between streams, topographic relief is generally from 60 to 130 ft above adjacent valley bottoms. The other 2 percent of land on FTD consists of high plains, which are predominantly gently rolling to hillock surfaces. High plains, which range in elevation from 740 to 850 ft above MSL, are located on the south-central edge of FTD and on the northeastern edge of the installation. The ground surface of the south central high plains and the northeastern area has a slope generally between 3 and 15 percent and between 3 and 8 percent, respectively. Slopes may reach 30 to 45 percent in both the low and high plains.

The Lake Erie-Ontario Lowlands and the Adirondack Uplands are the two major physiographic provinces located at FTD. The Lake Erie-Ontario Lowlands are located on the southwestern two-thirds of the installation. As a result of the Pleistocene glaciation, the surface geological features in this area are recessional moraines, small sand plains, drumlins, and swamps. The CIS footprint at FTD is located in the Lake Erie-Ontario Lowlands.

The western Adirondack Hills, a physiographic subdivision of the larger Adirondack Uplands division, are present in the northeastern third of the installation. This area is characterized by a wide zone of foothills partially covered by post-glacial lacustrine deposits. Several lakes, bedrock outcrops, and many steep-sided northeast-to-southwest hillocks are located in this part of FTD.

3.5.6.2.2 Geology and Hydrogeology

Unconsolidated deposits underlying FTD are comprised of Holocene- and Pleistocene-aged sands and gravel. Unconsolidated deposits from the Pleistocene represent glacial kame, lacustrine delta, lacustrine shoreline, and ice contact deposition which laid units that vary in both grain size and unit thickness across the site. As stated in the *CONUS Site Analysis Report* (BVSPC, 2015a), subsurface geology within the eastern and western portion of the CIS footprint consists of similar geologic units though bedrock tends to be deeper towards west. Poorly graded silty sands and gravel becoming dense with depth lay either above a dense till in the west or bedrock in eastern areas. Bedrock was not encountered in geologic borings completed in the west portion of the CIS footprint and is anticipated to be over 100 ft bgs. Bedrock was encountered in two borings completed in the eastern portion of the FTD footprint and ranged from 60 to 90 ft bgs in the area. Bedrock is comprised of limestone and gneiss.

There are no known mineral resources at the CIS footprint location.

Groundwater at FTD typically occurs within an upper water table aquifer (Pleistocene Pine Plains Aquifer) and a lower artesian aquifer (Potsdam Sandstone bedrock aquifer) (BVSPC, 2015a). The groundwater table within the FTD CIS footprint first occurs within sand and gravel stratum (water table aquifer) at depths ranging from 8 to 14 feet bgs. A more detailed description of the groundwater aquifers present at FTD is presented in Section 3.5.14 Water Resources.

3.5.6.2.3 Soils

As stated in the INRMP, there are 193 different soil types mapped on FTD. The majority of the FTD is underlain by "Plainfield Sand 0-8 percent slopes" this series encompasses approximately 8,587 acres of the installation. The Plainfield sand is an excessively drained and very permeable soil and is found on deltas, outwash plains, and terraces. The parent material consists of sandy glaciofluvial or deltaic deposits (Army, 2011).

3.5.6.2.4 Geologic and Seismic Hazards

A seismic and geologic hazards assessment for the FTD CIS footprint was conducted as part of a Site Analysis for the candidate CIS locations (BVSPC, 2015a). Findings of this assessment indicated that seismic activity in New York is relatively low and the probabilistic hazard mapping identifies the unnamed thrust faults that occur in the Adirondack region located between 60 and 75 miles to the east-northeast as the major contribution to the seismic hazard and, therefore, results in the low seismic risk at FTD (USGS, 2015). The USGS also recently created a report to predict a *2016 One-Year Seismic Hazard Forecast for the Central and Eastern United States* which takes into consideration both impacts from induced (fracking and injection) and natural earthquakes (USGS, 2016). Based on a review of the results of this recent report, the potential geologic or seismic hazard risks for the FTD site footprint did not change (i.e., remains low seismic risk). In addition, to alleviate seismic concerns at potential CIS locations, additional seismic and geologic characterizations would be conducted at the selected site, if a decision is made to deploy the CIS, and all CIS facilities would be designed and constructed in accordance requirement defined in UFC 3-310-04, 1 June 2013, *Seismic Design of Buildings*.

Karstic features are natural occurring cavities within the limestone bedrock. Karst activity is identified within the limestone bedrock regions of Jefferson County, NY, but was not observed in the geophysical tests at the CIS footprint. Limestone bedrock was observed in the borings for the eastern portion of the CIS footprint. Limestone was not observed within the western portion of the FTD CIS footprint. Karstic features are natural occurring solutions cavities within the limestone bedrock. There are caves under the City of Watertown located 15 miles to the west and there is an attraction identified as the Natural Bridge, located about 5 miles northeast of FTD. The caves and the Natural Bridge are karstic features. Land subsidence and collapsible soils are not anticipated. A review of the fines content, shear wave velocity profiles, and seismic accelerations show that liquefaction would not be a concern. Although landslides occur in Jefferson County, the CIS footprint would be within area of low incidence rates. Landslides would not be a hazard.

FEMA flood mapping shows the FTD CIS footprint would be above the 100-year floodplain.

3.5.6.3 Environmental Consequences and Mitigation – Geology and Soils – FTD

This section addresses the potential geologic hazards and environmental impacts that may affect the design and construction for the structures and foundations in the CIS footprint. The project activities evaluated include construction and operation impacts.

Environmental consequences for geology and soils are evaluated primarily based on the quantity and quality of the cut and fill required, depth to bedrock (affecting constructability), and depth to groundwater (indicating the amount of dewatering potentially needed).

3.5.6.3.1 Construction – Baseline Schedule

3.5.6.3.1.1 Environmental Consequences

Construction of a new CIS and support facilities at the CIS footprint would require disturbing 977 acres for grubbing and grading. Traditional drilling and excavation would be used, but may not be applicable where bedrock is encountered which is typically 60 ft bgs beneath the FTD Site footprint. The existing available surficial silty sand should be suitable for site grading.

The soils are not expansive and are acceptable for structural fill. Site grading with fill placement would require settlement monitoring as the compression of the soft silt would cause compression within the layer. Shallow excavations would be difficult in the loose and wet silty sand and silt layers due to the necessity to retain the slopes and dewater the excavations. In the areas where bedrock may be encountered, the use of excavated bedrock should not be used for fill placement, but could be used for general fill areas provided it is not on a slope. Bedrock excavation would be difficult due to the hardness of the rock. Basal heave should not be a concern but should be monitored. A more in depth constructability evaluation for the FTD Site is provided in the CONUS Site Analysis Report (BVSPC, 2015a).

To establish proper topography at the site, construction and potential CIS deployment activities would require ground surface grading, including both excavation (cut) and placing of compacted fill. By using existing topographic elevations a conservative estimate of earthwork at FTD may include 10 to 15 MCY of cut material and approximately 10 to 15 MCY of fill material (MDA, 2016a). Reuse of the soil onsite would be implemented to the extent possible in lieu of material importing and exporting. Due to the estimated quantities of cut and fill, project construction would not require the export of excavated materials as well as the import of fills from an offsite source. There would be potential for the use of onsite sand and gravel resources as part of the construction process. Several former and potential active gravel pits exist on or are in close proximity to FTD if extra cut or additional fill is required. The exact quality, extent, and economic potential of the aggregate resources are unknown. Minimizing the construction footprint through phased earthwork would be sufficient for staging during construction. There are no known or mapped mineral resources within the site; therefore, development of land for the potential CIS at this site would not affect mineral resources. All clearing, staging, and disposal of excavated soils would be provided in accordance with local, state, and federal regulations.

Though soils at the FTD Site are well drained and slopes are not substantial, BMPs would be used to stabilize soil erosion in sloped and previously forested or vegetated areas during construction. BMPs would be implemented to minimize negative short-term effects of the construction activities including clearing and grubbing, excavations, and grading for connecting infrastructure, roadways and parking. BMPs would be used to reduce the potential for soil erosion during construction. BMPs recommended would include reduction of slopes, partially grading streets and pads, minimizing clearing areas, frequent watering of graded areas and the use of soil stabilizers, and revegetation of slopes where applicable during construction.

Any fill material would be tested to ensure proper engineering characteristics and would be properly compacted to ensure stability of the surface and to reduce the potential for erosion. Additional investigations would concentrate on identifying the fracture and bedding planes within the bedrock. Packer tests would be used to identify the potential for groundwater inflow in excavations. Shallow excavations would be completed with traditional equipment unless bedrock is encountered which may require pneumatic rock breakers for excavation. Deep excavations may be shored with the use of conventional braced sheeting, secant columns, or jet grout columns. Dewatering techniques including sumps and pumps would be adequate for shallow excavations; dewatering techniques for deep excavations could include extraction wells and low permeable shoring.

Depth to groundwater at the FTD Site is typically less than 20 ft bgs. Therefore, dewatering would likely be required. Dewatering techniques would be required in areas where groundwater intercepts construction activities. Water generated would be discharged in accordance with all local, state, and federal regulations. Extraction wells and shoring systems could be used to prevent seepage and reduce groundwater infiltration in deep excavations.

There could be potential for hazardous material and hazardous waste spills affecting the soils and geology during construction. Hazardous materials and hazardous waste include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to the public health, welfare, or the environment, if an unlikely release were to occur.

Overall, with the implementation of BMPs, minor to moderate impacts to geology and soils could occur during construction activities.

3.5.6.3.1.2 Mitigation

Minor to moderate impacts would occur to geology and soils for construction activities at the FTD Site. Therefore, implementation of mitigation measures would not be required.

3.5.6.3.2 Construction – Expedited Schedule

3.5.6.3.2.1 Environmental Consequences

The environmental consequences associated with the construction under the expedited schedule would be similar to those described for the baseline schedule in Section 3.5.6.3.1.1. Due to the expedited schedule and the amount of earthwork required, larger expanses of land would have to be cleared and exposed at a time during construction. The shortened duration on construction would increase the intensity and context of the open construction areas and phased cutting and grubbing, including excavating and placement of site soils may not be applicable. Local and state regulations for earthwork such as limiting the number of disturbed acres at one time may not be able to be met under the expedited schedule. BMPs would need to be aggressively implemented to properly minimize negative short-term effects of the construction activities.

The expedited schedule could have impacts on construction where groundwater intercepts construction activities and dewatering techniques would be implemented. The intensity of groundwater extraction could affect site aquifers. Site hydrology would be monitored during construction. Refer to Section 3.5.14 Water Resources for site hydrology information.

Overall, with the implementation of BMPs, moderate impacts to geology and soils could occur during construction activities under the expedited schedule.

3.5.6.3.2.2 Mitigation

Moderate impacts would occur to geology and soils for construction activities at the FTD Site under the expedited schedule. Therefore, implementation of mitigation measures would not be required.

3.5.6.3.3 Operation

Impacts from potential CIS operation would be negligible. Following construction, the potential CIS would be relatively static except periodically for maintenance of various structures during the service life of the potential CIS.

3.5.6.3.3.1 Environmental Consequences

Similar to construction activities, during normal operations of the potential CIS soil erosion and slope stabilization could impact the geology and soils of the site and would be addressed using an erosion control plan. Likewise, impacts to soil and groundwater from potential hazardous materials used during daily activities would be addressed by storm water prevention procedures. Refer to Section 3.5.14 Water Resources for site hydrology impacts and mitigative measures.

3.5.6.3.3.2 Mitigation

Operations impacts would be negligible and further mitigation would not be warranted.

3.5.7 Hazardous Materials and Hazardous Waste Management – FTD

3.5.7.1 Regulatory Framework – Hazardous Materials and Hazardous Waste Management – FTD

Hazardous materials are defined as any items or agents (biological, chemical, physical) which have the potential to cause harm to humans, animals, or the environment, either by themselves or through interaction with other factors. A hazardous material can be a solid, liquid, gas, or combination with toxic, flammable, reactive, or corrosive characteristics. These materials are regulated at FTD by laws and regulations administered by the USEPA, OSHA, DOT, and DoD.

Hazardous materials must be disclosed to personnel in accordance with the OSHA 29 CFR Part 1910.1200 HazCom standards. The materials are to be labeled and stored in accordance with the HazCom standards and USEPA RCRA 40 CFR Parts 264/265 requirements.

In addition to these federal requirements, responsible personnel who sign shipping papers or manifests for hazardous materials must attend specialized transportation training in accordance with DoD Regulation 4500.9-R, Part II, Chapter 204. Handlers who do not sign shipping papers only receive general awareness, function specific, safety, and security training as indicated in the DoD Regulation. All drivers of hazardous material receive driver's training per 49 CFR Part 177.816 (Army, 2014b).

Hazardous wastes are characterized in accordance with 40 CFR Part 261. Once waste materials are identified as being hazardous the waste would then be managed in accordance with 40 CFR Parts 262 – 264. These standards outline the requirements for storage, transport, and disposal, and associated manifesting for differing types of waste (USEPA, 2015d). Army installations also address environmental issues in their own regulatory document in AR 200-1.

Waste minimization policies are used to recycle materials when feasible to reduce the volume, quantity, or toxicity of the waste. Material minimization methods are presented in 40 CFR Part 266. Non-chemical military munitions are specifically addressed in 40 CFR Part 266.205.

3.5.7.2 Affected Environment – Hazardous Materials and Hazardous Waste Management – FTD

The mishandling of hazardous materials onsite has the potential to impact several differing environmental matrices. Spills of hazardous compounds have the potential to contaminate building components as well as soils. Soils saturated with contaminants can release hazardous substances into surface waters and associated sediments. Contaminated surface waters and percolation through soils then result in the hazardous substances arriving in the groundwater aquifers and migrating even further. The contamination of soils and waters result in the exposure of human and ecological receptors.

3.5.7.2.1 Hazardous Materials

This section discusses the hazardous materials that currently exist at FTD and where they are located. These materials are handled, stored, and managed in accordance with DoD, AR 200-1, federal, and state regulations. No hazardous materials are currently being stored within the boundaries of the potential CIS area.

FTD has established a program referred to as the Hazardous Materials Control Point (HMCP) which manages the procurement, replenishment, and tracking. A computerized database is used for the management of these materials.

A SPCC plan has been developed for the site (Army, 2013e). The SPCC plan addresses the management of petroleum, oil, and lubricants in order to protect human health and the environment. Another tool used at FTD is the Petroleum Storage Tank Management Plan which involves the periodic inspection and testing of active bulk storage containers.

In addition to the SPCC plan, FTD has in place an Installation Spill Contingency Plan which addresses responses to petroleum, oil, and lubricants and other hazardous substance spills. The Installation Spill Contingency Plan identifies contractor resources and outlines the documentation required for the remediation process.

Cleaning products, ACMs, LBP, PCBs, and fluorescent light bulbs are used or are present in administrative buildings. ACMs are present in the old cantonment area and are addressed as encountered during building renovations or demolition (USACE, 1996). Cleaning products are stored within well marked containers and spill control storage cabinets. Herbicides, pesticides, and fertilizers are also used throughout the installation and are stored in accordance with the requirements of the Hazardous Waste Management Plan (HWMP) and HWCP.

3.5.7.2.2 Hazardous Waste Management

FTD is classified in accordance with USEPA regulations as large quantity hazardous waste generator by generating more than 1,000 kilograms of hazardous material in any given month USEPA ID NY0214020281. Wastes are manifested and transported to an offsite Treatment, Storage, and Disposal Facility and no waste is stored onsite for more than 90 days. Hazardous materials at FTD are controlled in accordance with the HWMP (Army, 2013a).

As part of the HWMP there is an Oil and Hazardous Spill and Contingency (OHSSC) plan which addresses the cleanup of hazardous substance discharges. Hazardous materials are generated from vehicle maintenance, medical related activities, chemical defense training, and facility maintenance. Engine oil, gear oil, grease, hydraulic fluid, brake fluid, gasoline, diesel fuel, and other petroleum based products are covered in detail in the OHSSC plan. Antifreeze, solvents, asbestos brake linings, and paints are used at the motor pool and maintenance facilities and are handled in accordance with the HWMP and HMCP.

Electrical transformers containing PCBs have been removed and replaced with non-PCB equipment. Capacitors may still exist which are not labeled as non-PCB containing and would be assumed as PCB–containing equipment. These capacitors would then be segregated and handled as a separate waste stream in accordance with the HWMP. Lighting fixture ballasts may still be in use which could contain PCBs; therefore, all structures slated for demolition or renovation undergo a PCB survey (Army, 2013a).

Hazardous materials defined as universal wastes such as fluorescent light tubes, high intensity discharge lamps, sodium vapor lamps, mercury vapor lamps, nickel cadmium batteries and lithium batteries have less stringent management requirements and are handled separately by the HWMP.

Live fire ranges are used continuously for training and involve various MEC. Large amounts of MEC are used during these exercises. Two RCRA-permitted open burning disposal areas exist at FTD for the destruction of MEC. Practice bombs containing small phosphorus charges are recovered by trained Air Force personnel on a bi-annual basis (USACE, 1996).

3.5.7.2.3 Installation Restoration Program

The U.S. Army established the IRP in 1975 in concurrence with the CERCLA as amended by the SARA. These regulations were implemented to identify, monitor, and remediate hazardous waste sites at federal facilities. No AOCs exist in the CIS footprint. The CIS footprint encompasses existing light maneuver training areas 7A, 7B, 7C, 7D, 7F, and 7G.

3.5.7.3 Environmental Consequences and Mitigation – Hazard Materials and Hazardous Waste Management – FTD

FTD currently operates with hazardous materials and wastes under state and federal regulatory guidelines. Using existing installation hazardous waste spill prevention programs and management procedures, along with the additional contractor’s HazCom HazWst management program, would minimize the potential for any environmental impacts during construction efforts.

3.5.7.3.1 Construction – Baseline Schedule

3.5.7.3.1.1 Environmental Consequences

Using the existing installation OHSSC plan and HWMP, along with the additional contractor’s HazCom and HazWst management program, would minimize the potential for any environmental impacts during construction efforts (Army, 1997).

A HazCom program for the site would need to be established during the initial planning stages of construction. At least one member of the construction team would be responsible for the enforcement of the HazWst management program at the site. A controlled hazardous storage area with containment pallets for drums, containment cabinets, spill containment equipment, etc., during construction would be established and secured by the contractor's HazWst Manager. The additional quantities of hazardous materials, and associated wastes, involved with potential CIS operations would be reduced by incorporating existing installation management plans coordinating tracking, purchasing, and storage procedures.

The contractor HazWst program would be in compliance with the FTD HWMP which specifically addresses contractor generated hazardous wastes. The operation and maintenance of motorized vehicles during the construction of the potential CIS would involve the same types of materials and wastes that are currently in use at the installation motor pools. All fuels, oils, solvents, coolants, and wastes associated with motorized equipment would be stored and managed in accordance with the construction HazCom program. Waste disposal would be coordinated with the HWMP.

Paints, coatings, and solvents used during construction would need to be addressed in the contractor's HazWst management plan and stored and staged in the contractor's HazWst storage area prior to offsite disposal or recycling.

Based on this analysis and the measures discussed, hazardous materials/hazardous waste impacts due to construction would be negligible.

3.5.7.3.1.2 Mitigation

Environmental impacts from HazMat and wastes throughout the construction process would be alleviated by strict adherence to established contractor and FTD hazardous materials management programs and policies and associated BMPs. No mitigation would be required.

3.5.7.3.2 Construction – Expedited Schedule

Environmental consequences and mitigations for hazardous materials and hazardous waste management under the expedited schedule would be the same as for the baseline schedule.

3.5.7.3.3 Operation

3.5.7.3.3.1 Environmental Consequences

As described is Section 2.7.1, several CIS-specific facilities would involve the use and storage of hazardous materials. Some hazardous waste would also be generated and temporarily stored prior to disposal. For these activities, a CIS-specific hazardous materials and hazardous waste management plan would need to be developed and implemented. By implementation of the hazardous materials and hazardous waste management plan, the potential for accidental release of hazardous materials would be very limited for the operation of the potential CIS and the potential for impacts would be negligible.

The potential for accidental release of hazardous materials is very limited for the operation of the CIS. The additional quantities of hazardous materials, and associated wastes, involved with CIS operations would be reduced by incorporating existing facility management plans coordinating tracking, purchasing, and storage procedures.

General Operations

During normal operations of the potential CIS, materials containing hazardous substances and materials may be brought onsite, such as cleaning supplies, paints, solvents, acid, bases, ethylene glycol, and alcohol oil, and lubricants (SMDC, 2002). These products would be managed in accordance with CIS-specific facility specific hazardous material/hazardous waste management plans (prepared specifically to address these products) and or coordinated with pre-existing (but updated) installation plans and procedures such as the HMCP and HWMP.

Fuel Management

As described in Section 2.4.1, the potential CIS would require several fuel storage tanks for the emergency power plant (approximate three 30,000-gallon ASTs) and associated fuel unloading facilities. These facilities would be designed and constructed in accordance with federal, state, and local SPCC requirements and managed in accordance with CIS-specific SPCC plans (prepared specifically to address potential CIS operations) and are coordinated with existing (but updated) FTD OHSSC plan. Fuel storage tanks would include provisions such as double-walled tanks, secondary containment, and cathodic protection as SPCC measures.

CIS-Specific Activities

The following information is a summary of CIS-specific activities that involves hazardous materials and hazardous waste management. This information was obtained from the *Ground-based Missile Defense Validation of Operations Concept Environmental Assessment* (EA) (SMDC, 2002).

KV fuel (hydrazine) and oxidizer (nitrogen tetroxide) are new hazardous materials that would be brought to the facility. These materials are listed on the USEPA's Toxic Substances Control Act Inventory and would be transported in accordance with DOT requirements, arrive at the CIS in preloaded tanks (<5 gallons each), and would be stored in separate structures until loaded into the GBI for placement in launch silos. USEPA's EPCRA would be followed by the adequate reporting to the local authorities of the hydrazine which is included in the USEPA's Extremely Hazardous Substance List. A sensor system would be installed which would monitor the status of the propellants. Specially trained emergency response personnel would accompany the transport of these materials onsite to all destinations in the event of a spill.

Ammonium perchlorate is also used as the oxidizer within the IBV propellant. The propellant remains in a stable and solid form after curing and manufacturing and continues in a solid form during its transportation, storage, and GBI integration. Because the propellant is in a solid form, there are no risks of leaks or environmental exposures during the CIS operations.

The current KV system includes beryllium components. Beryllium is listed on the USEPA's Toxic Substances Control Act Inventory. These components are deeply embedded in the kill vehicle and would never be removed at the missile site. The kill vehicle would be shipped intact to the manufacturer should maintenance on these parts be required.

Small quantities of ordnance are used during the launch timeline for the rapid opening of the SCM and the separation of the GBI IBV from the missile support system within the silo. These components would be stored in a separate building prior to installation in the silos and during GBI assembly. The explosive exposure potential would only exist during initial installation and assembly and later during silo maintenance procedures.

Any hazardous waste generated would be handled in accordance with appropriate federal, state, and local regulations would be minimal.

Appropriate hazardous materials and waste management plans would be developed for the CIS.

3.5.7.3.3.2 Mitigation

Environmental impacts from normal operations for hazardous materials would be minimized by adhering to the policies and procedures outlined in the CIS-specific plans and coordinated with installation plans such as FTD's HWMP and OHSSC plan.

Environmental and personnel exposure risks involving the KV fueling operations would only be present during initial delivery, assembly, and loading operations. These risks would be minimized through the use of preloaded tanks, supervision by emergency response personnel, and adherence to CIS-specific plans and procedures. No specific mitigations would be required for hazardous materials and hazardous waste management.

3.5.8 Health & Safety – FTD

3.5.8.1 Regulatory Framework – Health & Safety - FTD

The statutes and regulatory requirements pertaining to health and safety are as follows:

- AR 385-10, Army Safety Program (3 September 2009) - Implement s requirements of the Occupational Safety and Health Act of 1970 and establishes policy on Army safety management procedures.
- Occupational Safety and Health Act of 1970 (29 USC 651) - Legislation designed to ensure that workplaces are free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions.
- EO 12196, Occupational Safety and Health Programs for Federal Employees (26 February 1980) – Provides guidance for the implementation of Section 19 of the Occupational Safety and Health Act of 1970 which includes provisions to ensure safe and healthful working conditions for federal sector employees.
- AR 40-5, Preventative Medicine (25 May 2007) - Establishes practical measures for the preservation and promotion of health and the prevention of disease and injury.
- DoDI 6050.5, DoD Hazardous Communication (HAZCOM) Program (15 August 2006) - Implements the Hazardous Materials Process Controls and Information Management requirements relevant to product hazard data.
- DoDI 6055.5, DoD Occupational Health (11 November 2008) - Implements policies and prescribes procedures for maintaining deployment health activities and reduce occupational and environmental health.
- DoDI 6055.12, DoD Hearing Conservation Program (5 March 2004) - Protects DoD personnel from hearing loss resulting from operational (to include combat) and occupational noise exposure.

3.5.8.2 Affected Environment – Health & Safety – FTD

The evaluation of health and safety considers actions or operations which could affect or provide safety risks and the well-being of construction workers, facility workers, the general public, and the environment. Potential safety risks are typically assessed for activities that primarily occur during construction and operation. These risks are characterized prior to the initiation of actions, documented, and relayed to affected parties, then continually updated throughout the activity as additional safety risks are identified.

For FTD and the potential CIS, the primary health and safety issues consist of those related to on-base safety (current training hazards and emergency response systems), the environment, and explosion hazards. Additional health and safety issues and hazards related to specific resources, including those related to hazardous materials and hazardous waste management and transportation-related hazards, are described within the sections for those specific and respective resources.

3.5.8.2.1 On-Base Safety

FTD conducts Army training exercises throughout the year for the deployment of troops, weapons firing, and tactical maneuvers. For these activities, safety procedures and hazard prevention are addressed through regulations such as AR 385-10 *U.S. Army Intelligence Activities*. Currently, only light maneuver training is conducted within the training areas where the CIS footprint would be located. These training activities follow established safety procedures. No additional FTD facilities are present within the CIS footprint that would pose any health and safety issues.

On-base safety also considers the presence of emergency response systems, including those specifically related to fire protection and HazMat crews. Currently, FTD uses both onsite (fully staffed fire department with three fire houses), and offsite sources (through mutual aid agreements [Army, 2013b; Army, 2013c; Army, 2013d]) for emergency response systems, including fire protection.

3.5.8.2.2 Electromagnetic Radiation Environment

EMR is the radiant energy released by certain electromagnetic processes. EMR is usually classified as one of two types: ionizing radiation (typically produced by x-rays, cosmic rays, and gamma rays) and non-ionizing radiation (typically produced by a wide variety of equipment such as cellular phones, radios, television, and radar). For the potential CIS, issues related to EMR are important due to the potential for interferences with communications equipment, human exposure, and exposure to fuel or explosive devices.

Currently there are no EMR issues at FTD within the vicinity of the CIS footprint from current activities. However, to determine the potential for EMR issues with communications equipment, a background assessment of the EME at FTD was conducted as part of the potential CIS siting process by the Joint Spectrum Center (MDA, 2014b). To accurately define the EME at the CIS footprint, site RF measurements were obtained in the 100 MHz to 45 GHz frequency band from existing frequency related radiation sources (such as RF-related equipment within the vicinity of the CIS footprint). The measurements obtained from the EME assessment were compared to the frequencies of potential CIS systems to determine compatibilities and if adequate space or distances would be available at FTD to mitigate these potential interferences without special procedures.

Based on the EME assessment conducted, the database searches and other onsite measurements indicated that the potential CIS systems would be compatible with the current usage of the electromagnetic spectrum within the vicinity of CIS footprint and that there is adequate distance for the potential CIS to be operated without interference, and with EMR sources (e.g., radio gear, etc.) that may be in the vicinity of CIS footprint without the use of special procedures (MDA, 2014b).

In addition to EMR for communication interference, special constraints for fixed wing aircraft, helicopters, and unmanned aerial vehicles have been established for the IDT facility present at FTD near Wheeler Sack Army Airfield (MDA, 2014b). Additional details regarding current and potential health and safety impacts related to EMR and FTD airspace are provided in Section 3.5.2.

3.5.8.2.3 Explosive Hazards

No areas within FTD are used for explosives storage or required SDZs. Due to its use as a military training area there could be some risk of exposure to UXO. A site-specific survey was conducted of the FTD CIS footprint (USACE, 2014c), associated with the presence of MEC and UXO. The survey of the FTD CIS footprint indicated that although encountering MEC and UXO would be low risk during construction activities, standard ordnance awareness training was recommended for construction personnel prior to construction (USACE, 2014c).

3.5.8.2.4 Terrorist Threats

Terrorism is a growing concern throughout the U.S. To counter the threat, facilities such as those to be provided for the CIS are designed and constructed in accordance with the UFC and DoD anti-terrorist building standards, which are designed to address a range of terrorist attack scenarios, including explosives, fire and chemical, biological, and radiological weapons. In evaluating installation security for the CIS, MDA considered the potential impacts of threats to the site and community and incorporated commensurate levels of physical security and anti-terrorism mitigation measures in accordance with DoD standards. Measures are in place to secure the CIS facilities with a strong and integrated system. First, FTD is a closed military installation with its own internal security force and cooperative agreements with local law enforcement agencies. Only personnel with valid credentials are permitted access. Second, restricted areas within the CIS would be completely fenced with access control. The restricted area fencing would be equipped with intrusion detection sensors that are linked to installation security and local law enforcement. Finally, the restricted areas within the CIS also have a dedicated security force that patrols the site and controls access on a 24-hour/7-day basis.

3.5.8.3 Environmental Consequences and Mitigation – Health & Safety - FTD

3.5.8.3.1 Construction – Baseline Schedule

3.5.8.3.1.1 Environmental Consequences

General Construction Hazards. Some typical risks that would be associated with the construction of the potential CIS could include trips and falls, equipment hazards, dermal contact and inhalation of toxic materials, electrocution, overhead, and lifting hazards, confined space entry, and trenching activities. Each CIS construction activity would be evaluated and documented in a formal JHA in accordance with OSHA guidelines. Contractors would prepare and implement JHA and Safety Plan documentation to ensure safe working conditions during construction activities in accordance with applicable guidelines.

Explosion Hazards. Because the site is a military installation, there is a low risk hazard during construction for encountering MEC and UXO. A survey was conducted at this site which indicated that the risk of exposure is extremely low, standard ordnance awareness training was recommended for personnel providing construction activities (USACE, 2014c).

CIS Transportation Hazards. There would be a potential transportation hazard associated with construction. GBI IBVs and unfueled KVs, KV fuel and oxidizer tanks, and support equipment would be transported separately by air and then transported over-the-road by common carrier truck to the potential CIS. All shipping would be conducted in accordance with applicable U.S. Air Force, U.S. Army, FAA, and DOT regulations. Transportation of hazardous materials would be in accordance with DOT regulations for interstate shipment of hazardous materials found in 49 CFR Parts 100-199.

The GBI or its components (KV and IBV) would be delivered to the MAB for assembly, test, and checkout or would be temporarily stored in the ISF. The KV tanks would be delivered by ground transportation and stored in the KV fuel or oxidizer tank storage facility. The KV and IBV would be brought from storage separately to the MAB for assembly, test, KV tanking, and checkout. A GBI stored in the ISF would be delivered to the MAB for KV tanking and checkout. Hazards associated with onsite transportation would be addressed through preparation and implementation of safety procedures and through training.

Based on over 15 years of operations and transport of GBIs to and from sites similar to that anticipated for the potential CIS (e.g., Vandenberg Air Force Base, CA, and Fort Greely, AK), there have been no reported transportation incidents or accidents. As a standard of practice and to alleviate transportation related health and safety issues, prior to any shipments of GBI components, a transportation safety plan would be written in accordance with the appropriate DoD and DOT regulations, and transportation crews would receive the appropriate training in accordance with the plan. In addition, the emergency response personnel and equipment would accompany the GBI components during transport to handle and contain hazardous materials in the unlikely event of a release during transport.

3.5.8.3.1.2 Mitigation

Safety issues for construction would be addressed by the implementation of common safety practices. Therefore, no additional mitigation measures would be required.

3.5.8.3.2 Construction – Expedited Schedule

3.5.8.3.2.1 Environmental Consequences

In comparison with the baseline schedule, increased health and safety risks may be incurred during for the expedited construction schedule. Although the exact form of schedule expedition on specific work activities has not yet been specifically defined, the shortened schedule could result an increase numbers of workers onsite, longer work hours, overlapping shifts, and night work. To address these increased health and safety risks, in additional to the common safety practices defined for the baseline schedule, some added but commonly used safety practices (e.g., lighting for night work) could be provided to reduced and eliminate the increased safety risks.

3.5.8.3.2.2 Mitigation

Safety issues for construction would be addressed by the implementation of common safety practices. Therefore, no additional mitigation measures would be required.

3.5.8.3.3 Operation

3.5.8.3.3.1 Environmental Consequences

On-base Safety. Training activities would be suspended in the area of the CIS footprint and moved to other areas of FTD. Therefore, no health and safety related issues from on-going training activities would occur during the potential CIS operation.

If the CIS is installed at FTD, as described in Section 2.9.1, additional emergency response infrastructure, including those related to fire protection would be required and augmented to the extent necessary, thus reducing potential emergency response related health and safety impacts. The requirements of the enhanced EMS services would be defined during the design of the facilities.

Electromagnetic (EMR) Environment. EMR issues related to the CIS would include communications interference, personnel hazards, and potential explosive hazards.

As described previously, the EME for the CIS would include the potential for in-band frequency interference caused by two pieces of communications-electronics equipment (e.g., offsite radio equipment versus CIS facility equipment) that are operating within the same frequency band. However, based on the EME assessment for the CIS (MDA, 2014b), the CIS systems would be compatible with the current EME within the FTD CIS footprint and there would be adequate distance for the CIS to be operated without interference and without the use of special procedures. Therefore, no impacts related to communications interference from EMR would occur.

EMR can also impact personnel health due to radiation effects and act as a potential explosive/ignition source for fuel and ordnance. However, safety risks and impacts from the operation of facilities similar to the CIS have been incurred and the potential appears to be low due to the implementation of established safety provisions, including use of facility separation and explosive safety distances. Therefore, EMR impacts to human health or as explosive/ignition sources would not occur.

Explosive Hazards. In addition to potential fuels explosive hazards from sources alleviated through standard practices and establishment of explosion/safety distances, CIS facilities, including those related directly to the GBIs, would provide some ordnance-related hazards. Explosive safety quantity distances would be established to reduce hazards based on the net explosive weight of each GBI and its function, thus alleviating explosive hazards and associated impacts.

GBI Assembly. The GBI components would be placed in the MAB for assembly, integration, and check-out or ISF for storage prior to assembly or emplacement. The KV bi-propellant tanks would be stored in the KV Fuel and Oxidizer Storage facilities until mounted onto the KV subassembly. From storage, the IBV and KV components are brought separately to the MAB to be assembled into a GBI.

Inherent health and safety hazards and risks to GBI maintenance personnel and equipment damage would be mitigated by the multi-layer design of the tanks, protective packaging during transport, and proven operating procedures that have been in place for more than 10 years.

The KV contains liquid hypergolic propellants. Hypergolic propellants are fuels and oxidizers that ignite on contact with each other and need no ignition source. A release of either propellant could result in the release of hazardous materials inside the canister.

An indoor release of liquid propellants could result in localized concentrations that exceed both the IDLH and PEL for workers. Nitrogen tetroxide would be the greater hazard due to its lower IDLH limit and lower boiling point. Risk from inadvertent release is mitigated by design of the tanks, atmospheric monitoring, and monitoring, and procedure as summarized below. The most likely area for this to occur would be within the MAB, ISF, and the GBI field. Exposure to propellant released below the PEL level for the nitrogen tetroxide as a result of a release would not cause irreversible damage. Exposure at these levels would be mildly irritating to the eyes and nose and could include coughing.

Facility and equipment designs would incorporate the following measures to minimize the potential for and impact of accidents.

- The liquid bi-propellant tanks would have multiple safeguards, such as an internal bladder system, requiring several system failures before a release would occur, thereby making the potential for a release very remote.
- A sensor system would be used to monitor the condition/status of the KV propellant system during bi-propellant tank installation and checkout operations.
- In addition, the following operating procedures and training would be instituted to minimize the potential for and impact of accidents.
- Specific health and safety plans would be developed including evacuation plans, and notification of local and offsite emergency response as required.
- An emergency response team would be on call during tank installation and emergency equipment would be near the facility.
- The local fire departments would be notified through the existing cooperative agreements with the installation.
- In the event of a liquid bi-propellant release, the emergency response team would ensure the area would be evacuated, ignition sources would be removed, and vapors would be ventilated. All liquid would be contained for treatment and neutralization and disposed of in accordance with all applicable regulations. Releases would be absorbed with appropriate materials and transferred to containers for disposal.

GBI Integration Hazards. The IBV Class 1.3 propellant used in the GBI is principally considered a blast hazard for overpressure from gases generated by inadvertent ignition. There is also a secondary fire hazard from residual propellant spread from any blast.

Accidental ignition of solid propellant can be caused by static discharge, lightning, or a nearby fire or explosion. Additionally, impact of the rocket motor casing against any object or penetration of the rocket motor's casing may produce enough internal or external frictional energy release to cause ignition. However, detonation resulting solely from an impact is considered impossible because Class 1.3 propellants are not shock sensitive as defined by the DOT. Data show that even when subjected to explosive shock from explosives (C4) Class 1.3 propellants with HTPB binders, AP oxidizer, and AL fuel do not exhibit burn rates in excess of 3000 m/sec that is the accepted lower limit for detonation (Merrill et al., 1994).

To address GBI integration hazard concerns, the site would be designed such that facilities would be spaced out in accordance with safety quantity distances based on the net explosive weight of each GBI. It should be noted that there is no warhead on the GBI. The net explosive weight is based on the weight of the propellant. The appropriate separation distance between the silo's housing and the GBIs prevents any potential for a mishap at one GBI from impacting adjacent GBIs (i.e., no chain reaction). In addition, inhabited buildings, traffic routes, etc., would be located at a distance from the GBI's to minimize any potential health and safety hazards.

In addition, the following operating procedures and training would be instituted to minimize the potential for and impact of accidents such as accidental launch.

- Measures would be taken to prevent static buildup during transportation and GBI handling would be in accordance with standard safety procedures developed by DoD for the handling of solid and liquid propellants.
- A health and safety plan would be prepared that would include procedures to handle emergencies involving the GBI. This plan would describe how to handle each type of emergency, the appropriate base and off-base contacts, and an evacuation plan, if necessary.
- Cooperative agreements with local fire departments would need to be updated to inform them of the additional hazards and safety considerations of the GBI test site.

Terrorist Threats. The counter terrorist measures described in Section 3.5.8.2.4 are expected to prevent unauthorized personnel from entering the CIS facilities, damage to defense assets or injury to personnel, adverse effects to the general health and safety of site personnel or the general public, and adverse effects to the environmental attributes of the site. Environmental consequences due to damage to GBIs and fuel tanks caused by terrorist threats would have the similar results as those caused by accidents and would be addressed in similar manners as previously discussed in the hazardous materials and hazardous waste operations section, Section 3.5.7.3.3.1.

3.5.8.3.3.2 Mitigation

Based on assessments provided during the facility design, enhancement of emergency response related services could be provided to mitigate potential impacts from the lack of emergency responses, including those related to fire protection.

Other safety issues for operations would be addressed by the implementation of the site-safety and associated facility design practices. Therefore, no additional mitigation measures would be required.

3.5.9 Land Use – FTD

Land use can be defined as the human use of land resources for various purposes including economic production, natural resources protection, or institutional uses. Land uses are frequently regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable or protect specially designated or environmentally sensitive uses. Potential issues typically stem from encroachment of one land use or activity on another, or an incompatibility between adjacent land uses that leads to encroachment.

This section presents information on the current land use conditions at the CIS footprint and in the vicinity, project-related construction and operation impacts, and mitigation measures.

3.5.9.1 Regulatory Framework – Land Use - FTD

Land use at FTD is influenced and governed by federal legislation, as well as a variety of management plans, both regional and internal. These plans are either general plans for the installation in its entirety or are specific to U.S. Army Forces Command FTD activities and resources. Regional and internal land use management plans which influence and govern FTD land use and planning are described. Evaluation of any land use inconsistencies that the potential CIS deployment may have with the following plans are presented in Section 3.5.9.2.

3.5.9.1.1 Federal Programs

- AR 210-20, Real Property Master Planning for Army Installations (16 May 2005) – Defines the real property master planning concept and requirements and establishes policies and responsibilities for implementing the real property master planning process for U.S. Army communities.
- AR 405-20, Federal Legislative Jurisdiction (21 February 1974) - Provides for implementation of the additional authority granted to the military departments by Congress relative to relinquishment of legislative jurisdiction of Defense Directive 5160.63.
- AR 405-80, Management of Title and Granting Use of Real Estate (10 October 1997) - States the policy on management of title, unauthorized use, and granting use of U.S. Army controlled real property.
- AR 405-90, Disposal of Real Estate (10 May 1985). Includes policy for disposing of U.S. Army controlled real estate.
- Federal Land Policy and Management Act (FLPMA) of 1976 (Public Law 94-579; 43 USC 35) – Calls for establishment of procedures for managing federal lands.
- EO 12372, Intergovernmental Review of Federal Programs - Encourages consultations between federal, state and local governments in use of federal financial assistance and planning for federal development.

3.5.9.1.2 Regional/Local Land Management Programs and Plans

In response to growth at FTD and within the region, several planning mechanisms have been developed and established to provide guidelines for future land use, and community services. These efforts are sourced from the concern of losing valuable farmland and possible future encroachment near the boundaries of FTD and, equally, FTD's expansion and operational footprint. The programs highlighted in the following paragraphs strongly influence expansion and development occurring within the counties of Jefferson and Lewis.

FTD Regional Liaison Organization. Communities adjacent to and surrounding FTD could be affected by FTD's growth. FTD currently maintains the FTD Regional Liaison Organization (FDRLO), a regional membership organization that partners with many government and economic development entities at the federal, state, and local level to foster communication in the region. The FDRLO helps communities manage this growth by providing information and an action plan to ensure balanced and sustainable growth while maintaining compatible land uses (USACE, 2012). The goals of the FDRLO are the following:

- Create a comprehensive summary of current and projected installation activities and potential impacts on land use and community development;
- Identify alternative development scenarios for local officials;
- Provide meetings for local officials and the public to identify the community vision and development options; and
- Agree on clear and prioritized action steps to achieve the desired future.

FTD Growth Management Strategy. The FTD Growth Management Strategy was initiated by FDRLO. The purpose of the FTD Growth Management Strategy is to assist communities with growth, project development, and coordination with respect to current land uses while retaining the functionality of FTD's operations and preventing encroachment onto the installation. Growth in the communities can influence operations by encroaching near areas that are needed for military operations (FDRLO, 2009). Conversely, the growth of the installation places pressure on FTD to expand communities and residential areas located within the North and South Posts. The FTD Growth Strategy also addresses the need for preserving local agricultural land uses in order to sustain the local and regional economy (FDRLO, 2009). Further discussion on FTD's socioeconomics is presented in Section 3.5.11.

Army Compatible Use Buffer Program. The ACUB was established to limit encroachments and other constraints on military operations from external and internal encroachment, such as neighboring community expansion and development near the installation boundary and environmental constraints within the installation. The ACUB permits the FTD installation to work with non-federal governments, private landowners, and organizations to restrict land development and protect flora and fauna habitat without the need to acquire additional lands for Army ownership. To achieve this, the ACUB program establishes partnerships through these non-federal entities to identify mutual objectives of land conservation and to prevent development of critical lands near the installation boundary (USAEC, 2014). The ACUB is under the authority of the FTD Plans, Analysis, and Integration Office (FDRLO, 2009). Additionally, the ACUB funds conservation projects through trusts and local environmental organizations. This program promotes land-owners to either enter into voluntary agreements to sell the development rights to non-profit organizations or establish easements that preserve open space in order to limit development on property. No conservation projects have been completed through the ACUB program to date (FDRLO, 2009).

In recent years, the ACUB has acquired land development rights near and adjacent to the potential CIS deployment area, which would benefit development of this facility by limiting development near the area of the CIS footprint (refer to Figure 3.5.9-1).

Tall Structure Restrictions. In the interest of protecting aviation activities and public safety, tall structure restrictions exist in the region of FTD. Building heights or tall structures are limited to no greater than 40 feet in most communities in the region of FTD due to the typical development pattern and rural setting. Tall structure restrictions are required for FTD in order to preserve the airfield land use and aviation operations and training associated with the Wheeler-Sack Army Airfield (FDRLO, 2009).

Electromagnetic Interference. Military and aviation equipment may be sensitive to man-made electromagnetic interferences generated from commercial and/or industrial activities. Because of these concerns, most communities surrounding FTD have telecommunications regulations in place that address electromagnetic interferences. Thus far, no community in the vicinity of FTD has had to implement these regulations (FDRLO, 2009).

Town of LeRay Comprehensive Plan. The Town of LeRay has developed a Comprehensive Plan, adopted January 2009. The Comprehensive Plan provides a history of the town, inventory of natural resources and recreational areas, town character areas (including FTD), green planning, town-wide principles, and a strategic plan. The character area goals presented in the plan in relation to FTD include: 1) improved communications between FTD and the Town of LeRay; 2) collaboration efforts to improve multi-modal access between FTD and LeRay; 3) Collaborate with FTD to develop a feasibility study that would evaluate locating a university in LeRay; and 4) work to identify areas that are appropriate for land acquisition as part of the ACUB program (LeRay, 2009).

Lewis County Comprehensive Plan. Lewis County has developed a Comprehensive Plan, adopted October 2009. The Comprehensive Plan identifies the community's short and long-term needs and ties together broad ideas with specific goals and activities to guide decision-making over the next 15 years (USACE, 2012). Goals within the Comprehensive Plan in relation to FTD include: 1) work with FTD personnel and decision makers to expand marketing at the base for local products; 2) continue to work closely with FDRLO to improve opportunities for spill-over effects from investments at FTD; and 3) provide workshops and informal resources for the advancement of regional and local goals (Lewis, 2009).

Jefferson County Economic Development Strategy. Jefferson County developed an Economic Development Strategy, adopted in 2012. The major goals and objectives of this plan with respect to FTD include the continued implementation of growth management principles to maintain military and community land use compatibility and maintain regular communication between FTD and the community. Jefferson County plans to continue communication with the FDRLO as the basis for dialogue for partnering on military and community needs, opportunities and challenges (Jefferson, 2012).

3.5.9.1.3 Site Land Use Management Plans

Range Complex Master Plan. The RCMP is the guidance document for operational range planning that incorporates mission requirements, U.S. Army transformation, and natural resources management to accurately plan for and predict future military base requirements. The RCMP ensures that the carrying capacity of the land for training is not exceeded. Encroachment issues are also identified within the plan that may impact the use of the range complex (FTD, undated).

Long Range Component of the Real Property Master Plan. The LRC establishes the environmental baseline, basic framework, and specific options for developing and managing real property on FTD. This plan provides development options in accordance with FTD's mission and the real property goals and objectives (USACE, 2012).

Future Planning and Expansion. Contained within FTD's LRC, the Future Development Plan provides a framework for the installation that identifies long-term development and expansion plans. Key development areas have been focused on the Cantonment Area and the Wheeler-Sack Army Airfield, and include rehabilitated and new buildings, roadways, and trails. The Future Development Plan considers the population growth of soldiers and their families on the installation and provides a management plan while maintaining the mission of the installation (USACE, 2012). The following plans are currently listed in the Future Development Plan:

- A proposed road network that includes, but is not limited to, providing a direct route between the southern Cantonment Area and Airfield by altering or constructing an overpass over Route 26 and extending roads in the South Post in anticipation of future development;
- Establishment of new community hubs, such as retail, restaurants, educational areas, entertainment and medical within the Cantonment Area within 0.5 miles of employment and housing areas;
- Development of recreational areas, such as baseball fields, playgrounds, and park spaces, within smaller, scattered open space areas within the Cantonment Area;

- Development of a trail system within the Cantonment Area and Wheeler-Sack Army Airfield parallel to major traffic routes, through parks and green spaces, and separately-designated troop trails for training purposes; and
- Installation of way-finding and landmarks within the Cantonment Area to improve navigation.

Based on the stated future development projects, it is estimated that the closest planned development is approximately 2.75 miles east of the CIS footprint.

Installation Design Guide. The Installation Design Guide presents design standards for aesthetics, new construction, renovation, maintenance, and repair; provides guidance for sustainable development; offers guidance for project development and visual imagery and provides procedures for maintaining the unique historical character of the installation. The Installation Design Guide also informs of environmental and operational constraints that could create complexities in project planning and encourages development in areas where mitigation measures are minimized (FORSCOM, 2011).

Integrated Cultural Resources Management Plan. The ICRMP provides procedures to manage cultural resources, including archeological sites, historic properties, and archeological and historical objects at FTD. The ICRMP also provides guidance on coordinating consultation with federally recognized tribes and the New York SHPO (Army, 2010).

Integrated Natural Resources Management Plan. The INRMP describes the baseline conditions of the natural resources and helps to ensure sustainability of quality training lands to accomplish the military mission. The INRMP also establishes goals to comply with applicable environmental laws and regulations in order to make informed decisions, manage natural resources and maintain good stewardship of the public lands and enhance the quality of life on and around FTD while operating within the framework of U.S. Army policies and regulations (Army, 2011).

Installation Operational Noise Management Plan. The Installation Operational Noise Management Plan provides noise management at FTD through education of noise metrics, complaint management, noise and vibration mitigation, noise-abatement procedures and the Installation Compatible Use Zone Program (USACE, 2009).

Installation Hazardous Waste Management Plan. The Installation Hazardous Waste Management Plan identifies state, federal, and U.S. Army regulations required to ensure that all hazardous waste generated, accumulated, stored, or treated at FTD is managed to protect human health and the environment through established procedures (Army, 2013a).

3.5.9.2 Affected Environment – Land Use - FTD

3.5.9.2.1 Regional Land Use

FTD is situated in both Jefferson and Lewis counties. The Jefferson County townships that include parts of the FTD installation are Antwerp, Philadelphia, LeRay, Champion, Wilna, and Diana. Other townships in the vicinity of the installation include Fowler, Rossie, Pitcairn, Gouverneur, Denmark, and Pamelia. The City of Watertown, the Jefferson County seat and largest populated area in the vicinity of FTD, is located about 6 miles west of the installation and has a population of 26,705 (Army, 2011). The villages of Evans Mills, Deferiet, Herrings, Black River, Harrisville, Carthage, West Carthage, and Gouverneur are also located in the vicinity of FTD (USACE, 2012) (refer to Figure 3.5.9-2).

The land use adjacent to the boundary of FTD is generally agricultural with small subsets of rural, residential areas. Commercial and industrial areas lie mainly within the village boundaries. Agricultural land use is prominent in the regional area, with approximately 37 percent in Jefferson County and 21 percent in Lewis County. The percentage of land classified as agricultural in the two counties has steadily decreased in the past 40 years as commercial and residential areas have expanded (USACE, 2012). A natural resources-based regional economy has been the predominant source of industry in the area, with specific industries such as dairy farming, field crops, food processing, and papermaking.

Residential land uses near FTD are found in the surrounding villages and towns. To the northwest, residential uses include the villages of Evans Mills, Philadelphia, and Antwerp within Jefferson County. To the south, larger residential areas include the villages of Black River, Deferiet, Herrings, Carthage, West Carthage, and Wilna. The residential areas that have seen the most substantial population growth due to FTD expansion include Pamelia, Evans Mills, Philadelphia, and Antwerp (FDRLO, 2009). Commercial land uses are found in concentrated areas within Evans Mills, Philadelphia, Antwerp, Black River, Deferiet, Herrings, Carthage, West Carthage, and Wilna, and continue to grow in response to the overall regional population growth. Commercial building types range from one-story small structures to retail, large storage, warehouse, and distribution facilities (USACE, 2012).

There are numerous state lands that surround FTD, including state forests, forest preserves, and wildlife management areas. Beartown and Onjehonge State Forests are located approximately 5 and 7 miles east and southeast, respectively, of FTD in Lewis County. Pulpit Rock and Yellow Lake State Forests are located approximately 20 miles northeast in Jefferson County. Adirondack Park, located approximately 5 miles east of the FTD boundary and 20 miles east of the project site, contains 6 million acres of federally-protected forestry on public and private lands. The nearest state wildlife management area is Perch River Wildlife Management Area, approximately 5 miles northwest of the Cantonment Area of FTD and 17 miles from the CIS footprint (refer to Figure 3.5.9-3 (Army, 2011).

Land use policies in Jefferson and Lewis Counties are under the jurisdiction of those counties and dictate how land would be used in the counties (see Section 3.5.9.1). One exception is the township of LeRay, which manages its own planning and economic development (USACE, 2012). The township of Champion maintains a "memorandum of understanding" with FTD, establishing a formal communication process to relay land use and planning activities. No other townships or villages maintain a formal process due to limited development pressures and/or limited staff resources (FDRLO, 2009). Regionally, compatible land use and planning is coordinated with the FTD Regional Liaison Organization, whose role is further detailed in Section 3.5.9.1.

Encroachment. Recent regional residential and commercial development caused by the sudden increase in population have also created encroachment concerns. Since 2003, the number of soldiers assigned to the installation has increased by 45 percent. With this increase in FTD's soldier residency, populations in Jefferson and Lewis counties have experienced rapid increases in the last decade (USACE, 2012). Specifically, the growth rates in the towns of Antwerp, Pamelia, Evans Mills, and Philadelphia between 2000 and 2007 have exceeded the growth rate of the overall region (ranging between 5 to 10 percent vs. 5 percent) (FDRLO, 2009). This population growth has caused regional concerns over further development of the land bordering the installation, which currently remains predominantly undeveloped and largely consists of agricultural and forested lands (FDRLO, 2009). Because these townships are located near the northern boundary of FTD, however, future development near FTD would not impact the potential CIS deployment location.

As development outside of FTD continues, encroachment concerns include land use compatibility impacts to the functionality and operational footprint of FTD. As development moves closer to FTD's boundaries, buffers for noise, firearms and flight patterns could further reduce the available training area within the installation in order to fully avoid or reduce the off-installation effects of incompatible land uses; however, these concerns have been carefully and successfully addressed through regional planning and the creation of the FDRLO. Regional and internal planning efforts are described in further detail in Section 3.5.9.1.

3.5.9.2.2 Site Land Use

FTD lies in the "North Country" region of New York State, located in the northeast corner of Jefferson County and northwest corner of Lewis County in northwestern New York, and borders St. Lawrence County to the northwest. Lake Ontario is located roughly 12 miles west. FTD encompasses 109,634 contiguous acres of federally-owned property under the command of the U.S. Army, Northeast Regional Office of the Installation Management Command (Army, 2011) (refer to Figure 3.5.9-2).

Current occupants of FTD include the U.S. Army Forces Command 10th Mountain Division (Division) and U.S. Air Force 174th Attack Wing of the New York Air National Guard. FTD's mission is to "provide a quality installation to our soldiers and their families that is equitable to their quality of service and sacrifice to our Nation" (FORSCOM, 2011). FTD also provides training and mobilization needs to the U.S. Army Reserve, ALNG, Air National Guard, U.S. Air Force Reserve, and U.S. Marine Corps Reserve.

3.5.9.2.2.1 Land Use Characteristics

The FTD military base is divided into five functional areas: North Post, South Post, Residential Area, Airfield Area, and Range Area (Army, 2011). These functional areas are shown on Figure 3.5.9-4. The North and South Posts comprise a total of 6,280 acres and contain the Cantonment Area, consisting of troop housing, officer housing, installation administration and support, medical services, commercial districts and recreational areas. The South Post also includes educational facilities, motorpools, and vehicle storage (USACE, 2012).

The residential area is comprised of 2,660 acres and contains the majority of family housing, religious services, childcare centers, and other community centers (USACE, 2012). The Airfield Area contains the Wheeler-Sack Army Airfield operations for rotary-wing and fixed-wing aircrafts, and includes two runways over a span of 3,930 acres.

Military training is provided in the Range Area, which spans approximately 97,000 acres (about 90 percent of the installation), and is designated for training activities such as light infantry, helicopter air assault exercises, artillery, armor, fixed wing aircraft, anti-aircraft missiles, and drones. The ammunition supply point, located to the east of Wheeler-Sack Army Airfield, is surrounded by perimeter fencing and maintains storage facilities. This area is further subdivided into 14 maneuver areas, firing range areas, and the Main Impact Area. The Main Impact Area covers 20,351 acres located in the central Range Area and supports indirect firing of mortar and artillery (USACE, 2012). This area is off limits to maneuver training, development, and public access.

Other uses within FTD include a 0.86-acre area used under a single agreement for apiaries (bee keepers). This area is located within the northeast corner of the installation and not located near or within the CIS footprint.

3.5.9.2.2.2 Land Use Classifications

Seven land use classifications are used within the FTD installation (Army, 2011) (refer to Figure 3.5.9-5):

- Professional/Institutional – Provides for non-tactical organizations including military schools, headquarters, major commands, and non-industrial Research Development Training and Evaluation.
- Residential – Accommodates family housing, senior unaccompanied personnel housing, family services, and neighborhood services.

- Community – Includes religious, family support, personnel service, professional, medical, community, commercial, and recreational uses.
- Troop – Designated for basic combat training, complexes associated with basic combat training, station unit training and complexes and selected initial entry training and security posts within these facilities.
- Industrial – Designated for production, maintenance, depot, and other storage, as well as heavy vehicle traffic, loud outdoor equipment operations, noise, smoke, or large amounts of pollutants that must be processed onsite.
- Ranges and Training – Includes live-fire ranges and training, non-live fire ranges, and special training areas. All of the land outside the Cantonment area, Wheeler-Sack Army Airfield, and ammunition supply point is designated for ranges and training.
- Airfield – Designated for flight operations such as runways, taxiways, airfield support facilities, aviation refueling, maintenance, and testing facilities within the Wheeler-Sack Army Airfield.

Based on the land use classifications and location, the CIS footprint falls within the Ranges and Training land use classification (refer to Figure 3.5.9-5).

3.5.9.2.2.3 Land Use Constraints

Effects of past and current military operations have resulted in land use constraints, limiting land development and military training in certain areas within FTD. The following paragraphs present a summary of the current constraints implemented by the installation (refer to Figure 3.5.9-6).

Operational Constraints. FTD's Airfield and Range Area contain areas that are limited to development in order to provide facilities for military training. FTD provides services and training that require air and land space on a year-round basis; therefore, these areas must be protected from incompatible land uses. These areas include the Main Impact Area, firing ranges, quantity distance arcs, SDZs, compatible use buffer zones, clear zones, and accident potential zones (FORSCOM, 2011).

In the Range Area, the Main Impact Area supports indirect firing of mortar and artillery; the firing ranges designate 40 live fire training areas on FTD, and the quantity distance arcs depict areas encircling certain quantities of explosive material to be detonated. Similarly, the SDZs are safety areas that designate setback areas from weapons-firing and detonation areas. These setback areas vary day-to-day and are determined by the type of ammunition fired, number of firing ranges, and target layouts. Further information regarding the purpose and implementation of the ACUB zones can be found in Section 3.5.9.1. A map of the Range Area provided in FTD's LRC indicates that there are no operational constraints located in the area of the potential CIS deployment.

In the Airfield Area, clear zones are areas immediately beyond the end of the runways where development is prohibited. Accident potential zones are located in areas beyond the clear zone where it is reasonable for accidents and collisions to occur (Army, 2011).

Environmental Constraints. Many environmental constraints are associated with natural and cultural resources, as well as areas of known contamination. Severely restricted development areas, where major impacts would occur if development proceeded include cemeteries, archeological sites, 100-year flood zones, wetlands, Bat Conservation Areas, the septic drain field, FTD potable water supply well field, and AOCs (Army, 2011).

Moderately restricted development can occur, with caution, in historic areas (with the exception of NRHP-listed areas), steep slope areas, quantity distance arcs, and firing ranges. These constraints are identified as such due to the potential mitigation requirements if development should occur (Army, 2011).

Wetlands within the CIS Footprint. These areas would require mitigation and site preparation prior to the construction, and are discussed in further detail in Sections 3.5.15. Other known environmental constraints that exist within the FTD include cultural resource areas; however, their locations have not been identified in the interest of protecting the resource. Further information regarding cultural resources can be found in Section 3.5.4.

Areas of Concern. Land use and development can be temporarily impacted by AOCs due to the levels of contamination based on the life of the remedial activities. Once site remediation is complete, development and site access can be reinstated.

Currently, there are 14 AOCs throughout FTD from past operations on the installation, including operation of USTs, leaching materials in landfills, pesticides, battery acid and other hazardous materials (FTD, 2015d). These areas are managed by the IRP and are predominantly located in the Cantonment Area. No AOCs exist in the CIS footprint.

3.5.9.2.3 Recreational Land Use

Regional and site recreational lands and features are outlined in this section to present baseline existing conditions that may be impacted by the development of the potential CIS development. Potential impacts to these features and mitigation measures are outlined in Section 3.5.9.3.

3.5.9.2.3.1 Regional Recreation

FTD is surrounded by state parks and other recreational areas. The “Thousand Islands Region” is a recreation area comprised of over 1,800 islands in the St. Lawrence River valley located 20 miles north of FTD, where recreational activities such as boating and sport fishing occur. Similarly, Lake Ontario, approximately 12 miles to the west, offers large acreage of open waters for outdoor recreation, including swimming, boating, and fishing.

Adirondack Park, located approximately 5 miles to the east of FTD, contains 6 million acres of protected lands and expansive backcountry. The park contains historic sites, campgrounds, 2,000 miles of hiking trails, horseback riding trails, canoe routes and 42 peaks over 4,000 feet in height (USACE, 2012).

The Tug Hill Plateau, located approximately 30 miles south of FTD, provides thousands of acres of public lands and recreational activities such as cross-country skiing, hiking, biking, motorized and non-motorized trails, canoeing, kayaking, and fishing (USACE, 2012).

The Black River, running along the southern edge of the installation, offers recreational fishing, canoeing, whitewater rafting, kayaking, and boating. The Black River Blueway Trail consists of a series of boating routes for small, motorized boats, and paddle boats along the Black River beginning in Carthage and ending in Lake Ontario's Henderson Bay (USACE, 2012). This trail identifies land-based attractions such as historic sites, parks, birdwatching, hiking trails, and picnicking (Army, 2011).

Among Jefferson, Lewis, and St. Lawrence counties, the region maintains numerous recreational and seasonal trails that accommodate skiers, all-terrain vehicles (ATVs), snowmobiles, bicyclists, and hikers (FDRLO, 2009). Pedestrian and bicycling paths are limited to the sidewalks and along the Route 11 corridor near commercial areas and local attractions.

3.5.9.2.3.2 Site Recreation

Part of the FTD INRMP's goals and objectives are specifically aimed towards enhancement of quality of life on and around FTD (Army, 2011). Maintaining FTD as a quality recreational resource in the region through recreational opportunities includes three objectives:

- Provide quality outdoor recreational opportunities;
- Provide educational outreach activities for soldiers, their families and surrounding communities; and
- Maintain FTD as an important regional asset for natural resources in the New York State.

FTD is the largest contiguous tract of federal land in New York that allows for outdoor recreation and public access. Approximately 69,000 acres are open to the public for all allowable outdoor recreational activities on FTD, including, but not limited to, hunting, fishing, trapping, and camping within the Range Area (approx. 66,000 acres) and Cantonment Area (approximately 3,000 acres) (Army, 2011).

The Natural Resources Program is responsible for regulating outdoor activities throughout the installation (Fort Drum Regulation 420-3) as well as providing Recreation Permits (access passes) for recreation, hunting, and fishing. Access to the Cantonment area is controlled by the Directorate of Emergency Service while access to the training areas is controlled by Directorate of Plans Training Mobilization and Security. Recreationalists are required to call the sportsman hotline to find out what areas are available for use daily (Army, 2011).

Table 3.5.9-1 lists the total number of Recreation Permits issued from 2003 through 2010 for the entire FTD installation. Earlier or more recent data were not located.

Table 3.5.9-1 Issued Recreation Permits, 2002-2016 - FTD

Year	Active Military	Military Family Member	Retired Military	DoD Civilian	General Public	Total Issued
2002-2003	790	339	116	64	1634	2943
2003-2004	686	409	133	42	1593	2863
2004-2005	910	558	103	74	1751	3396
2005-2006	636	292	108	75	1649	2760
2006-2007	461	261	150	115	1818	2805
2007-2008	712	277	161	141	1954	3245
2008-2009	646	272	176	146	1916	3156
2009-2010	772	500	210	146	1898	3575
2010-2011	1041	253	547	207	2582	4630
2011-2012	1362	215	824	187	2000	4588
2013-2014	1413	273	701	241	2162	4790
2014-2015	2009	280	732	175	1869	2065
2015-2016	1642	295	576	178	1854	4545
Sources: Army, 2011 and FTD, 2016.						

Information indicating the percentage of total recreationists from the region was not available; however, assumptions can be made based on the total regional population of Jefferson, Lewis, and St. Lawrence counties. As of Census year 2010, Lewis County had a total population of 27,087; Jefferson County 116,229; and St. Lawrence County 111,944, equating to a total population of 255,260 (Census, 2010d). The most recent recreational use statistics at FTD (2009 to 2016) indicated that approximately 1.4 percent of the region’s total population use FTD for recreational purposes.

Occasionally, MWR Outdoor Recreation Program provides guided educational hunting and fishing trips, which are held on and off the installation under an Outdoor Adventure Program. Outdoor equipment can also be rented for these activities. Natural resource professionals on FTD also provide periodic educational presentations to the public, and provide assistance with service and community projects (Army, 2011). In addition, the Forest Management Program oversees a firewood program, where the public may harvest firewood from the installation (USACE, 2012).

Access and Restrictions. An automated telephone hotline maintained by the FTD Fish & Wildlife Program alerts the public of areas that are open for recreational use daily. Recreationists can access any part of the Cantonment or Range Areas that are open to the public after checking in and obtaining a recreational pass. At this time, there is no limit on the number of persons allowed entry per day. Recreationists are required to call the FTD Fish & Wildlife Program hotline to hear announcements on area closings.

The FTD Fish & Wildlife Program's Recreational Use Map identifies areas of permanent restriction for safety and security purposes. Areas permanently closed to the public are posted with restriction signs, and include the Main Impact Area, firing ranges, Wheeler-Sack Army Airfield, ammunition supply point, and other small, isolated areas. The Recreational Use Map also identifies boundaries, land cover, angling sites, water bodies, and boat launch ramps and firearms/archery-restricted areas (FTD FSW, 2011; FTD, 2013).

Within the 977-acre CIS footprint, there are currently no FTD operational restrictions on recreation. Two fishing sites fall within the CIS footprint: Mixed Water Angling Site 5 and Cold Water Angling Site 4 (refer to Figure 3.5.9-7). The area is currently available for hunting, fishing, trapping, and camping uses.

3.5.9.3 Environmental Consequences and Mitigation – Land Use - FTD

3.5.9.3.1 Construction – Baseline Schedule

3.5.9.3.1.1 Environmental Consequences

<u>Compatibility with Existing Regional Land Use/Management Plans and Policies</u>

The following paragraphs address the effect of the potential CIS construction on existing regional land use and management plans and policies (previously described).

Regional Management Plans. Under the doctrine of Federal Supremacy, federal actions are not required to conform to local and regional land use management plans (ARNG, 2011). However, the FDRLO serves the purpose of partnering with many government and economic development entities at the federal, state, and local level to foster communication and assist communities in the region with growth management by providing information and an action plan to follow to ensure balanced and sustainable growth while attempting to maintain compatible land uses. Therefore, conflicts with regional management and land use plans would not occur.

Land Use Conversions. Construction of project would not alter offsite land use designations because construction would occur within the FTD boundary; therefore, impacts to land use designations would not occur. However, there could be potential impacts to land use activities as discussed in the following paragraphs.

Recreation. Impacts to Beartown, Onjehonge, Pulpit Rock, and Yellow Lake are expected to be negligible due to their long distances from the project site. The Black River, located one-quarter of a mile from the project site, could possibly be impacted by noise and dust emissions. This could lead to a reduction in the quality of recreational experience of the Black River. However, because of the temporary nature of construction and implementation of dust suppression and noise reduction BMPs, impacts to the recreational use of the Black River would be expected to be temporary and minor.

Compatibility with Existing Site Land Use/Management Plans and Policies

The following paragraphs address the effect of the project's construction on applicable existing site land use and management plans and policies (previously described).

Range Complex Master Plan. Based on the information regarding the RCMP's military use provisions, it appears that the construction of the potential CIS deployment would be consistent with the plan and adjacent land use for military operations. Based on a meeting with project personnel, installation staff indicated that project construction would not conflict with the RCMP. Further, prior coordination with FTD confirmed that locating the project within the installation is consistent and compatible with the installation mission.

Long Range Component of Range Complex Master Plan. A review of the LRC indicates that potential CIS deployment construction would not conflict with the LRC. This is because the on-post future development areas provided for by the LRC are primarily located within the Cantonment Area, and are not adjacent to or within the CIS footprint.

Installation Design Guide. The construction and maintenance of the potential CIS deployment is expected to conform, as applicable, to the requirements listed in the Installation Design Guide. As described in the Installation Design Guide, the Ranges and Training Area contains buildings that are isolated from the Cantonment Area. The design of these facilities is primarily based on mission specifications and functionality rather than visual aesthetics. The project facilities (which would be located in an area currently designated as 'Ranges and Training') would likewise prioritize functionality over visual appeal. Therefore, conflicts with the design standards would not occur.

The FTD Site footprint poses a potential conflict with the location provisions of the Installation Design Guide (which provides information regarding the suitable locations for expansion and development) because of the onsite presence of certain environmental constraints (refer to Environmental and Operational Constraints within this section). In general, suitable development locations per the Installation Design Guide include those that require no mitigation (i.e., no cleanup), although on-post development is not strictly limited to only those locations. However, because the environmental constraints would be addressed through potential mitigations for other resources, conflicts with this plan would not occur.

Army Compatible Use Buffer Program. The ACUB has benefitted the construction and operation of the potential CIS deployment by gaining development rights near and adjacent to the CIS footprint, which would minimize the potential for encroachment onto the CIS footprint; therefore, there are no conflicts between the ACUB and the potential CIS deployment and adjacent offsite land uses.

Integrated Cultural Resources Management Plan. The development of the potential CIS deployment would conform to the ICRMP. Specific to land use, the ICRMP establishes procedures to comply with regulations, which includes, but is not limited to, Section 106 of the NHPA, which requires assessment of the effects of federal actions on cultural resources. It is assumed that consultation and coordination between FTD, MDA, DoD, SHPO, and local Indian Tribes would occur during project planning to determine specific mitigation measures for areas that contain cultural resources. Currently, no listed or proposed NRHPs are located within the CIS footprint of the project site, and SOPs have been established in the event that cultural and/or archeological resources are found during instances of development and land disturbance. Therefore, conflicts with the ICRMP would not occur.

Integrated Natural Resources Management Plan. The development of the potential facilities would have a minor conflict with the INRMP. The purpose of the INRMP is to ensure no net loss of military training areas as well as a goal to conserve natural resources and maintain habitat for local species. However, project construction would result in approximately 1 percent of the land available for training, recreation, and habitat to be permanently converted to non-training and non-environmental uses. Considering the small amount of land that would be converted and the availability of other training and natural resource areas, such a conflict would not be substantive.

The INRMP also emphasizes compliance with natural resource-related local, state, and federal regulations. It is unlikely that current environmental programs and procedures would be noticeably impacted by the CIS deployment. Despite the presence of the project, FTD would continue to comply with all applicable natural-resource related local, state, and federal regulations.

Installation Operational Noise Management Plan. The Installation Operational Noise Management Plan identifies areas of compatible and incompatible land uses with respect to noise zones. Within the CIS footprint, land uses are determined to be compatible with typical noise emissions from training and operations, as well as the operation of the Wheeler-Sack Army Airfield. Noise emissions associated with construction of the project facilities would remain compatible with established noise zones with the implementation of mitigation measures (refer to Section 3.5.10). Potential CIS operational noise would remain compatible with noise zones. Therefore, conflicts with the Installation Operational Noise Management Plan and recommendations found within would not occur.

Integrated Hazardous Waste Management Plan. The HWMP provides the following: 1) an outline of applicable environmental regulations; 2) SOPs for personnel who handle, generate, and store hazardous and universal waste within FTD; and 3) emergency response procedures for all hazardous waste spills. Areas and buildings that currently generate and store hazardous waste are identified and do not fall within the CIS footprint and additional HWMPs for the CIS would be prepared and coordinated with the installation HWMP. Therefore, the project would not conflict with the purpose and procedures outlined in the HWMP.

Land Use Conversions. Land use designations at the project site would possibly change to "Industrial" or "Professional/Institutional" (per the existing FTD land use designations, as previously discussed) as a result of project construction. The project site is designated for 'Ranges and Training' which, based on its definition, would appear to be incompatible with military training and operations.

The construction of the CIS in the 'Ranges and Training' designated areas and the accompanying redesignation of the site would reduce the area available for use for military operations and training exercises. The CIS footprint is estimated as 977 acres, whereas the amount of acreage designated as 'Ranges and Training' is 97,000. This converted land use is only 1 percent of the total land use area designated as 'Ranges and Training.' Considering this factor and the availability of other training lands on FTD, the reduction of the acreage of 'Ranges and Training' area from the construction of the project and conversion to an "Industrial" or "Professional/Institutional" land use designation would be permanent, yet minor.

Environmental and Operational Constraints. Three environmental constraints are identified within the FTD site footprint: cultural resources, water resources, and wetlands (refer to Sections 3.5.4, 3.5.14, and 3.5.15 for further information regarding impacts to these resources and subsequent mitigation measures). Impacts to land use and land use conversions due to environmental constraints would be minor because any environmental issue that would require mitigation measures must be addressed prior to moving forward with construction of the project site. In addition, there are no operational constraints that fall within the CIS footprint; therefore, impacts to land use and land use conversions due to operational constraints are nonexistent.

Highway Closing. Construction of the potential CIS would require closing State Highway 3A. Although not a direct land use issue, minor but beneficial impacts could result to the installation by allowing for additional military training activities to occur within the area. Currently, weapons-firing is limited in the area due to the proximity of State Highway 3A; however, with the closure of the highway, additional military training and weapons-firing could occur in areas along the previous location of the highway outside the CIS footprint.

Recreation. The construction of the project would have a permanent, minor impact on onsite recreation resources available within the 977-acre CIS footprint. Approximately 69,000 acres are currently available for recreational use within FTD for hunting, fishing, trapping, and camping.

Some of these recreational areas may have day-to-day restrictions due to military training, while other areas have permanent restrictions. In comparison, recreation that can occur within the CIS footprint currently does not have permanent restrictions. Taking into considerations that: 1) an estimated 1.4 percent of the regional population uses FTD for recreational purposes; and 2) the total acreage no longer available for recreation due to construction of the CIS would be only 1.4 percent, a minor amount of acreage would be eliminated for available recreational use. Moreover, the recreational land use within the CIS footprint is similar to that of other areas within FTD's Ranges and Training designated areas.

Mixed Water Fish Angling Site 5 and Cold Water Fish Angling Site 4 would likely be closed due to construction and operation of the potential CIS deployment. However, 22 other available fish angling sites exist within the installation boundary for recreational use; therefore, overall impacts to recreation would be minor.

Utilities. Possible rerouting of utilities and/or construction of additional utility lines to support the potential CIS could impact land use permanently by creating easements or restrictions in the area; however, at this time, exact locations and utilities routing is not known. For further information regarding locations and impacts to utilities, refer to Section 3.5.13.

3.5.9.3.1.2 Mitigation

Regional Land Use and Land Use Designations. No mitigation would be required because the project would be constructed within the FTD boundary, a factor which would not be expected to affect offsite land use designations. Localized mitigation measures through the implementation of regional planning efforts and comprehensive plans are likely to be identified during the design and potential closure of State Highway 3A. Potential mitigation measures addressing traffic impacts due to the closure of State Highway 3A are further discussed in Section 3.5.12.

Site Land Use and Land Use Designations. Other than the redesignation of the project site to "Industrial" or "Professional/Institutional" use, no onsite mitigation measures would be required because the land use would continue to be consistent with general military use.

Regional Recreational Land Use. No mitigation for recreation for land use would be required.

Site Recreational Land Use. No mitigation would be required for permanent impacts to recreation activities within FTD due to the vast amount of other recreational area provided within and around FTD.

3.5.9.3.2 Construction – Expedited Schedule

3.5.9.3.2.1 Environmental Consequences

Environmental consequences for land use under the expedited construction schedule would be that same as under the baseline construction schedule.

3.5.9.3.2.2 Mitigation

Mitigation for land use under the expedited construction schedule would be that same as under the baseline construction schedule.

3.5.9.3.3 Operation

3.5.9.3.3.1 Environmental Consequences

<u>Regional Land Use</u>

Land Use Conversions. Because the CIS footprint is located within the installation and land use conversions would only occur within the installation, adjacent land use designations would not be impacted by operations of the CIS. Even though the location of the project is very near the installation boundary, it is actually expected that operations and maintenance activities would not interfere or influence current or future land use activities that occur on adjacent or nearby areas. This is because day-to-day activities associated with facilities operations and maintenance activities would be similar to ongoing installation activities. Regional and installation-specific land use plans are likely to be revised to reflect the changes in land use, and future land development would maintain consistency with established land use and zoning categories per local and regional land use regulation.

Recreation. Potential impacts to regional recreation resources from operations and maintenance activities would be negligible because such activities would be localized and would occur inside the FTD installation.

Highway Closure. The closure of State Highway 3A would likely have permanent but likely minor effects on land use on surrounding communities. Additional commercial and residential land uses could possibly develop along the most frequently chosen alternative traffic route. However, the potential for such additional development is probably no greater than currently exists, and development would be consistent with land use and zoning categories per local and regional land use regulation. Transportation is discussed in Section 3.5.12.

<u>Site Land Use</u>

Land Use Conversions. Safety arcs are designated for potential CIS facilities. While the exact locations of the CIS facilities within the footprint have not been established at this time, the safety arcs would remain within the boundaries of FTD. Development within these safety arcs would be restricted. However, these restrictions would not affect military activities because of the vast acreage of other lands available for military training within the Range Area.

Recreation. Operations would not substantially interfere with recreation activities at FTD. The decrease in recreation area due to the presence of the facilities (including facilities and any safety arcs or buffer zones) would result in a permanent, yet minor, decrease within FTD that is available for recreation.

3.5.9.3.3.2 Mitigation

No mitigation measures would be required for potential land use impacts associated with operations and maintenance activities because the level of impact to onsite or offsite land use would be minor.

Figure 3.5.9-1 Army Compatible Use Buffer Priority Area Near Footprint - FTD

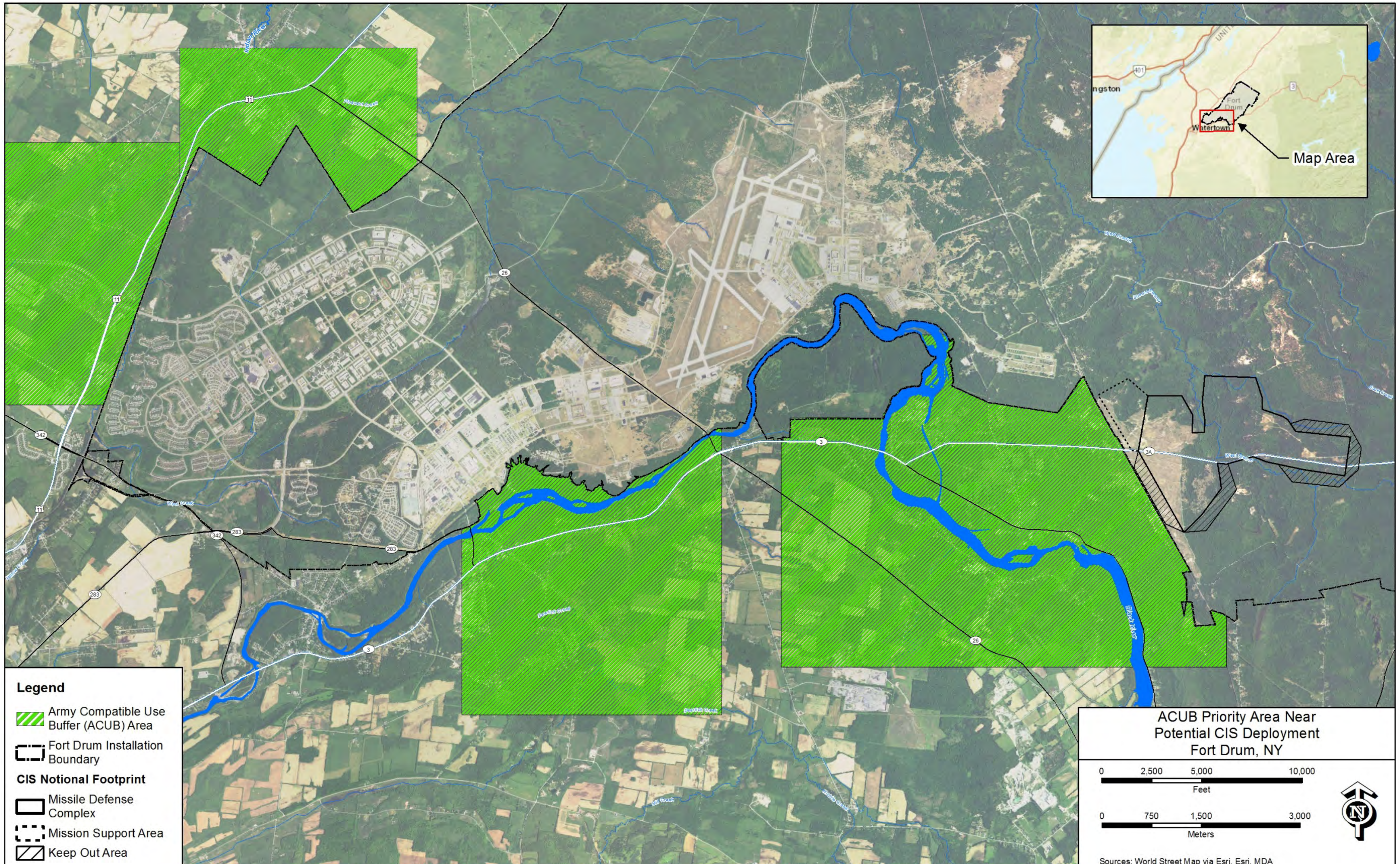


Figure 3.5.9-2 Regional Map - FTD

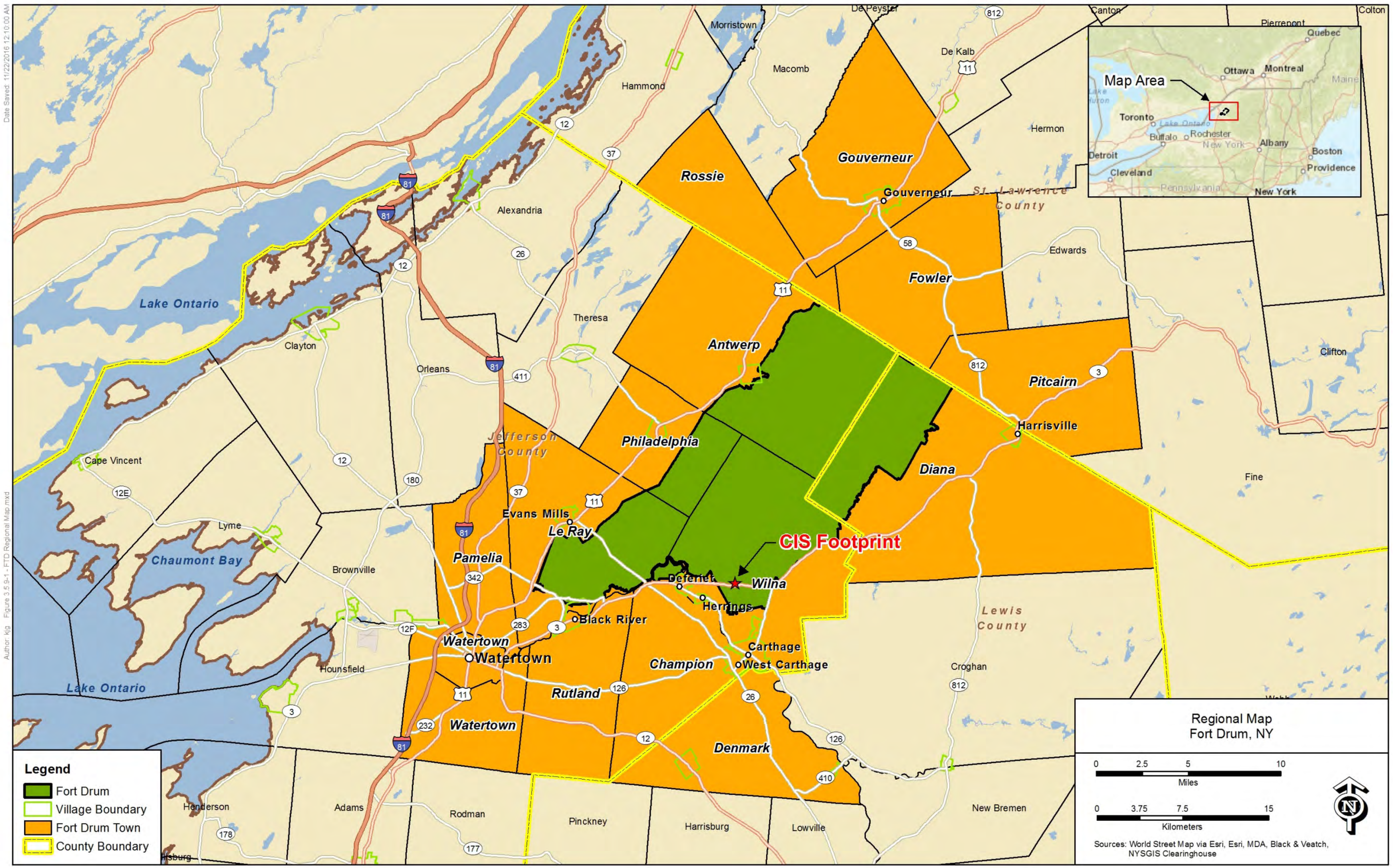


Figure 3.5.9-3 Recreational Areas Near FTD

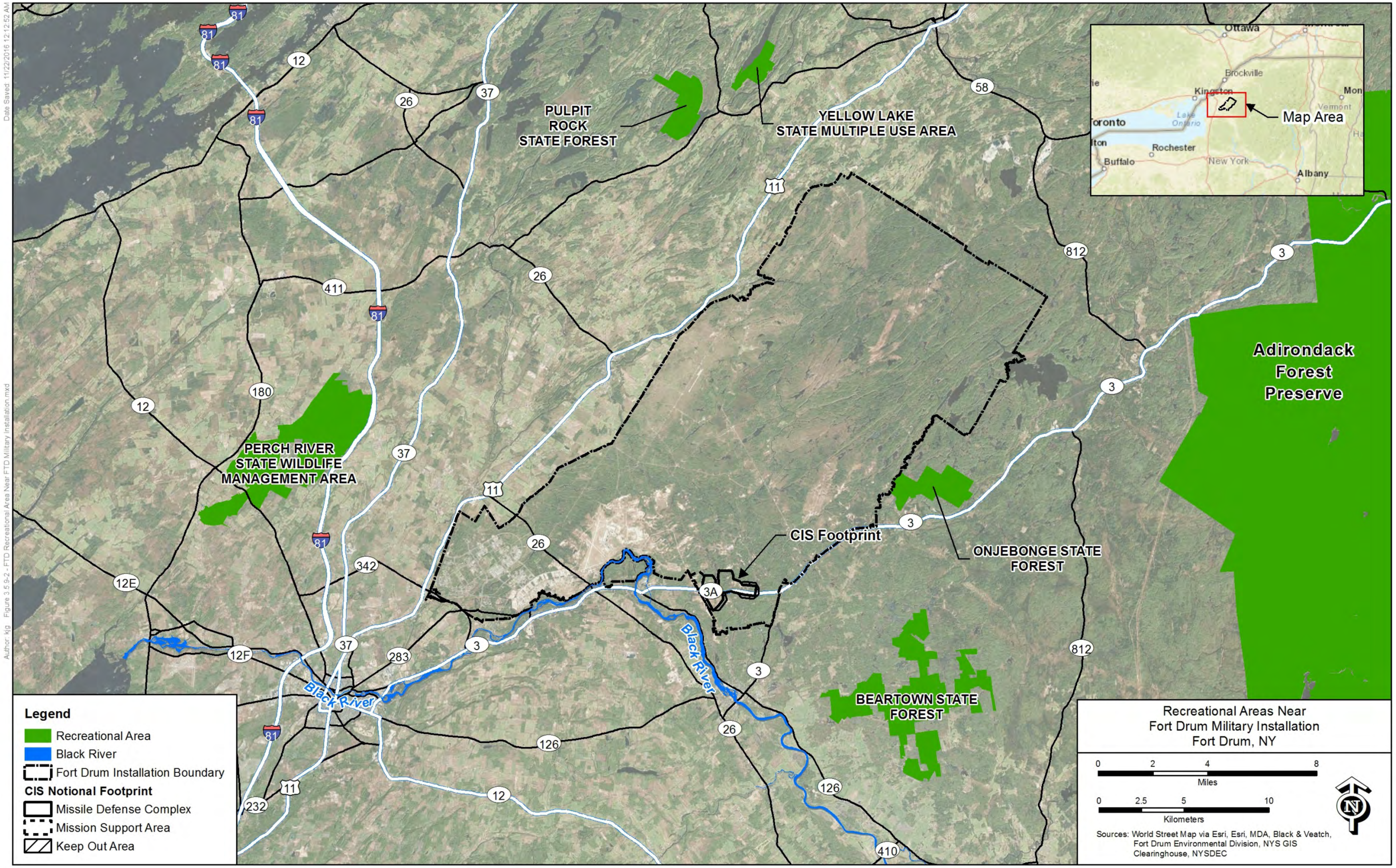


Figure 3.5.9-4 Functional Areas – FTD

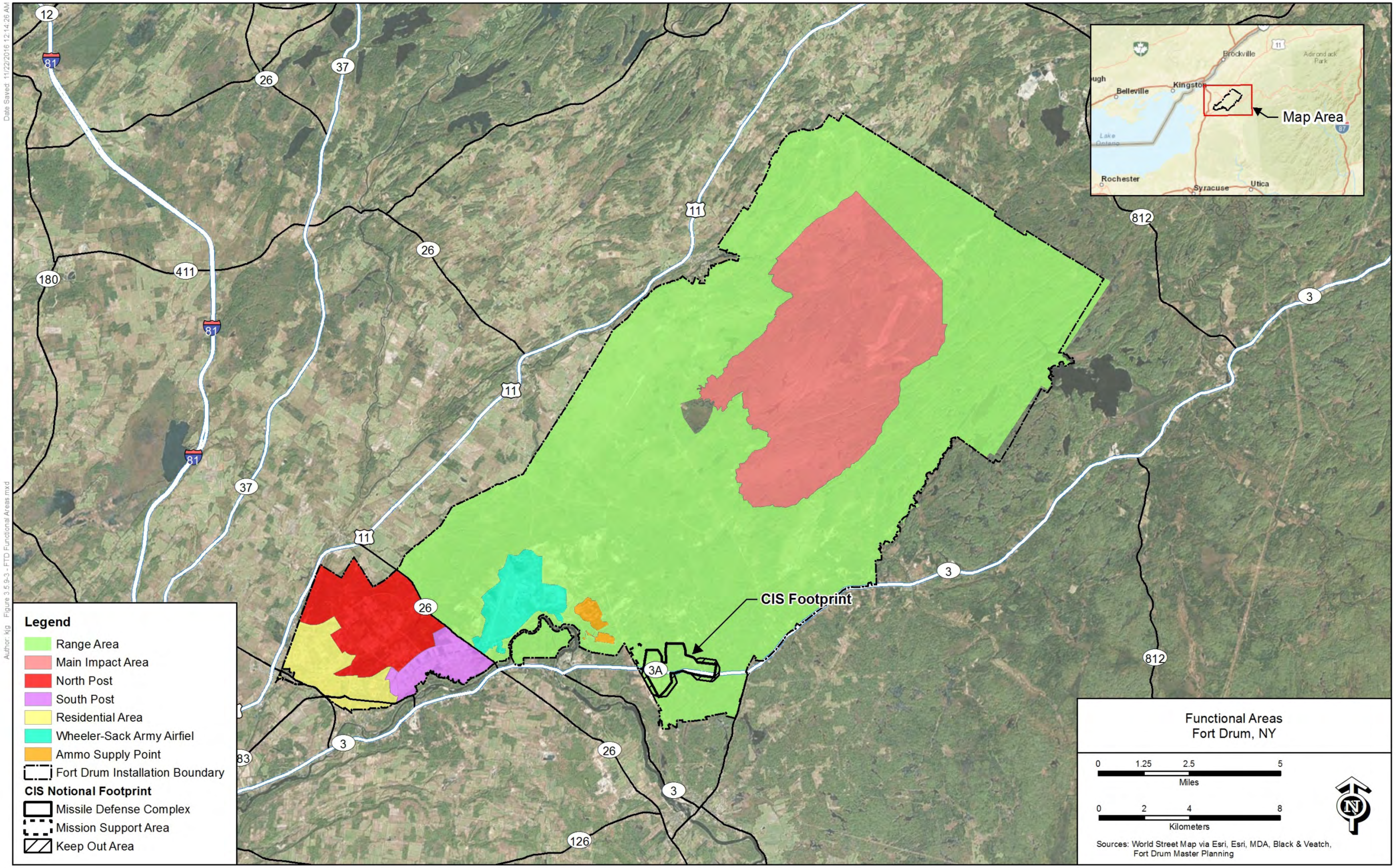


Figure 3.5.9-5 Land Use Classifications - FTD

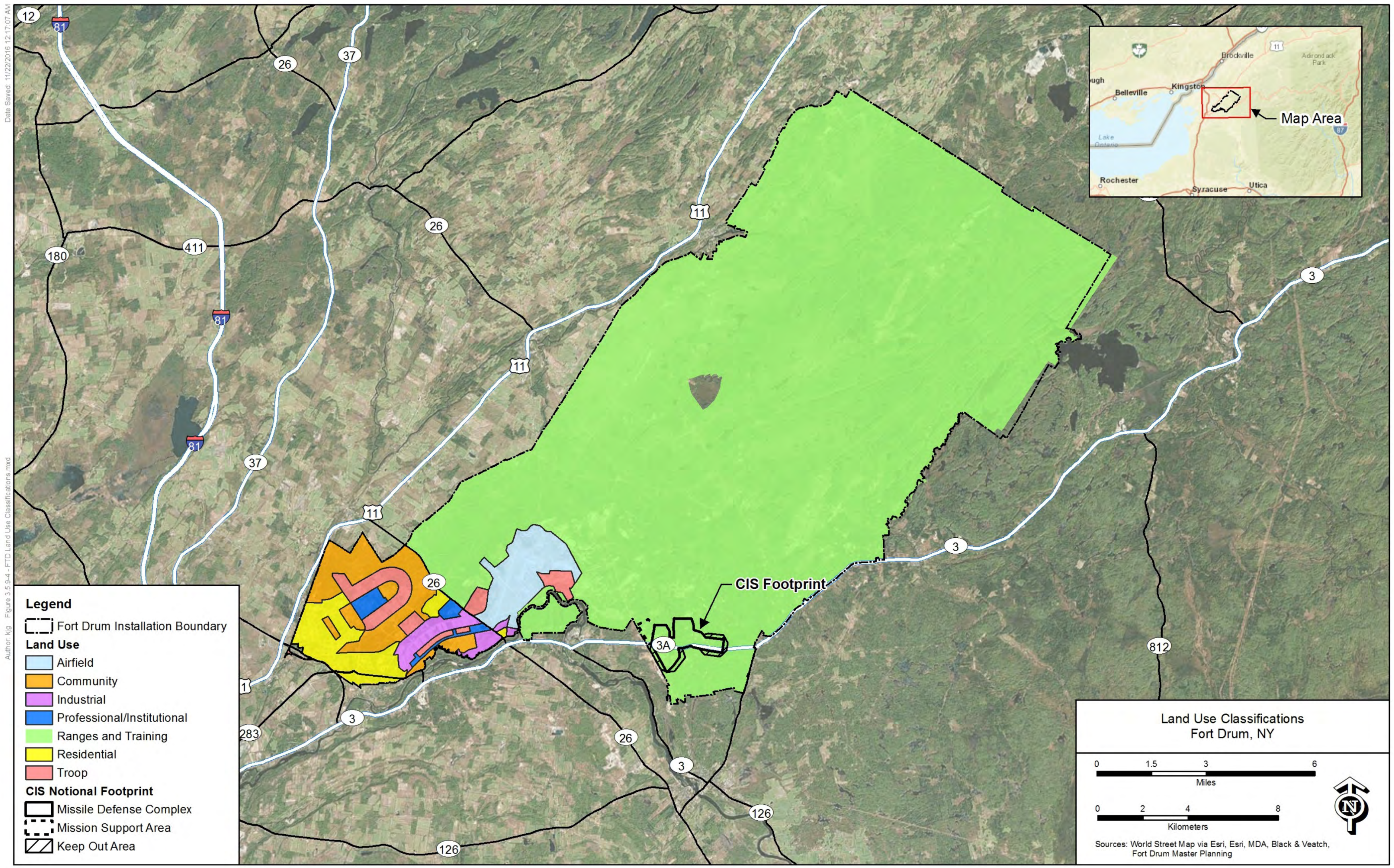


Figure 3.5.9-6 Environmental Constraints - FTD

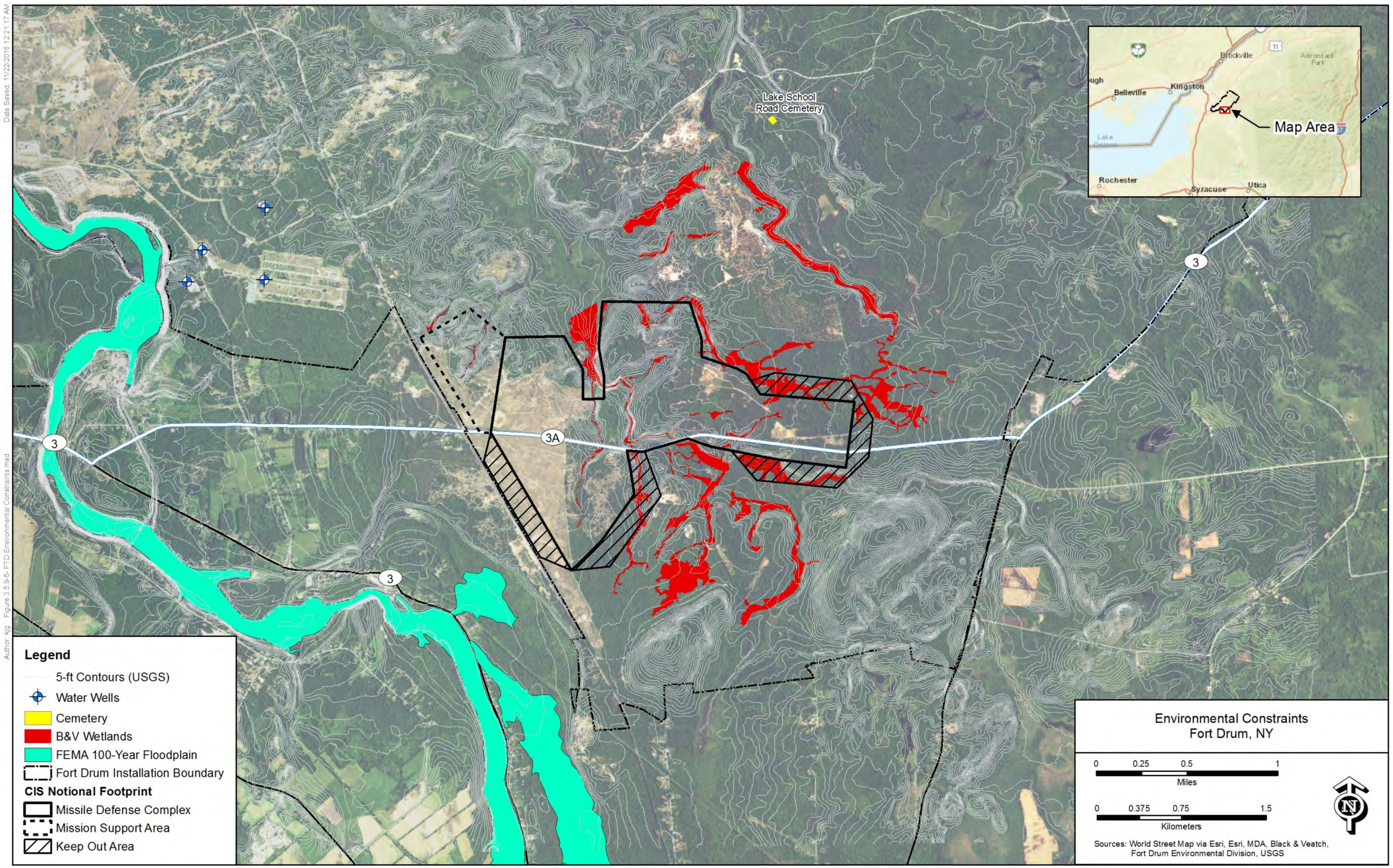
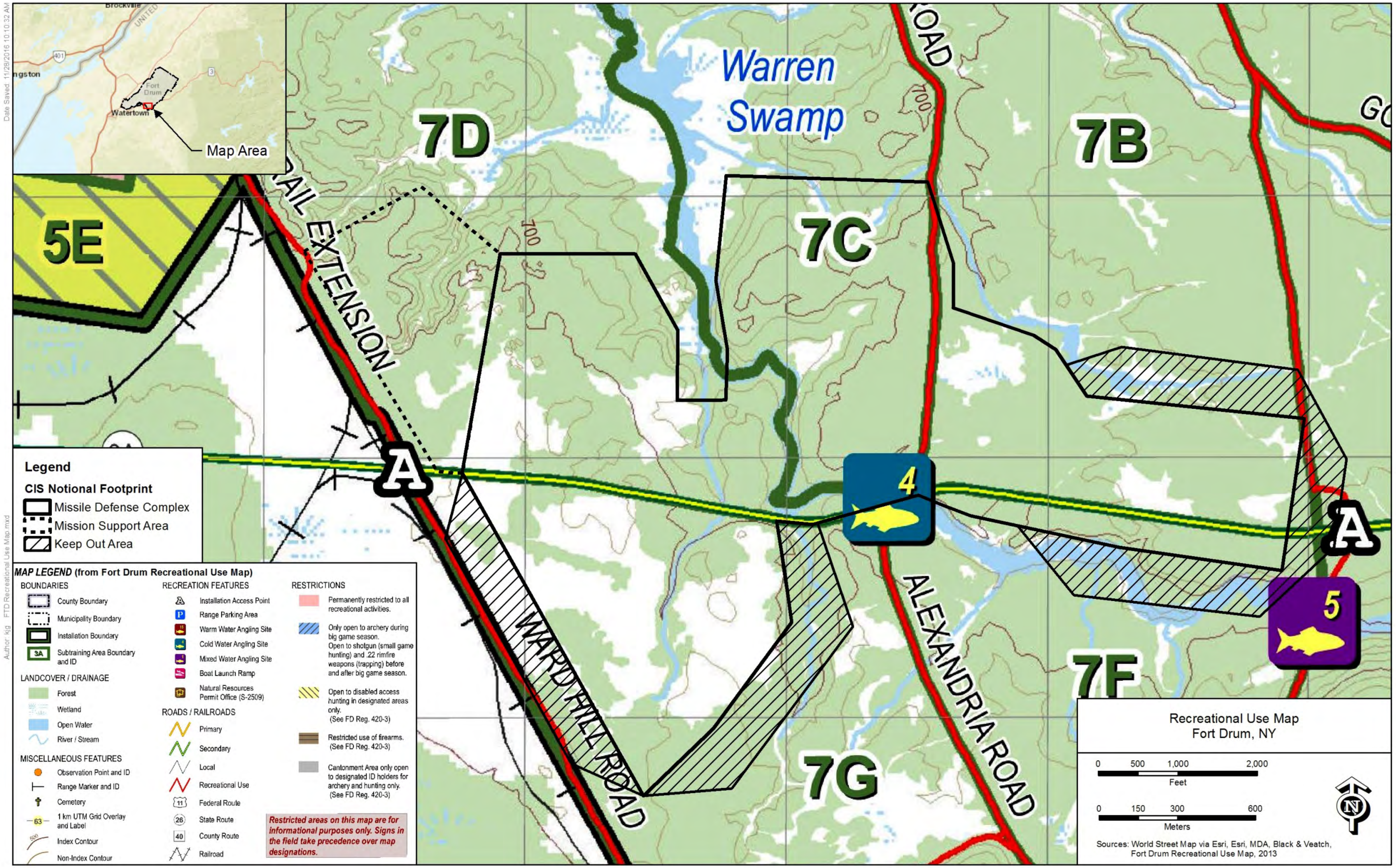


Figure 3.5.9-7 Recreational Use Map – FTD



3.5.10 Noise – FTD

Noise, simply defined as unwanted sound, can have an adverse effect on humans and their activities, as well as the natural environment. This section presents the current noise conditions at and in the vicinity of the CIS footprint, background information about noise principles, guidelines, and regulations, and noise management methods and criteria.

3.5.10.1 Noise Regulations and Guidelines – Noise - FTD

3.5.10.1.1 State Noise Policy

FTD, including the CIS footprint, is located in Jefferson County, New York. Noise in New York State is regulated by the NYSDEC Noise Policy (NYSDEC, 2000). In general, the NYSDEC Noise Policy is consistent with the USEPA guidelines discussed in the following section. Additionally, the NYSDEC Noise Policy states that the sound pressure levels in non-industrial settings "should probably not exceed ambient noise by more than 6 dB(A)" at a noise-sensitive receptor.

3.5.10.1.2 Federal Noise Guidelines

The USEPA guidelines for environmental noise can be used for areas lacking quantifiable sound level limits. The USEPA has established a guideline limiting the L_{dn} at noise-sensitive receptors, such as residences and schools, to 55 dBA (USEPA, 1974). The L_{dn} is based on the 1-hour L_{eq} measured over a 24-hour period with a +10 dBA penalty applied to the sound levels measured during the nighttime hours (22:00 to 07:00). The 1-hour sound levels for a 24-hour period are then logarithmically averaged to determine the L_{dn}.

3.5.10.2 Noise Introduction – Noise - FTD

3.5.10.2.1 Acoustical Terminology

Environmental sound levels are quantified by a variety of parameters and metrics. In order to aid the reader, this section introduces general concepts and terminology related to acoustics and environmental noise.

3.5.10.2.2 Sound Energy Characteristics

Sound energy is physically characterized by amplitude and frequency. Sound amplitude is measured in dB as the logarithmic ratio of a sound pressure to a reference sound pressure (20 micropascals). The reference sound pressure corresponds to the typical threshold of human hearing.

Noise is often considered unwanted sound. However, human response to noise is complex and is influenced by a variety of acoustic and non-acoustic factors. Acoustic factors generally include the sound's amplitude, duration, spectral content, and fluctuations. Non-acoustic factors typically include the listener's ability to become used to the noise, the listener's attitude towards the noise and the noise source, the listener's view of the necessity of the noise, and the predictability of the noise. As such, response to noise is highly individualized. Nonetheless, average listener reactions to changes in sound level are shown in Table 3.5.10-1.

Table 3.5.10-1 Human Reaction to Increases in Sound Pressure Level - FTD

Increase in Sound Pressure Level (dB)	Human Reaction
Under 5	Unnoticed to tolerable
5 to 10	Intrusive
10 to 15	Very noticeable
15 to 20	Objectionable
Over 25	Very objectionable to intolerable
Source: Down and Stocks, 1977.	

Frequency is measured in Hz, which is the number of cycles per second. The typical human ear can hear frequencies ranging from approximately 20 Hz to 20,000 Hz. Typically, the human ear is most sensitive to sounds in the middle frequencies (1,000 to 8,000 Hz) and is less sensitive to sounds in the low and high frequencies. As such, the A-weighting scale was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighting scale emphasizes sounds in the middle frequencies and de-emphasizes sounds in the low and high frequencies. Any sound level to which the A-weighting scale has been applied is expressed in A-weighted decibels, dBA. For reference, the A-weighted sound pressure levels associated with some common noise sources are shown in Table 3.5.10-2.

3.5.10.2.3 Environmental Noise Metrics

Noise in the environment is constantly fluctuating, such as when a car drives by, a dog barks, or a plane passes overhead. Several noise metrics have been developed to quantify fluctuating noise levels. These metrics include the equivalent-continuous sound level and the exceedance sound levels.

The equivalent-continuous sound level, L_{eq}, is the level of a hypothetical steady sound that has the equivalent sound energy as the actual fluctuating sound over a given time duration. For example, L_{eq} (1-hour) is the equivalent-continuous sound level measured over a 1-hour period and provides an indication of the average sound energy over the 1-hour period.

Table 3.5.10-2 Typical Sound Pressure Levels Associated with Common Noise Sources - FTD

Sound Pressure Level (dBA)	Subjective Evaluation	Environment	
		Outdoor	Indoor
140	Deafening	Jet aircraft at 75 ft	
130	Threshold of pain	Jet aircraft takeoff at 300 ft	
120	Threshold of feeling	Elevated train	Rock band concert
110	Extremely Loud	Jet flyover at 1000 ft	Inside propeller plane
100	Very Loud	Motorcycle at 25 ft, auto horn at 10 ft, crowd noise at football game	
90	Very Loud	Propeller plane flyover at 1000 ft, noisy urban street	Full symphony or band, food blender, noisy factory
80	Moderately Loud	Diesel truck (40 mph) at 50 ft	Inside auto at high speed, garbage disposal, dishwasher
70	Loud	B-757 cabin during flight	Close conversation, vacuum cleaner, electric typewriter
60	Moderate	Air-conditioner condenser at 15 ft, near highway traffic	General office
50	Quiet		Private office
40	Quiet	Farm field with light breeze, birdcalls	Soft stereo music in residence
30	Very quiet	Quiet residential neighborhood	Bedroom, average residence (without t.v. and stereo)
20	Very Quiet	Rustling leaves	Quiet theater, whisper
10	Just audible		Human breathing
0	Threshold of hearing		
Sources: Egan, 1988; Ramsey and Sleeper, 1994.			

The exceedance sound level, L_x, is the sound level exceeded "x" percent of the sampling period and is referred to as a statistical sound level. The most common L_x values are L_{90}, L_{50}, and L_{10}. L_{90} is the sound level exceeded 90 percent of the sampling period. L_{90} is referred to as the residual sound level because it measures the background sound level without the influence of loud, transient noise sources (ANSI, 2013a). L_{50} is the sound level exceeded 50 percent of the sampling period or the median sound level. L_{10} is the sound level exceeded 10 percent of the sampling period. L_{10} is often referred to as the intrusive sound level because it measures the occasional louder noises.

3.5.10.3 Affected Environment – Noise – FTD

3.5.10.3.1 Environmental Noise Survey

3.5.10.3.1.1 Survey Methodology

An FTD ENS was completed in August 2015 in order to characterize the existing acoustical conditions. The ENS was conducted in accordance with industry standard methods (ANSI, 2005; ANSI, 2011; ANSI, 2013a; ANSI, 2013b; ANSI, 2013c; ANSI, 2014a; ANSI, 2014b; ANSI, 2014c; ASTM, 2008; ISO, 2003; and ISO, 2007) and included the measurement of the L_{eq} and L_{90} sound levels.

Locations of the nearest off-post noise-sensitive receptors (i.e., residences) that could be impacted by CIS construction and operation noise were identified during the ENS. NMLs were selected based on the locations of the noise-sensitive receptors. The NMLs selected during the ENS, numbered 1 through 5, are shown on Figure 3.5.10-1. Military training exercises were not being conducted at FTD during the ENS period. Two locations, NML1 and NML5, were situated within on-post residential areas.

Weather conditions during the ENS were conducive to the measurement of sound levels: partly cloudy to mostly cloudy conditions with low winds. Some very brief periods of light precipitation occurred during the survey period, but were not substantial enough to affect the sound level measurements. Meteorological data from the Wheeler-Sack Army Airfield as well as in situ measurements of meteorological conditions are shown on Figure 3.5.10-2.

Sound levels were monitored at four of the NMLs for at least 44 hours. Sound level monitors were secured and inspected periodically to ensure continuous operation, but were otherwise unmanned. Short-term sound levels were also measured at four of the NMLs for 5-minute to 20-minute periods during both the daytime and nighttime hours. Extant noise sources were observed and documented. A summary of sound level measurement and monitoring equipment is provided in Table 3.5.10-3. As shown, equipment was laboratory-calibrated within 12 months of the ENS. Additionally, sound level meters were field-calibrated before and after each monitoring period and measurement series, and the change in calibration level did not exceed 0.2 dB (a change exceeding 1.0 dB would have required measurements to be repeated).

Table 3.5.10-3 Sound Level Measurement and Monitoring Equipment – FTD

Model	Serial Number	Laboratory Calibration Date
Rion Model NL-22	01110135	21 July 2015
Rion Model NL-22	01110133	21 July 2015
Rion Model NA-27	01191119	21 July 2015
Rion Model NL-52	01232541	21 July 2015
Rion Model NL-52	00331834	3 February 2015
Norsonic 1251 Acoustic Calibrator	25762	10 April 2015
Rion NC-73 Acoustic Calibrator	10527795	20 July 2015

3.5.10.3.1.2 Survey Results

NML1

NML1 was representative of on-post residences on the southwest side of FTD. NML1 was situated along a walking trail, west of Holdenbury Drive, in an on-post residential area. The main sources of noise observed at NML1 during the ENS were distant highway traffic, neighborhood activities, occasional vehicles passing by on local roads, and occasional on-post helicopter activity.

The sound levels measured at NML1 during the ENS are shown on Figure 3.5.10-3. The minimum L_{dn} corresponding to the measured 1-hour L_{eq} data was 53 dBA. The median, measured 10-minute L_{90} was 41 dBA during the daytime and 36 dBA during the nighttime. The measured sound levels were typical for quiet suburban residential areas. The minimum L_{dn} measured at NML1 during the ENS was consistent with the ≤ 55 dBA USEPA guideline for noise-sensitive receptors.

NML2

NML2 was situated along Loop Road, approximately 875 ft north of Gormley Road. The sound level monitor was placed at a location representative of nearby residences along Loop Road. Noise sources observed at NML2 during the ENS included traffic on State Highway 3, occasional trucks passing by on Loop Road, barking dogs, wind-blown trees, insects, and aircraft flyovers.

The sound levels measured at NML2 during the ENS are shown on Figure 3.5.10-4. The minimum L_{dn} corresponding to the measured 1-hour L_{eq} data was 58 dBA. The median, measured 10-minute L_{90} was 38 dBA during both daytime and nighttime periods. The measured sound levels were typical for a residential area situated near a highway. The minimum L_{dn} measured at NML2 during the ENS exceeded the ≤ 55 dBA USEPA guideline for noise-sensitive receptors.

NML3

NML3 was representative of the nearest residences to the south of the FTD Site footprint. NML3 was situated at the north end of Boyd Road. Noise sources observed at NML3 during the ENS included dogs barking, insects, occasional breezes in the trees, distant highway traffic (distant), and occasional helicopter flyovers.

The sound levels measured at NML3 during the ENS are shown on Figure 3.5.10-5. The minimum L_{dn} corresponding to the measured 1-hour L_{eq} data was 54 dBA. The median, measured 10-minute L_{90} was 42 dBA during the daytime and 46 dBA during the nighttime. The measured sound levels were typical for a quiet residential area. The increase in median nighttime L_{90} sound level (relative to the median daytime level) was caused by increased nighttime insect activity. The minimum L_{dn} measured at NML3 during the ENS was consistent with the ≤ 55 dBA USEPA guideline for noise-sensitive receptors. With the exception of occasional helicopter flyovers, the primary sources of noise were not related to any FTD activity.

NML4

NML4 represented residences along State Highway 3A, with the monitoring setback distance from the highway consistent with that of nearby homes. NML4 was situated on the west boundary of FTD installation, approximately 80 ft south of State Highway 3A. Noise sources observed at NML3 during the ENS included State Highway 3A traffic. The observed daytime traffic count was approximately 280 vph, approximately 20 percent of which was heavy trucks. The nighttime traffic count was approximately 25 vph. Other source of sound included insects, occasional breezes in the trees, and occasional helicopter noise.

The sound levels measured at NML4 during the ENS are shown on Figure 3.5.10-6. The minimum L_{dn} corresponding to the measured 1-hour L_{eq} data was 64 dBA. The median, measured 10-minute L_{90} was 45 dBA during the daytime period and 37 dBA during the nighttime period. The measured sound levels were typical for a residential area situated near a highway. The minimum L_{dn} measured at NML4 during the ENS exceeded the ≤ 55 dBA USEPA guideline for noise-sensitive receptors.

NML5

NML5 was situated along Leray Drive, within an on-post residential area. Noise sources observed at NML5 during the ENS included distant traffic, insects, and wind-blown trees. Due to the steady, quiet conditions at NML5, sound levels were measured for one 10-minute daytime period and one 5-minute nighttime period. The measured daytime L_{90} sound level was 44 dBA and the measured nighttime L_{90} sound level was 40 dBA.

ENS Summary

Table 3.5.10-4 summarizes the existing conditions at FTD NMLs, as measured during the ENS, as well as the guidelines and regulations that would be used to assess potential environmental impact:

Table 3.5.10-4 Summary of Ambient Sound Level Environmental Noise Survey Results and Sound Level Design Criteria - FTD

Location	Measured Sound Level	Applicable Regulation / Guideline	Notes
NML1	L_{dn}: 53 dBA	USEPA: $L_{dn} \leq 55$ dBA	(1)
NML1	Median L_{90}: 41 dBA (Daytime)	Assess potential increase to L_{90}.	(2)
NML1	Median L_{90}: 36 dBA (Nighttime)	Assess potential increase to L_{90}. Limit facility sound level to 42 dBA per NYSDEC guideline.	(2)
NML2	L_{dn}: 58 dBA	USEPA: $L_{dn} \leq 55$ dBA	(2)
NML2	Median L_{90}: 38 dBA (Daytime)	Assess potential increase to L_{90}.	(2)
NML2	Median L_{90}: 38 dBA (Nighttime)	Assess potential increase to L_{90}. Limit facility sound level to 44 dBA per NYSDEC guideline.	(2)
NML3	L_{dn}: 54 dBA	USEPA: $L_{dn} \leq 55$ dBA	(1)
NML3	Median L_{90}: 42 dBA (Daytime)	Assess potential increase to L_{90}. Limit facility sound level to 48 dBA per NYSDEC guideline.	(2)
NML3	Median L_{90}: 46 dBA (Nighttime)	Assess potential increase to L_{90}.	(2)
NML4	L_{dn}: 64 dBA	USEPA: $L_{dn} \leq 55$ dBA	(2)
NML4	Median L_{90}: 45 dBA (Daytime)	Assess potential increase to L_{90}.	(2)
NML4	Median L_{90}: 37 dBA (Nighttime)	Assess potential increase to L_{90}. Limit facility sound level to 43 dBA per NYSDEC guideline.	(2)
NML5	Measured L_{90}: 44 dBA (Daytime)	Assess potential increase to L_{90}.	(2)
NML5	Measured L_{90}: 40 dBA (Nighttime)	Assess potential increase to L_{90}. Limit facility sound level to 46 dBA per NYSDEC guideline.	(2)

Notes:
1. The addition of CIS noise contribution should result in a cumulative L_{dn} that is consistent with the USEPA guideline.
2. Addition of CIS noise contribution should minimize cumulative impact at residences near NML.

3.5.10.4 Environmental Consequences and Mitigation – Noise - FTD

3.5.10.4.1 Noise Impact Assessment Guidelines

Potential cumulative environmental noise impacts at all locations, regardless of jurisdiction, were evaluated by determining the potential changes to the ambient, or residual, sound level. The residual sound level was quantified by the L_{90} exceedance level (ASTM, 2002). Potential changes in L_{90} sound level resulting from CIS construction and operation were compared to the guideline criteria shown in Table 3.5.10-1 to determine the potential reaction of neighbors. Additionally, the predicted construction and operation sound levels were compared to the NYSDEC Noise Policy guideline suggesting facility sound levels should probably not exceed the existing ambient sound levels by more than 6 dBA.

3.5.10.4.2 Construction – Baseline Schedule

Environmental noise impacts associated with the baseline construction schedule discussed in Section 2.5.1 were evaluated.

3.5.10.4.2.1 Calculation Basis

Major CIS construction phases would consist of mobilization, site preparation, and individual facility construction. The individual facility construction phase for the potential CIS deployment would generally include foundation construction, building erection, and site clean-up / start-up.

Noise emissions would vary with each phase of construction depending on the specific construction activity, the location of the activity on the CIS, and the associated construction equipment required for each phase or activity. Accurately predicting the actual sound levels at off-post receptors resulting from construction activities is difficult due to the mobility and time-varying usage of construction equipment. Nonetheless, the variable nature of construction noise can be represented by an "average" sound level, which is determined in accordance with methodologies outlined by the USEPA and other construction noise resources (USEPA, 1971; BBN, 1977). The "average" construction sound levels account for the type and quantity of equipment, the expected usage of each piece of equipment over a typical 8 to 12-hour shift, and the typical sound levels of the equipment used during each phase of construction. A list of construction equipment that would be anticipated to be used for potential CIS construction is provided in Table 3.5.10-5. The typical sound level at a reference distance of 50 feet from each piece of equipment is also provided. Estimated quantities of each piece of equipment and the estimated usage percentages were provided for the mobilization, site preparation, and facility construction phases. Note that Table 3.5.10-5 provides all the equipment that could be used over the entire CIS construction period; actual type and quantity of equipment components in individual CIS construction areas would depend on the specific construction activity.

Table 3.5.10-5 Combined List of Construction Equipment for All Phases - FTD

Construction Equipment	Typical sound level at 50 ft	Construction Equipment	Typical sound level at 50 ft
Air Compressor	76 dBA	Grader	77 dBA
Asphalt Paver	89 dBA	Grinder	79 dBA
Auger, Large (18') Excavator Mounted	85 dBA	Impact Wrench	85 dBA
Bobcat	84 dBA	Light Set (with Generator)	71 dBA
Bush Hammer	75 dBA	Man Lift	71 dBA
Chain Saw	85 dBA	Mobile Crane	80 dBA
Chop Saw	66 dBA	Pile Driver - Impact	101 dBA
Sheepsfoot Compactor	79 dBA	Rock Hammer	75 dBA
Concrete Pumper Truck	74 dBA	Rock Crusher	88 dBA
Concrete Saw	88 dBA	Roller	79 dBA
Concrete Truck	85 dBA	Scraper/Pan	88 dBA
Concrete Vibrator	68 dBA	Sump Pump	76 dBA
Crawler Excavator	86 dBA	Threading Machine	85 dBA
Diesel Generator	71 dBA	Torque Wrench	88 dBA
Dozer	77 dBA	Truck with Trailer	81 dBA
Drill	83 dBA	Troweling Machine	81 dBA
Dump Truck	81 dBA	Truck	81 dBA
Forklift	76 dBA	Vibratory Tamper	78 dBA
Front End Loader	77 dBA	Welder	81 dBA

3.5.10.4.2.2 Environmental Consequences

Using calculations described previously, the potential worst-case “average” sound levels in nearby residential areas were determined using the aforementioned methods (USEPA, 1971; BBN, 1977). Distances from construction areas to the nearest noise-sensitive receptors (i.e., residences) shown on Figure 3.5.10-7 were determined. The nearest noise-sensitive receptors were generally consistent with the NMLs from the ENS, but are the actual locations of residential buildings determined based on examining available aerial imagery. Table 3.5.10-6 provides the distance from each receptor on Figure 3.5.10-7, “R1” through “R5,” to the closest CIS footprint. The range of worst-case “average” construction sound levels was determined based on these distances. Note that this is a very conservative estimate because it assumed that all construction equipment is collocated at a single point on the closest CIS footprint boundary, and it assumed attenuation only from the geometrical spreading of sound (i.e., sound attenuation over distance). Other attenuation factors such as ground and atmospheric absorption, and shielding from local terrain were not considered.

The results in Table 3.5.10-6 were used to evaluate potential worst-case construction noise impacts by comparing the worst-case "average" sound level at a receptor to the median measured ambient daytime L_{90} sound level. The worst-case "average" construction sound level was then combined with the median daytime ambient sound level and the potential worst-case increase to the ambient sound level was determined. Finally, a potential reaction to the change in sound level was provided based on the guideline criteria in Table 3.5.10-1. Based on the results in Table 3.5.10-6, there could be times when construction noise would be potentially intrusive or objectionable at R2, R3, and R4 locations shown on Figure 3.5.10-7. However, it should be noted that the estimated sound levels in Table 3.5.10-6 are conservative and that any impacts, while potentially tolerable to objectionable, would be reduced by the implementation of standard noise BMPs.

Table 3.5.10-6 Construction Noise Calculation Results - Baseline Schedule – FTD

	Nearest Noise-Sensitive Receptor (1)				
	R1	**R2**	**R3**	**R4**	**R5**
Estimated distance to nearest construction area	6.5 mi	4,575 ft	5,000 ft	500 ft	5.5 mi
Worst-case "average" construction sound levels (2)	22 to 32 dBA	30 to 49 dBA	34 to 49 dBA	48 to 64 dBA	24 to 33 dBA
Median measured daytime ambient (L_{90}) sound level (3)	41 dBA	38 dBA	42 dBA	45 dBA	44 dBA
Worst-case sound levels during construction	41 dBA	39 to 50 dBA	43 to 50 dBA	49 to 64 dBA	44 dBA
Potential worst-case sound level increase	0 dBA	1 to 12 dBA	1 to 8 dBA	4 to 19 dBA	0 dBA
Potential reaction from nearest noise-sensitive neighbors (4)	Unnoticed	Unnoticed to very noticeable	Unnoticed to intrusive	Tolerable to objectionable	Unnoticed

Notes:
1. See Figure 3.5.10-7.
2. Based on USEPA, 1971; BBN 1977.
3. Based in Table 3.5.10-4.
4. Based in Table 3.5.10-1.

3.5.10.4.2.3 Mitigation

Implementation of BMPs would adequately address construction noise so that mitigation measures would not be required. Construction noise BMPs would consist of the following:

- Where possible, select vibratory pile-driving in lieu of impact pile-driving because the former is typically roughly 10 dBA quieter than the latter.

- Outfit diesel engines with engine exhaust mufflers, as recommended by the manufacturers.
- Ensure noise control equipment, such as engine mufflers, are maintained and inspected regularly to ensure it is functioning properly.
- Implement provisions, in accordance with guidelines, that would limit noisier construction periods, whenever practical, especially during the nighttime hours.

3.5.10.4.3 Construction – Expedited Schedule

3.5.10.4.3.1 Environmental Consequences

Environmental noise impacts associated with the expedited construction schedule discussed in Section 2.5.1 were also evaluated. Although the worst-case "average" construction sound levels associated with the expedited schedule would be identical to the baseline schedule potential 24/7 construction activities could result in additional nighttime acoustical impacts. Calculated nighttime acoustical impacts at the nearby noise sensitive receptors are detailed in Table 3.5.10-7.

Table 3.5.10-7 Construction Noise Calculation Results - Expedited Schedule – FTD

	Nearest Noise-Sensitive Receptor (1)				
	R1	**R2**	**R3**	**R4**	**R5**
Estimated distance to nearest construction area	6.5 mi	4,575 ft	5,000 ft	500 ft	5.5 mi
Worst-case "average" construction sound levels (2)	22 to 32 dBA	30 to 49 dBA	34 to 49 dBA	48 to 64 dBA	24 to 33 dBA
Median measured nighttime ambient (L_{90}) sound level (3)	36 dBA	38 dBA	46 dBA	37 dBA	40 dBA
Worst-case sound levels during construction	41 dBA	39 to 50 dBA	43 to 50 dBA	49 to 64 dBA	44 dBA
Potential worst-case sound level increase	6 dB	4 to 12 dB	2 to 5 dB	12 to 27 dB	5 dB
Potential reaction from nearest noise-sensitive neighbors (4)	Intrusive	Unnoticed to very noticeable	Unnoticed to intrusive	Very noticeable to very objectionable	Unnoticed to intrusive

Notes:
1. See Figure 3.5.10-7.
2. Based on USEPA 1971; BBN 1977.
3. Based in Table 3.5.10-4.
4. Based in Table 3.5.10-1.

3.5.10.4.3.2 Mitigation

In addition to efforts detailed in Section 3.5.10.4.2.3, noisier construction activities could be limited to the daytime hours as much as possible.

3.5.10.4.4 Operation

The results herein conservatively assumed continuous (24-hour) operation of the CIS backup power plant and a power plant location that would be centrally located in the CIS footprint (see Figure 3.5.10-7). Power plant operation would normally be intermittent and limited to testing periods and during power outages).

3.5.10.4.4.1 Calculation Basis

The primary permanent CIS noise sources from potential CIS deployment at FTD would be associated with the backup power plant, which would consist of no more than two 3-MW diesel engine-generators inside the power plant building, although four generators could operate for short durations (5 to 10 minutes). This analysis was the worst case short-duration situation. The most substantial noise sources for the power plant would include the engine-generator exhausts, the air intakes, and the engine-generator operation. The engine-generator exhausts would be ducted to the outside of the building via an exhaust stack, and would be furnished with standard acoustical silencers ("mufflers") to reduce their environmental noise contribution.

The engine-generators are typically cooled via forced air from large AHUs having air intakes on the outside of the building. There is typically one AHU for each engine-generator. The AHU air intakes are typically outfitted with hoods and standard louvers and/or bird screens.

Typical equipment sound levels for power plant noise sources are as follows:

- Engine-generator exhaust stack exits: Sound power level of 100 to 105 dBA, including effects of silencers.
- AHU air intakes: Sound power level of 90 to 95 dBA.
- Engine-generator room noise leaking out through AHU air intakes: Interior sound pressure level of approximately 120 to 125 dBA (combined sound level from multiple operating engine-generators and AHUs).

In addition to the power plant, the MEBs could also radiate some noise from indoor or outdoor equipment, such as compressors, pumps, blowers, ventilation units, and/o r transformers. Noise from indoor sources would be reduced considerably by the building walls and roof. Outdoor sources, such as small transformers and air conditioning units, would not be major environmental noise contributors due to their small size.

3.5.10.4.4.2 Environmental Consequences

The potential environmental sound levels at the nearest noise-sensitive receptors resulting from the operation of the potential CIS sources were estimated using standardized calculation methodology (ISO, 1993; ISO, 1996). The standard methodology accounts for source sound power, directivity, and height, and for acoustical shielding from local terrain and CIS buildings and structures. Ground inside the CIS footprint was assumed to be acoustically reflective (e.g., packed dirt or pavement). Ground outside the CIS footprint was assumed to be acoustically non-reflective (e.g., loose dirt, grass, or foliage). Only potential CIS sources of sound were included in the calculations; other sources of sound such as background sound (e.g., traffic) were not included. Meteorological conditions were conservatively assumed to be downwind from source to receptor with a moderate temperature inversion, which bends sound propagating through the atmosphere back toward the ground.

The estimated CIS sound levels are summarized in Table 3.5.10-8 and Table 3.5.10-9 for the five nearest noise-sensitive receptors (residences), labeled "R1" through "R5" on Figure 3.5.10-7. R1 and R5 were representative of the closest on-post residential areas. R2, R3, and R4 were representative of the closest residences to the east, south, and west of the CIS footprint, respectively.

Table 3.5.10-8 provides the calculated future L_{dn} for R1 through R4 considering continuous, 24-hour power plant operation. The L_{dn} at R1 through R4 would not be expected to change, even during continuous power plant operation.

The potential increases in ambient sound level (L_{90}) and the expected reactions to the increases are summarized in Table 3.5.10-9. As shown, sound contributions from the potential CIS are not expected to be noticeable at R1 through R5. Additionally, Table 3.5.10-10 provides a summary of the predicted CIS sound levels compared to the recommended sound level limit determined in accordance with NYSDEC guidelines.

Table 3.5.10-8 Summary of Predicted Sound Levels and Predicted Future L_{dn} Sound Levels - Operation – FTD

Location	Predicted CIS Sound Level	Existing L_{dn}	Predicted Future L_{dn} Including CIS	Potential Increase	Consistent with USEPA Guidelines?
R1	21 dBA	53 dBA (1)	53 dBA	0 dBA	Yes
R2	26 dBA	58 dBA (2)	58 dBA	0 dBA	Yes (3)
R3	26 dBA	54 dBA (4)	54 dBA	0 dBA	Yes
R4	31 dBA	64 dBA (5)	64 dBA	0 dBA	Yes (3)

Notes:

1. Based on L_{dn} measured at NML1; see Table 3.5.10-4.
2. Based on L_{dn} measured at NML2; see Table 3.5.10-4.
3. Existing L_{dn} exceeds USEPA guideline; CIS contribution would not increase existing L_{dn}.
4. Based on L_{dn} measured at NML3; see Table 3.5.10-4.
5. (5) Based on L_{dn} measured at NML4; see Table 3.5.10-4.

Table 3.5.10-9 Summary of Predicted Sound Levels and Potential Reactions at Residential Receptors - Operation – FTD

Location	Predicted CIS Sound Level	Period	Existing Ambient Sound Level (L_{90})	CIS + Existing Ambient Sound Level	Potential Increase	Potential Reaction (1)
R1	21 dBA	Daytime	41 dBA (2)	41 dBA	0 dBA	Unnoticed
R1	21 dBA	Nighttime	36 dBA (2)	36 dBA	0 dBA	Unnoticed
R2	26 dBA	Daytime	38 dBA (3)	38 dBA	0 dBA	Unnoticed
R2	26 dBA	Nighttime	38 dBA (3)	38 dBA	0 dBA	Unnoticed
R3	26 dBA	Daytime	42 dBA (4)	42 dBA	0 dBA	Unnoticed
R3	26 dBA	Nighttime	46 dBA (4)	46 dBA	0 dBA	Unnoticed
R4	31 dBA	Daytime	45 dBA (5)	45 dBA	0 dBA	Unnoticed
R4	31 dBA	Nighttime	37 dBA (5)	38 dBA	1 dBA	Unnoticed
R5	< 20 dBA	Daytime	44 dBA (6)	44 dBA	0 dBA	Unnoticed
R5	< 20 dBA	Nighttime	40 dBA (6)	40 dBA	0 dBA	Unnoticed

Notes:

1. Based in Table 3.5.10-1.
2. Based on median L_{90} measured at NML1; see Table 3.5.10-4.
3. Based on median L_{90} measured at NML2; see Table 3.5.10-4.
4. Based on median L_{90} measured at NML3; see Table 3.5.10-4.
5. Based on median L_{90} measured at NML4; see Table 3.5.10-4.
6. Based on L_{90} measured at NML5; see Table 3.5.10-4.

Table 3.5.10-10 Summary of Predicted Operational Sound Levels Relative to New York State Department of Environmental Conservation Guidelines – FTD

Location	Predicted CIS Sound Level	NYSDEC Guideline Limit	Consistent with NYSDEC Guideline
R1	21 dBA	42 dBA (1)	Yes
R2	26 dBA	44 dBA (1)	Yes
R3	26 dBA	48 dBA (1)	Yes
R4	31 dBA	43 dBA (1)	Yes
R5	< 20 dBA	46 dBA (1)	Yes
Notes: 1. See Table 3.5.10-4.			

3.5.10.4.4.3 Mitigation

The overall environmental noise impact from the CIS would be negligible for the surrounding residential area. BMPs commonly used to reduce noise impacts during operations would include the following:

- Standard noise control equipment for continuous 24-hour operation of the CIS power plant equipment.
- Silencers for engine exhausts.
- Acoustical louvers and/or silencers, as needed, for AHU air intakes.
- Standard noise control equipment for outdoor equipment packages, as needed.

Because negligible noise impacts would occur from operations and implementation of BMPs could further address impacts from noise, no mitigation measures would be required.

Figure 3.5.10-1 Noise Monitoring Locations – FTD

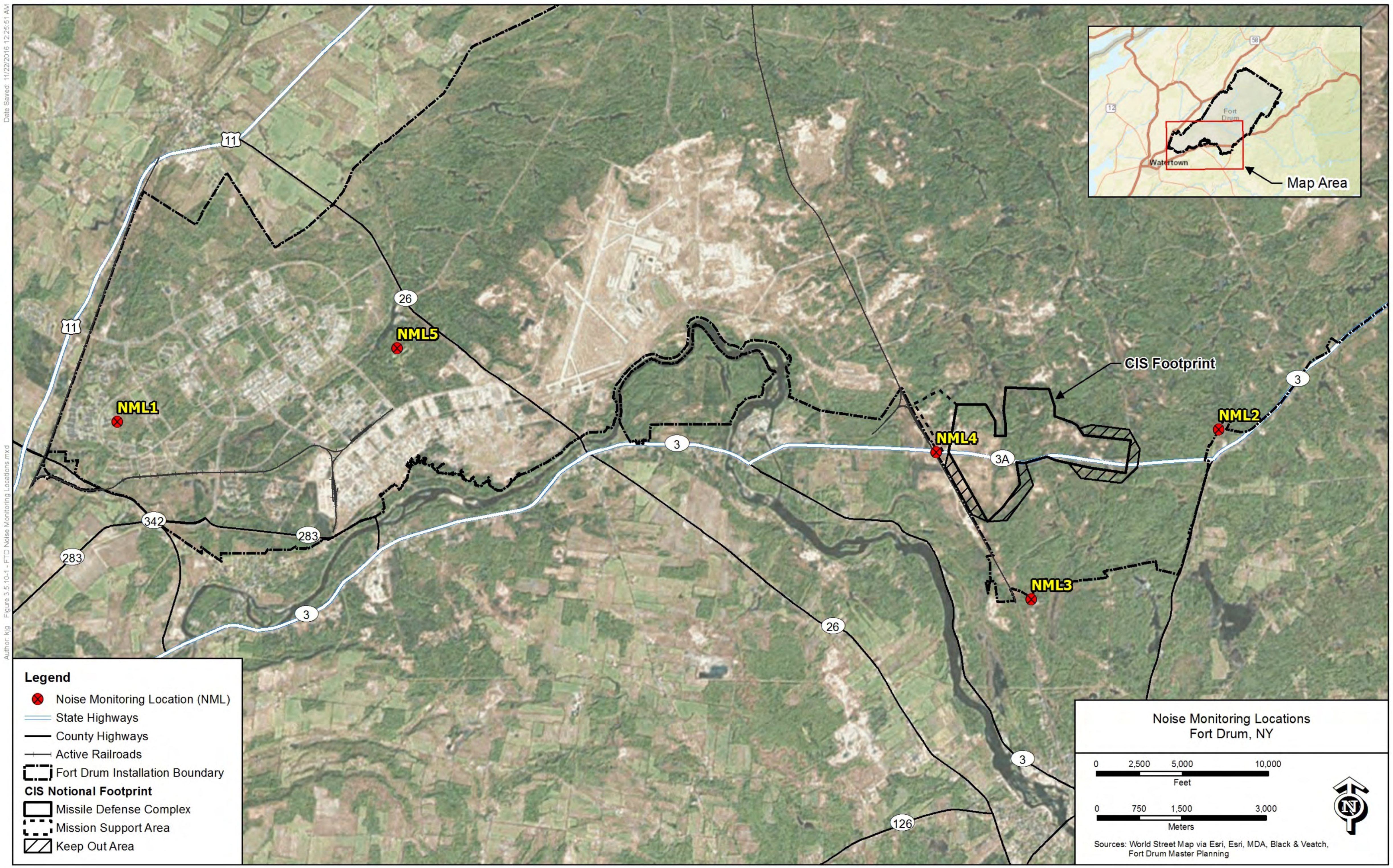
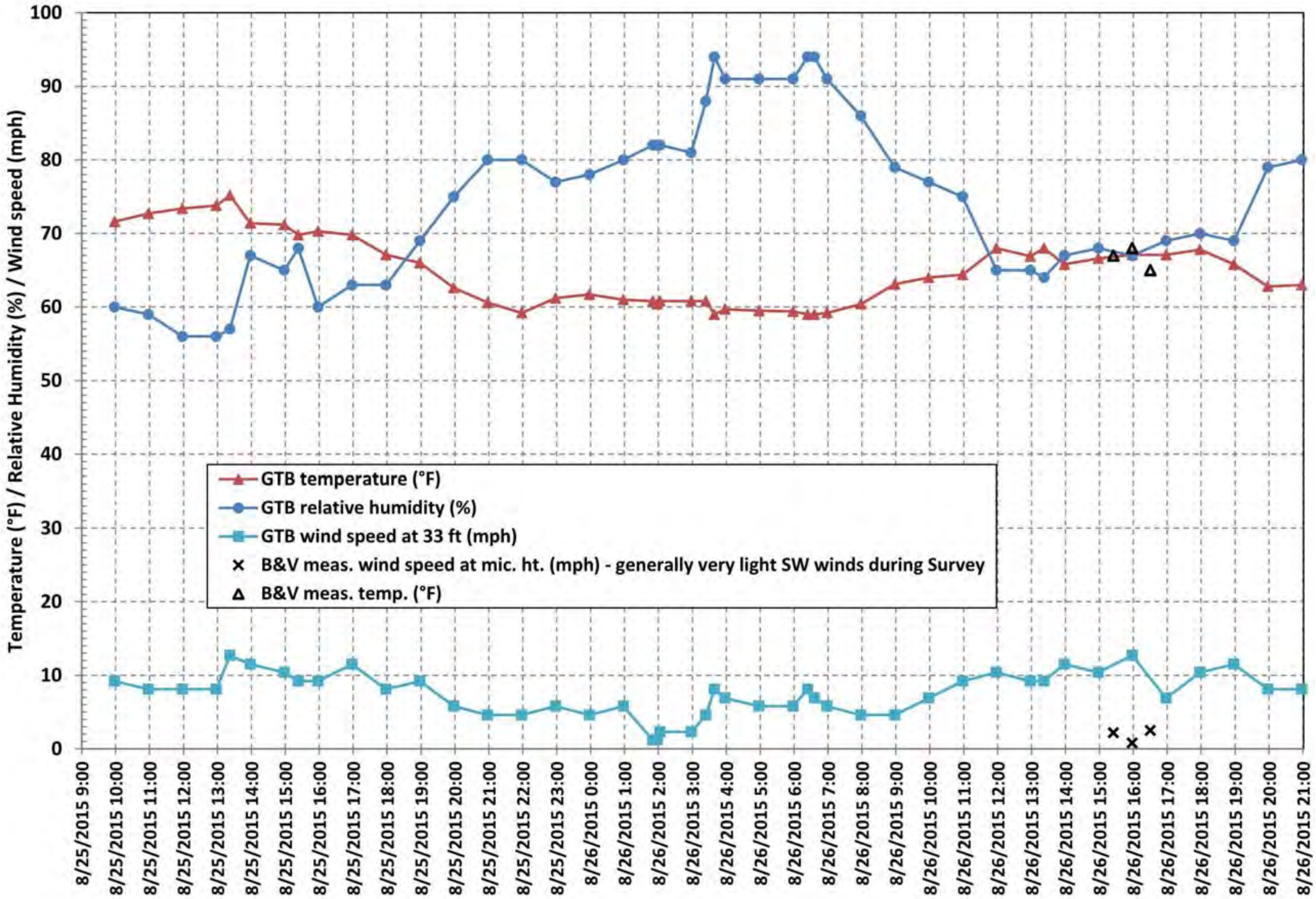


Figure 3.5.10-2 Meteorological Data for Environmental Noise Survey Period – FTD



Source: Hourly data from GTB airport meteorological station accessed 21 September 2015 via http://www.wunderground.com.

Figure 3.5.10-3 Measured Ambient Sound Levels at Noise Measurement Location 1 – FTD

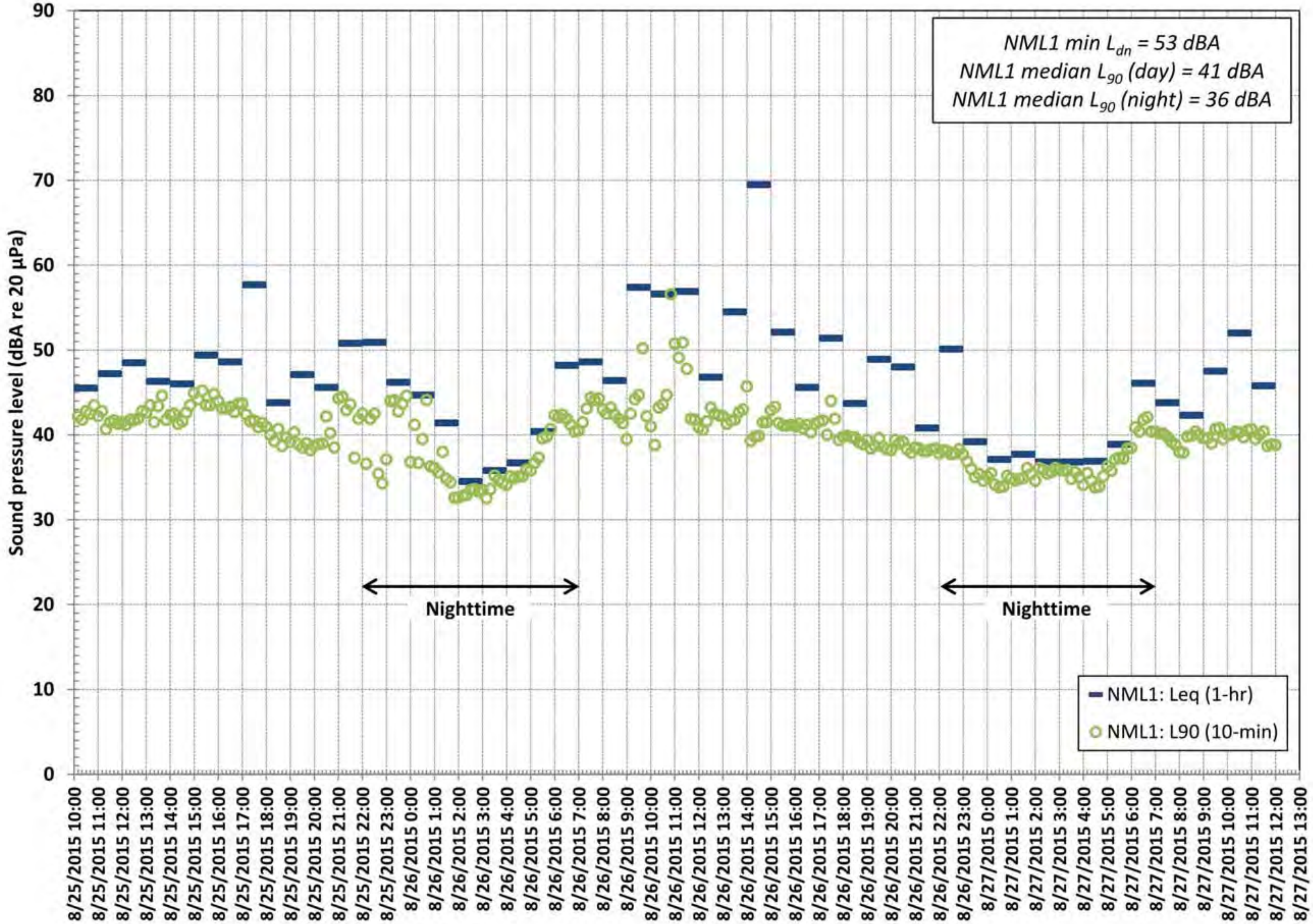


Figure 3.5.10-4 Measured Sound Levels at Noise Measurement Location 2 – FTD

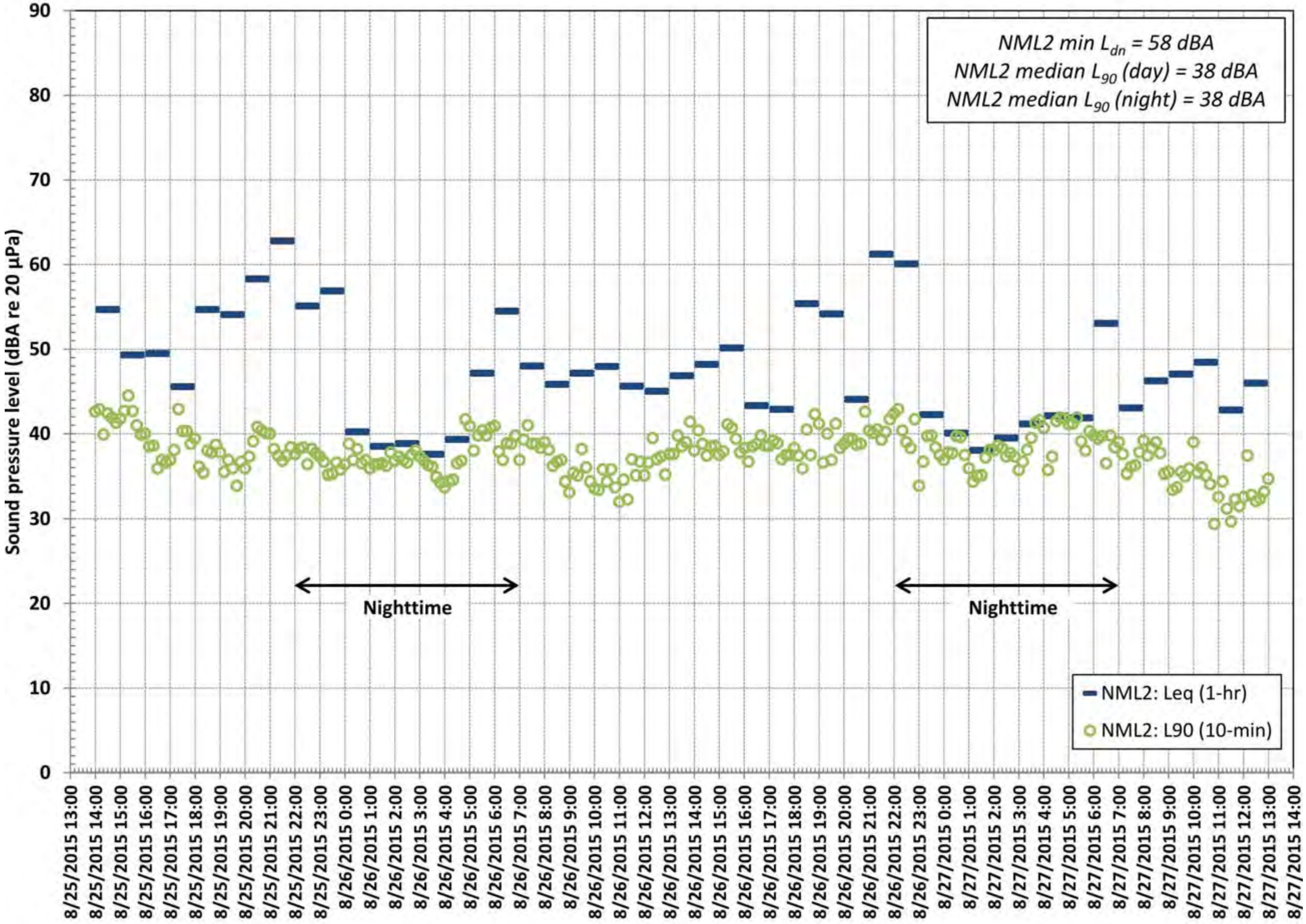


Figure 3.5.10-5 Measured Sound Levels at Noise Measurement Location 3 – FTD

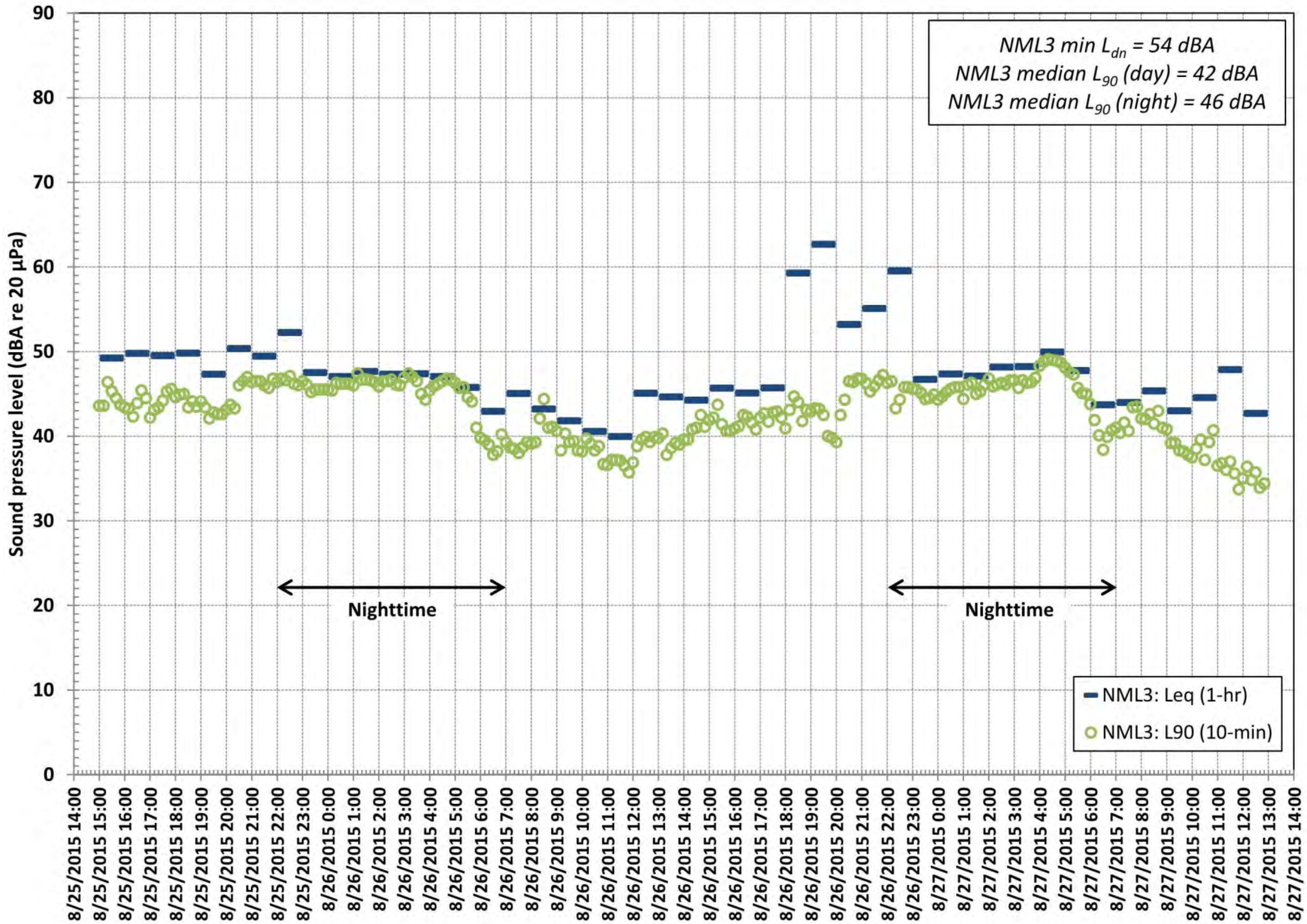


Figure 3.5.10-6 Measured Sound Levels at Noise Measurement Location 4 – FTD

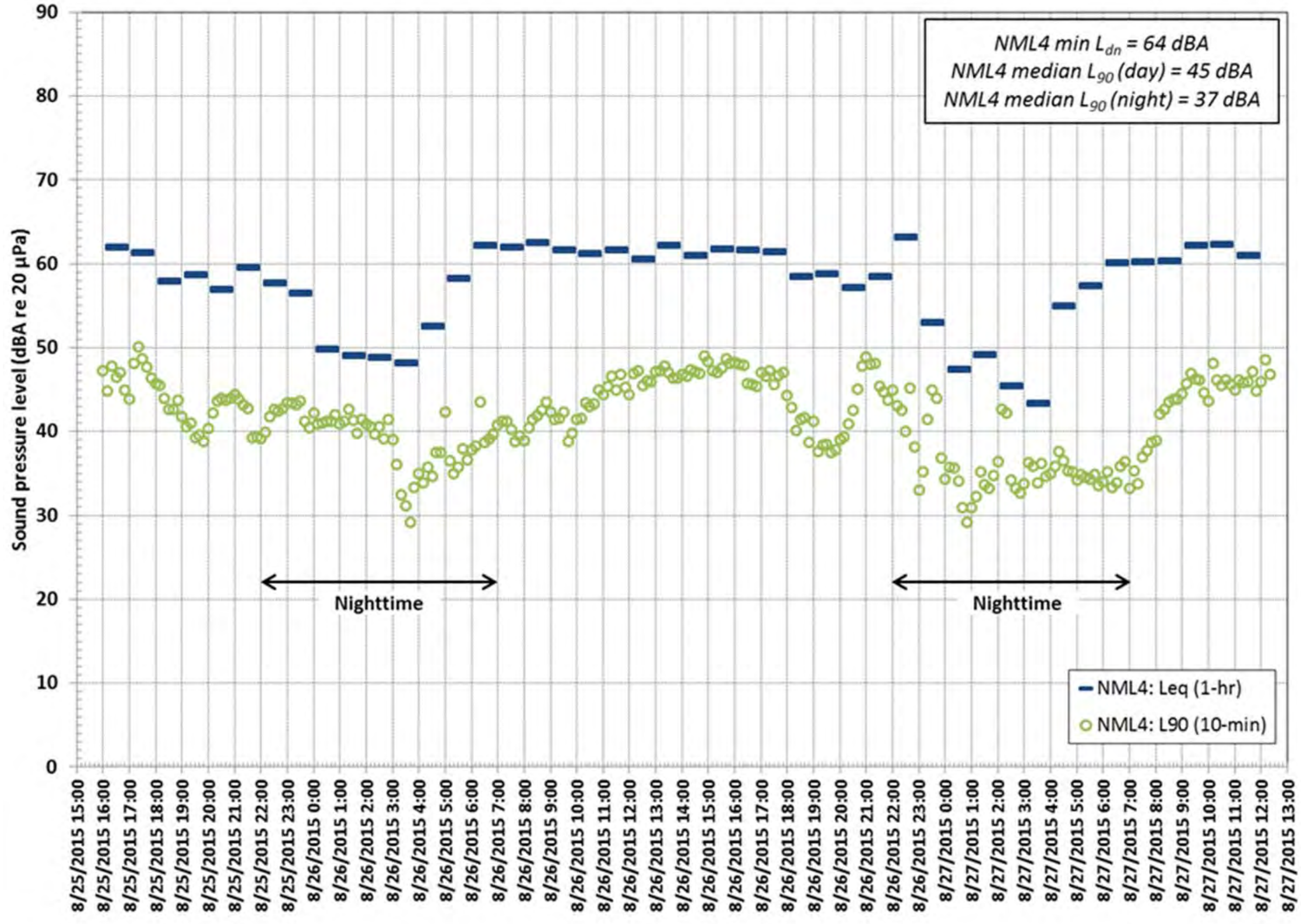
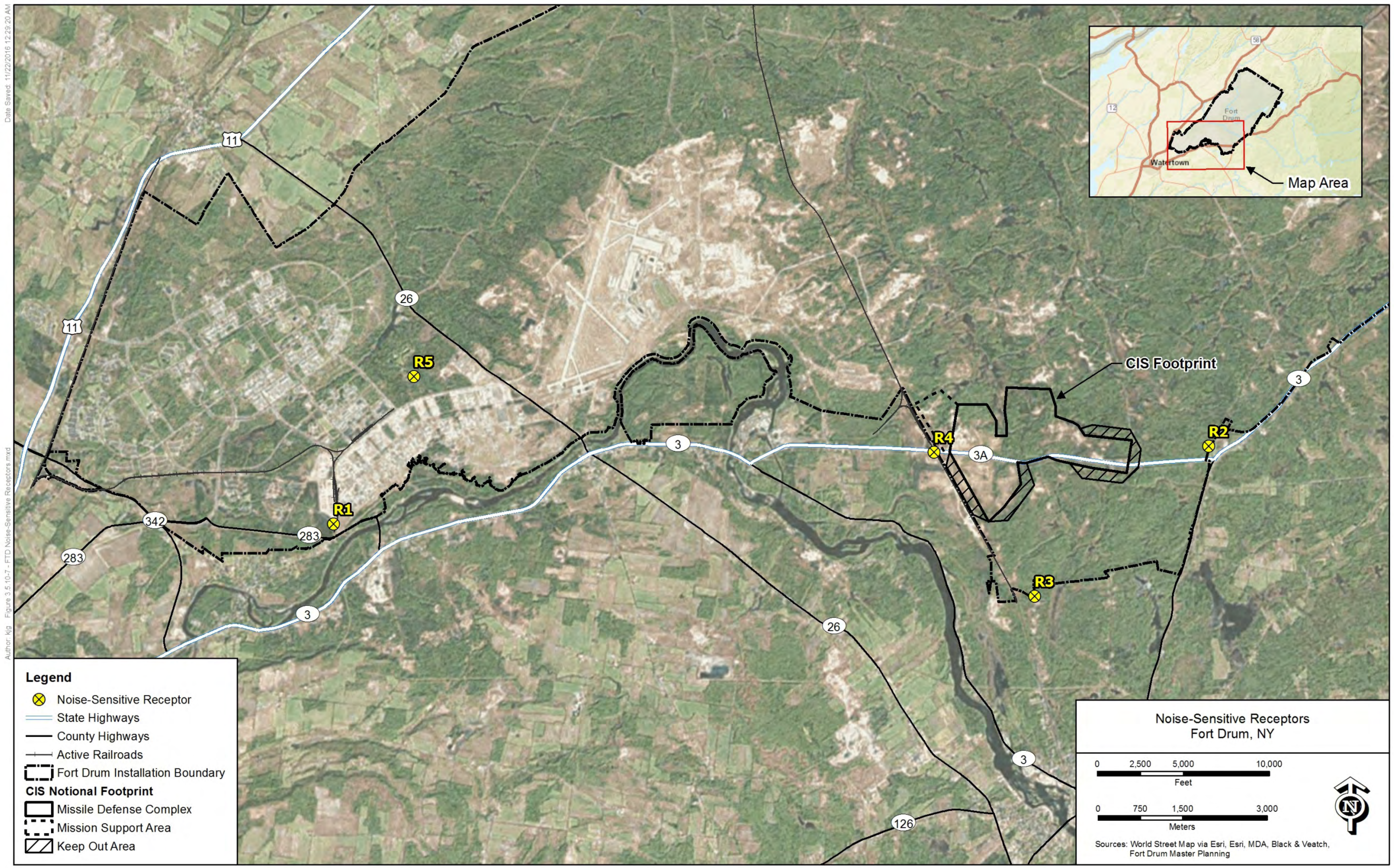


Figure 3.5.10-7 Noise-Sensitive Receptors – FTD



3.5.11 Socioeconomics – FTD

Socioeconomics describes a community by examining its social and economic characteristics. Several demographic variables are analyzed in order to characterize the community, including population size, the means and amount of employment, and income creation. In addition, socioeconomics analyzes the fiscal condition of local government and the allocation of the assets of the community, such as its schools, housing, public services, and healthcare facilities.

3.5.11.1 Regulatory Framework – Socioeconomics – FTD

There are no U.S. Army or federal regulations that apply specifically to the assessment of socioeconomic impacts for an EIS.

3.5.11.2 Affected Environment – Socioeconomics – FTD

The following counties comprise the socioeconomics study area for the FTD site: Jefferson, Lewis, and St. Lawrence. These counties are within commuting range of FTD (the commuting range is discussed in more detail in Section 3.5.11.3.1.1) and are the counties closest to FTD, so it is assumed that they would provide a substantial portion of the labor pool, at least for the construction phase of the potential CIS deployment. Also, the area supports a wide variety of industrial, commercial, and institutional businesses and services that could serve some of the project's need for contractor services, equipment and materials, business supplies, etc., and the workers' needs for housing, medical services, schools, shopping, entertainment, etc. The potential project-related economic impacts to the study area are the focus of this socioeconomic evaluation.

Due to the amount of workers that would be required to be present on a daily basis for the construction and operation of the potential CIS, it has been assumed that the majority of the socioeconomic impacts would be felt in Jefferson County. Additionally, due to the large amount of infrastructure located at FTD and in the immediate surrounding area, it can be assumed that workers onsite during construction and operation of the CIS would spend a substantial amount of time and income in Jefferson County. Therefore, Jefferson County has been discussed in the most detail in this section. Some effects of the construction and operation of the potential CIS would be felt in the larger region surrounding the CIS area and are discussed as needed.

3.5.11.2.1 FTD Population

The total working population of FTD is 23,012 consisting of active component soldiers, students and trainees, other military services, civilians, and contractors. The population that lives on FTD consists of 9,867 soldiers and an estimated 14,978 family members, for a total on-installation resident population of 24,845. The portion of the soldiers and civilian population living off the installation is 23,025 and consists of soldiers, army civilians, and their family members (SPEA, 2014).

In November 2012, the U.S. Army Environmental Command published the *Programmatic Environmental Assessment for Army 2020 Force Structure Realignment*, which analyzes the potential environmental and socioeconomic impacts associated with realignment of the Army's force structure between FY 2013 and FY 2020 to field a force of sufficient size, capability, and configuration to meet the Nation's current and projected future security and defense requirements (PEA, 2012). In this document, the socioeconomic impact of force reduction of soldiers and army civilians at FTD was identified as being significant. The Programmatic Environmental Assessment (PEA) stated that the reduction in military personnel and civilians in the FTD area would lead to less crowding in local schools and less traffic in the area surrounding FTD, but would also decrease the overall tax base for the FTD area as military personnel and civilians left the area. A June 2014 *Supplemental Programmatic Environmental Assessment for Army (SPEA) 2020 Force Structure Realignment* built on the information and analysis contained in the PEA and assessed the environmental and socioeconomic impacts of a substantial increase in potential military reduction from the original information contained in the PEA (SPEA, 2014). The SPEA stated that the proposed reduction in military and civilian levels at FTD would have a significant impact on the installation and the surrounding area. Income, tax receipts, sales, and employment would all be negatively impacted on FTD and in the surrounding areas if the proposed reduction were to be implemented. Additionally, housing values and rental rates in the FTD area would also likely decrease if the reduction were to occur (SPEA, 2014).

In July 2015, the U.S. Army announced that FTD would only lose 28 soldiers, instead of the estimated worst-case scenario of 16,000 military and civilian personnel, as part of a nationwide reduction in the size of the Army (WWNY, 2015).

3.5.11.2.2 General Population

In 1900, 7 years before the creation of the Pine Plains Training Area, now FTD, Jefferson County contained 76,748 people. The 2013 population estimate showed a population of 119,504, which reflects population growth of approximately 55.7 percent over 113 years. The population of New York grew 170.3 percent over the same period.

In 2014, FTD included 47,870 active duty military personnel and military personnel family members living in the area. The population trends of Jefferson County since 1900 are summarized in Tables 3.5.11-1 and 3.5.11-2.

Table 3.5.11-1 Population of Jefferson County – FTD

Year	Population
1900	76,748
1920	82,250
1940	84,003
1960	87,835
1980	88,151
2000	111,738
2013 (est.)	119,504
All numbers taken directly from Census data. Source: Census, 2012a.	

Table 3.5.11-2 Population Trends of Jefferson County – FTD

1900-1950	1950-2000	2000-2013
11.43% Growth	30.66% Growth	6.95% Growth
All numbers taken directly from Census data. Source: Census, 2012a.		

The largest minority population in Jefferson County is black or African American, which comprised an estimated 6.4 percent of the population in 2013.

According to the FTD Economic Impact Statement for FY 2014, FTD's positive direct impact upon its surrounding community approached $1.3 billion. This decrease of approximately $119 million from the previous year is expected as major construction and troop levels driven by 13 years of wartime began to contract (FTD, 2014).

The counties of Lewis and St. Lawrence are located near FTD and border Jefferson County to the north and to the east. Lewis County's population (27,074) is quite a bit lower than Jefferson and St. Lawrence Counties (111,941) as there is no major city located in Lewis County. Additionally, only the population of Jefferson County, out of all three counties, is growing faster than the New York State average of 1.4 percent. St. Lawrence County actually had zero growth between 2010 and the 2013 population estimate provided by the Census (Census, 2012a; Census, 2012b; Census, 2012c).

Based on the data presented in Table 3.5.11-2, Jefferson County has been consistently growing since 1900. There are established industrial job markets in construction and business operations, which could bring in additional people if the CIS would be located at FTD. Without the CIS, the 2020 projected population of the county is expected to slowly increase to 122,537 (Census, 2012a).

The nearest population centers to FTD include the cities of Carthage (population 3,747, approximately 9 miles southeast) and Watertown (population 27,823, approximately 10 miles southwest).

3.5.11.2.3 Demographics

Jefferson County has a predominantly white population with a variety of minority ethnicities having their residence there. The racial demographics of the counties surrounding FTD are similar to the reported demographics for Jefferson County. Lewis County has little racial diversity, with 97.4 percent of the population reported as white, while St. Lawrence County reported as 93.5 percent white (Census, 2012a; Census, 2012b; Census, 2012c).

Additional information regarding the county's demographics can be found in Table 3.5.11-3. 51.6 percent of the population of Jefferson County is male and 43 percent of the population is between 25 and 54 years of age (Census, 2012a).

Table 3.5.11-3 Demographics of Jefferson County – FTD

Population	Number	Percent
Male	57,660	51.6
Female	54,078	48.4
Under 5 Years	8,176	7.3
5 To 9 Years	8,471	7.6
10 To 14 Years	8,129	7.3
15 To 19 Years	8,035	7.2
20 To 24 Years	9,962	8.9
25 To 34 Years	17,145	15.3
35 To 44 Years	17,839	16.0
45 To 54 Years	13,040	11.7
55 To 59 Years	4,644	4.2
60 To 64 Years	3,596	3.2
65 To 74 Years	6,636	5.9
75 To 84 Years	4,464	4.0
85 Years And Over	1,601	1.4
Median Age (Years)	32.6	
Source: Census, 2012a.		

Table 3.5.11-4 Jefferson County Educational Attainment – FTD

Educational Attainment	Number	Percent
Persons 25 years and over	73,193	
No high school diploma	8,683	11.9
High school graduate only	25,548	34.9
Some college, no degree	15,696	21.4
Associate degree	8,602	11.8
Bachelor's degree	8,728	11.9
Master's degree or higher	5,936	8.1
All numbers taken directly from Census data. Source: Census, 2012a.		

The most common level of academic achievement for the residents of Jefferson County is a high school diploma (see Table 3.5.11-4). A portion of Jefferson County's residents (20 percent) achieve a degree from higher education.

3.5.11.2.4 Employment

Jefferson County has an estimated 59,647 people in the civilian work force. An estimated 24.8 percent of the civilian workforce is employed in educational services, health care and social assistance, which is one of the highest ranking employment sectors in the county. Another high-ranking sector in the county is retail trade, employing 15.4 percent of the workforce (Census, 2012a). The civilian proportion that is currently unemployed in Jefferson County is approximately 5.9 percent of the population, or 5,361 people (Census, 2012a).

The highest-ranking employment factor in Jefferson County is government, employing almost 40 percent of the workforce (Census, 2012a). That is largely due to the presence of FTD and the two state prisons in the county.

It is likely that potential CIS deployment at FTD would need to bring in part of its workforce from outside of Jefferson County to meet the project's labor needs. In order to accommodate the additional workforce, sufficient vacant housing would either need to be in place or would need to be constructed near the project site for all workers that choose not to commute to the worksite. According to housing data provided by the Census, approximately 22 percent of the housing in Jefferson County is vacant. Whether this amount of vacant housing is sufficient for housing the project's labor force would depend on the condition of the vacant housing, the proximity of the housing to the project site, and the cost of the housing.

The population of Jefferson County is employed in a wide variety of occupations. The construction industry in Jefferson County makes up approximately 7.3 percent of the labor force. Table 3.5.11-5 summarizes the different occupations identified in the county.

Table 3.5.11-5 Jefferson County Occupations – FTD

Occupation	Employed	Percentage
Civilian employed population 16 years and over	45,053	
Management, business, science, and arts	13,698	30.4
Service	9,331	20.7
Sales and office	11,626	25.8
Natural resources, construction, and maintenance	5,107	11.3
Production, transportation, and material moving	5,291	11.7
All numbers taken directly from Census data. Source: Census, 2012a.		

The construction workforce for Lewis and St. Lawrence counties are both above the New York State average of 5.6 percent. Lewis County reported 11.3 percent construction workers, while St. Lawrence County reported 6.6 percent. While these numbers are above the New York State average, the total populations of these counties are low. Therefore, there may not be a local construction force large enough to meet the needs of the potential CIS deployment.

The employment numbers for the counties surrounding FTD are fairly consistent with one another. The unemployment rate for Lewis County is at 4.9 percent, while St. Lawrence County is at 6.2 percent. Compared to the New York State unemployment rate of 5.9 percent, the surrounding areas seem to reflect an unemployment rate which is close to the state average. For both Lewis and St. Lawrence Counties, the highest-ranking employment sector was identified as being “educational services, health care and social assistance” at 24.9 percent in Lewis County and 34.2 percent in St. Lawrence County. Private wage and salary workers were also identified as both Lewis and St. Lawrence County’s highest percentage class of worker, with both counties reporting over 63 percent private wage and salary workers.

The industries that are represented in the county are listed in Table 3.5.11-6. As shown, construction and manufacturing make up 14.8 percent of the industrial employment in the county.

3.5.11.2.5 Income

In 2012, Jefferson County had a median household income of $46,549. Approximately 46.4 percent of households had an income greater than $49,999 and 11.9 percent of the residents were living below the poverty level in 2012. Figure 3.5.11-1 shows the range of median household income in Jefferson County. In 2012, Lewis County had a median household income of $46,990, and, St. Lawrence County had a median household income of $44,454.

Table 3.5.11-6 Jefferson County Industries – FTD

Industry	Employed	Percentage
Civilian employed population 16 years and over	45,053	
Agriculture, forestry, fishing and hunting, and mining	624	1.4
Construction	3,288	7.3
Manufacturing	3,380	7.5
Wholesale trade	991	2.2
Retail trade	6,947	15.4
Transportation and warehousing, and utilities	1,759	3.9
Information	777	1.7
Finance and insurance, and real estate and rental and leasing	1,657	3.7
Professional, scientific, and management, and administrative and waste management services	2,969	6.6
Educational services, and health care and social assistance	11,189	24.8
Arts, entertainment, and recreation, and accommodation and food services	4,466	9.9
Other services, except public administration	2,034	4.5
Public Administration	4,972	11.0
Source: Census, 2012a.		

Both St. Lawrence and Lewis Counties have a median income that is below the New York State average. Lewis County has fewer people living below the poverty level than the New York State average. However, St. Lawrence County has more people living below the poverty level than the New York State average (Census, 2012a; Census 2012b; Census, 2012c).

3.5.11.2.6 Housing, Education, and Health

3.5.11.2.6.1 Housing

Jefferson County has 57,866 housing units, according to the 2008-2012 American Community Survey 5-Year Estimates from the Census. Of these, 22.0 percent were vacant. Table 3.5.11-7 describes the Jefferson County housing characteristics from the years 2008-2012 (Census, 2012a).

Table 3.5.11-7 Jefferson County Housing Characteristics (2008-2012) – FTD

General Housing Data	2008-2012 Census Est.	% of Est. Total
Total Housing Units	57,886	
Occupied	45,162	78.0%
Vacant	12,704	22.0%
Owner-Occupied Units	25,824	57.2%
Median Value Of Owner-Occupied Units	129,000	
Median Gross Rent	$871	
Source: Census, 2012a.		

Neighboring St. Lawrence and Lewis Counties, presented in Table 3.5.11-8, have smaller housing unit totals than Jefferson County and the majority of the housing is occupied in both St. Lawrence and Lewis Counties.

Table 3.5.11-8 Lewis and St. Lawrence County Housing Characteristics (2008-2012) – FTD

General Housing Data	Lewis County	% of Est. Total	St. Lawrence County	% of Est. Total
Total Housing Units	15,149	N/A	52,053	N/A
Occupied	10,677	70.5%	41,839	80.4%
Vacant	4,472	29.5%	10,214	19.6%
Owner-Occupied Units	8,220	77%	29,619	70.8%
Median Value of Owner-Occupied Units	$107,200	N/A	$84,400	N/A
Median Gross Rent	$661	N/A	$673	N/A
Sources: Census, 2012b; Census, 2012c.				

3.5.11.2.6.2 Education

There are 12 local schools in Jefferson County, plus the Watertown, New York, city schools, and the Jefferson-Lewis-Hamilton- Herkimer-Oneida Board of Cooperative Educational Services that provide kindergarten through high school educational services. Additionally, there are 12 universities, community colleges, or college extensions with a presence in Jefferson County that provide higher educational opportunities (Jefferson, 2015b). Jefferson County has a school enrollment of 28,093 for its population over 3 years of age (Census, 2012a).

Lewis County, while it is a county with a smaller population, has well-established education districts that incorporate aspects of local life into lesson plans. Students are taken on hikes and focus on science and the outdoors as a part of their education. The county has a total enrollment of 4,571 students in grades kindergarten through twelve, taught by 345 full time teachers in thirteen school buildings (Lewis, 2015). St. Lawrence County has 40 schools that provide education from day care through twelfth grade. Due to the larger population of St. Lawrence

County, the demand on the school system is greater than that of Lewis County (St. Lawrence, 2015). No details were given by St. Lawrence County regarding the number of students in the county schools, but the Census estimates that 31,763 people aged 3 and above are enrolled in school (Census, 2012c).

Jefferson County has a student-to-teacher ratio of 13:1, which is the same as the state average (PSR, 2015a). Lewis County and St. Lawrence County have student-to-teacher ratios of 12:1, which are comparable to the state average (PSR, 2015b; PSR, 2015c).

3.5.11.2.6.3 Health

Health care in Jefferson County is provided by several hospitals, as well as the North Country Children's Clinic and the Hospice of Jefferson County. The nearest county hospital to FTD is the Carthage Area Hospital approximately 3.5 miles away.

Lewis County has one major hospital that could serve workers for the CIS. The facility, Lewis County General Hospital, is located approximately 19 miles to the southeast of the CIS footprint.

FTD's on-installation medical services are administered by its U.S. Army Medical Department at several facilities. These facilities provide healthcare services for military personnel, military family members, and to military retirees and their families. Healthcare support for FTD is also delivered by an established military-community partnership that joins the army medical treatment facility with community providers to augment the medical treatment facility's primary care capability with most specialty care and inpatient services provided by community hospitals (SPEA, 2014).

Using metrics that track the mortality, morbidity, health behaviors, clinical care, social and economic factors, and the physical environment, the University of Wisconsin compiles the County Health Rankings & Roadmaps document to rank the overall health of counties. The most recent ranking available was from 2015. The Health Outcomes metric represents how healthy a county is while the Health Factors metric represents what influences the health of the county. Jefferson County ranked 52nd in Health Factors and 44th in Health Outcomes out of the 62 counties in New York (UW, 2015b). These results suggest that the Jefferson County health services system is not currently meeting the health requirements of its citizens as well as most of the counties in New York.

Similarly, St. Lawrence County scored low on meeting the health requirements of its citizens with a Health Factor score of 56 and a Health Outcome score of 57. Lewis County has an above average Health Outcome score of 23 out of 62, but its Health Factor score of 47 is below average.

All three counties share similar health issues which are driving their low rankings in the University of Wisconsin study. Below average access to care and high physician to patient ratios seem to lead to a lack of preventative care in all three counties. This lack of preventative care seems to lead to a variety of health issues, such as obesity, diabetes, and heart disease.

3.5.11.2.7 Services

This section focuses on the services available in Jefferson County. First responders and emergency management for incidents occurring at the potential CIS would come from FTD or Jefferson County first, with other counties responding as needed.

3.5.11.2.7.1 Police/Sheriff Departments

The FTD Directorate of Emergency Services includes law enforcement, fire and emergency services, force protection/anti-terrorism, fire prevention and protection, emergency dispatch, physical security, and crime prevention. Ultimately, the FTD Directorate of Emergency Services provides for the protection of all critical assets and personnel and ensuring a safe environment for all who work and live on FTD (PEA, 2012).

No issues concerning a lack of law enforcement services were identified in the Jefferson County area.

3.5.11.2.7.2 Fire/Emergency Services

FTD has a fully staffed 24-hour fire department with three fire houses. In addition, the Jefferson County Fire and Emergency Management Office (EMO) is in charge of dispatching engines to fires and organizing response efforts across the county (Jefferson, 2015b). According to documentation provided by FTD personnel, Jefferson, Lewis, and St. Lawrence Counties all have a Mutual Aid Agreement between the county emergency services provider and FTD (Army, 2013b; Army, 2013c; Army, 2013d). The Mutual Aid Agreements provide that each county's emergency services provider will respond to a request for support from FTD for emergency services, including basic medical support, basic and advanced life support, hazardous material containment and confinement, and special rescue events involving vehicular and water mishaps and trench, building, and confined space extractions.

No issues concerning a lack of fire or emergency response services were identified in the FTD area.

3.5.11.2.7.3 Emergency Management

The Jefferson County EMO is the county's emergency management agency that is tasked with ensuring a coordinated public response in the event of a natural or man-made disaster. The EMO works with the American Red Cross, FTD Emergency Services, New York State Emergency Management, FEMA, and other agencies during response activities (Jefferson, 2015b). As previously discussed, Jefferson, Lewis, and St. Lawrence Counties all have a Mutual Aid Agreement between the county emergency services provider and FTD.

No issues concerning a lack of emergency management services were identified in the Jefferson County area.

3.5.11.2.8 Subsistence Living

Two churches in the area surrounding FTD were contacted to gather information about any known local subsistence populations. The City of Refuge Christian Church and the First Baptist Church of Black River were contacted. Neither church had any information regarding any subsistence populations. In addition, FTD personnel also stated that no known subsistence populations are present in the FTD area (Wagner, 2016a).

3.5.11.2.9 Tax Revenues

In general, local government is funded through a number of tax sources and this revenue is allocated to various account funds. These taxes generally apply to all non-government and non-church property.

Jefferson County has one of the highest median property taxes in the U.S. and is ranked 473rd of 3,143 counties in order of median property taxes. The average yearly property tax paid by Jefferson County resident's amounts to about 3.41 percent of their yearly income. Jefferson County is ranked 407th of the 3,143 counties for property taxes as a percentage of median income (Jefferson, 2015a.)

3.5.11.2.10 Local Economic Information

In addition to U.S. Census resources, local economic interests from the FTD area provided information that is relevant to the EIS analysis.

Information provided by the FDRLO shows the FTD region's ability to grow and adapt to population and infrastructure changes in their area (FDRLO, 2016) including identifying six major roadway transportation infrastructure projects and $107.6 million expended to improve the identified corridors. In addition, improved rail transportation was added by the State of New York to the existing FTD rail system, and a $20 million investment in capital improvements to the Watertown International Airport that resulted in an annual increase in enplanements from 5,600 in 2010 to 40,000 in 2014.

Based on information provided by FDRLO, the community can provide an adequate workforce for the CIS to draw from during construction. Over 5,500 members of the Central and Northern New York Building Trades Council are "ready, willing and more-than-able to lend their expert services to the Fort Drum site" if the site were to be selected for CIS deployment (FDRLO, 2016).

Finally, local developers have a housing site that is ready to begin construction of an additional 360 units of housing as the market demands. This additional ability to build coupled with a recent limited reduction in the number of soldiers stationed at FTD should decrease the impact of the housing demand caused during construction and operation of the CIS facility, if it were constructed at FTD (FDRLO, 2016).

Information such as what was provided by the FDRLO was not provided by the other two sites under consideration in this EIS. Therefore, this section of the EIS report is unique to the FTD site.

3.5.11.3 Environmental Consequences and Mitigation – Socioeconomics – FTD

Generally, the social and economic impacts of construction are a function of the extent of site preparation and development work, the amount of equipment and materials purchased for construction, the size of the construction workforce, wages paid, and the number of relocating workers relative to the available community facilities and services. Many of these impacts would be positive for Jefferson County and the FTD region (Jefferson, Lewis, and St. Lawrence Counties). If negative impacts were to arise, the primary categories of concern would most likely include short-term traffic impacts and possibly impacts that could arise if a large workforce is relocated to a region that has limited availability of housing or inadequate community facilities and services. The key information to make this determination would be the size of the relocating construction workforce relative to the availability of housing and community facilities and services.

The majority of the economic impact from construction of the potential CIS at FTD would be anticipated to occur in the immediate surrounding area, Jefferson County.

3.5.11.3.1 Construction - Baseline Schedule

As discussed in Section 2.5.1, between 400 and 600 employees and workers would be needed during CIS construction. These construction staff would be expected to be a mixture of commuting and permanent residents of the FTD region (Jefferson, St. Lawrence, and Lewis Counties).

3.5.11.3.1.1 Environmental Consequences

Tax Revenue Impacts

The main source of tax revenue in the site area is sales tax (Jefferson, 2013). The construction of CIS would increase the amount of taxes collected in the study area as construction-related goods and services are purchased during project development. Workers purchasing goods and services for their personal use would also contribute to sustaining or increasing tax revenues in the study area. In order to calculate the associated tax revenue that the construction of the CIS would generate in Jefferson County, the number of workers and the amount each worker can be expected to spend in Jefferson County was multiplied by the sales tax rate for Jefferson County. Table 3.5.11-9 summarizes the estimates of tax revenue from the CIS during construction.

Table 3.5.11-9 Estimated Sales Tax Revenue - Construction - FTD

Input	Construction
Number of Workers (middle of given range of workers)	500
Assumed Expenditures Subject to Sales Tax (per person/year)	$28,364
Sales Tax Rate (Jefferson County)	7.75%
Estimated Sales Tax Revenue (total for CIS workers/ year)	$1,099,105
Note: Based on 2014 data – no escalation. Source: BLS, 2014.	

As shown in Table 3.5.11-9, the estimated taxable expenditures include expenditures like food, transportation, and entertainment that workers employed by the CIS would likely be spending a portion of in Jefferson County regardless of where they have their permanent residence. Table 3.5.11-9 summarizes what the estimated tax revenue would be in Jefferson County if CIS workers spent all of their expenditure dollars in Jefferson County exclusively. The estimated sales tax revenue from the CIS project would generate approximately $1.09 million in sales tax revenue during construction for Jefferson County. The operational tax revenue annually would be especially substantial because the operation workforce would be contributing to the sales tax revenue of Jefferson County during the CIS's entire operational period.

Any additional property tax collection for Jefferson County above what is currently being collected would depend on the number of workers that choose to move to the area and purchase newly constructed homes for use during the construction of the CIS. It is possible that the increase demand for housing in the area may cause home values in Jefferson County to increase, which would lead to an increase in the property taxes collected by the county. Conversely, construction workers hired for the CIS may choose to commute to the construction site from outside Jefferson County and would not contribute to the property tax revenue of Jefferson County.

Regional Economic Impact Estimates

The total economic impact of the potential CIS deployment project would be greater than the direct employment, income, and tax revenue impacts arising from the project workforce. The additional economic impact would arise from what are commonly called "multiplier effects" that are associated with the successive rounds of spending in the economy from a new investment. The total economic impact is measured in this study using the RIMS II model. Regional input-output multiplier models such as RIMS II project how new expenditures will create changes in various economic categories within a defined geographic region. The specific economic categories include total gross output (sales), value added (gross domestic product), earnings, and employment.

In general, RIMS II multipliers are used by both the private and public sector to project future impacts arising from a project's direct expenditures. Project construction expenditures would go primarily to workers (labor) and subcontractors. Yet these direct expenditures on construction are only a portion of the total economic impacts generated by the project construction. There are also indirect impacts (that arise from company-to-company purchases in support of the direct construction expenditures) and induced impacts that deal with the spending of wages by laborers. Regional input-out multipliers capture both direct and secondary (indirect) impacts, therefore, giving a fuller and more complete picture of the total economic impacts generated by the initial direct construction expenditures. In the end, the overall economic impact within the region would be greater than the project's direct construction expenditures due to the secondary impacts. A more detailed explanation of how RIMS II was used in this analysis is provided in the following paragraphs.

The direct construction expenditures for the potential CIS deployment would have a major and direct impact on the FTD region and would also impact the rest of New York State. In addition to the primary or direct investment and expenditure impacts, there would also be secondary impacts in the form of indirect and induced benefits.

To capture the total economic impact of the project investment and construction expenditures, it would be necessary to track expenditures as they work their way through the state and U.S. economy over a period of a few years after expenditures are first made. For example, firms that are hired to build the potential CIS would purchase materials and services from a diverse set of companies offering lumber, transportation, fuel, catering, etc. (any items purchased by the firm from another firm required to conduct their business). The suppliers of these goods and services would, in turn, use revenue to pay employees and to purchase inputs that allow the suppliers to meet their contract obligations. This process arising from the business to business purchases would continue through many rounds of spending in the economy and create a total economic impact that is a multiple of the original purchase of material and service inputs by the firms hired to construct the CIS. This type of effect is called the "indirect effect." The indirect effect is measured in the RIMS II data based on recent survey information that measures the economic relationship among industries in terms of inputs purchased from other firms to produce output in a given industry.

Similarly, a substantial portion of the direct expenditures on the potential CIS construction would be paid to workers who perform the construction work. Through what is called the "induced effect," these workers would use their disposable earned income to purchase goods and services such as clothing, rent, automobile payments, food, vacations, savings, etc. Establishments that receive the worker's income in exchange for goods and services would, in turn, use the revenue received to pay their own workers, to purchase supplies needed to provide additional goods and services, etc. This process would continue through multiple rounds of spending in the economy and would create a total economic impact that is a multiple of the original wages received from the CIS workers. Generally, through each round of spending, the impact would lessen because not all of the income would be spent in the study area due to the purchase of imports, worker savings, taxes, etc. Thus, there would be an economic “ripple effect” with project expenditures that would lessen with time, as the successive rounds of spending work through the economy. While the models used to estimate the total impact of an investment do not estimate the timing of impacts, it is generally understood that most of the impacts from a new construction project will ripple through the economy within 2 to 3 years after the completion of a project.

While envisioning the successive rounds of spending in an economy is intuitive, tracing the actual spending patterns of even a single construction project would be enormously difficult and expensive. Fortunately, there are mathematical methods and models available that estimate the economic impact of an investment on the economy; these models are commonly referred to as input-output models. These models are built upon detailed databases, including survey data that track the historical economic interrelationship and expenditure patterns among industries and households. Two widely used input-output models are the RIMS II developed by the BEA, and the IMPLAN model. RIMS II, which dates to the 1970s, was used in this analysis; its specific application to the potential CIS project is described if the following paragraphs. The impact multipliers generated by RIMS II allow users to apply the multipliers to project expenditures and estimate the regional impact of the project on output (sales), value added (gross domestic product), earnings, and employment.

RIMS II incorporates data contained in national input-output accounts that capture the relationship between each major industry and other industries or final users that use or purchase the goods and services produced by each industry. Thus, as any industry increases production, the mathematical relationships in RIMS II that reflect the historical input-output accounts will determine the added output required from other industries, as well as the increase in earnings, employment, and value added.

When performing an analysis for a sub-national region, RIMS II adjusts the national input accounts for local conditions, based on available data such as the size of each industry within the region, and generates multipliers for the selected area. The study area can be as small as a single U.S. county. Multipliers will be different for all study areas because all study areas have unique economic conditions.

A few other aspects of RIMS II are appropriate to highlight. First, RIMS II assumes that a constant mix of inputs is used to produce outputs; this assumption is because the national input-output accounts reflect the structure of the economy at a point in time, when the data was collected. The current input-output relationships are from 2010. The model also assumes that all businesses in an industry use a similar production process, and it is assumed that there are no supply constraints that would increase prices for a particular input as demand for the input increases. Finally, RIMS II does not account for multi-regional feedback impacts, and the multipliers do not predict the period of time over which impacts will occur.

The end product from RIMS II is a series of economic multipliers. For this study, final demand multipliers were used. When a dollar change in final demand is applied to these multipliers, the estimated total economic impact from the expenditure in the selected region is produced. Final demand multipliers are produced by RIMS II for employment, earnings, value added (Gross Domestic Product), and output.

Government expenditures can be traced using RIMS II through a multi-step process that includes developing a breakdown of government expenditures by expected industry, an estimate of the local industries that will provide goods and services for the government project, and the application of final demand multipliers to the impacted industries.

Table F.3 in Appendix F lists the major expenditures for the CIS project and assigns these to a RIMS II industry. All categories but one were assigned to the RIMS II category of construction in the table. The first two columns listing estimated expenditure values for material and labor costs are presented in 2015 dollars and total approximately $201 million for materials and more than $48 million for labor costs. These estimates are based on a similarly sized government project operated at Fort Greely, AK. As the DoD has not decided to pursue an additional CIS, discussion of costs specific to a potential CIS are premature at this time. Before the RIMS II multipliers can be applied, however, several adjustments are required. First, when using a final demand multiplier, RIMS II requires that an adjustment be made for household purchases by workers who already live and work in the region, assumed to be 50 percent in this study. The 50 percent assumption is based on percentages seen in similar studies. This adjustment avoids inflated impact estimates as the spending of workers living in the region is already part of the multipliers. Following this adjustment, Table F.3 shows the combined material plus labor applied to the final demand multipliers. Also, because the RIMS II multipliers are derived from a model using 2010 data, it is necessary to state the 2015 costs in 2010 dollars and to then apply the multipliers.

Table F.3 shows the multipliers estimated by RIMS II for the FTD region. Applying these multipliers to the adjusted expenditure line items and then summing the total (converted back to 2015 dollars) yields the following estimated results for the total construction period:

- The total change in output that occurs in all industries from the potential CIS deployment would be more than $325 million in the selected region.
- The total incremental earnings in the region arising from the project would be more than $101 million.
- The project would create 1,836 indirect jobs that would be temporary and end when construction ends.
- Finally, the total value added arising in the region from the potential CIS deployment is would be more than $190 million.

Employment and Industry

The amount of construction employment required at the potential CIS would vary substantially as the construction progresses. As discussed in Section 2.5.1, between 400 and 600 workers would be onsite over the course of the baseline construction period. Although a detailed workforce distribution plan has not yet been developed, the number of workers would likely be smaller during the first portions of site clearing and utility work, then increase substantially when heavy construction starts and continue for 2 years. After the peak 2-year construction period, the workforce would decrease somewhat during the final one year build out period. Thus, the project workload pattern is expected to generally follow a traditional “S curve” distribution, in which relatively few hours are spent in the early and late stages of construction, and the largest expenditure of construction hours occur in the middle of the construction period. This is because multiple crafts are typically onsite and construction efforts are often occurring at multiple places on the site.

Based on the construction plan and estimates from similar projects, approximately 50 to 85 percent of the construction workforce are assumed to come from the commuting area around the site (FTD region), while 15 percent to 50 percent of the workforce would relocate from outside the region (the RIMS II estimates assumed a 50/50 split to be conservative). Construction workers brought into the area from outside the FTD region for the potential CIS (assumed to be those with selected skills or experience not generally available in the region) would likely be living and commuting between 9 and 10 miles (or possibly farther) from the job site if they are renting housing in either Carthage or Watertown. Due to the availability of vacant housing in Jefferson and Lewis Counties, the new workforce would not likely experience difficulties while attempting to secure nearby living accommodations.

Workers from outside the FTD region may decide to commute from their current living location rather than to compete for housing close to the job site. According to a 2010 study of commuter habits in an area similar to the FTD area, willingness to commute is determined both by the economic benefit to the commuter and by commuting costs (Westin and Sandow, 2010). The latter consists of the commuter’s perceived value of commuting time plus the actual expense for traveling. The value of commuting time differs between individuals depending on their specific circumstances, personal preferences, and characteristics, including gender. Additionally, commuting must be possible in terms of accessibility to transportation routes and availability of transportation sources. Generally, construction workers are more willing to commute than other professions due to the nature of their work and because if they are not willing to commute, they could lose out on relatively local employment opportunities. In any case, the inclination to commute declines rapidly when commuting times exceed 45 minutes, regardless of gender, transportation mode, and socioeconomic factors (Westin and Sandow, 2010).

The availability of amenities is another factor which appears to influence the settlement patterns of workers and thus, the willingness to commute (Westin and Sandow, 2010). In general, larger communities (usually with 10,000 residents or more) attract most of the immigrating construction workers. Based upon observed settlement patterns in (Westin and Sandow, 2010), it appears that key quality of life factors (amenities) influencing construction workers' choice of residence are schools, shopping facilities, local services (medical and dental are of special importance), and housing availability.

Because the cities of Watertown, Carthage, and Lowville are likely within the 45-minute commuting maximum (depending on traffic and road conditions), it is possible that project construction could draw commuting construction workers from these areas. It is unlikely that said workers would relocate closer to the job site due, in part, to the level of amenities available in their existing large home towns. Therefore, workers from these areas would be expected to spend most of their wages in their hometowns, which would lead to local increases in business, sales tax, and income tax revenues. The cities of Watertown, Carthage, and Lowville are included in the Central and Northern New York Building Trades Council. Therefore, the approximately 5,500 workers available for construction work as stated by the FDRLO are included in the commuting workers analysis.

Of the many industries that operate in Jefferson County, the largest percentage of people are employed by the educational, health care and social assistance industry, which would see a substantial increase in demand as construction workers are brought into the area for the potential CIS project. The demand for educational, health care, and social assistance would largely depend on the amount of workers permanently moving to the counties during construction. Commuting construction workers would not likely impact the educational services, health care, and social assistance industry as they would likely take advantage of these services in their home area. If a major amount of workers moved to Jefferson County during construction, the educational, health care and social assistance industry would see increased demand for its services and would need to expand its ability to supply its services to the increased population.

Traffic

There is the potential for short-term, negative impacts on traffic patterns associated with the volume of workers accessing the site during the peak months of construction, especially if New York Highway 3A is closed. New York Highway 3A would be closed in areas conflicting with the CIS footprint. However, analysis in Section 3.5.12 results in the conclusion that the construction of the CIS would result in minor to moderate impacts to traffic patterns in the area of FTD. For a detailed discussion of the transportation impacts from CIS construction, refer to Section 3.5.12 Transportation.

Public Services

Jefferson County ranks 44th out of 62 New York counties for positive health outcomes. Of the county's rankings, decreasing risky behaviors affecting one's health (e.g., smoking, inactivity, and sexually transmitted diseases) was 61st in the state out of 62 counties. Jefferson County scored low in social and economic factors contributing to community health as well, ranking 52nd out of 62 counties (UW, 2015b). According to the Community Health Assessment published in 2013, the largest public service need in Jefferson, St. Lawrence, and Lewis Counties is access to health care services. As access to health care is already an issue in Jefferson, St. Lawrence, and Lewis Counties, the addition of construction workers to the county may exacerbate the condition of the county's lack of accessible health care facilities (NCHCP, 2013). However, initiatives to address the below average access to healthcare, including the recruitment of additional health care professionals and planned upgrades, are currently underway for the five hospitals in the FTD service area (FDRLO, 2016).

Some relocating workers would bring their children to live in the community and those children would need to attend the community schools. The area schools would likely see an increase in enrollment during the construction of the CIS. Based on the low average student to teacher ratio of the students in Jefferson, St. Lawrence, and Lewis County schools, the schools would not likely be overcrowded. Because few construction workers would be expected to relocate to the area from outside of the region, the associated influx of new students to Jefferson, St. Lawrence, and Lewis County schools would not be expected to affect the availability or quality of education.

The level of emergency preparedness in the project area meets the needs of the current population. The EMA would likely need to investigate its currently emergency response plans to assess whether they adequately address procedures for the additional construction CIS workforces. The planning and preparation that would be needed from the EMA would not likely be a major impact on Jefferson County.

3.5.11.3.1.2 Mitigation

The socioeconomic impacts resulting from construction of the CIS would be moderate and largely positive, particularly in the areas of increased revenue for local counties and numbers of jobs supported. Therefore, project-sponsored mitigation measures are not required.

3.5.11.3.2 Construction – Expedited Schedule

Section 1683 of the 2016 NDAA includes the requirements to develop a plan to expedite CIS deployment by at least 2 years. Execution of this plan, following a deployment decision, would result in achieving a CIS initial operational capability within 3 years following a deployment decision and site selection. The expedited schedule is approximately 60 percent of the baseline construction schedule. It has been assumed that the construction workforce would need to be doubled to meet the expedited schedule as discussed in Section 2.5.1.2. Therefore, the impacts of 800 to 1200 construction workers would be felt in the FTD area during expedited construction, increased from 400 to 600 construction workers during the baseline construction schedule.

Unless discussed in this section, impacts and mitigations during the expedited construction schedule would be the same as the impacts and mitigations discussed in for baseline construction schedule.

3.5.11.3.2.1 Environmental Consequences

Tax Revenue Impacts

Expedited schedule workers purchasing goods and services for their personal use would contribute to increased sales tax revenue in the study area above the amounts detailed for the baseline schedule. Based on the fact that the workforce for the expedited schedule would need to be doubled over the workforce for the baseline schedule, the expected sales tax revenue from the expedited schedule would also roughly double over what was estimated for the baseline schedule.

Regional Economic Impact Estimates

The RIMS II baseline construction schedule analysis assumed a 5-year construction schedule. In the event the timeline is reduced to 3 years, this change would not noticeably affect the results derived from RIMS II. This negligible impact is due to the fact RIMS II is a static model and does not take time into account - it is a snapshot of the economy at a given moment. Therefore, whether the construction period were to last 5 or 3 years, the estimated impacts would be the in the same order of magnitude. Of course, there would likely be some cost differences between the construction periods. The 3-year construction period would offer a savings due to a shorter onsite presence but there would be substantial over-time paid to workers which would off-set these savings. Overall, it is estimated that the savings and additional expenses for the baseline and expedited construction schedules would largely cancel each other out, creating similar impacts for each schedule duration.

Traffic

The traffic patterns in the FTD area would be affected by the around the clock construction schedule that would be required by the expedited schedule. There would likely be increased road noise during the night from construction truck and worker traffic that would affect the populations living near the FTD construction area. A more detailed discussion of the traffic impacts can be found in Section 3.5.12 Transportation.

Public Services

Under the expedited construction schedule for the CIS, there would be an increased impact on public services over the baseline construction schedule caused by the increased construction worker presence in the FTD area.

More construction workers would be sending their children to FTD area schools. However, the expedited construction schedule workforce would be similar in size to the operational workforce discussed in Section 3.5.11.3.3. The increase of 650 to 850 new students attending area schools during operation was estimated to be approximately one more student per teacher and would not cause a major impact to the FTD area schools. Because the total number of workers required for the expedited construction schedule would be approximately the same as the operational workforce, the expedited schedule workforce would also not have a major impact on FTD area schools.

3.5.11.3.2.2 Mitigation

The socioeconomic impacts resulting from construction of the potential CIS would be moderate and largely positive, particularly in the areas of increased revenue for local counties and numbers of jobs supported. Therefore, mitigation measures are not required.

3.5.11.3.3 Operation

3.5.11.3.3.1 Environmental Consequences

As discussed in Section 2.7, between 650 and 850 employees and workers would be needed during potential CIS operation. This would include full time operating staff, plus contract operation and maintenance personnel. This operation staff would be expected to be a mixture of military, civilian, and other support staff that would be located both on and off the FTD installation.

<u>Tax Revenue Impacts</u>

Impacts of the potential CIS operation on the region and nearby communities could potentially include impacts on nearby populations, buildings, roads, and cultural or recreational facilities. There would be the potential that the demand for a number of local public services in the primary impact area would be impacted by CIS operation. A positive impact of the CIS on the surrounding area would be an increase in the population base that would, in turn, increase taxes and user fees for the continued funding of facilities and services. Sales tax collection from the operational workers would also have a positive impact on area counties. Refer to Table 3.5.11-10 for an analysis of the estimated impact that the CIS's operation would have on tax revenue in Jefferson County.

The potential for negative impacts would also be present and could arise if the relocation of workers occurred rapidly and outpaced the ability of the area to provide for the sudden increase in demand for services. However, it is unlikely that this would occur.

Table 3.5.11-10 Estimated Sales Tax Revenue – Operation - FTD

Input	Operation
Number of Workers (middle of given range of workers)	750
Assumed Expenditures Subject to Sales Tax (per person/year)	$28.364
Sales Tax Rate (Jefferson County)	7.75%
Estimated Sales Tax Revenue (total for CIS workers/year)	$1,648,858
Based on 2014 data – no escalation. Source: BLS, 2014.	

Regional Economic Impact Estimates

The potential CIS's operation would be likely influence the regional economy by increasing the demand for goods and services and generating additional employment, income, output, and value added in the region. For this impact analysis, it was assumed that 750 workers would be employed annually at the CIS, as this is the mid-point of the 650 to 850 worker range provided. During the operation period, a substantial amount of materials would be purchased and earnings would be generated by workers at the CIS. It is assumed that workers at the CIS would be new to the area.

To estimate the multiplier impacts during operations, the process involved allocating expenditures for materials to specific industries and adding in the estimated earnings of CIS staff. The average earnings was based on 2014 wages for military personnel, escalated to 2015 at 2.5 percent. The resulting total wages assumed to be earned by CIS staff during operations were approximately $21.5 million per year in 2015 dollars. These earnings plus the estimated material purchases were set in 2010 dollars and the RIMS II multiplier were applied. The estimated regional impact from these expenditures is shown in Table F.3. The annual expenditures for materials and earnings during the operating period would produce the following impacts:

- The total change in output that occurs in all industries from the annual operation of the CIS project would be more than $45 million in the selected region.
- The total incremental earnings (over and above the $21.5 million earned by the CIS staff) in the region arising from the project operation each year would be more than $14 million.
- The CIS would create 340 indirect jobs yearly during the operating period (over and above the estimated 750 direct workers onsite).
- Finally, the total value added arising in the region from the CIS would be more than $27 million for each year of operation.

Employment and Industry

Based on information provided by MDA, the majority of the workforce (approximately 85 percent) would be brought into the area due to the need for specialized expertise. Local area contractors and other civilian services may be used for certain operations and maintenance activities as facility management deems appropriate.

The increase in population caused by the to 850 new workers and their families that settle in Jefferson and Lewis Counties and the region would increase the demand for certain services such as health care, schools, and restaurants. Consequently, the educational services, health care and social assistance, and services industries would see a moderate increase in employment. This increase in demand for service workers would continue throughout the operation of the CIS. Increased hiring for services industry jobs to accommodate CIS operations staff may contribute to a small decrease in unemployment over the operating life of the CIS.

Traffic

Operational workers would likely be required to live within a certain distance of the facility in order to meet management requirements for response times in case of an emergency. In most instances, 30 miles or 30 minutes away from the facility is the management requirement for operational workers (Gilmore, 1982). Watertown, Carthage, and Lowville are all within 30 miles of the CIS footprint.

Project operation could result in minor to moderate impacts on local traffic patterns due to the volume of workers accessing the site from the region each day. The CIS operational workforce would likely consist of specialized expertise that would have to be brought in from outside the region. These workers would probably settle in, and commute to work from, various locations in the region that are within 30 minutes or 30 miles of the site. Additionally, New York State Highway 3A may be closed permanently as a result of the potential deployment of the CIS. Although there would be additional workers using other existing roads, the analysis in Section 3.5.12 Transportation states that the area roads could accommodate the additional traffic anticipated from the operational CIS workforce. Refer to Section 3.5.12 for further traffic impact analysis.

Public Services

As indicated previously, the Community Health Assessment drafted for Jefferson, St. Lawrence, and Lewis Counties identified areas of public health need in the analyzed counties. Based on these areas of need, the influx of operational workers for the potential CIS could negatively affect the two counties' ability to meet health care needs for the existing population. The 650 to 850 additional workers and their families would be expected to either move to the area or live within commuting distance of the facility, and, therefore, would increase the burden on the counties' healthcare facilities.

Schools in the area may also need to accommodate increased enrollment due to the new workforce present in the area. While exact numbers for the possibility of new students are not available, it can be assumed that a portion of the new workforce would have children that would be incorporated into the Jefferson County education system. Currently, Jefferson County has an approximately 13:1 student to teacher ratio, while St. Lawrence and Lewis Counties have a 12:1 student teacher ratio (PSR, 2015a; PSR, 2015b; PSR, 2015c). For a conservative estimate, if it is assumed that each worker has only one child, approximately 650 to 850 new students would be entering the area. Projected student to teacher rations are shown in Table 3.5.11-11 shows an analysis of the possible impacts of the new students.

Table 3.5.11-11 County Student-to-Teacher Ratios during Operation - FTD

County	Existing Values		Projected Estimates			
			Low Estimate of Potential CIS Operation Workers		High Estimate of Potential CIS Operation Workers	
	Total Students	Student: Teacher Ratio	Total Students [1]	Student: Teacher Ratio	Total Students [2]	Student: Teacher Ratio
Jefferson	28,093	13:1	28,743	13:1	28,943	13:1
St. Lawrence	31,763	12:1	32,413	12:1	32,613	12:1
Lewis	4,571	12:1	5,221	14:1	5,421	14:1

Notes:
1. Assumes 650 new students.
2. Assumes 850 new students.
Sources: PSR, 2015a; PSR, 2015b; PSR, 2015c.

Nationwide, the year 1955 had the highest student to teacher ratio, 26.9:1, since the metric was first taken (DES, 2015). With current student to teacher ratios of between 12:1 and 13:1 for Jefferson, St. Lawrence, and Lewis Counties, and the modest impact projected, it is concluded that the potential for a negative impact on student to teacher ratios in the region is very slight, as only Lewis County would realize an increase in the ratio should all the employees decide to live in Lewis County.

The level of emergency preparedness for the site area meets the needs of the current population. The EMA would likely need to investigate its current emergency response plans to assess whether they adequately address procedures for the additional operational CIS workforces.

Other safety impacts could potentially include impacts on the demand for safety and emergency services at the CIS and by workers and families relocating to the area. This could include demands on police, fire, ambulance, and hospital services. For each of these services, the impact created in the area by the relocating population is a function of the percentage increase in population. Based on the projected populations for Jefferson, St. Lawrence, and Lewis Counties, the 650 to 850 person population increase attributed to the relocation of the facility workforce would have a minor impact on the populations of Jefferson, St. Lawrence, and Lewis Counties. The increase associated with the CIS operating personnel would create a negligible increase in the demand for safety-related impacts.

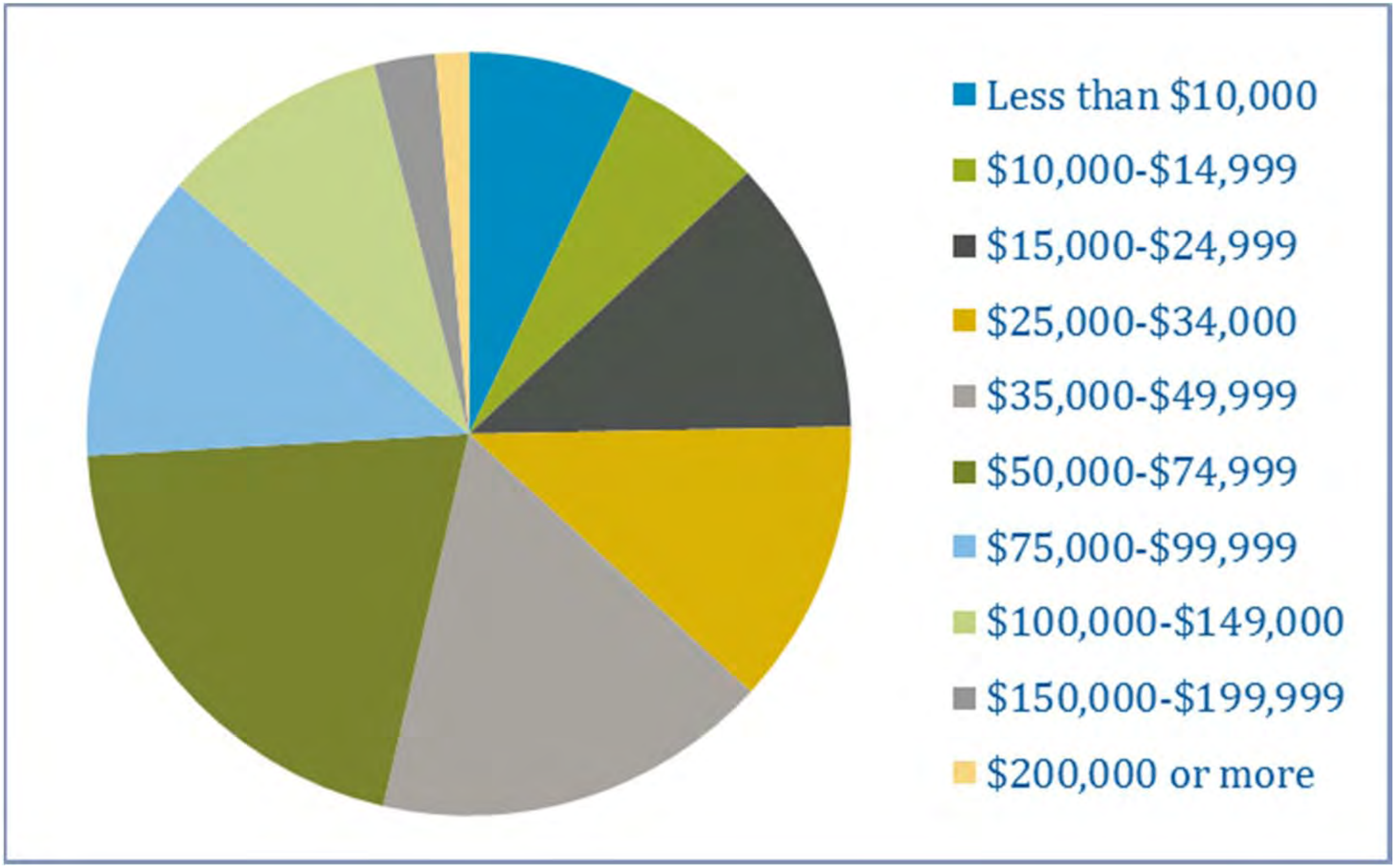
Another factor in reducing the potential for safety impacts is the fact that the demand for public safety services should be small because the CIS's design, emergency response programs, and operational practices would be established per appropriate safety standards. In fact, the CIS would be largely self-sufficient in terms of safety mitigation, which would include measures such as the following:

- Onsite personnel would be trained in facility response procedures as a condition of their employment.
- Security personnel posted onsite with a system in place to control personnel access
- Security lighting, fire suppression equipment, and first aid stations throughout the facility site.
- Standard procedures for spill prevention and containment, injury response, and requests for assistance from local police, fire, and ambulance services.

3.5.11.3.3.2 Mitigation

The socioeconomic impacts that would result from operation of the potential CIS would be moderate and largely positive, particularly in the areas of increased revenue for local counties and numbers of jobs supported. Therefore, mitigation measures would not be required.

Figure 3.5.11-1 Median Household Income in Jefferson County, 2012 – FTD



Source: Census, 2012d

3.5.12 Transportation – FTD

Transportation focuses on the availability, condition, and use of infrastructure for moving people and goods and materials (including heavy haul equipment) within and through a given geographic area. This section presents information on the current transportation conditions at the CIS footprint and in the vicinity, project-related construction and operation impacts, and mitigation measures.

3.5.12.1 Regulatory Framework – Transportation – FTD

Transportation infrastructure planning, design, and use are governed by various federal, state, and local laws, regulations, and ordinances. Key policies which influence how the federal government addresses environmental consequences include the following:

- EO 13274, Environmental Stewardship and Transportation Infrastructure Project Reviews (18 September 2002). EO 13274 promotes environmental stewardship in the Nation's transportation system and expedites environmental reviews of high-priority transportation infrastructure projects.
- EO13693 Planning for Federal Sustainability in the Next Decade (19 March 2015). This EO establishes and integrated strategy towards sustainability in the federal government and to make reduction of GHG emissions a priority for federal agencies.

Requirements and permits for the transportation of people, equipment, and materials are discussed in Section 3.5.12.3 and include a heavy haul permit from the New York State Department of Transportation (NYSDOT), access permit from NSYDOT that requires a TIS for the potential CIS Gate traffic accessing NY 3A and NY 3, coordination and approval from the Federal Highway Administration (FHWA) and NSYDOT related to the closure of NY 3A, coordination with state/local police related to the heavy haul transport, along with the removal of two roundabouts (raised central island) on County Route (CR) 29 located on FTD property to facilitate the heavy haul transport through these intersections. Modifications to the signal phasing/timing at the signalized intersection of School Street and NY 3/126 (State Street) in the Village of Carthage would also be required.

3.5.12.2 Affected Environment – Transportation – FTD

There is an adequate network of Interstate, U.S., and SRs in the north/northwestern portion of the State of New York which, for the purposes of this EIS, was assumed to be the ROI. Those routes effectively serve to move both people and goods throughout the region. In the area around FTD, there is I-81 to the west, and the primary roads that feed into FTD are I-781, US 11, and SRs NY 3, NY 26, and NY 342.

The area within the boundary of the CIS footprint at FTD has a few existing roads with some of them asphalt surfaced and most unpaved. If a deployment decision is made and FTD were selected, then, based on the final site layout, if some of the onsite existing roads and/or their corridors were to be used during construction and operation of the facility, they would require improvements to meet pavement structural capacity, width, and geometric requirements.

3.5.12.2.1 Ground Transportation

The existing capacity of local thoroughfares, SRs, and one U.S. Route was evaluated using available existing traffic counts from the NYSDOT. The routes selected were based on the direct route motorists would likely travel to access the CIS gate to the potential CIS in the southern area of FTD. These SRs either feed or transition into NY 3 itself, which would provide direct access to the CIS gate.

The area roadways are depicted on Figure 3.5.12-1.

The SRs and U.S. routes selected for evaluation are two-lane highways and include:

- NY 3(x) – East Leg of NY 3 (55 mph section), between NY 3A and northern limit of City of Carthage.
- NY 3(y) – West Leg of NY 3 (55 mph section), from northern limit of City of Carthage north approximately 1.5 miles.
- NY 3(z) – West Leg of NY 3 (45 mph section), just north of NY 3A.
- NY 26 – Between US 11 and 45th Infantry Division Dr.
- NY 342 - Between NY 37 and Bush Rd/Goulds Corner Rd.
- US 11 – From split with NY 37 north approximately 2.4 miles.

In addition, the intersection of School Street (North & South) and NY 3/126 is also in the ROI and was analyzed. The interstate highways are multi-lane routes and were assumed to be able to accommodate the generated traffic.

Traffic volumes are typically reported in AADT numbers, which represent the total volume of vehicles per day as averaged by the entire year. For the analysis of two-lane highways, the DHV and directional distribution of traffic are a couple of main inputs for the HCS (UF, 2010). The HCS is based on the methodology of the Highway Capacity Manual (TRB, 2010). The peak traffic hours on the roads are typically the morning and evening periods where motorists are traveling to and from work, respectively. The HCS calculates the LOS, which is a quantitative measurement that represents the quality of service motorists experience as they travel the roadways. The HCS uses six LOS's, ranging from LOS A to LOS F, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst. A brief description of each LOS follows:

- LOS A - free flow, traffic flows at or above the posted speed limit.
- LOS B - reasonably free flow.
- LOS C - stable flow, at or near free flow.

- LOS D - approaching unstable flow, with speeds slightly decreased as traffic volumes increase.
- LOS E - unstable flow, operating at the capacity of the road.
- LOS F - forced or breakdown flow where vehicles move lockstep with the vehicle in front of it with frequent slowing required.

The existing traffic volume data for the SRs and U.S. route in the ROI were from two different years, based on the existence of new traffic counts on NY 3 and NY 3A. The NYSDOT website was used to access the most recent (2013) traffic volumes (NYSDOT, 2013) for NY 26, NY 342, and US 11. Field traffic counts were obtained from NYSDOT (NYSDOT, 2016) in February 2016 for the two intersections of NY 3 and NY 3A in an effort to determine the volume of traffic that would be diverted on NY 3 if NY 3A is closed. In February 2016, the NYSDOT also collected traffic data at the signalized intersection of School Street (North & South) and NY 3/126 in the Village of Carthage. These intersection` counts were also used to develop the existing two-way peak hour volume on the sections of NY 3(x), (y) and (z) used in this LOS analysis. An average growth rate of 1 percent per year (Cornell, 2011), based on projected population numbers for the counties of Jefferson, Lewis and St. Lawrence, was used to escalate the year 2013 traffic volumes to the year 2016 traffic volumes for the existing condition in this analysis. There was no traffic volume data for the internal FTD roads. The analyses for the two-lane highways were based on the morning peak hour time period, but it is also representative of the evening peak hour. The existing traffic data for NY 26, NY 342, and US 11 is based on AADT, with the assumption of the DHV being 10 percent of AADT (TRB, 2000) and a directional distribution of 50/50. The percentage of no passing zones along the highways was very similar in either direction of travel in the segments studied for this EIS. Thus, the traffic volumes would be the same in either the morning or afternoon peak hours, in opposite directions of travel, and because the other factors are consistent for travel in either direction, there is only one design hour that needs to be analyzed. The DHV and directional distribution for the studied sections along NY 3 were derived from the year 2016 counts. The existing traffic volumes and LOS of the selected highways in this capacity analysis are noted in Table 3.5.12-1.

Table 3.5.12-1 Existing Traffic Volumes and Levels of Service - FTD

Roadway	Traffic Design Hour Volume(1)	Level Of Service(4)
NY 3(x)	163 (2)	A
NY 3(y)	246 (2)	B
NY 3(z)	416 (2)	B
NY 26	539 (3)	C
NY 342	1,419 (3)	D
US 11	949 (3)	C

Notes:
1. In units of vph.
2. Source: NYSDOT, 2016.
3. Assumed DHV is 10% and directional distribution if 50/50 (NYSDOT, 2013; Cornel, 2011).
4. HCS (UF, 2010).

Highway agencies typically design their roads to a LOS C, with an absolute minimum of LOS D. The HCS modeling showed that the existing LOS for the selected routes are all within these limits. See Appendix G.3 for the detailed HCS analysis results.

The existing intersection of School Street (North and South) and NY 3/126 was analyzed and the resultant LOS are noted in Table 3.5.12-2.

Table 3.5.12-2 Intersection of School Street and NY 3/126 (State Street) Existing Levels of Service - FTD

Roadway & Movement	AM Peak Hour Level of Service	PM Peak Hour Level of Service
NY 3/126 EB (L)	A	A
NY 3/126 EB (TR)	A	A
NY 3/126 WB (L)	A	A
NY 3/126 WB (TR)	A	B
N. School St SB (LTR)	B	C
S. School St NB (LTR)	B	B
Overall Intersection	A (Delay 8.1)	B (Delay 12.9)
Notes: 1. Lane Groupings: L = Left, TR = Thru/Right, LTR = Left/Thru/Right 2. Overall Intersection Delay is measured in seconds/vehicle. 3. LOS designation is based on Existing Timing Plan and Phasing Scheme from NYSDOT.		

The HCS analysis shows that the existing signalized intersection of School Street (North and South) and NY 3/126 (State Street) operates at a very good LOS with minimal delays.

There are very few existing internal roads that could provide access to various elements of the potential CIS. Figure 3.5.12-2 illustrates the existing roads within the CIS footprint that might be used during the construction and operation. However, the existing roads would need to be upgraded and several new roads constructed to adequately carry the CIS-generated traffic, both for pavement structure and roadway geometric conditions.

3.5.12.2.2 Air Transportation

Air is the mode of transportation designated for initial transport of GBIs and other equipment. The Wheeler-Sack Army Airfield is located on FTD, has the capability to accommodate C-17 aircraft, and is less than 5 miles from the potential CIS.

3.5.12.2.3 Railroad Transportation

A railroad (owned and operated by the CSX Corporation) is located along the west side of FTD and the FTD CIS footprint. Although there is an access spur within FTD, there is no current plan to use this mode of transportation for the construction or operation of the CIS.

3.5.12.3 Environmental Consequences and Mitigation – Transportation - FTD

If a deployment decision is made and FTD is selected, an access permit for access at the CIS Gate at the end of NY 3A would be required from NYSDOT which would require the preparation of a TIS. NY 3A would be closed to through traffic from approximately the railroad that is just west of the potential CIS to the east leg of NY 3. This would require substantial coordination with the NYSDOT and approval from the FHWA because NY 3A is registered on the National Highway System. Modifications to the signal phasing/timing at the signalized intersection of School Street and NY 3/126 (State Street) in the Carthage would also be required. Another mitigation would be to stagger the work shifts during construction and operations so that the travel to and from work would not coincide with the existing peak hour of traffic traveling on NY 3 through the Village of Carthage.

The transportation of the SIV and silos would require a special hauling permit (oversized/overweight) from NYSDOT. Coordination would be required with state/local police while the SIV/silo moves from NY 37 to NY 812 because it requires the transport to travel in the wrong direction on an on-ramp between NY 812 and NY 37. In addition, there are two roundabouts (with raised central islands) on CR 29 located on FTD property that would need to be removed to facilitate the transport of the SIVs and silos through these intersections.

3.5.12.3.1 Construction - Baseline Schedule

3.5.12.3.1.1 Impact Calculation Basis

Construction Traffic

If a deployment decision were made and FTD is selected, construction activities at FTD would take a total of 5 years with tree clearing and site preparation (earthwork) occurring in the first 2 years, heavy construction (foundations, concrete, buildings, etc.) the next 2 years, and the final buildout occurring in the fifth year as discussed in Section 2.5.1. The construction workforce would average approximately 400 personnel, with a maximum of 600 during the peak construction activities. The CIS-generated DHV of one-way traffic for construction workers is anticipated to be 540 vph due to the assumption of potential varying shifts and some carpooling. These vehicles would be spread out over the various SRs, US routes, and interstate highways in the area around FTD. It is assumed that there would be a total of 90 trucks associated with the construction activities that would be entering and exiting the site during this time of peak construction. A 10-hour work shift was also assumed and thus an average of nine trucks would be entering and exiting the site each and every hour of this workday. Furthermore, it was assumed that there would be some traffic exiting the site during the peak hour (i.e., 10 percent of the construction workforce or 54 vehicles). Using the morning peak hour as the period for analysis, this results in a total CIS construction-generated traffic of 549 vehicles (540 cars and nine trucks) entering the potential CIS and 63 vehicles (54 cars and nine trucks) exiting during this peak period. It is also assumed this construction traffic would travel the surrounding road network during the existing peak hour of each respective roadway. There is an anticipated balance between cut and fill volumes for site preparation and thus there is no need to analyze traffic impacts for trucks during this earthwork phase because they would remain onsite and not have to haul fill material to the site nor haul excess material off the site.

To determine traffic impacts on local roadways within the ROI, the populations of area cities and towns within an approximate 40-mile radius of the CIS in the counties of Jefferson, Lewis, and St. Lawrence were obtained from the 2010 Census (Census, 2010c). A weighted average of these populations relative to the total CIS-generated workforce was used to distribute the construction workforce over the regional road network, taking into account where the laborer lives and assumptions on the most viable routes they would take to the CIS. In order to factor up the existing traffic to a baseline condition for the peak construction period, an assumption was made that if a decision for deployment were made and FTD is selected, then the earliest design and permitting work could start would be late 2016. Then based on the schedule noted in Section 2.5.1, the peak construction period with 600 workers would occur in the year 2020. Therefore, the existing design hour volume was escalated up to the year 2020. The construction workers and the construction truck traffic were then added to the year 2020 baseline design hour traffic data along the selected routes of this analysis. Due to the closure of NY 3A, the traffic which traveled this highway would be rerouted south on NY 3 to the Village of Carthage and then back north on NY 3. Thus the traffic volumes for the construction period for the routes in this analysis noted as NY 3(x) and NY 3(y) account for this rerouted traffic in addition to the site-generated traffic. The LOS results with the construction traffic added to the baseline are shown in Table 3.5.12-3.

Table 3.5.12-3 Peak Construction Levels of Service - FTD

Roadway	Traffic Design Hour Volume (1)	Level of Service (2)
NY 3(x)	319	C
NY 3(y)	646	D
NY 3(z)	832	C
NY 26	684	C
NY 342	1,661	D
US 11	1,037	D

Notes:
1. In units of vph.
2. HCS (UF, 2010).

The modeling showed that all of the SRs and the U.S. Route studied have the capacity to accommodate the increased traffic associated with the peak construction activities at FTD. The LOS remained the same as the existing condition on two routes – NY 26 and NY 342. However, the LOS was lowered from an existing condition LOS B and LOS C to a peak construction condition of LOS C and LOS D on two routes, NY 3(z) and US 11, respectively. A greater lowering of LOS results would occur on NY 3(x) and NY 3(y) where the existing condition of LOS A and LOS B were lowered at the peak construction condition to LOS C and LOS D, respectively.

The rerouted traffic due to the closure of NY 3A and the peak construction traffic was analyzed for the intersection of School Street (North and South) and NY 3/126 and the resultant LOS is noted in Table 3.5.12-4.

Table 3.5.12-4 Intersection of School Street and NY 3/126 (State Street) Peak Construction Levels of Service – FTD

Roadway & Movement	AM Peak Hour Level of Service	PM Peak Hour Level of Service
NY 3/126 EB (L)	B / B	B / D
NY 3/126 EB (TR)	A / A	B / D
NY 3/126 WB (L)	A / A	A / C
NY 3/126 WB (TR)	B / B	B / E
N. School St SB (LTR)	C / C	F / E
S. School St NB (LTR)	B / B	B / A
Overall Intersection	B (Delay 16.6) / B (Delay 16.7)	F (Delay 138.6) / E (Delay 59.2)
Notes: 1. Lane Groupings: L = Left, TR = Thru/Right, LTR = Left/Thru/Right 2. Overall Intersection Delay is measured in seconds/vehicle. 3. First LOS designation is based on Existing Timing Plan and Phasing Scheme from NYSDOT and the Second LOS designation is based on Optimum Cycle Lengths and Splits using Existing (Permissive Only) Phasing Scheme.		

There are two values of LOS for each lane grouping based on a mitigation solution for the peak construction and operations conditions. The first LOS designation is based on the existing timing plan and phasing scheme received from NYSDOT and the second LOS designation is based on updating those existing conditions with optimum cycle lengths and splits using the existing (permissive only) phasing scheme. The morning peak hour operated at an acceptable LOS B with a slight increase in the delay motorist would experience at the intersection compared to the existing condition. However, the results of the analysis incorporating the optimum cycle lengths with permissive phasing for the evening peak hour resulted in an overall intersection LOS E and a delay that is nearly five times the existing condition (59.2 seconds per vehicle vs 12.9 seconds per vehicle).

Existing onsite roads designated for the potential CIS construction traffic route would be upgraded to meet the necessary physical requirements. Potential modifications would include curve widening at intersections and around curves to compensate for wheel off-tracking, surface stabilization (gravel roads) for augmented rut resistance and pavement thickness increase for added structural capacity. The majority of onsite roads would be new roads to provide access to individual mission and mission-support facility construction areas. Those new roads would need to have sufficient width, structural capacity and meet longitudinal grade requirements.

Heavy Haul Equipment Transport

A viable route for heavy haul equipment was identified and coordinated with NYSDOT for the transportation of the SIV and silos during construction. A detailed evaluation of the proposed route is presented in the CIS Transportation Study (MDA, 2015a). The SIV and silos are heavy loads that also have height issues that need to be accounted for during transport over the road. If a deployment decision is made and FTD selected, at that time the exact route would be determined with the NYSDOT while the heavy haul permit is obtained. The SIV and silos are anticipated to be manufactured on the West Coast and they would be transported via ship to the Port of Ogdensburg, New York. The Port of Ogdensburg has sufficient infrastructure to receive and unload vessels, provides a secure temporary holding area, and has easy access to a road network that is capable of handling the transport of the SIV and silo components. Figure 3.5.12-3 depicts a viable route of the SIV and silos from the Port of Ogdensburg to FTD. The transport route begins at the Port of Ogdensburg to Ford Street for approximately 1 mile and then it goes along the following routes: NY 37 west, NY 812 south, US 11 south, CR 29 south, CR 37 southeast, NY 3A east to the CIS gate on FTD.

Based on preliminary discussions with the NYSDOT during the CIS Transportation Study (MDA, 2015a), the viable route would not require any modifications/upgrades to the existing roadway network for the SIV/silo transport. The main route limitation would be a bridge clearance issue as the transport moves from NY 37 to NY 812. To avoid this bridge, travel could be the wrong way up an on-ramp (from NY 812) as they exit NY 37 while heading to NY 812. The movement up the on-ramp would need to be coordinated with the state and local police. Once the transport would access NY 29, there would be two roundabouts on FTD property with raised central islands that should be removed to facilitate the movement of the SIV and silo through those two intersections. The final route would be determined with NYSDOT at the time the heavy haul permit is obtained.

In addition to the SIV/silo transport, the GBIs and other equipment would be flown into Wheeler-Sack Army Airfield which has C-17 aircraft capabilities and adequate off loading facilities. From the Wheeler-Sack Army Airfield, the GBIs and other equipment would then be transported via truck over public and FTD roads to the CIS footprint. Another possible mode of transport for equipment and materials during construction would be via rail. FTD has rail off-loading capability in two U.S. Army-owned rail yards within the cantonment area. CSX accesses these rail yards regularly to move U.S. Army heavy equipment. However, for this EIS, it is assumed that the majority of the equipment and materials would be via over-the-road vehicles and thus, an emphasis has been placed on that mode of transportation.

Onsite transportation of materials and equipment for CIS construction would be along designated routes based on the final layout of the CIS and those vehicles would enter the site through the CIS Gate at the end of NY 3A, see (Figure 3.5.12-2). To accommodate missile transport, SIV/silo transport, and delivery of materials and equipment, onsite roads would need to meet the requirements specified in Section 2.4.1.4. The dimensions and load characteristics of the SIV, silo, GBI, and their transporters are also noted in Section 2.6.1 and the CIS Transportation Study (MDA, 2015a).

3.5.12.3.1.2 Environmental Consequences

The regional roadway system has the capacity to accommodate the increased traffic due to peak construction activities at FTD. If a deployment decision is made and FTD is selected, there would be a reduction of one level of LOS for two of the routes: NY 3(z) and US 11, and a reduction of two levels of LOS for two routes: NY 3(x) and NY 3(y). These reductions would be considered a moderate impact. However, the signalized intersection of School Street (North and South) and NY 3/126 (State Street) would be reaching the capacity of the intersection and result in delays of five times the existing condition. This impact would be considered a major impact.

There are no bridge, highway, or intersection modifications required for the transport of the SIVs and silos from the Port of Ogdensburg to the CIS at FTD except for the removal of raised islands in the middle of two roundabouts on FTD property. The majority of onsite roads (within the CIS footprint) would be newly constructed two-lane roads and with adequate capacity to accommodate the construction traffic.

3.5.12.3.1.3 Mitigation

Based on modeling results, the peak construction LOS results for the selected two-lane highways would remain at acceptable levels. Two routes would be lowered one level when compared to the existing LOS results, while two routes would be lowered two levels. If a deployment decision were made and FTD is selected, then an access permit for entering and exiting CIS-generated traffic at the CIS gate onto NY 3A would be required from NYSDOT which requires the preparation of a TIS. At the intersection of NY 3 and NY 3A (section of NY 3A that would remain), the volume of NY 3 EB site-generated traffic turning left onto NY 3A would warrant a left turn lane for both the construction and operations conditions. The warrant for a traffic signal at the NY 3 and NY 3A would be determined when a TIS is performed for an access/highway work permit from NYSDOT. In addition, modifications to the signal phasing/timing at the signalized intersection of School Street and NY 3/126 (State Street) in the Village of Carthage would also be required. Consideration should also be given to the development of an exclusive left turn lane for the N. School Street SB approach and possibly provide a permitted left turn phasing scheme. The traffic evaluation for the closure of NY 3A was based on using a viable route of NY 3 into and out of the Village of Carthage. If a decision is made to deploy the CIS and FTD is the selected site, efforts would be coordinated with the NYDOT, along with the Villages of Carthage and West Carthage, to determine the most appropriate solution for traffic routing.

The LOS analysis conservatively assumed that all of the construction workers would travel to and from the CIS during the peak hour of traffic on the regional road network. Another mitigation would be for the work schedules to be staggered such that the majority of the construction workers would travel on the regional roads prior to and/or after the morning and evening peak hours for the respective roads. This would help reduce the impacts particularly to motorists on NY 3 within and just outside the Village of Carthage.

3.5.12.3.2 Construction – Expedited Schedule

3.5.12.3.2.1 Impact Calculation Basis

The 3-year expedited construction schedule assumes two 10-hour per day work shifts with the peak period of construction still employing 600 workers. There is also a 2-hour transition period between shifts so there are not 600 workers going to and coming from the potential CIS area at the same time. The analysis performed for the 5 year baseline construction schedule applies to the expedited construction schedule because the peak volume of CIS-generated traffic would be the same. Thus the affected environment for transportation for FTD would be the same as that described for the baseline construction schedule.

3.5.12.3.2.2 Environmental Consequences

The construction environmental consequences for transportation for FTD would be the same as those described for the baseline construction schedule (moderate to major impacts).

3.5.12.3.2.3 Mitigation

The construction mitigations for transportation for FTD would be the same as those described for the 5-year baseline construction schedule.

3.5.12.3.3 Operation

3.5.12.3.3.1 Impact Calculation Basis

As discussed in Section 2.7, a range of 650 to 850 employees and workers over a total of three work shifts would be needed during this CIS operation. The personnel employed would be a mixture of military, civilian and contractor workforce. It is assumed that there would be approximately 350 employees during the typical daytime shift spread out over the various SRs and US routes in the area of the potential CIS. Therefore, it is assumed that the CIS-generated traffic would be 350 one-way vehicles entering the potential CIS during the morning peak hour traffic. In addition, the personnel are assumed to arrive and depart within a 1-hour period (assumed no flex schedule) that coincides with the peak hour traffic volumes on the regional road network. It is assumed that there would be an additional 10 percent of traffic that would be attributed to trucks associated with the operation of the site entering and exiting the site. A 9-hour work shift was also assumed and thus an average of four trucks would be entering and exiting the site each and every hour of the workday. The other two work shifts are assumed to have approximately 250 workers per shift. Furthermore, using the morning peak hour for this analysis, it was conservatively assumed one-half of the third shift would travel the area roadways during the peak hour of the regional road network, which equates to approximately 125 vehicles. These assumptions result in a total CIS-generated traffic of 354 vehicles (350 cars and four trucks) entering the CIS and 129 vehicles (125 cars and four trucks) exiting the CIS during this peak period.

The distribution of CIS-generated traffic over the regional road network during the operation of the CIS was similar to the construction worker distribution, with the majority of the workers coming from the more populated cities located west of FTD proper. In order to factor up the existing traffic to a baseline condition for the operations period, an assumption was made that if a decision for deployment is made and FTD is selected, the earliest design and permitting work could start would be late 2016. Then based on the schedule noted in Section 2.5.1, the first year of full operations would occur in the year 2022. Therefore, the existing design hour volume was escalated up to the year 2022 based on a yearly growth rate of 1 percent as previously described to establish a baseline condition. The operation workers and the operation truck traffic were then added to the year 2022 baseline design hour traffic data along the selected routes of this analysis. Due to the closure of NY 3A, the traffic which traveled this highway would be rerouted south on NY 3 to the Village of Carthage and then back north on NY 3. Thus the traffic volumes for the operations period for the routes in this analysis noted as NY 3(x) and NY 3(y) account for this rerouted traffic in addition to the site generated traffic. The LOS results with the operation traffic added to the baseline are shown in Table 3.5.12-5.

Table 3.5.12-5 Operations Levels of Service - FTD

Roadway	Traffic Design Hour Volume(1)	Level of Service(2)
NY 3(x)	313	C
NY 3(y)	611	D
NY 3(z)	756	C
NY 26	670	C
NY 342	1,654	D
US 11	1,046	D

1. Units in vph.
2. HCS (UF, 2010).

The LOS results of the operations CIS-generated traffic are similar to the results of the construction CIS-generated traffic on the surrounding road network. All of the routes studied have the capacity to accommodate the increased traffic associated with the operations of the CIS at FTD. The LOS remained the same as the existing condition on two routes: NY 26, and NY 342. However, the LOS was lowered one level from the existing condition on two routes: NY 3(z) and US 11. A greater lowering of LOS results would occur on NY 3(x) and NY 3(y) where the existing condition of LOS A and LOS B were lowered at the operation condition to LOS C and LOS D, respectively.

The rerouted traffic due to the closure of NY 3A and the operations traffic was analyzed for the intersection of School Street (North and South) and NY 3/126 and the resultant LOS are noted in Table 3.5.12-6.

Table 3.5.12-6 Intersection of School Street and NY 3/126 (State Street) Operations Levels of Service – FTD

Roadway & Movement	AM Peak Hour Level of Service	PM Peak Hour Level of Service
NY 3/126 EB (L)	B / B	B / C
NY 3/126 EB (TR)	A / A	B / C
NY 3/126 WB (L)	A / A	A / B
NY 3/126 WB (TR)	C / B	B / D
N. School St SB (LTR)	C / C	F / E
S. School St NB (LTR)	B / B	B / A
Overall Intersection	B (Delay 19.3) / B (Delay 18.5)	F (Delay 98.1) / D (Delay 48.7)

Notes:
1. Lane Groupings: L = Left, TR = Thru/Right, LTR = Left/Thru/Right
2. Overall Intersection Delay is measured in seconds/vehicle.
3. First LOS designation is based on Existing Timing Plan and Phasing Scheme from NYSDOT and the Second LOS designation is based on Optimum Cycle Lengths and Splits using Existing (Permissive Only) Phasing Scheme.

The morning peak hour operated at an acceptable LOS B with a slight increase in the delay motorist would experience at the intersection compared to the existing condition. However, the results of the analysis incorporating the optimum cycle lengths with permissive phasing for the evening peak hour resulted in an overall intersection LOS D and a delay that is nearly four times the existing condition (48.7 seconds per vehicle vs 12.9 seconds per vehicle).

If a deployment decision is made and FTD is selected, then during the design phase a network of onsite new roads and parking areas would be designed and subsequently constructed to serve CIS operations. Parking capacity, traffic circulation patterns, security, and turning radius would be evaluated during the design phase

Table 3.5.12-7 provides a comparison of the LOS during the three periods analyzed in this EIS for the two-lane highways.

Table 3.5.12-7 Levels of Service Comparison (Two-Lane Highways) - FTD

Roadway	Existing LOS	Peak Construction LOS	Operations LOS
NY 3(x)	A	C	C
NY 3(y)	B	D	D
NY 3(z)	B	C	C
NY 26	C	C	C
NY 342	D	D	D
US 11	C	D	D

As noted previously, both the peak construction and operations periods lower the LOS one level for NY 3(z) and U.S. 11 and lower the LOS two levels for NY 3(x) and NY 3(y). This slight reduction in LOS for NY 3(z) and U.S. 11 would be a minor impact, while the LOS reductions on NY 3(x) and NY 3(y) would be moderate impacts.

Table 3.5.12-8 provides a comparison of the LOS during the three periods analyzed in this EIS for the intersection of School Street (North and South) and NY 3/126 (State Street). The LOS results for the peak construction and operations condition are based on the optimum cycle length and splits using the existing (permissive only) phasing scheme.

Table 3.5.12-8 Levels of Service (Intersections) – FTD

Roadway & Movement	AM Peak Hour Existing LOS	AM Peak Hour Peak Construction LOS	AM Peak Hour Operations LOS
NY 3/126 EB (L)	A	B	B
NY 3/126 EB (TR)	A	A	A
NY 3/126 WB (L)	A	A	A
NY 3/126 WB (TR)	A	B	B
N. School St SB (LTR)	B	C	C
S. School St NB (LTR)	B	B	B
Overall Intersection	A (Delay 8.1)	B (Delay 16.7)	B (Delay 18.5)
Roadway & Movement	**PM Peak Hour Existing LOS**	**PM Peak Hour Peak Construction LOS**	**PM Peak Hour Operations LOS**
NY 3/126 EB (L)	A	D	C
NY 3/126 EB (TR)	A	D	C
NY 3/126 WB (L)	A	C	B
NY 3/126 WB (TR)	B	E	D
N. School St SB (LTR)	C	E	E
S. School St NB (LTR)	B	A	A
Overall Intersection	B (Delay 12.9)	E (Delay 59.2)	D (Delay 48.7)
Notes: 1. Lane Groupings: L = Left, TR = Thru/Right, LTR = Left/Thru/Right 2. Overall Intersection Delay is measured in seconds/vehicle.			

The intersection would operate at an acceptable LOS for the morning peak hour. However, there would be major delays for motorists during the peak construction period and significant delays for the operations condition during the evening peak hour.

3.5.12.3.3.2 Environmental Consequences

The regional roadway system has the capacity to accommodate the increased traffic due to operation of the potential CIS at FTD. As compared to the existing condition, travel speeds and maneuverability would be similar on two routes (NY 26 and NY 324), slightly decreased on two routes (NY 3(z) and US 11), and moderately decreased on two routes (NY 3(x) and NY 3(y)), during potential CIS operation (moderate impacts). However, the signalized intersection of School Street (North and South) and NY 3/126 (State Street) would be near the capacity of the intersection and result in delays of four times the existing condition (major impact). Improvements to the internal roads, as noted in Section 3.5.12.2.1, would have been made during the construction phase so there are no environmental consequences related to the onsite road network during the operation of the CIS. The onsite roads would have adequate capacity to accommodate the CIS-generated traffic.

3.5.12.3.3.3 Mitigation

The operation LOS results for the peak hour of travel on the selected two lane highways remained at acceptable levels. However, there would be minor to moderate reductions of travel speed and maneuverability on four of the six routes studied. Two routes would be lowered one level when compared to the existing LOS results and two routes would be lowered by two levels. If a deployment decision is made and FTD is selected, then an access permit for entering and exiting CIS-generated traffic at the CIS Gate onto NY 3A would be required from NYSDOT which requires the preparation of a TIS. In addition, modifications to the signal phasing/timing at the signalized intersection of School Street (North and South) and NY 3/126 (State Street) in the Village of Carthage would also be required. Consideration should also be given to the development of an exclusive left turn lane for the N. School Street SB approach and possibly provide a permitted left turn phasing scheme. The traffic evaluation for the closure of NY 3A was based on using a viable route of NY 3 into and out of the Village of Carthage. If a decision is made to deploy the CIS and FTD is the selected site, efforts would be coordinated with the NYDOT, along with the Villages of Carthage and West Carthage, to determine the most appropriate solution for traffic routing.

The LOS analysis assumed that all of the operations personnel would travel to and from the CIS during the peak hour of traffic on the regional road network. Thus it was conservatively assumed that the entire morning shift of 350 people would arrive and one-half of the third shift (125 people/vehicles) would depart from the potential CIS at FTD during the respective peak hours of the area roadways. To address this operation traffic concern, work schedules could be staggered such that there is a more even volume of traffic traveling the area roadways and there is not a 1-hour CIS-generated peak traffic volume hitting the existing road peak hour at the same time. This could be accomplished by shifting the work hours by 30 to 60 minutes, allowing flex-time, providing a 30-minute gap between work shifts, or similar schedule variations. This would help reduce the impacts particularly to motorists on NY 3 within and just outside the Village of Carthage.

Figure 3.5.12-1 Regional Road Network - FTD

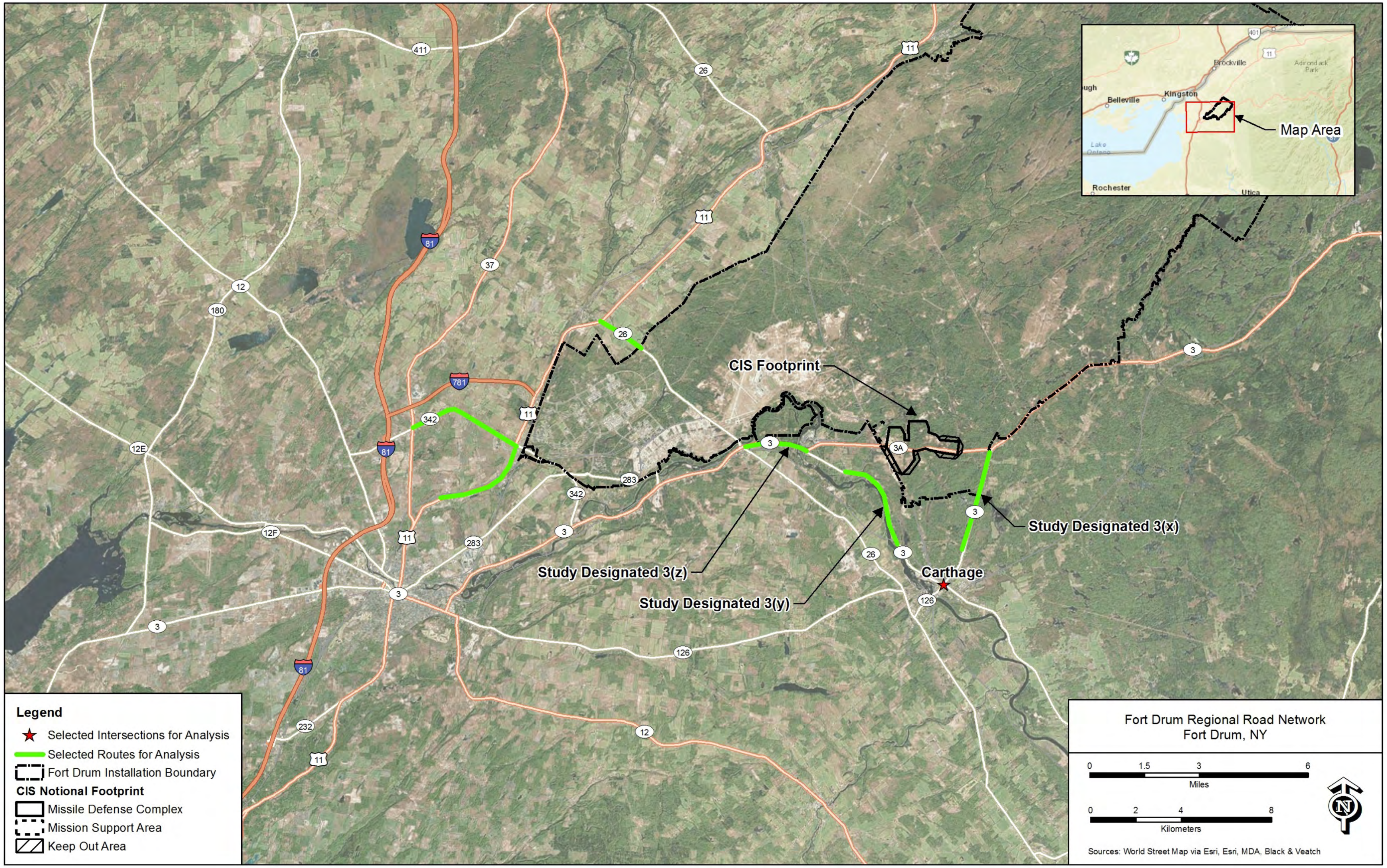


Figure 3.5.12-2 Existing FTD Road Network

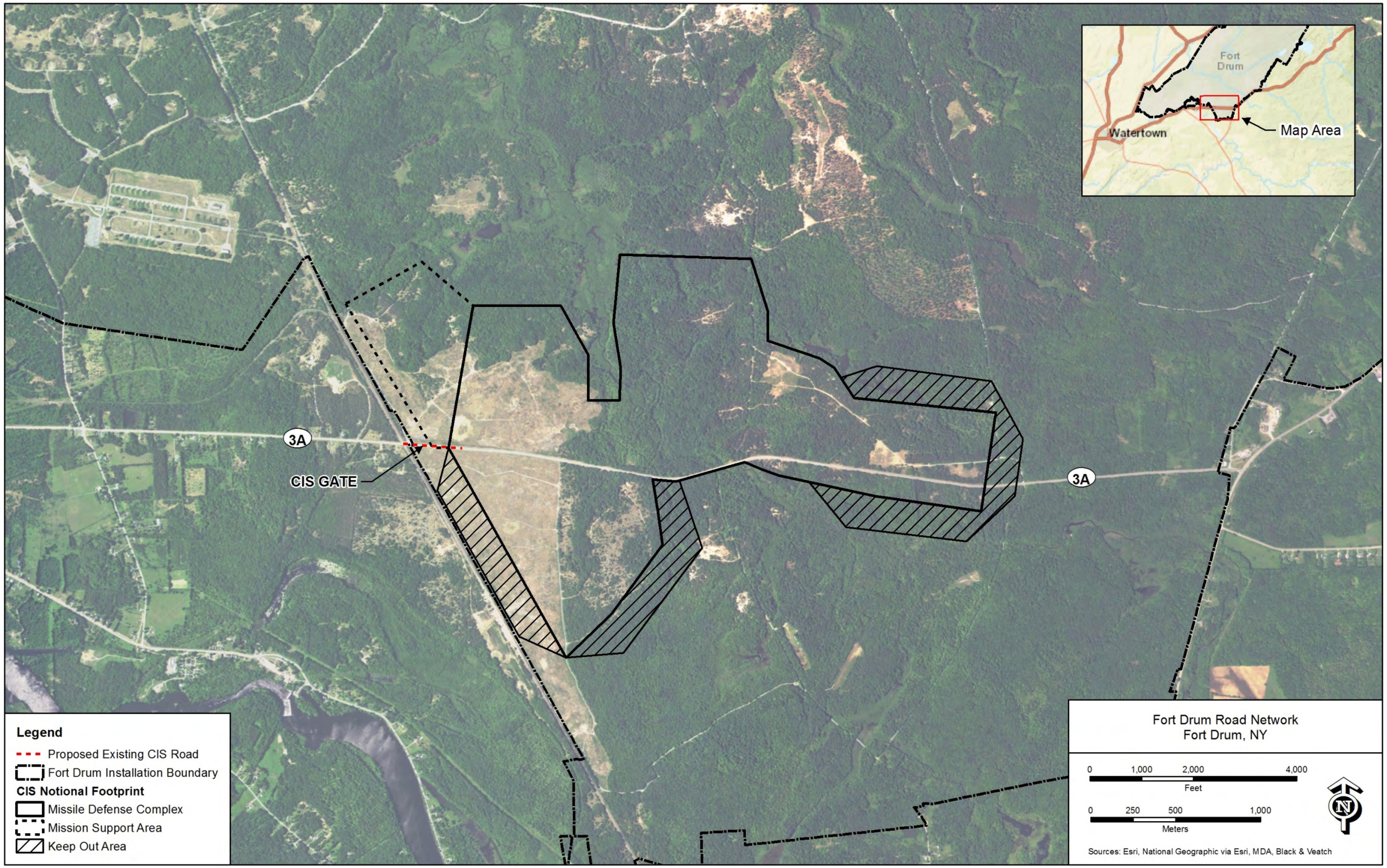


Figure 3.5.12-3   Route from Port of Ogdensburg to FTD

Route from Ogdensburg Port to FTD
Fort Drum, NY

3.5.13 Utilities – FTD

The utility systems addressed in this analysis include the facilities and infrastructure used for:

- Water services including pumping, treatment, storage, and distribution. Includes potable water, fire protection water, and water needed for facilities operation.
- Wastewater management including collection and treatment.
- Solid waste collection and disposal.
- Electrical and natural gas or other fuel sources used for energy generation and distribution.
- Communication services, specifically those related to telephone and internet services.

For this analysis, both onsite and offsite service provisions were considered. The primary considerations for the utility services include abilities related to processing, distribution, storage capacities, and consumption demands needed to determine the adequacy of services for future services as related to the potential CIS.

3.5.13.1 Regulatory Framework – Utilities – FTD

Utilities are governed by various federal, state, and local laws, regulations, and ordinances. Key guidance regarding how the federal government is to address the environmental compatibility of infrastructure is contained in the following:

- EO 13211 Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (issued on May 18, 2001). EO 13211 requires that agencies address the effects of certain regulatory actions on energy supply, distribution, or use.
- EO 13693 Planning for Federal Sustainability in the Next Decade (issued on March 19, 2015). EO 13693 establishes an integrated strategy towards sustainability in the federal government and encourages federal agencies to reduce GHG emissions.

3.5.13.2 Affected Environment – Utilities – FTD

The potential CIS is located within an area of FTD that currently has limited utility services.

Information and data gathered for this assessment was based primarily of correspondence with the installation (FTD, 2015c) and through correspondence and interviews held as part of the utility study (BVSPC, 2016a).

3.5.13.2.1 Water Supply

FTD obtains its water supply primarily from two sources: the City of Watertown via a transmission system operated by the Development Authority of the North Country (DANC), and an onsite well field (Army, 2011). The nominal well capacities range from 53 gpm to 440 gpm, with a total combined well capacity of 2,314 gpm. This equates to a flow of about 3.3 MGD. The combination of the Watertown and FTD water supplies provides a mixed/blend water system throughout the year. With respect to the CIS footprint location, the closest onsite connection is approximately 3.0 miles and the closest offsite connection is approximately 4.0 miles to the west.

Currently, there are no water wells within the potential FTD Site footprint. However, as indicated from previous geologic and hydrogeologic studies, there appears to be groundwater that could be a source of potable water from water table aquifers and an artesian aquifer system underlying the CIS footprint (USACE, 1977). Within the water table aquifer, individual wells were observed to produce up to 90 to 150 gpm, and wells within the artesian aquifer system were observed to produce 150 to 470 gpm (USACE, 1977). As described in further detail in the Section 3.5.14 Water resources section, the groundwater quality is good to excellent for potable water use with limited treatment (chlorination) prior to use.

3.5.13.2.2 Wastewater Management

Wastewater at FTD is typically collected and sent via a sanitary sewer line provided by the DANC and sent off installation to the wastewater treatment plant owned and operated by the City of Watertown for treatment (Army, 2011). The current contracted capacity of wastewater/sewage management between DANC/City of Watertown and FTD is approximately 1.6 MGD (DANC, 2015b). However, the current wastewater/sewage production rate is about 25 percent of this current capacity. The closest connection for the FTD Site footprint wastewater system ranges between approximately 3 miles (on installation) and 4 miles (off installation) west of the CIS footprint.

Currently there are no provisions for wastewater management within the CIS footprint.

3.5.13.2.3 Solid Waste

Solid waste at FTD is collected internally by FTD at a transfer station located in the cantonment area, then hauled off-installation by a commercial hauler (FEHER Rubbish) to the Town of Rodman Landfill, operated by the DANC, and located about 15 miles south of Watertown (Army, 2011). The Rodman Landfill was recently permitted for an estimated 45-year expansion (DANC, 2015a).

3.5.13.2.4 Energy

Energy includes both electrical power and natural gas, or other heat fuel alternatives.

The electrical power at FTD is provided by a 60-MW biomass electrical generation facility, the ReEnergy Black River biomass power plant, with backup power being provided from an off installation source, National Grid (Army, 2011). If power to the potential CIS is supplied from the existing biomass plant, an additional substation for power transmission to the FTD Site footprint may be required. The estimated distance for connection to the cogeneration plant is 7.7 miles to the CIS and 1.3 miles to National Grid.

Natural gas is available at the cantonment airfield in limited supply by National Grid. For the potential CIS, the closest connection for the natural gas supply ranges between approximately 4 and 6 miles to the west of the FTD Site footprint boundaries. In-lieu of natural gas, heating loads may be addressed by fuel oil (diesel, kerosene, etc.) fired-boilers. The fuel oil sources required for these fuel oil fired-boilers would be furnished by commercial suppliers.

3.5.13.2.5 Communication

There are no available communication (telephone or internet) services present at the CIS footprint.

Telephone and internet service is currently being provided to FTD by Network Enterprise Center within the cantonment area. For service, main cables would likely need to be run from the FTD Site footprint boundary to the CIS facilities using existing duct banks within the vicinity of the air field and cantonment area and providing new duct banks from the air field to the potential CIS. The estimated distance for connection of these new services is approximately 5 miles.

3.5.13.3 Environmental Consequences and Mitigation – Utilities - FTD

Based on preliminary estimates defined for the utility study, utility services required for the potential CIS operations would consist of the following (BVSPC, 2016a):

- **Water demand**: 275 gpm (assumed peak demand includes potable and fire water demand). An emergency backup water supply source would be provided for potential CIS operation.
- **Wastewater/sewer capacity**: 100 gpm.
- **Solid Waste**: 1.5 CY/day.
- **Electric demand**: 10 MW. A total of four 3-MW generators would be provided as part of CIS for emergency backup power.
- **Heating load** 7 MBtu/hr. Load to be provided by natural gas or other fuel sources (fuel oil, etc.).
- **Communication usage**: To be determined based on personnel and system needs, to be specifically determined during CIS facility design.

Although not specifically defined, it has been assumed that the construction demand would be less than operations demand. However, to provide for a conservative estimate to the relative construction demands it has been assumed that they would be equal to operations demands.

For the utilities needed for the potential CIS, unless otherwise defined, it has been assumed that potential utility services would generally be provided by the existing commercial sources that were identified in Section 3.5.13.2. For the commercial utility services, it has been assumed that routing and the connection of new services to the CIS footprint would be provided within existing road ROWs in order to minimize impacts to the environment. Also, as needed, any permits required for utilities services would need to be obtained once a decision has been made whether to deploy the CIS and a site is selected.

3.5.13.3.1 Construction - Baseline Construction

For the analysis of impacts from construction of utilities, it has been assumed that utilities services would be provided as follows:

- **Water services:** Commercial or onsite source to be provided though coordination with or by the construction contractor.
- **Wastewater/sewage services**: Commercial source or services to be provided by construction contractor.
- **Solid waste management**: Commercial services provided thru the construction contractor.
- **Electric demand**: Commercial source coordinated with/through the construction Contractor with some limited needs being directly provided by construction contractor provided generators.
- **Heating load**: Assumed to be provided through/by construction contractor through a commercially provided existing service or by offsite fuel source providers.
- **Communications:** Assumed to be provided through/by the construction contractor through a commercial source or providers.

3.5.13.3.1.1 Environmental Consequences

The following are environmental consequences attributed to utilities from construction-related activities:

Water Supply. Water for construction activities could be provided from either commercial sources or by use of onsite wells. If commercial sources are used, based on the assumed demand (275 gpm), no impacts would be incurred. For the commercial water sources, it has also been assumed that the connections and piping would be provided along existing road ROWs and, therefore, environmental impacts would be negligible.

If the water supply for construction demand (275 gpm) would be provided by onsite wells, based on hydrogeologic information provided for aquifers in the area of the FTD Site footprint (ranges produce up to 90 to 150 gpm for water table wells, and between 150 to 470 gpm for artesian wells), groundwater should be available to meet the demand incurred during the CIS construction activities. However, prior to the initiation of construction activities, further confirmatory evaluation on the availability of groundwater sources in the area of the CIS footprint would need to be provided. If onsite wells are used for the construction water supply, wells would need to be installed in accordance NYSDEC requirements. Overall, only minor environmental impacts associated with use of groundwater as a water source for construction activities via onsite wells would occur.

Wastewater. Wastewater and sanitary sewage management during construction activities may be provided through commercial sources (connected to existing sources) or provided via commercial services provided by the construction contractor. If existing commercial sources are used, based on the assumed demand versus the capacity no adverse impacts would be incurred. Also, if wastewater management is provided by an existing commercial provider, it has been assumed that the connections and piping would be provided along existing road and utility ROWs and, therefore, environmental impacts would be negligible.

Otherwise, if wastewater and sanitary sewage management would be provided by the construction contractor's commercially provided service, it has been assumed that this service would be licensed to provide these services in accordance with NYSDEC requirements. Therefore, the environmental impacts associated with these services would be negligible.

Solid Waste. Solid waste generated during construction activities would be addressed by the Construction Contractor in accordance with NYSDEC requirements. As discussed in Section 3.5.13.2.3, solid waste from FTD is typically sent to the Rodman Landfill located to the south of Watertown. This landfill has capacity to meet current, as well as anticipated future, needs. Therefore, no impacts from solid waste disposal during the potential CIS construction activities at FTD would occur.

Electrical Power. Commercial power for the potential CIS construction activities could be provided from an off-installation source by National Grid or from a 60-MW biomass electrical generation facility located in the cantonment area at FTD. Based on the findings in the utility study, due to accessibility and capacity to provide the needed electrical power demand, the most likely source of electrical power for construction activities would be from the offsite source provided by National Grid (BVSPC, 2016a). An onsite biomass electric generating facility could also be used as a source of electrical power; however, this option is only considered as a secondary option due to its extended distance from the CIS and the potential need for an additional substation being required at the generating facility. Although not analyzed in detail because building the substation would be the responsibility of the generation facility, if the secondary option is implemented, adequate space and limited impacts appear to be present if the additional substation is needed. Routing of services from either of these sources would be provided within existing road and utility ROWs. In addition, the construction contractor could address localized construction needs by the use of generators. The use of generators has been accounted for in emissions estimates in Section 3.5.1 Air Quality. Overall, based on the anticipated electrical demand versus available power, routing of service lines in existing road and utility ROWs with limited impacts during construction activities from construction contractor generator, minor impacts from electrical services to be provided for construction activities for the CIS at FTD would occur.

Natural Gas or Other Heating Fuel Sources. Construction activities, especially at its peak, would primarily be provided during limited spring, summer, and limited fall periods; therefore, minimizing the need for temporary heating systems and the need for natural gas. Due to the limited supply of natural gas, fuel oil (kerosene or diesel) fired-boilers could be used as an alternative to natural gas to provide any required heating loads. Fuel oil is available through several vendors within the vicinity of FTD and the Watertown area. Provisions for accounting for fuel oil fired-boiler emissions have been provided for in Section 3.5.1 Air Quality for FTD CIS construction activities. Overall, based on the anticipated temporary heating system demands from construction activities, the availability of fuel oil and accountability of related emissions, minor impacts would occur.

Communication (Telephone and Internet). Communication systems during the CIS construction would be the responsibility of the construction contractor and provided as needed. If communication systems are provided, they may be provided from existing sources (telephone and internet services) by connecting to existing services and routing them along existing ROWs or they could be provided by the construction contractor by other methods (e.g., cell phone service or wireless internet services). Overall, regardless of the communications method used, negligible impacts for communication utilities during potential CIS construction activities would occur.

3.5.13.3.1.2 Mitigation

Water. No mitigation is required due to the limited impacts of commercial and/or onsite water sources for CIS construction activities.

Wastewater. Because there would be negligible impacts for either commercial and/or onsite provided wastewater management for CIS construction activities, no mitigation would be required.

Solid Waste. Because there would be no impacts associated with solid waste disposal from CIS construction activities, no mitigation would be required.

Electrical. Because there would be only negligible adverse impacts associated with providing electrical services during CIS construction activities, no mitigation would be required.

Natural Gas or Other Heating Fuel Sources. Because there would be only negligible impacts associated with the use of natural gas or alternatives such as fuel oil for heating sources during construction, no mitigation efforts would be required.

Communication (telephone and Internet). Because there would be only negligible adverse impacts associated with providing communication services during CIS construction, no mitigation efforts would be required.

3.5.13.3.2 Construction – Expedited Schedule

The environmental consequences and mitigations for utilities for construction under the expedited schedule would be the same as for the baseline schedule.

3.5.13.3.3 Operation

For utilities needed for operation of the potential CIS, the following has been assumed:

- **Water services.** Water services would be provided for routine operations by commercial sources or for routine, and at a minimum emergency/backup conditions by onsite sources.
- **Wastewater/sewage services.** Wastewater services would be provided by commercial or onsite sources for the estimated demand required for the operation of the potential CIS.
- **Solid Waste.** Solid waste services would be provided by a commercial offsite services during operation of the potential CIS.
- **Electric demand.** Electrical demand would be provided by a commercial source(s) for routine operations, with an onsite power generation source provided for backup and emergency services.
- **Heating load.** Heating load requirements for operations would be provided through/by commercial provided existing service or by an offsite fuel source provider.
- **Communications.** Communication services for operations would be provided through/by commercial sources or providers.

3.5.13.3.3.1 Environmental Consequences

The following are environmental consequences attributed to utilities for operations-related activities:

Water Supply. Water for potential CIS operations activities would be provided from either commercial sources or by onsite wells.

If commercial sources are used, based on the assumed demand (275 gpm), there would be no adverse impacts. For the commercial water sources, it has also been assumed that the connections and piping would be provided along existing road ROWs and, therefore, environmental impacts would be limited.

If an onsite water supply were used to fulfil the routine demand (275 gpm), it would be provided by onsite wells. Based on hydrogeologic information provided for aquifers in the area of the CIS footprint (up to 90 to 150 gpm water table wells and between 150 to 470 gpm for artesian wells), onsite groundwater should be adequate to meet the demand during the CIS operations. Prior to the initiation of construction activities further confirmatory evaluation on the availability of groundwater sources in the area of the CIS footprint would be provided. For any onsite wells used for water sources, wells would need to be installed in accordance NYSDEC requirements.

Regardless of whether onsite water was provided for routine operations, as described in Section 2.4, an onsite source (groundwater provided by wells) would be provided and used for an emergency/backup water source. As discussed in Section 2.4, a water supply facility would be provided and designed to supply and distribute water to the CIS facilities for all necessary capabilities in an autonomous mode for a period should conditions warrant. This facility system would consist of wells, water treatment equipment, pumps, and storage tank to distribute potable water. In addition to the water supply system for potable water, a fire protection water supply and storage system would also be provided for the CIS. Both the potable water supply and fire protection systems would be designed and operated in accordance with UFC and applicable state (including NYSDEC) and local requirements.

Overall, whether used for routine operations or only for backup/emergency use during operations, environmental impacts associated with use of an onsite groundwater via onsite wells would be minor.

Wastewater. Wastewater and sanitary sewage management during potential CIS operations are assumed to be provided through commercial sources (connected to existing sources) or as described in Section 2.4, provided by an onsite wastewater facility constructed as part of the CIS. For either of these wastewater management services, the capacity is assumed to be 100 gpm.

If commercial sources are used, based on the assumed demand versus the capacity no adverse impacts would be incurred. Also if commercial wastewater management is provided, it has been assumed that the connections and piping would be provided along existing road and utility ROWs.

If provided by an onsite CIS-specific facility, as described in Section 2.4, the facility would be designed and built based on the unique size requirement for the specific potential CIS location. If provided, the onsite wastewater management facility would be designed and operated in accordance with UFC and applicable state (including NYSDEC) and local requirements. Specific provisions could include those related to any treated and permitted wastewater discharge and/or residual waste disposal requirements.

Overall, whether wastewater services would be provided by commercial sources or by an onsite CIS-specific facility, environmental impacts related to these services are would be negligible.

Solid Waste. Solid waste generated during operational activities would be address by an offsite commercial source. Similar to the current solid waste management services for FTD as discussed in Section 3.5.13.2.3, it has been assumed that solid waste from the potential CIS would be sent to the Rodman Landfill located to the south of Watertown. This landfill has capacity to address current, as well as anticipated future, needs. Therefore, negligible impacts from solid waste disposal during the CIS operations would occur.

Electrical Power. Electrical power for routine operations electrical power would be provided from a commercial source(s), whereas an onsite power generation source would be provided for backup and emergency services. A demand of 10 MW has been assumed for electrical power services.

Commercial power for the potential CIS operations could be provided from an off-installation source by National Grid or from a 60-MW biomass electrical generation facility located in the cantonment area at FTD. Based on the findings in the utility study, due to accessibility and capacity to provide the needed electrical power demand, the most likely source of electrical power during CIS operations, would be from the offsite source provided by National Grid (BVSPC, 2016a). An onsite biomass electric generating facility could also be used as a source of electrical power; however, this option is only considered as a secondary option due to its extended distance from the CIS and the potential need for an additional substation being required at the generating facility. Although not analyzed in detail because building the substation would be the responsibility of the generation facility, if the secondary option is implemented, adequate space and limited impacts appear to be present if the additional substation is needed. Routing of services from either of these sources would be provided within existing road and utility ROWs. Only minor environmental impacts would occur with the connection, routing, and use of the commercial electrical services for operations of the CIS.

In addition to commercial power sources for routine operations, a backup and emergency power generator system would also be provided for the CIS. As described in Section 2.4, the backup power plant would likely consist of four 3-MW diesel generators, switchgear, operations room, and maintenance area. The power plant would be operated with diesel supplied from dedicated day tanks supplied from larger fuel tanks. The impacts related to emissions generated from the operation of this power plant as well as fuel storage and use has been discussed in Section 3.5.1 Air Quality. Additional impacts related to fuel storage and use has also been discussed in the Section 3.5.7 Hazardous Materials/Hazardous Waste. In addition to the power plant, as discussed in Section 2.4, a substation would be provided for the CIS. This substation would provide electrical service interface with the commercial and the CIS power plant. The specific size of this substation would be determined during the design process. Infrastructure for electrical service lines throughout the CIS would be provided by buried duct banks.

Overall, whether electrical services are provided by commercial sources or by an onsite CIS-specific facility, environmental impacts associated directly with these services would be minor. As indicated, additional evaluation of impacts related to emissions and handling of fuel for the backup emergency electrical power generation plant has also been provided in the Sections 3.5.1 Air Quality and 3.5.7 Hazardous Materials/Hazardous Waste.

Natural Gas or Other Heating Fuel Sources. Heating of the potential CIS facilities during operations would typically be accomplished with natural gas (if available), with some alternative fuel source (kerosene or diesel), or by electricity. For the potential CIS operations an estimated

7 MBtu/hr heating load capacity would be required. Due to the limited supply of natural gas, fuel oil (kerosene or diesel) fired-boilers could be used as an alternative to natural gas to provide any required heating loads. Fuel oil is available through several vendors within the vicinity of FTD and the Watertown area. Provisions for accounting for fuel oil fired-boiler emissions have been provided for in the Section 3.5.1 Air Quality for CIS operations. In addition, provisions for management of fuel oil required for heating loads have also been addressed in Section 3.5.7 Hazardous Material/Hazardous Waste for the CIS operations.

Overall, because the source of fuel oil appears readily available to meet the heating requirements for the CIS, environmental impacts associated directly with these services would be negligible. As indicated, additional evaluation of impacts related to emissions and handling of fuel oil to provide facility heating has also been provided in Sections 3.5.1 Air Quality and 3.5.7 Hazardous Materials/Hazardous Waste.

Communication (Telephone and Internet). Communication (telephone and internet) systems for the CIS operations would be provided from existing fiber cable sources and routed in or along existing ROWs and therefore environmental impacts would be negligible.

3.5.13.3.3.2 Mitigation

Water. Because impacts associated with use of a commercial water source for CIS operations would be negligible, no mitigation would be required.

Wastewater. Because impacts associated with use of either commercial or onsite wastewater management for CIS operations would be negligible, no mitigation would be required.

Solid Waste Because impacts associated with solid waste disposal for CIS operations would be negligible, no mitigation would be required.

Electrical. Because impacts associated with providing electrical power for CIS operations would be negligible, no mitigation would be required.

Natural Gas or Other Heating Fuel Sources. Because impacts associated with providing heating of facilities by natural gas or fuel oil during CIS operations would be negligible, no mitigation would be required.

Communication (telephone and Internet). Because impacts associated with providing communication services during CIS operations would be negligible, no mitigation would be required.

3.5.14 Water Resources – FTD

Water resources include the quality, quantity, physical characteristics, and use of groundwater and surface waters. This section describes the existing water resource conditions at the project site and construction and operations-related impacts and mitigation.

3.5.14.1 Regulatory Framework – Water Resources – FTD

There are a variety of laws, regulations, and requirements that must be taken into consideration when determining the effects of a potential deployment and alternatives on water resources including, but not limited to:

- CWA Section 401, Water Quality Certification, 1986 provides states with the authority to ensure that federal agencies will not issue permits or licenses that violate the water quality standards.
- CWA Section 404, Permits for Dredged or Fill Material, 1977 establishes a program to regulate the discharge of dredged or fill material into the WOUS, including wetlands.
- CWA Section 402, National Pollutants Discharge Elimination System, 1972 regulates the discharge of storm water and wastewater to surface WOUS.
- CWA Section 303(d), 1972 requires that all states, territories and authorized tribes designate and prioritize cleanup of waters that are too degraded to meet water quality standards (impaired waters).
- Endangered Species Act, 1973 protects and provides for recovery programs for imperiled species and the ecosystems upon which they depend. Under Section 7 of the ESA, federal agencies are required to coordinate their actions with the USFWS and the NOAA to prevent jeopardizing the continued existence of species.
- NEPA, 1969 requires that water resources be fully considered prior to undertaking any major federal action that significantly affects the environment.
- 40 CFR Part 112, Oil Pollution Prevention establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable WOUS.
- 40 CFR Part 651, Environmental Analysis of Army Actions regulates environmental protection and enhancement and provides the framework for the U.S. Army Environmental Management System.
- AR 200-1 Environmental Protection and Enhancement implements policy for the integrated management of natural resources (including biological and earth resources) on property and lands managed and/or controlled by the DoD.
- DoD Instruction 4715.03, Natural Resources Conservation Program implements the NEPA and establishes the U.S. Army's policies and responsibilities for considering environmental issues in planning and decision-making.

- U.S. Department of the Army, Technical Manual 5-633, Fish and Wildlife Management provides civil engineering requirements for all new and renovated government-owned facilities for the DoD.
- New York State Environmental Conservation Law, Articles 15 and 24 sets forth policies for protecting and preserving New York State's lakes, rivers, streams and ponds, and regulates solids waste management and disposal to protect human and natural resources including water resources.
- UFC 3-210-01 Civil Engineering provides civil engineering requirements for all new and renovated government-owned facilities for the DoD.
- UFC 3-210-10 Low Impact Development provides technical criterial, technical requirements, and references for storm water planning and management at DoD projects.
- Section 438 of the EISA implements requirements for the reduction of storm water runoff associated with new construction of current and future DoD projects.

These laws, regulations, and requirements identify the compliance process; define responsibilities of the federal agency proposing an action; and coordination with appropriate public agencies and institutions. A 'federal action' is a project or program funded in whole or in part by a federal agency, an action being implemented on behalf of a federal agency, or one that requires a federal permit, license, or approval.

3.5.14.2 Affected Environment – Water Resources – FTD

3.5.14.2.1 Surface Waters

Watersheds. A watershed represents a dividing ridge separating one drainage area from others or the area that drains into a river or lake. FTD is located in the St. Lawrence River legacy watershed, within the Indian Creek watershed (USGS HUC-8 04150303). This is the second largest watershed in New York State in terms of land area, covering about 4.9 million acres (7,600 mi^2). FTD makes up approximately two percent of the total area of this watershed (Army, 2011). The St. Lawrence watershed lies at the border of New York State and Canada. The St. Lawrence River serves as the gateway between the North Atlantic and the Great Lakes. At its most downstream point in the U.S., the St. Lawrence River drains an area of 300,000 mi^2 (NYSDEC, 2015).

Most of the CIS footprint falls within the West-Branch-Black Creek sub-watershed (HUC-12 041503030202) as shown on Figure 3.5.14-1, which is located within the St. Lawrence River watershed. The West Branch-Black Creek watershed covers approximately 23 mi^2.

The surface waters within the West-Branch-Black Creek sub-watershed drain to the north.

Prominent Local Surface Water Features. NYSDEC water quality classifications are defined and identified in 6 NYCRR Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations. NYSDEC establishes water quality standards and criteria through this regulation. All waters in New York State are assigned a letter classification that denotes their beneficial uses. Letter classes such as A, B, C, and D are assigned to fresh waters. Beneficial uses include source drinking water, swimming, boating, fishing, and shell fishing. This letter classification system is elaborated in 6 NYCRR Part 701, Classifications – Surface Waters and Groundwaters (NYSDEC, 2015).

There are eight primary lakes and ponds totaling more than 400 acres of surface area on FTD. All of the natural lakes and ponds are found in the Western Adirondack Transition ecoregion. Two ponds, Remington Pond and Conservation Pond, are impounded creeks created by dams. The largest waterbody on FTD is Indian Lake (186 acres) which is adjoined to Narrow Lake (45 acres) through a narrow channel. The largest lake in the area is Lake Bonaparte (1,248 acres) which shares approximately 2.1 miles or 12.7 percent of the total shoreline with FTD (Army, 2011).

There are two rivers and eight primary streams on FTD totaling about 91.9 mi. Minor streams and tributaries are widespread throughout the installation. The Indian River is the longest drainage on FTD, winding 27.4 miles across the installation. In general, most rivers and streams on FTD are meandering, low gradient, and heavily influenced by beaver activity. Most streams on FTD are classified by NYSDEC as Class C or Class D surface water bodies. Class C and D waters are suitable for fishing, fish survival, and primary and secondary contact recreation; Class C waters are additionally suitable for fish propagation (Army, 2011).

Site-Specific Surface Water Features. There are surface water features located within the CIS footprint that would be impacted (refer to Figure 3.5.14-2). The surface waters are headwater tributaries to downstream West Branch – Black Creek. A description of the tributaries within the CIS footprint as shown on Figure 3.5.14-2 is presented in Table 3.5.14-1.

There are no ponds within the CIS footprint.

Table 3.5.14-1 Onsite Tributaries – FTD

Tributary Identification	General Flow Direction	Tributary Flow Description
A	Northwest	West Branch – Black Creek
B	North	Unnamed tributary of West Branch – Black Creek
C	Northeast	Unnamed tributary of West Branch – Black Creek
D	West	Unnamed tributary of West Branch – Black Creek
E	Southwest	Unnamed tributary of West Branch – Black Creek
F	Southwest	Unnamed tributary of West Branch – Black Creek

Wetlands are present within the CIS footprint at FTD. These wetlands are a water resource in terms of providing aquatic habitat, terrestrial habitat, protecting, and improving water quality, and recharging groundwater supplies. Details regarding wetlands are provided in Section 3.5.15.

Surface Water Quality. Water quality standards are the basis for programs to protect the state waters. Water quality standards are used as the regulatory targets for permitting, compliance, enforcement, and monitoring and assessing the quality of the state's waters. Waters are classified by their beneficial uses (fishing, source of drinking water, etc.). Water quality standards (and guidance values) are set to protect those uses.

Surface waters that do not meet designated beneficial uses, water quality standards, and antidegradation provisions are designated as impaired, meaning a change in the chemical, physical, or the biological integrity of the surface water where the surface water in question is unable to meet its beneficial use.

The following paragraphs present a discussion of existing surface water quality data, including regional and site-specific conditions.

<u>Regional Surface Water Quality</u>

Water quality in the Saint Lawrence Watershed is dominated by atmospheric deposition of pollutants that originate largely outside the basin. Acid rain and mercury deposition are the most widespread issues in the watershed. Impacts from agricultural activities are also frequently cited in this very rural and agriculturally intensive area. Hazardous wastes and other industrial impacts associated with resource extraction are also a concern in specific areas (NYSDEC, 2015). Major water quality concerns in the watershed are:

- Acid rain which limits the fish community and aquatic life.
- Atmospheric deposition of mercury which restricts fish consumption.
- Agricultural activities and associated runoff which contributes nutrients and sediments to waters.
- Hazardous wastes and legacy industrial impacts in the St. Lawrence River at Massena AOC, located north of the installation.

USEPA MyWaters Mapper Data. Regionally, USEPA MyWaters Mapper currently lists a segment of the Black River that flows along the southern boundary of FTD as impaired by nutrients, oil and grease, pathogens, and PCBs (HUC-12 141501011401). The USEPA does not show data to indicate which beneficial use or uses are impaired due to these impairments or their probable sources; however, the database does indicate that NYSDEC is working to develop TMDLs for the river.

Locally, the MyWaters Mapper tool indicates that the waters within the CIS footprint have attained all beneficial uses, and are not impaired. No waters within the West Branch – Black

Creek sub-watershed are listed as impaired (USEPA, 2013a). A portion of Black Creek north of the CIS footprint that flow into the Indian River near Philadelphia, as well as the Indian River, are listed as impaired for nutrients and sedimentation. The USEPA does not show data to indicate which beneficial use or uses are impaired due to these impairments or their probable sources; however, the database does indicate that NYSDEC is working to develop TMDLs for the river.

Local Surface Water Quality

The potential CIS layout is located in Indian Creek Watershed (HUC-8 04150303) and the West-Branch-Black Creek watershed (HUC-12 041503030202), for which there are few data. Black & Veatch performed additional environmental sampling events between October 14 and December 18, 2014, to further characterize and evaluate the presence of potential pollutants in surface water within the CIS footprint. A total of three surface water samples were collected at FTD during the site investigation. Sample SWD1 was collected from the unnamed tributary to the West Branch Black Creek; Samples SWD2 and SWD3 were collected from Buck Creek located north of CIS footprint. Samples were analyzed for VOCs, SVOCs, PP metals, pesticides, herbicides, PCBs, and explosive derivatives. Sample SWD1, SWD2, and Sample SWD3 analytical results showed low levels of VOCs and metals. All constituent concentrations were below screening criteria.

Overall, it is likely that streams within the CIS footprint exhibit water quality conditions that are comparable to other similar streams in the vicinity.

3.5.14.2.2 Floodplains

The CIS footprint is located in flood hazard area Zone X. Zone X includes those areas deemed to be outside of the 0.2 percent annual chance floodplain (500-year floodplain) (See Figure 3.5.14-3) (FEMA, 1992).

3.5.14.2.3 Groundwater

Groundwater Physical Attributes. There are two primary aquifers north of the Cantonment Area near Wheeler-Sack Army Airfield and around Training Area 4. The aquifers overlay each other and are located beneath the CIS footprint.

The aquifers are used by FTD as a backup potable water supply, while primary potable water supply is provided by the City of Watertown. The treatment process at the FTD drinking water treatment plant consists of ultraviolet and chlorine disinfection and fluoride injection (FTD, 2012). See Section 3.5.13 Utilities for additional information on the water supply.

The first aquifer (upper aquifer) is the Pleistocene Pine Plains Aquifer which has saturated thicknesses of up to 85 feet. Wells screened in this zone are capable of producing up to 100 to 150 gpm.

The second aquifer (lower aquifer) is the Potsdam Sandstone bedrock aquifer which is up to 210 feet thick with top depths ranging from 130 to 180 feet bgs; wells screened in this aquifer are capable of producing from 150 to 475 gpm. A thick lacustrine unit of silty clay may restrict groundwater flow between the Pine Plains aquifer and the underlying Potsdam Sandstone bedrock aquifer in most areas. This layer is absent in the southwestern part of FTD, so shallow groundwater may move down in this area and recharge the bedrock aquifer.

Groundwater exists in the sand and gravel stratum located within the aquifer boundary within the CIS footprint (refer to Figure 3.5.14-4). The groundwater table ranges from 8 to 14 feet bgs and typically mimics the topography. Both aquifers are recharged by rain and snowmelt.

The deep groundwater divide is located below the Wheeler-Sack Army Airfield. The general direction of horizontal groundwater movement for both aquifers is outward from the groundwater divide that approximately parallels the north side of the Black River (USAG, 2011; NYARNG, 2010).

Groundwater Use. Groundwater from the two aquifers supplies a well field consisting of 11 wells generally located north of the Cantonment Area near Wheeler-Sack Army Airfield within Training Area 4. Nominal well capacities range from 53 gpm to 440 gpm, with a total well capacity of up to 2,314 gpm. This equates to a flow of about 3.3 MGD. Two main wells are used for water supply; Wells 7 and 11. Well 3 is used as a backup and Well 2 has been abandoned (Army, 2011; FTD, 2012).

There are no operating or abandoned groundwater wells within the CIS footprint.

Groundwater Quality. FTD obtains its drinking (potable) water from a combination of sources including both surface water from the Black River (provided via the DANC and the City of Watertown) and from groundwater wells at FTD near the cantonment area (FTD, 2015a). The drinking water from both of these sources are provided in about equal quantities for use and treated prior to use. Based on the recent information on annual drinking water quality, there were no violations of maximum contaminant levels or water quality standards from either of these sources (FTD, 2015a).

As discussed for groundwater use, the groundwater wells used from drinking water are located near the cantonment area which is approximately 5 miles to the north and west of the CIS footprint. There are no currently groundwater wells present within the CIS footprint used for drinking water.

Black & Veatch 2014 Environmental Sampling Report. Black & Veatch performed additional environmental sampling events between October 14 and December 18, 2014, to further characterize and evaluate the presence of potential pollutants in the groundwater.

The screening limits used in this sampling event were derived from 6 NYCRR Part 703.5 – Water Quality Standards for Taste, Color, and Odor-Producing, Toxic and Deleterious Substances as a basis for data evaluation. A total of four groundwater monitoring wells were installed. All four wells were within the CIS footprint. MW1 and MW2 were both located south of Highway 3A.

Groundwater samples were collected from each of these newly installed monitoring wells. Metals were detected in the groundwater at all four of these wells. Trace volatiles were identified in groundwater from well FTD-MW1, while one pesticide, gamma chlordane, was identified in the groundwater at wells FTD-MW1 and FTD-MW2. With the exception of gamma chlordane at well FTD-MW2, all compounds identified in the groundwater were found at concentrations below screening limits. The concentration of gamma chlordane in groundwater at FTD-MW-2 was 0.126 μg/L which is higher than the screening limit of 0.05 μg/L (BVSPC, 2015a).

3.5.14.3 Environmental Consequences and Mitigation – Water Resources - FTD

The environmental consequences and mitigations for water resources for FTD are described in this section.

3.5.14.3.1 Construction – Baseline Schedule

3.5.14.3.1.1 Environmental Consequences

Surface Water

Surface Water Runoff. Impacts to surface water could include changing the drainage pattern of surface water at FTD. Land disturbance activities such as clearing, grading, and excavation would have an effect on surface water runoff patterns and surface water velocity. Surface water migration and velocity could alter flow patterns and rates at which streams and lakes are recharged, leading to an increase in one water body's capacity and a decrease in another. This impact could also potentially impact aquatic and terrestrial flora and fauna by reducing or increasing the quality and/or quantity of aquatic habitat, and affecting the composition, abundance, distribution, and dynamics of individual species and the local biological communities as a whole.

Impacts to surface water migration could be major. The implementation of BMPs under the NYSDEC General Permit under the New York State NPDES program for the discharge of storm water during construction would reduce potential impacts to surface water bodies receiving storm water flow. In addition, Section 438 of the Energy Independence and Security Act provides guidance for federal projects to implement storm water management practices to maintain pre-development hydrology. Storm water management practices would be developed during the design phase of the project.

Soil Erosion and Sedimentation. Disturbance of land areas during land clearing and grubbing; temporary laydown areas, buildings, and facilities construction; and linear facilities construction would impact surface water quality, aquatic flora and fauna, and terrestrial flora and fauna due to soil erosion and sedimentation.

Potential construction-related impacts to surface water quality include sediment deposition and re-suspension from storm water runoff from land cleared of vegetation. High sediment loads can reduce water flow capacity. The suspended sediments and corresponding increases in turbidity tend to refract light, which can, in turn, affect the ability of aquatic flora to photosynthesize and otherwise thrive, particularly if combined with the effects of other environmental stressors, such as pollution from discharges like a release of petroleum product or chemicals used during construction. Suspended sediments can settle out of the water column, smothering plants and sessile organisms and accumulating on habitat features (i.e., substrate). Similarly, increases in turbidity can affect aquatic fauna by impairing respiration. Potential impacts to terrestrial flora and fauna from soil erosion and sedimentation include a reduction in vegetative cover and food sources.

Impacts to surface water quality and aquatic fauna and flora due to soil erosion and sedimentation would be limited to the CIS footprint because: 1) the implementation of sediment and erosion control BMPs under a NYSDEC General Permit for the discharge of storm water during construction would reduce potential impacts to surface water bodies accepting storm water flow; 2) the implementation of a SWPPP and SPCC Plan would reduce potential impacts from pollution of petroleum products and chemicals; and 3) the temporary nature of the construction activities. Erosion and sediment control requirements could impact schedule due to the disturbance limitations of 5 acres prior to having sediment and erosion control established (NYSDEC, 2016).

Fugitive Dust Generation. Increases in turbidity levels in local streams can result not only from soil erosion and sediment re-suspension, but also from the settling of dust generated from land clearing, grading, soil excavation, and the movement of equipment or vehicles across areas that are devoid of vegetation. As previously mentioned, turbidity refracts light and an increase in turbidity could affect the ability of freshwater vegetation to photosynthesize and otherwise thrive. Further, increases in turbidity could impact aquatic fauna like fish that breathe through gills as well as aquatic habitat depending upon the amount of sediments that settle out of the water column. However, dust-related turbidity impacts would be localized, temporary, and minor due to: 1) the implementation of standard dust suppression procedures; and 2) the temporary nature of the construction activities.

Other Pollutants Caused by Construction. Project construction could result in the inadvertent release of minor amounts of pollutants via oil leaks from equipment and vehicles; chemical releases from cleaning agents, paints, solvents, etc.; construction waste; and other sources. However, the implementation of standard pollution control measures through the construction

SPCC Plan (specifically, the use of chemical and petroleum spill prevention; and control and cleanup facilities, equipment and procedures) would reduce the potential for chemical or petroleum releases. Consequently, any adverse impacts to surface water quality, aquatic or terrestrial resources resulting from pollutant releases would be temporary and minor.

Placement of Fill into Existing Surface Water Features (Wetlands). The placement of fill material in wetlands would have a permanent impact on their function in that the wetlands would no longer provide aquatic or terrestrial habitat. Its function to improve water quality and recharge groundwater could also be permanently impacted. Details regarding the potential impacts to wetlands are discussed in Section 3.5.15.

Onsite Tributaries. Construction activities would include clearing, grading, and the addition of fill material (as needed) to create a relatively flat topography. These activities would affect the hydrology of the onsite tributaries (refer to Table 3.5.14-1 for the list of onsite tributaries).

There is a potential for up to 5.5 linear miles of streams to be impacted due to the construction of site improvements. Of this approximately 5.5 linear total miles of streams, there are approximately 1.2 linear miles of perennial (continuous flowing) named streams (West Branch Black Creek) and approximately 4.3 linear miles of intermittent streams (flows during wet seasons) of the 5.5 linear miles of streams and tributaries approximately 1.7 linear miles are within areas associated with Riverine wetlands. Further discussions of impacts for these streams have been provided in Section 3.5.15.3.1.1 of the FTD wetland section.

For the remaining 3.8 linear miles of streams and tributaries, the existing hydrology would be impacted from the placement of fill material or possibly relocating and enclosing underground one or more of the tributaries. The placement of fill would reduce the stream flow and impact aquatic and terrestrial fauna due to habitat alterations. Similarly, relocating a tributary underground would also have a permanent impact on terrestrial and aquatic fauna because the stream channel would no longer provide habitat or food. Impacts to hydrology, hydraulics, water quality, and related water characteristics from filling, relocating, and enclosing onsite tributaries would be examined during detailed engineering design.

Surface Water Use. No surface water withdrawals are expected for construction activities associated with the potential CIS. Therefore, potential impacts to surface water use from construction activities would not occur.

<u>Groundwater</u>

Groundwater Flows and Use. Groundwater withdrawal in terms of dewatering would likely be required for construction of deep foundations. The specific volume of groundwater withdrawal would be estimated during detailed design. However, dewatering activities could result in a temporary, localized lowering of the groundwater table. The temporary, localized lowering of the groundwater table would not affect registered groundwater wells located within the FTD installation due to the distance (approximately 6 miles) from the CIS footprint. Additionally, construction of deep foundations could require the use of soil cement columns or other binding soil modification methods to provide a cementation at the subgrade level prior to excavation. The purpose of the cementation is to prevent water infiltration into the excavation. Potential impacts to groundwater from cementation include a modification in groundwater flow or a change in the level of the groundwater table. However, these potential impacts would be minor because of the relatively small areas where cementation would be used.

Groundwater Contamination. Potential impacts to surface water from groundwater/surface water interface could potentially impact surface water quality, which in turn could impact aquatic flora and fauna and terrestrial fauna in terms of food sources and/or habitat. However, this potential impact would be minor because the FTD's topological features create a groundwater and surface water divide near the eastern end of the installation.

3.5.14.3.1.2 Mitigation

Of the 5.5 linear miles of streams and tributaries that could be impacted, approximately 1.7 linear miles are accounted for as impacts associated with Riverine wetlands. The discussion of mitigation for these 1.7 linear stream miles is provided in Section 3.5.15.3.1.2 of the FTD wetlands section. For the remaining 3.8 linear miles of streams, and tributaries, project related changes in the flow regime could result in major impacts. Due to the major impacts that could occur to surface water streams from the potential deployment of the CIS at the FTD site, the impacts could be considered "significant" impacts. Mitigation within the CIS footprint, in addition to the BMPs as discussed in the previous section and depending on final site requirements, would need to be further evaluated during the design of the CIS. Two potential options that could be designed are: 1) the streams could be routed around the perimeter security fence and tie back into the existing stream path before leaving the project boundary; and 2) a portion of the streams could be enclosed and routed through site to still capture and convey the runoff while avoiding major site facilities. The significant impacts resulting from these potential improvements would be avoided to the maximum extent practical and mitigation plans for the stream channel impacts would be developed in accordance to standards outlined in 33 CFR 332 (Compensatory Mitigation for Losses of Aquatic Resources). In addition, consultations would be held during the design and permitting phase of the project to further define stream channel impacts and compensatory stream mitigation options with USACE and/or appropriate State governing agencies.

3.5.14.3.2 Construction – Expedited Schedule

3.5.14.3.2.1 Environmental Consequences

Surface Water

Surface Water Runoff. Impacts to surface water during the expedited construction schedule could include surface water runoff rerouting and instantaneous increases of surface water drainage and flow within the FTD CIS footprint and to nearby surface water features. Expedited land disturbance activities are likely to have a greater impact by increasing surface water runoff rates as a larger area of disturbed land would be exposed to precipitation. To influence surface water migration in this way could have a greater, more immediate impact to flow patterns and rates at which water bodies are recharged. These conditions could also potentially impact aquatic and terrestrial flora and fauna more acutely by reducing or increasing the quality and/or quantity of aquatic habitat in a more immediate manner, and affecting the composition, abundance, distribution, and dynamics of individual species and the local biological communities as a whole.

However, impacts to surface water migration could be major, and would be addressed through the implementation of BMPs discussed within the baseline construction schedule impacts in Section 3.5.14.3.1.1.

Soil Erosion and Sedimentation. Impacts to surface water quality and habitat within local water bodies as a result of soil erosion and sedimentation as described in the baseline construction schedule impacts are likely to occur more rapidly due to the increase in sediment loading in surface water runoff. Surface water migration could occur along further distances of the disturbed, cleared area, acquiring a higher concentration of sediment prior to migrating offsite and into local and regional surface water features.

However, impacts to surface water quality and habitat due to soil erosion and sedimentation would remain localized, temporary, and would be adequately addressed through implementation of the BMPs discussed within the baseline construction schedule impacts in Section 3.5.14.3.1.1. Erosion and sediment control requirements could impact schedule due to the disturbance limitations of 5 acres prior to having sediment and erosion controls established (NYSDEC, 2016).

Fugitive Dust Generation. Dust generation during the expedited construction schedule would increase due to the exposure of a larger area of disturbed land to construction activities and weathering. The impacts of an increase in dust generation would either result in a more concentrated dust plume developed during construction or the overall increase of settled dust on adjacent lands, or both; in which case, turbidity levels in local water bodies could substantially increase, resulting in a more dramatic impact to aquatic flora and fauna habitat and respiratory function. However, dust-related turbidity impacts would remain localized and minor due to: 1) the implementation of dust suppression BMPs as described in the baseline construction in Section 3.5.14.3.1.1; and 2) the temporary nature of the construction activities.

Other Pollutants Caused by Construction. Project construction under the expedited construction schedule would likely increase the potential for inadvertent releases of minor amounts of pollutants described in the baseline construction schedule impacts due to an increase in site mobilization and activities. However, the implementation of standard pollution control BMPs such as those described within the baseline construction schedule impacts in Section 3.5.14.3.1.1 would reduce the potential for chemical releases.

Placement of Fill into Existing Surface Water Features (Wetlands). The placement of fill material in wetlands would be similar to impacts discussed in Section 3.5.14.3.1.1 and in Section 3.5.15 Wetlands.

Onsite Tributaries Similar to the baseline schedule construction described in Section 3.5.14.3.1.1, major (significant) impacts would occur to onsite tributaries.

Surface Water Use. Similar to the baseline schedule construction described in Section 3.5.14.3.1.1, no surface water withdrawals or impacts are expected for construction activities.

<u>Groundwater</u>

Groundwater Flows and Use. Groundwater dewatering during the expedited schedule would occur in the same manner as described in the baseline schedule; however, because groundwater withdrawal would occur in a shorter timeframe, the rate at which groundwater is withdrawn would increase. Methods to control groundwater infiltration within shallow and deep foundations are assumed to remain the same or similar to those described within the baseline construction schedule. The specific volume of groundwater withdrawal required during the expedited construction schedule timeframe would be estimated during detailed design.

Dewatering activities could result in a more rapid, albeit temporary and localized lowering of the groundwater table. The temporary, localized lowering of the groundwater table would occur to a greater degree than dewatering during the baseline construction schedule. Further groundwater modeling would need to be completed in order to determine the effects of higher dewatering rates on local and regional surface and groundwater hydrology.

3.5.14.3.2.2 Mitigation

Mitigation under the expedited construction schedule would be the same as under the baseline schedule presented in Section 3.5.14.3.1.2.

3.5.14.3.3 Operation

3.5.14.3.3.1 Environmental Consequences

Impervious Areas. Permanent increases in the amount of impervious area from new, permanent buildings and facilities, paved roadways, and concrete would occur. Conceptually, such increases could result in reduced infiltration of surface water into groundwater which could affect groundwater recharge patterns. This, in turn, could affect the quantity and distribution and availability of groundwater resources and impact the hydrological patterns of water bodies. In such cases, the physical boundaries of affected water bodies could contract, and their associated water quality and biological communities could change accordingly. In the case of intermittent water bodies, "wet periods" could be shortened depending on the nexus between the water body and the groundwater source. Conversely, while an increase in impervious areas could reduce groundwater infiltration, it could increase surface water runoff.

There would be an estimated 60 acres of impervious surface created due to new, permanent structures and concrete surfaces. However, the CIS footprint consists of clearing 977 acres. The impervious area would be about 6 percent of the total CIS footprint. While there would be a permanent impact to the area available for infiltration of surface water into groundwater, the impact would be negligible.

Operational Pollutants. Project operations could result in the inadvertent release of minor amounts of pollutants to surface water or groundwater from equipment coolant, diesel fuel from the power backup generators, oil leaks from equipment and vehicles; chemical releases from cleaning agents, paints, solvents, etc.; and other sources. However, the implementation of an SPCC Plan for operations, standard pollution control measures such as the use of chemical and petroleum spill prevention, control and cleanup facilities, equipment, and procedures would reduce the potential for chemical or petroleum releases. Consequently, any adverse impacts to surface water or groundwater resources resulting from pollutant releases would be temporary and minor.

To address potential releases of fuel, oil, or chemicals during operations, an SPCC Plan would be developed and implemented prior to start of operations. Onsite personnel would be trained in SPCC. The SPCC Plan for operations would include:

- A description of potential spill sources.
- Project and site information including drainage pathways, nearby surface waters and their distances.
- The identification of pre-existing contamination.
- Spill prevention and response procedures and training.
- Permanent BMPs to prevent discharges to groundwater or surface water during mixing or transfer of fuel, chemicals, or oil.

Storm Water Pollution Prevention. Project operations could result in potential impacts to surface water resources due to soil erosion and sedimentation. However, upon completion of construction activities, any areas devoid of vegetation would be stabilized to prevent sediment transport offsite. Also, an industrial storm water permit would be obtained from the NYSDEC, and the proper storm water pollution prevention measures implemented. Therefore, impacts to surface water from soil erosion and sedimentation would be minor.

Surface Water Runoff. Similar to construction impacts, operational impacts to surface water migration could include the permanent rerouting of surface water drainage at FTD. The impacts of changes in surface water migration are similar to that of construction, without the concern of the inclusion of sediment. Over time, the water quality and hydrological characteristics of affected water bodies or streams would change; if excess flows from storm events predominantly flow into one water body, the water level and hydrologic characteristics of another could be negatively affected.

The potential impacts to surface water migration would be minor because, as explained in the construction impacts, the area within the FTD boundary is characterized by high permeability and recharge rates due to the hydrogeological characteristics. Likewise, operational BMPs, including permanent storm water controls, would aid in the control of storm water runoff and quality.

A SWPPP would be completed prior to the start of operations, addressing the potential discharge of sediment and other potential pollutants into storm water during operations would be completed prior to the start of operations. Onsite personnel would be trained in storm water pollution prevention and response. The SWPPP for operations would include the following information:

- The potential for discharging sediment and the identification of other potential pollutants from operations including fuel, oils, and chemicals.
- Location and type of all permanent storm water control BMPs.
- Procedures for the operations and maintenance of permanent storm water controls.
- Site maps with final grades; post-construction storm water flows and volume; impervious areas and soil types; and the identification of all surface waters and existing wetlands potentially impacted from storm water pollution.
- Methods to be implemented for final site stabilization of all exposed soil areas.

Surface and Groundwater Supplies. No surface water withdrawals would be required for potential CIS operations. Potable and service water would primarily be provided by a commercial service provider. Emergency/backup water would be provided by an onsite groundwater well. Impacts for groundwater use for a utility source are provided in Section 3.3.13 Utilities.

3.5.14.3.3.2 Mitigation

No additional surface water or groundwater mitigation would be required during operation. The BMPs discussed in Section 3.5.14.3.3.1 would adequately address impacts to groundwater and surface water during operation of the potential CIS.

Groundwater would be used as a backup/emergency water source. Mitigation for groundwater use for a utility source is provided in Section 3.3.13 Utilities.

Figure 3.5.14-1 Watersheds – FTD

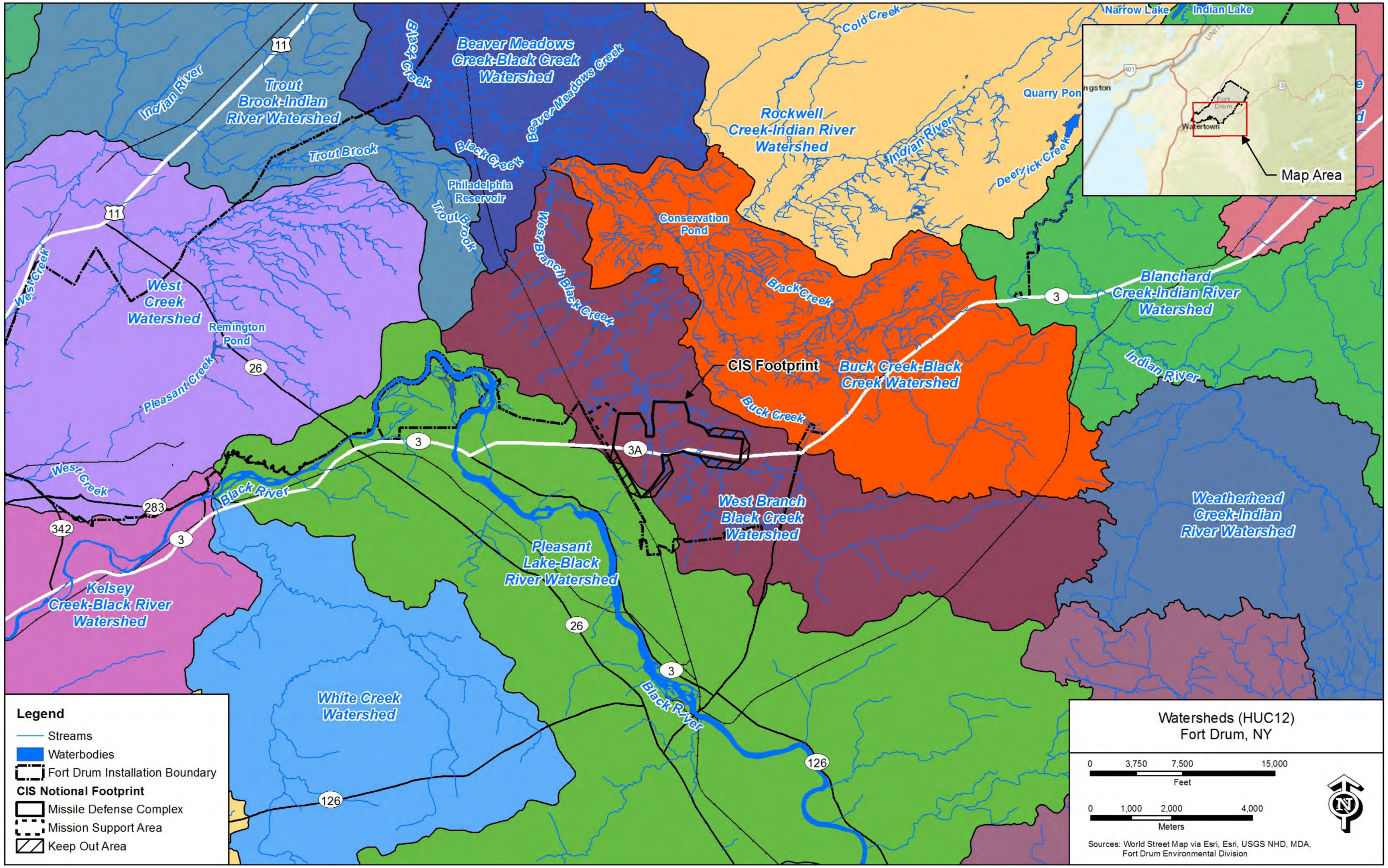


Figure 3.5.14-2 Surface Waters – FTD

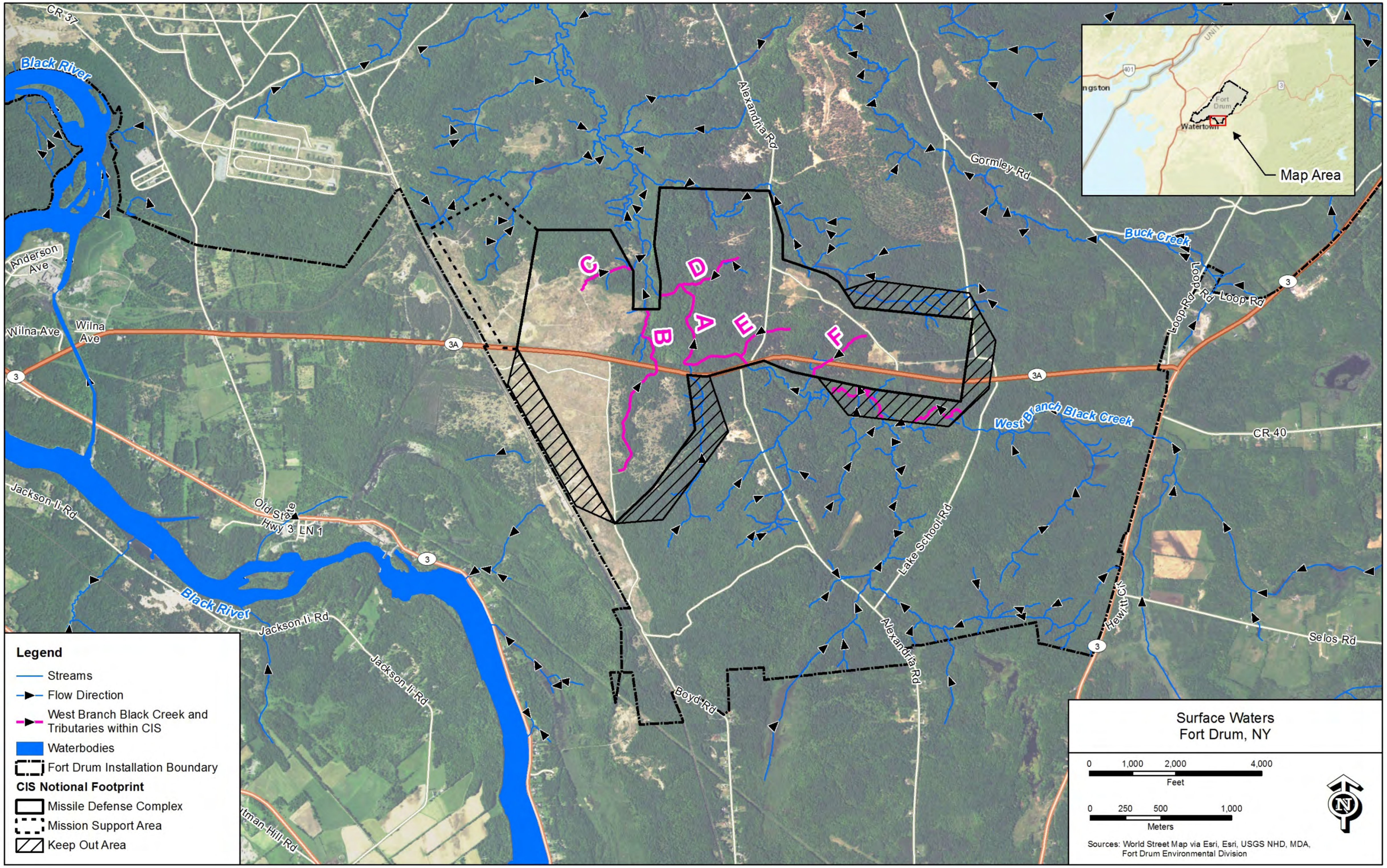


Figure 3.5.14-3 Federal Emergency Management Activity 100-Year Floodplain - FTD

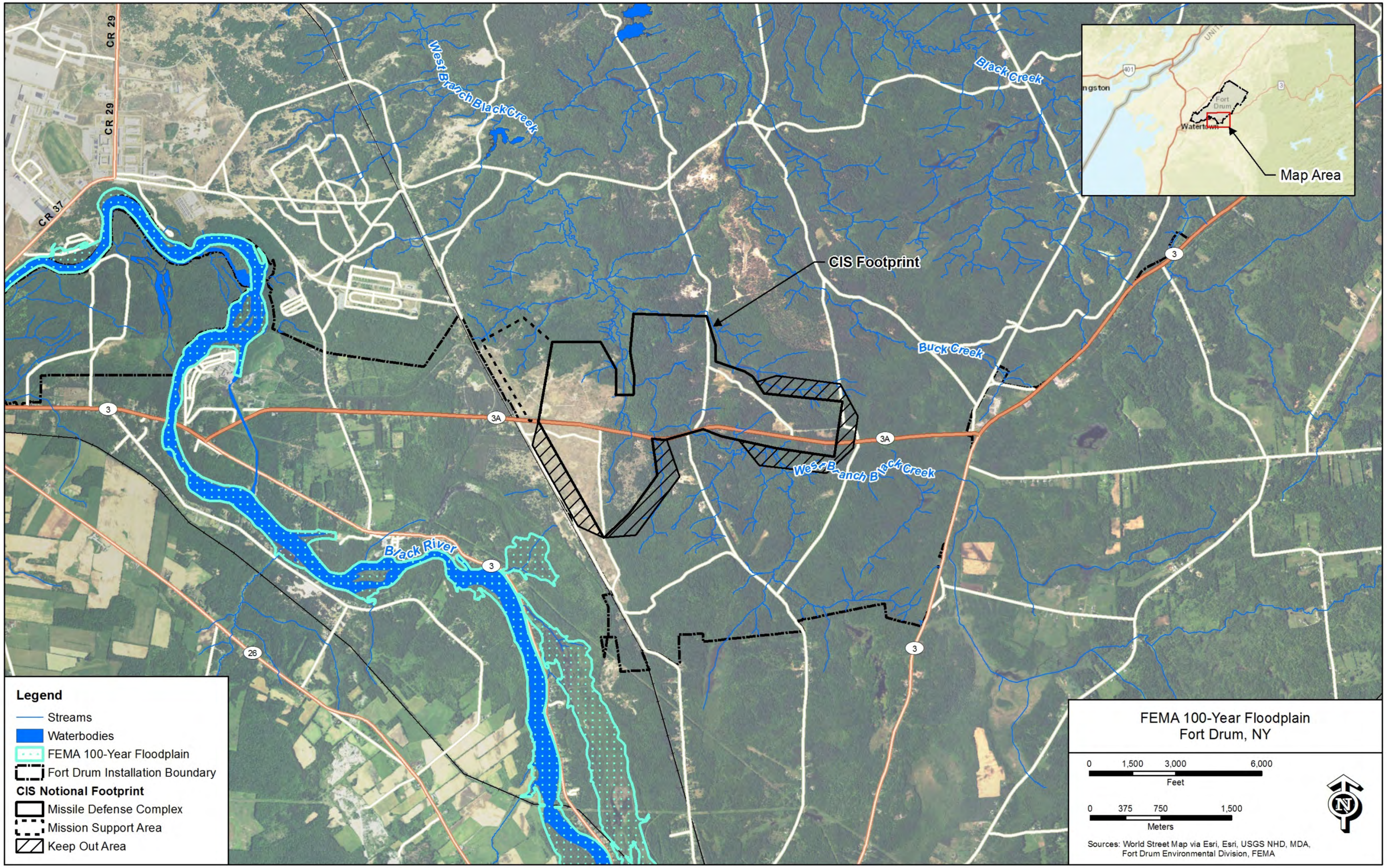
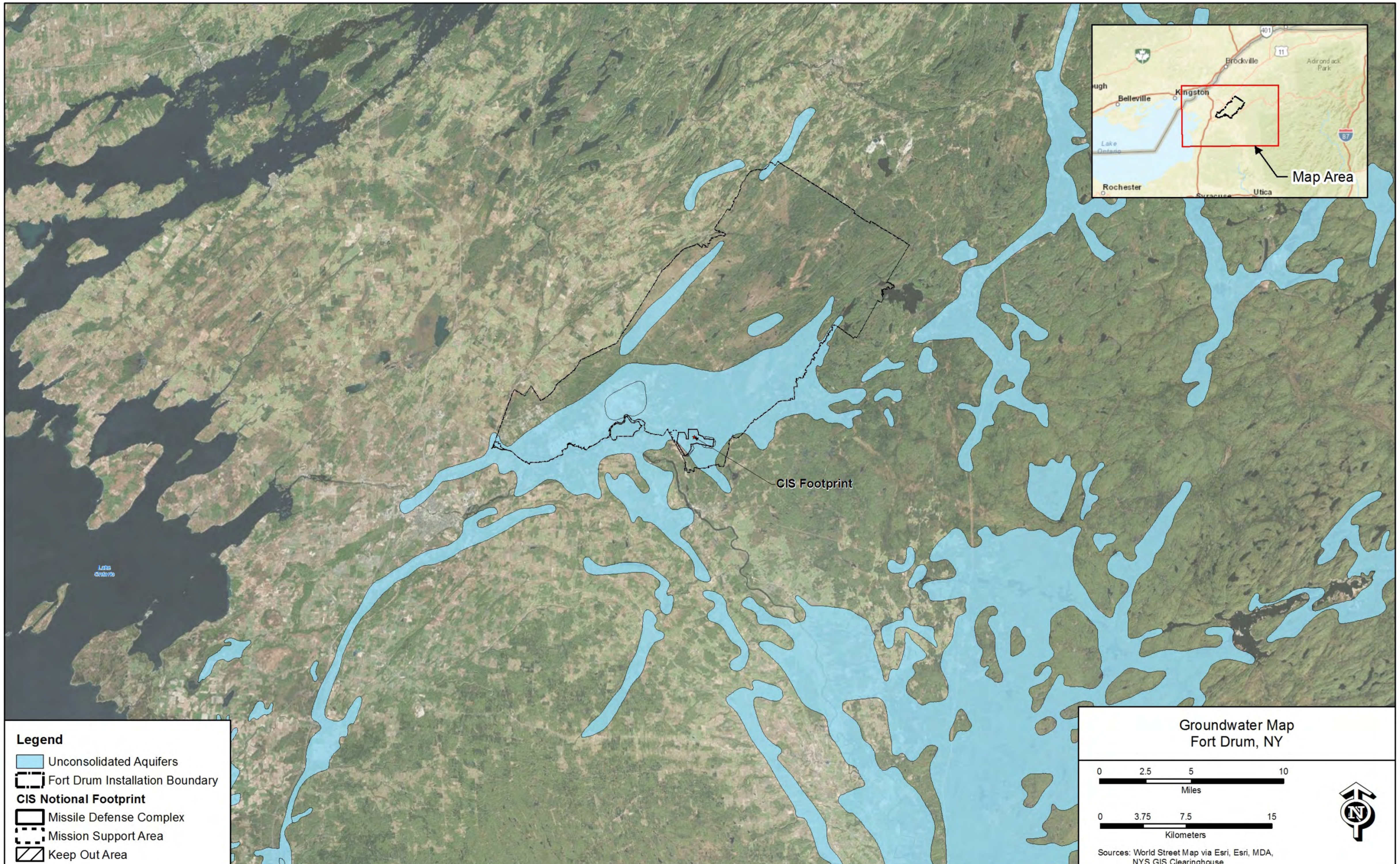


Figure 3.5.14-4 Groundwater Map – FTD



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3.5.15 Wetlands – FTD

This section describes the general wetland resources within FTD, including detailed information regarding wetland resources within the CIS footprint on FTD. It also presents the regulatory framework for how wetlands are regulated in New York State, the methodology for the wetland delineations within the CIS, and environmental consequences of constructing the potential CIS at FTD and potential required mitigation.

3.5.15.1 Regulatory Framework – Wetlands – FTD

The information provided in this section provides a basic federal and New York State wetland regulatory background that is applicable to most situations. This summary is intended for basic informational purposes only and it should not be viewed as all-inclusive. In addition, federal, state, or local requirements may change frequently, which could alter some of the information provided.

3.5.15.1.1 Federal

3.5.15.1.1.1 Definition of Wetlands

Wetlands are defined under 33 CFR Part 328.3 (b) as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (USACE, 1987). Identification and delineation of wetland areas is based on the technical criteria outlined in the *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-97-1) (USACE, 1987) and the appropriate Regional Supplement. Wetland identification includes consideration of the following three wetland parameters:

- Hydrophytic Vegetation: The *Corps of Engineers Wetlands Delineation Manual* defines a hydrophytic vegetation community as one possessing greater than 50 percent of the dominant species from all strata being classified as obligate wetland (OBL – almost always observed in wetlands), facultative wetland (FACW – usually observed in wetlands), or facultative (FAC – observed in both wetlands and uplands) which are determined based on 2014 National Wetland Plant List version 3.2 (USACE, 2014a; Lichvar et al., 2014).
- Wetland Hydrology: The *Corps of Engineers Wetlands Delineation Manual* defines wetland hydrology as "all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an over-riding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient

duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic conditions."

- Hydric Soils: The USDA defines a hydric soil as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation (USDA, 1987).

Areas that exhibit positive indicators of these three parameters are determined to be a wetland and are under the jurisdiction of the USACE New York District.

3.5.15.1.1.2 Federal Regulatory Program

The USACE regulatory program is one of the oldest in the federal government, having originated in the 19th century with the RHA of 1890 (Title 33--Navigation and Navigable Waters, Chapter 9--Protection of Navigable Waters and of Harbor and River Improvements Generally, Sections 401 and following; 33 USC 401, et seq.), which established protection of waters used for commerce. The basic mission of the regulatory program today is "…to protect the nation's aquatic resources, while allowing reasonable development through fair, flexible and balanced permit decisions."

The geographic jurisdiction of the RHA includes all navigable WOUS, which are defined at 33 CFR Part 329 as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." This jurisdiction extends seaward to include all ocean waters within a zone 3 nautical miles from the coastline (the "territorial seas"). Activities requiring RHA Section 10 permits include structures in navigable waters (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to navigable WOUS.

In 1972, amendments to the Federal Water Pollution Control Act added what is now known as Section 404 authority (33 USC 1344) to the program. The USACE is authorized to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into WOUS, including wetlands at specified locations. Selection of such sites must be in accordance with guidelines developed by the USEPA in conjunction with the Secretary of the Army; which are known as the 404(b)(1) guidelines. The discharge of all other pollutants into WOUS is regulated under Section 402 of the Act (more commonly known as the NPDES. The Federal Water Pollution Control Act was further amended in 1977 and given the common name of CWA, and was again amended in 1987 to modify criminal and civil penalty provisions and to add an administrative penalty provision.

The CWA uses the term "navigable waters" which is defined at 33 CFR Part 329 as meaning "waters of the U.S., including the territorial seas." Thus, Section 404 jurisdiction is defined as encompassing Section 10 waters, their tributaries, and adjacent wetlands. Isolated waters are jurisdictional where the use, degradation, or destruction of such waters could affect interstate or foreign commerce. Pursuant to Section 404 of the CWA, the USACE regulatory program has jurisdiction over the placement of fill or dredged material in all jurisdictional WOUS, including wetlands.

The geographic extent of USACE jurisdiction has recently been modified by several U.S. Supreme Court Cases, most notably the Solid Waste Agency of Northern Cook County and Rapanos/Carabell which found that the term WOUS may be limited to traditional navigable waters (i.e., waters navigable in fact or "Section 10 waters"), relatively permanent waters and wetlands adjacent to these waters ("Section 404 waters"). Because of the court decisions, isolated wetlands and non-permanent non-navigable waters usually are not jurisdictional, with the exceptional case where interstate commerce is supported by the waterbody (e.g., shellfish production or cypress bark harvested for interstate sale)." Most recently the USEPA and USACE finalized and published a Clean Water Rule: Definition of Waters of the U.S. on June 29, 2015, that became effective on August 28, 2015. However, as of October 2015, the Clean Water Rule was stayed by a federal court nationwide pending the outcome of several cases against the rule. As a result, any WOUS discussed in this section are based on the USACE regulations and guidance in effect in September 2014.

Under the CWA Section 404, placement of dredged or fill materials in WOUS is prohibited without a permit issued by the USACE. The determination that a wetland is subject to regulatory jurisdiction is made independently of procedures described in the delineation manual and the regional supplement.

EO 11990 – Protection of Wetlands (42 FR 26961, 3 CFR, 1977, p. 121) was executed on May 24, 1977, in order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. The Order furthers Section 101(b)(3) of the NEPA (42 USC 4331(b)(3)) to improve and coordinate federal plans, functions, programs and resources so the Country may attain the broadest range of beneficial uses of the environment without degradation and risk to health or safety. Each agency is charged with avoiding, undertaking, or providing assistance for new construction located in wetlands unless the head of the agency finds that there is no practicable alternative and that the potential deployment includes all practicable measures to minimize harm to wetlands which may result from such use. For the CIS, it should be noted that all potential sites analyzed in this EIS contain wetlands. All practicable measures were taken to arrange the CIS footprints to minimize and avoid impacts to wetlands while still maintaining operational effectiveness. However, impacts to wetlands, regardless of the site, are unavoidable. If a deployment decision were made, consultations would be held with the USACE and applicable state regulatory agencies to determine appropriate mitigations for wetland impacts. A FONPA would then be prepared. The FONPA would explain why there is no practicable alternative to impacting wetlands at the identified site. It is important to note that no proposed action or decision to deploy has been made to construct the additional CIS.

3.5.15.1.2 New York State

New York State regulates freshwater, non-tidal wetlands under the Freshwater Wetlands Protection Act (Article 24 et. seq.) through the NYSDEC. Freshwater wetlands or wetlands is defined in New York as "*…lands and waters of the State which meet the definition provided in 24-0107(1) of the act and have an area of at least 12.4 acres (approximately 5 hectares) or, if smaller, have unusual local importance as determined by the commissioner pursuant to section 24-0301(1) of the act"* (6 CCR-NY 664.2). Under 24-0107(1) freshwater wetlands means lands and waters of the state as shown on the freshwater wetlands map which contain any or all of the following:

(a) Lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semi-aquatic vegetation of the following types:

1. Wetland trees, which depend upon seasonal or permanent flooding or sufficiently water-logged soils to give them a competitive advantage over other trees; including, among others, red maple (*Acer rubrum*), willows (*Salix* spp.), black spruce (*Picea mariana*); swamp white oak (*Quercus bicolor*), red ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), silver maple (*Acer saccharinum*), American elm (*Ulmus americana*), and Larch (*Larix laricina*);
2. Wetland shrubs, which depend upon seasonal or permanent flooding or sufficiently water-logged soils to give them a competitive advantage over other shrubs; including, among others, alder (*Alnus* spp.), buttonbush (*Cephalanthus occidentalis*), bog rosemary (*Andromeda glaucophylla*), dogwoods (*Cornus* spp.), and leatherleaf (*Chamaedaphne calyculata*);
3. Emergent vegetation, including, among others, cattails (*Typha* spp.), pickerelweed (*Pontederia cordata*), bulrushes (*Scirpus* spp.), arrow arum (*Peltandra virginica*), arrowheads (*Sagittaria* spp.), reed (*Phragmites communis*), wildrice (*Zizania aquatica*), bur-reeds (*Sparganium* spp.), purple loosestrife (*Lythrum salicaria*), swamp loosestrife (*Decodon verticillatus*), and water plantain (*Alisma plantago-aquatica*);
4. Rooted, floating-leaved vegetation; including, among others, water-lily (*Nymphaea odorata*), water shield (*Brasenia schreberi*), and spatterdock (*Nuphar* spp.);
5. Free-floating vegetation; including, among others, duckweed (*Lemna* spp.), big duckweed (*Spirodela polyrhiza*), and watermeal (*Wolffia* spp.);
6. Wet meadow vegetation, which depends upon seasonal or permanent flooding or sufficiently water-logged soils to give it a competitive advantage over other open land vegetation; including, among others, sedges (*Carex* spp.), rushes (*Juncus* spp.), cattails (*Typha* spp.), rice cut-grass (*Leersia oryzoides*), reed canary Grass (*Phalaris*

arundinacea), swamp loosestrife (*Decodon verticillatus*), and spikerush (*Eleocharis* spp.);

7. Bog mat vegetation; including, among others, sphagnum mosses (*Sphagnum* spp.), bog rosemary (*Andromeda glaucophylla*), leatherleaf (*Chamaedaphne calyculata*), pitcher plant (*Sarracenia purpurea*), and cranberries (*Vaccinium macrocarpon* and *V. oxycoccos*);
8. Submergent vegetation; including, among others, pondweeds (*Potamogeton* spp.), naiads (*Najas* spp.), bladderworts (*Utricularia* spp.), wild celery (*Vallisneria americana*), coontail (*Ceratophyllum demersum*), water milfoils (*Myriophyllum* spp.), muskgrass (*Chara* spp.), stonewort (*Nitella* spp.), water weeds (*Elodea* spp.), and water smartweed (*Polygonum amphibium*);

(b) Lands and submerged lands containing remnants of any vegetation that is not aquatic or semi-aquatic that has died because of wet conditions over a sufficiently long period, provided that such wet conditions do not exceed a maximum seasonal water depth of 6 feet and provided further that such conditions would persist indefinitely, barring human intervention;

(c) Lands and waters substantially enclosed by aquatic or semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation; and

(d) The waters overlying the areas set forth in (a) and (b) and the lands underlying.

Boundaries of freshwater wetlands are determined by the outer limits of the vegetation in (a) and (b) above and the lands and waters of (c) New York Environmental Conservation Law §24-0107 and areas within 100 feet of the edge or those wetlands.

A permit, or letter of permission, is available for any person proposing to conduct an activity in New York State jurisdictional freshwater wetlands; however, Part 663 of the NYSDEC Regulations defines "person" as any corporation, firm partnership, association, trust, estate, one or more individuals or any unit of state or local government or any agency or subdivision thereof, including any state department, bureau, commission, board, or other agency; public authority, or public benefit corporation. This definition specifically excludes the federal government. As such, a NYSDEC permit for fill and impact to state wetlands would not be required for the potential project; however, a Section 401 Water Quality Certification would be required as part of the Section 404 USACE permitting process.

3.5.15.2 Affected Environment – Wetlands - FTD

Wetlands are prevalent throughout FTD comprising upwards of 20 percent of the land area, or 15,500 acres and an additional 4,675 acres of surface waters for a total of 20,175. Across the installation, there are three primary types of wetlands - riverine, lacustrine and palustrine - with palustrine comprising 77 percent of all wetlands or approximately 15,498 acres. Riverine and lacustrine wetlands account for approximately 3,874 acres and 803 acres, respectively. Due to changing hydrology brought on by natural successional and snowmelt/surface drainage patterns and substantial beaver activity, wetland boundaries have been noted to change frequently on FTD (Army, 2011).

Wetlands mapped and delineated within the CIS footprint are described in Sections 3.5.15.2.2 and 3.5.15.3.1.1. NWI and NYSDEC wetlands mapped within the area of the CIS footprint are shown on Figure 3.5.15-1.

3.5.15.2.1 Wetland Identification Methodology

A jurisdictional waters field delineation was completed for 2,773 acres on two separate sites (Site 7 and Site 9) of FTD to determine the location and extent of USACE jurisdictional wetlands and waters. The wetland delineation was conducted in accordance with the *Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Delineation Manual: Northcentral and Northeast Region* (Version 2.0) and classified using the *Classification of Wetlands and Deepwater Habitats of the U.S.* (Cowardin et al., 1979), also known as the Cowardin Classification. Per NYSDEC regulations, mapped freshwater wetlands under their jurisdiction were identified in the report based on the official mapping. Additional detail regarding specific wetland identification methodology is provided in the *Wetland Delineation Report* (BVSPC, 2016b). NWI and NYSDEC mapped wetlands were used to help guide field work in the field by identifying areas of likely wetlands. Figure 3.5.15-1 shows the location and extent of the National Wetland Inventory and NYSDEC mapped wetlands.

After the jurisdictional waters field delineation was completed, Site 7 and Site 9 were consolidated into one potential CIS. As a result, there was approximately 293 acres that had not been included in the jurisdictional waters field delineation conducted over the summer of 2015. Therefore, desktop wetland delineation was conducted to provide wetland data for the purposes of evaluating impacts to WOUS, including wetlands, within the consolidated CIS footprint. The methodology for the desktop wetland delineation included a review of the following publically available data, mapping, and imagery, and the application of professional judgement impart based on experience within the CIS footprint.

- USFWS NWI Version 1.0 (1977 – 2014).
- NYSDEC New York State Wetlands Mapping (2012).
- USDA –NRCS – Soil Survey Geographic Database, Jefferson County, New York, mapping.
- USDA – NRCS National Hydric Soils List (March 2014).
- USGS – National Elevation Dataset (2013).
- FEMA – National Flood Hazard Layer, undated.

- Microsoft Bing® aerial photography (2014).
- Google Earth ™ aerial photography (October, 2013; October, 2008; April 2007; and May 1994).

These data sources, mapping, and imagery were combined in Google Earth™ to identify areas that exhibited indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology. Once areas were determined to have a high potential to be a wetland, the following were evaluated to determine the approximate extent/boundary of wetland areas:

- Location of surface waters (streams, rivers, ponds, etc.).
- Areas of inundation visible on aerial imagery.
- Area of soil saturation visible on aerial imagery.
- Areas where topographic contours indicated potential geomorphic position to support wetland hydrology.
- Location of areas within the FEMA 100-year floodplain.
- Identification of confirmed upland vegetation aerial imagery signatures.
- Identification of confirmed wetland vegetation aerial imagery signatures.
- Location of soil series documented to be hydric or possess hydric inclusions.
- Dark exposed surface soil on aerial imagery.

Although this methodology has resulted in a relatively accurate assessment of wetlands, there is no USACE-accepted methodology for conducting a desktop wetland delineation for the purposes of assessing wetland impacts or Section 404 permitting review/approval. As such, the result of this desktop wetland delineation is only being used to estimate probable impacts to wetlands in these areas. Should FTD be selected for deployment of the potential CIS, a supplemental jurisdictional waters delineation would be required for permitting purposes.

3.5.15.2.2 Wetlands Delineated

The jurisdictional waters field delineation identified 13 wetlands totaling 274.56 acres of wetlands. All but approximately 200 sq. ft. of the 12 wetlands identified are jurisdictional under Section 404 of the CWA and permitting authority of the USACE – NY District. The one wetland that was determined to not be jurisdictional was a small isolated wetland identified as a probably vernal pool located along Alexandria Street. Table 3.5.15-1 summarizes the Cowardin Classification, Cowardin Classification Definition, and approximate acreage of that wetland type located within the 2,773-acre study area. Figure 3.5.15-2 shows the location and extent of all delineated wetlands within the study area and Figure 3.5.15-3 (four sheets, a through d) shows the location and extent of all delineated wetlands within the study area according to Cowardin Classification in more detail.

Table 3.5.15-1 Cowardin Classification Definition and Approximate Acreage in 2,773-acre Study Area on FTD

Cowardin Class	Cowardin Class Definition	Acres
P	**Palustrine System Wetlands** -tidal and non-tidal marshy wetlands or shallow water, not Riverine (associated with a stream or river), Lacustrine (lakes and ponds over 20 acres), Estuarine (tidal and non-tidal wetlands associated with estuaries) or Marine (wetlands associated with near-shore marine environments that are not part of another system).	274.56
PEM1B	**Palustrine** (P); **Emergent wetland** (EM), vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; **Persistent vegetation** (1), remnants of vegetation persists into winter months and is generally identifiable; **Saturated** (B), the substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present.	0.66
PEM1E	**Palustrine** (P); **Emergent wetland** (EM), vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; **Persistent vegetation** (1), remnants of vegetation persists into winter months and is generally identifiable; **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	36.23
PEM1Fb	**Palustrine** (P); **Emergent wetland** (EM), vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; **Persistent vegetation** (1), remnants of vegetation persists into winter months and is generally identifiable; **Semi-permanently Flooded** (F), surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface. **Beaver** (b), vegetation community is a result of beaver activity.	6.94
PSS1B	**Palustrine** (P); **Emergent wetland** (EM), vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; **Persistent vegetation** (1), remnants of vegetation persists into winter months and is generally identifiable; **Scrub-Shrub** (SS), woody vegetation that is characterized as true shrubs, young trees and/or trees and shrubs that are small or stunted due to environmental conditions and are generally less than 20 feet in height; **Broad-Leaved Deciduous** (1), woody vegetation is predominantly deciduous and broad-leaved tree or shrub species; **Saturated** (B), the substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present.	2.70
PSS1D	**Palustrine** (P); **Emergent wetland** (EM), vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; **Persistent vegetation** (1), remnants of vegetation persists into winter months and is generally identifiable; **Scrub-Shrub** (SS), woody vegetation that is characterized as true shrubs, young trees and/or trees and shrubs that are small or stunted due to environmental conditions and are generally less than 20 feet in height; **Broad-Leaved Deciduous** (1), woody vegetation is predominantly deciduous and broad-	1.06

Cowardin Class	Cowardin Class Definition	Acres
	leaved tree or shrub species; **Seasonally Flooded/Well Drained** (D), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is substantially below the land surface.	
PSS1E	**Palustrine** (P); **Emergent wetland** (EM), vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; **Persistent vegetation** (1), remnants of vegetation persists into winter months and is generally identifiable; **Scrub-Shrub** (SS), woody vegetation that is characterized as true shrubs, young trees and/or trees and shrubs that are small or stunted due to environmental conditions and are generally less than 20 feet in height; **Broad-Leaved Deciduous** (1), woody vegetation is predominantly deciduous and broad-leaved tree or shrub species; **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	80.32
PSS1Fb	**Palustrine** (P); **Scrub-Shrub** (SS), woody vegetation that is characterized as true shrubs, young trees and/or trees and shrubs that are small or stunted due to environmental conditions and are generally less than 20 feet in height; **Broad-Leaved Deciduous** (1), woody vegetation is predominantly deciduous and broad-leaved tree or shrub species; **Semi-permanently Flooded** (F), surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface. **Beaver** (b), vegetation community is a result of beaver activity.	3.73
PFO1B	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer; **Broad-leaved Deciduous** (1), broad-leaved deciduous tree species which are represented throughout the U.S.; **Saturated** (B), the substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present.	51.09
PFO1C	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer; **Broad-leaved Deciduous** (1), broad-leaved deciduous tree species which are represented throughout the U.S.; **Seasonally Flooded** (C), surface water is present for extended periods, especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	0.005
PFO1D	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer; **Broad-leaved Deciduous** (1), broad-leaved deciduous tree species which are represented throughout the U.S.; **Seasonally Flooded/Well Drained** (D), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is substantially below the land surface.	3.11
PFO1E	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer;	19.38

Cowardin Class	Cowardin Class Definition	Acres
	Broad-leaved Deciduous (1), broad-leaved deciduous tree species which are represented throughout the U.S.; **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	
PFO4B	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer; **Needle-Leaved Evergreen** (4), needle-leaved evergreen species such as black spruce (*Picea mariana*) or pond pine (*Pinus serotina*). **Saturated** (B), the substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present.	17.61
PFO4D	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer; **Needle-Leaved Evergreen** (4), needle-leaved evergreen species such as black spruce (*Picea mariana*) or pond pine (*Pinus serotina*); **Seasonally Flooded/Well Drained** (D), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is substantially below the land surface.	1.36
PFO4E	**Palustrine** (P); **Forested wetland** (FO), vegetation is dominated by forest tree species but also possess an understory of young trees and/or shrubs, and a sparse herbaceous layer; **Needle-Leaved Evergreen** (4), needle-leaved evergreen species such as black spruce (*Picea mariana*) or pond pine (*Pinus serotina*); **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	18.15
PAB3E	**Palustrine** (P); **Aquatic Bed** (AB), vegetation is dominated by plants that grown principally on or below the surface of the water for most of the growing season in most years; **Rooted Vascular** (3), rooted vascular plants occurring at all depths within the photic zone and often occur in sheltered areas where there is little water movement. **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	1.68
PAB4E	**Palustrine** (P); **Aquatic Bed** (AB), vegetation is dominated by plants that grown principally on or below the surface of the water for most of the growing season in most years; **Floating Vascular** (4), plant species float freely either in the water or on its surface; **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	0.67
PUB2	**Palustrine** (P); **Unconsolidated Bottom** (UB), wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 3 inches diameter), and a vegetative cover less than 30%; **Sand** (2), unconsolidated particles smaller than stones are predominantly sand, although finer or coarser sediments may be intermixed.	0.19
PUB3	**Palustrine** (P); **Unconsolidated Bottom** (UB), wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 3 inches diameter), and a vegetative cover less than 30%;	1.02

Cowardin Class	Cowardin Class Definition	Acres
	Mud (2), unconsolidated particles smaller than stones are predominantly silt and clay, although coarser sediments or organic material may be intermixed.	
PUB3E	**Palustrine** (P); **Unconsolidated Bottom** (UB), wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 3 inches diameter), and a vegetative cover less than 30%; **Mud** (2), unconsolidated particles smaller than stones are predominantly silt and clay, although coarser sediments or organic material may be intermixed; **Seasonally Flooded/Saturated** (E), surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.	0.30
POWb	**Palustrine** (P); **Open Water** (OW), open water where vegetation is not present at the surface; **Beaver** (b), vegetation community is a result of beaver activity.	2.46
R	**Riverine** (R), wetlands and deepwater habitats contained within a channel except wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens and habitats with water containing ocean-derived salts in excess of 0.5 0/00.	14.56
R3AB3	**Riverine** (R), **Upper Perennial** (3), gradient is high and velocity of the water fast with no tidal influence. Substrate consists of rock, cobbles, or gravel with occasional patches of sand; **Aquatic Bed** (AB), vegetation is dominated by plants that grown principally on or below the surface of the water for most of the growing season in most years; **Rooted Vascular** (3), rooted vascular plants occurring at all depths within the photic zone and often occur in sheltered areas where there is little water movement.	2.83
R3RB2	**Riverine** (R), **Upper Perennial** (3), gradient is high and velocity of the water fast with no tidal influence. Substrate consists of rock, cobbles, or gravel with occasional patches of sand; **Rock Bottom** (RB), wetlands and deepwater habitats having an areal cover of stones, boulders, or bedrock 75% or greater and vegetative cover of less than 30%; **Rubble** (2), Bottoms with less than 75% areal cover of bedrock, but stones and boulders alone, or in combination with bedrock, cover 75% or more of the surface.	5.48
R3UB2/4	**Riverine** (R), **Upper Perennial** (3), gradient is high and velocity of the water fast with no tidal influence. Substrate consists of rock, cobbles, or gravel with occasional patches of sand; **Unconsolidated Bottom** (UB), wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 3 inches diameter), and a vegetative cover less than 30%; **Sand** (2), unconsolidated particles smaller than stones are predominantly sand, although finer or coarser sediments may be intermixed; **Organic** (4), unconsolidated material smaller than stones is predominantly organic soils of formerly vegetated wetlands.	2.26
R3UB4	**Riverine** (R), **Upper Perennial** (3), gradient is high and velocity of the water fast with no tidal influence. Substrate consists of rock, cobbles, or gravel with occasional patches of sand; **Unconsolidated Bottom** (UB), wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 3 inches diameter), and a vegetative cover less than 30%; **Organic** (4), unconsolidated material smaller than stones is predominantly organic soils of formerly vegetated wetlands.	3.99
*Cowardin, et al., 1979.		

Detailed descriptions of each wetland complex delineated within the study area are provided in the *Wetland Delineation Report, Missile Defense Agency – CONUS Interceptor Site – Fort Drum, NY* (BVSPC, 2016b).

The desktop wetland delineation identified 29.63 acres of additional potential wetlands in areas not included in the jurisdictional waters field delineation performed in the summer 2015 as shown on Figure 3.5.15-2. Table 3.5.15-2 summarizes the Cowardin Classification of the potential wetlands identified and Figure 3.5.15-2 shows the location of the desktop delineated wetlands according to Cowardin Classification. Because these wetlands were only identified through a desktop wetland delineation and were not directly observed in the field, the Cowardin System and Class are the only designations assigned.

Table 3.5.15-2 Summary of Acres of Desktop Delineated Wetlands According to Cowardin Classification - FTD

Cowardin Classification	Acres
PEM	0.34
PSS	15.86
PFO	10.39
PUB	1.21
PAB	0.62

3.5.15.3 Environmental Consequences and Mitigation – Wetlands - FTD

The potential deployment activities for the CIS are detailed in Section 2.5.1. As described in Section 2.9.3, one of the primary criteria in the initial siting of the CIS was to locate the facility in an area that did not impact the installation missions. Additionally, during preliminary CIS site layout exercises, substantial efforts were made to avoid and minimize wetland losses to the maximum extent practicable. The intent was to maintain full function of the CIS, while reducing the quantity and type of compensatory wetland mitigation required. The following sections analyze the permanent/temporary and direct/indirect impacts that would occur to wetlands as a result of the construction and operation and maintenance of the CIS and potential compensatory mitigation options available.

3.5.15.3.1 Construction - Baseline Schedule

Construction of the CIS according to the baseline schedule as described in Section 2.5.1 would result in unavoidable permanent impacts to wetlands. The specific types of impacts, quantity, and potential mitigation are described in this section.

3.5.15.3.1.1 Environmental Consequences

The construction of the CIS would require extensive grading, cutting and filling of land in preparation of construction which would include wetland areas. The construction of this site and grading would result in permanent and temporary; direct and indirect impacts to wetland areas. This section quantifies and describes the type of impact to wetlands within the CIS and vicinity according to their Cowardin Classification.

Permanent Direct Impacts

Permanent and direct impacts would occur as a result of the grading and filling of these wetlands within the cleared CIS footprint as shown on Figures 3.5.15-4. Permantent, direct impacts to wetlands according to Cowardin Classification within the cleared CIS footprint are quantified in Tables 3.5.15-3.

Table 3.5.15-3 Summary of Permanent, Direct Impact to Wetlands within Cleared Footprint by Cowardin Classification - FTD

Cowardin Class	Acres
Jurisdictional Water Delineated Wetlands	
PSS	2.59
PFO	5.05
R3AB	2.49
R3RB	4.89
Subtotal	15.02
Desktop Delineated Wetlands	
PEM	0.34
PSS	3.70
PFO	5.29
PAB	0.66
Subtotal	9.99
Overall Total	**25.01**

In addition to the permanent and direct impacts to wetlands as described in Section 3.5.14.3.1.1 of the FTD Water Resources section, there is a potential for up to 1.7 linear miles of streams and tributaries that are within the Riverine wetlands acreages (R3AB and R3RB) that would be impacted due to the construction of site improvements. The existing hydrology associated with these streams and tributaries would be impacted from the placement of fill material or possibly relocating and enclosing underground one or more of the tributaries. The placement of fill would reduce the stream flow and impact aquatic and terrestrial fauna due to habitat alterations. Similarly, relocating a tributary underground would also have a permanent impact on terrestrial and aquatic fauna because the stream channel would no longer provide habitat or food. Impacts to hydrology, hydraulics, water quality, and related water characteristics from filling, relocating, and enclosing onsite tributaries would be examined during detailed engineering design.

Permanent Indirect Impacts

Permanent indirect impacts would occur to those wetlands outside, but immediately adjacent to, or bisected by the cleared CIS footprint. While not directly impacted due to fill, these wetlands would be indirectly impacted by substantial erosion/sedimentation during construction; changes in hydrology due to additional runoff from the CIS; and permanent alterations in vegetation communities caused by changes in nutrient loading, lighting, hydrology and water flow velocities. These impacts could potentially be major and may require mitigation. Wetland acreage based on Cowardin Classification that would be impacted as a result of being adjacent to, or bisected by, the cleared CIS footprint are summarized in Table 3.5.15-4 and shown on Figure 3.5.15-5.

Table 3.5.15-4 Summary of Permanent, Indirect Impact to Wetlands According to Cowardin Classification - FTD

Cowardin Classification	**Acres (Downslope/Downstream)**
PAB	1.26
PEM	5.47
PSS	20.01
PFO	8.90
PUB	0.98
R3AB	0.33
R3RB	0.04
R3UB	2.26
Total	39.25
Desktop Delineated Wetlands	
PAB	0.81
PEM	0.36
PSS	13.69
PFO	3.21
R3RB	0.27
R3UB	2.71
Subtotal	21.05
Total	**60.30**

Temporary Indirect Impacts to Wetlands

Wetlands occurring downslope/downstream, including Warren Swamp and other wetlands north of the CIS footprint on FTD, would also likely experience erosion/sedimentation and altered water quality during construction. As a result, these wetlands may fill in from uncontrolled sedimentation and/or become wetter due to the additional surface water runoff from the CIS. Warren Swamp is north of the CIS footprint and associated with West Branch Black Creek and would be the first and largest wetland system that could be impacted. This change in hydrology has the potential to alter the wetland plant communities in the short term; however, this impact would be negligible as Warren Swamp is a large, habitat diverse wetland and would recover after construction and surface flows return to normal. Warren Swamp would also help buffer other wetlands further downstream by aiding in the filtering process of sedimentation leaving the construction site and buffering from hydrology, nutrient loading and other water quality/quantity changes. These impacts would be addressed through the use of BMPs such as soil erosion sediment control devices and an approved and implemented storm water management plan. As a result, these potential impacts would be negligible and compensatory mitigation should not be required. Figure 3.5.15-5 shows those wetlands delineated downstream of the CIS footprint that have the potential to be impacted as described.

Wetlands occurring upslope/upstream of the CIS footprint have the potential to experience an oversupply of hydrology caused by the CIS footprint restricting water flow downstream of the wetland system. As a result, forested wetlands could become too wet which would cause tree die-offs and permanently convert the wetland to either a scrub-shrub, emergent or a mosaic of the two, or scrub-shrub wetlands could become too wet and be permanently converted to an emergent wetland. Although it is uncertain if these impacts would occur, it is foreseeable that such an impact could result without a proper storm water management plan to maintain surface water flow. It is assumed for the purpose of this EIS that a storm water management plan would be designed and implemented to ensure that surface water flows are as close to preconstruction conditions as possible. Given this, potential impacts to wetlands upslope/upstream of the CIS footprint would be negligible. Figure 3.5.15-5 shows the wetlands upstream of the CIS footprint that have a minor potential to be impacted as described previously and should not require compensatory mitigation.

Wetlands further downstream and outside of the boundaries of the FTD CIS footprint may experience indirect, temporary impacts such as a period of sedimentation/siltation caused by erosion of the CIS before the construction site is stabilized. However, these potential impacts would be addressed through the use of BMPs such as soil erosion and sediment control devices and implementation of an approved storm water management plan as described previously. Additionally, Warren Swamp would buffer these wetlands from potential impacts due to sedimentation and water quality/quantity changes during construction as previously detailed. As a result, these wetlands impacts to wetlands downstream would be negligible and not require compensatory mitigation. Once the site is operational, wetlands downstream would no longer be impacted by the CIS.

As previously indicated, there is an area that was not included in the jurisdictional waters delineation and encompasses approximately 293 acres. A desktop wetland delineation was performed, as detailed in Section 3.5.15.2.1, to estimate the approximate acreage of potential wetlands within the 293 acres that were not included in the jurisdictional water delineation. If a decision to deploy is made and the FTD site selected, a supplemental jurisdictional waters delineation would need to be conducted prior to permitting. Figure 3.5.15-2 shows the location and extent of the areas not included in the wetland delineation.

3.5.15.3.1.2 Mitigation

As discussed in Section 3.5.15.1, wetlands in New York are under the separate jurisdiction of the USACE – New York District and the NYSDEC; however, the federal government is not included in the requirements to apply for and receive a permit approval for impacts to wetlands under state jurisdiction. Impacts to wetlands within the cleared CIS footprint should be considered significant, requiring a permit approval from the USACE – New York District; however, because more than 1 acre of impact would occur, an individual permit approval with compensatory mitigation would be required. Due to the major impacts that would occur to wetlands from the potential deployment of the CIS at the FTD site, the impacts would be considered “significant” impacts. NYSDEC would be involved in the USACE Section 404 permitting process through the review and approval of a Section 401 Water Quality Certification. This section summarizes the compensatory mitigation options that have been identified; however, the amount (ratios) and type of mitigation would not be determined until the permit application process has been initiated with the USACE and NYSDEC. As discussed in Section 3.1, consultation regarding permitting and compensatory mitigation will not be initiated until a decision to deploy is made and a site is selected. Further efforts will be made during final facility design and layout to avoid and/or minimize wetland impacts to the greatest extent practicable, prior to initiating the permitting phase.

Historically, the USACE preferred onsite mitigation for value and functions lost due to fill of WOUS, including wetlands, but offsite mitigation was possible, provided the mitigation site was located in the same HUC-8 Watershed as the function and value lost. If available, mitigation was possible through mitigation banking sites.

Currently the only wetland mitigation bank is owned by FTD and used as a private bank solely for compensatory mitigation for mission activity impacts to wetland. As such, it is unknown how many credits are currently available and credits may not be available for the potential CIS deployment. No commercially approved wetland mitigation banks are available in this portion of New York; however, an ILFP is approved for the area, sponsored by Ducks Unlimited, Inc. An applicant sponsored mitigation site to create, restore, enhance, and/or preserve wetlands is another alternative. This mitigation option would not be ideal because the wetland mitigation site area would be taken out of potential mission use in perpetuity (forever) and costs associated with designing, developing, and maintaining the site and risk of potential failure would be high. Additionally, a mitigation site off-base would not be an option as MDA is not able to purchase and/or own land.

As a result, the likely preferred mitigation to compensate for lost function and value of WOUS, including wetlands, would be to use the ILFP that services the FTD region. As previously indicated, the type and amount of mitigation would not be determined until the application process under Sections 401 and 404 of the CWA is initiated and wetland mitigation ratios negotiated.

In addition to the wetlands, approximately 1.7 linear miles of streams and tributaries from project-related changes in the flow regime or physical configuration of a portion of West Branch Creek and a major tributary could result in major impacts to the surface water streams. Due to the major impacts that could occur to surface water streams from the potential deployment of the CIS at the FTD site, the impacts could be considered "significant" impacts. Because these impacted surface water streams are within Riverine wetlands, mitigation would be coordinated and implemented in conjunction with associated wetland mitigation. Specific stream modifications within the CIS footprint would be dependent on the final site facility layout, and thus the need and type of mitigation would be further evaluated during the design of the CIS. Three potential options that could be designed are: 1) the streams could be routed around the perimeter security fence and tie back into the existing stream path before leaving the project boundary; 2) a portion of the streams could be enclosed and routed through site to still capture and convey the runoff while avoiding major site facilities; or 3) the site could be split into two sites and enclosed with a security fence leaving the stream in place. The significant impacts resulting from these potential improvements would be avoided to the maximum extent practical and mitigation plans for the stream channel impacts would be developed in accordance to standards outlined in 33 CFR 332 (Compensatory Mitigation for Losses of Aquatic Resources). In addition, consultations would be held during the design and permitting phase of the project to further define stream channel impacts and compensatory stream mitigation options with USACE and/or appropriate state governing agencies.

3.5.15.3.2 Construction – Expedited Schedule

Other than the potential for a larger amount of soil disturbance causing additional sedimentation, water quality and quantity changes downstream in a shorter time frame, no other impacts to wetlands would occur as a result of the expedited construction schedule. As a result, the additional impacts when compared to the baseline construction schedule would be minor and not require additional compensatory mitigation.

3.5.15.3.3 Operation

Activities during the normal operation of the CIS are described in Section 2.7. The following sections detail the potential wetland impact and potential mitigation.

3.5.15.3.3.1 Environmental Consequences

During normal operation of the site, there would not be any increase in the size of the CIS footprint or additional buildings constructed outside of the CIS footprint that would impact wetlands remaining after the construction of the site. The only potential impact to adjacent and nearby wetlands may occur due to erosion and sedimentation from the CIS footprint and storm water management facility failure. However, this potential impact would be temporary and short-term because slopes would need to be stabilized and storm water facilities would need to be repaired. As a result, any potential impact to wetland areas resulting from erosion and sedimentation or storm water facility failure would be negligible and not require compensatory mitigation.

3.5.15.3.3.2 Mitigation

The potential erosion/sedimentation impact to adjacent wetlands during normal operation of the CIS would be minimized and mitigated through regular maintenance of storm water management facilities, including outfalls and addressing/fixing erosional issues on the site including supplemental stabilization measures such as re-grading/reseeding. Depending on the severity of the resulting fill to adjacent or downslope wetlands, restoration such as removal of eroded soil or accumulated sediment may be necessary; however, compensatory mitigation would not be required.

Figure 3.5.15-1 National Wetlands Inventory and New York State Department of Environmental Conservation Wetlands - FTD

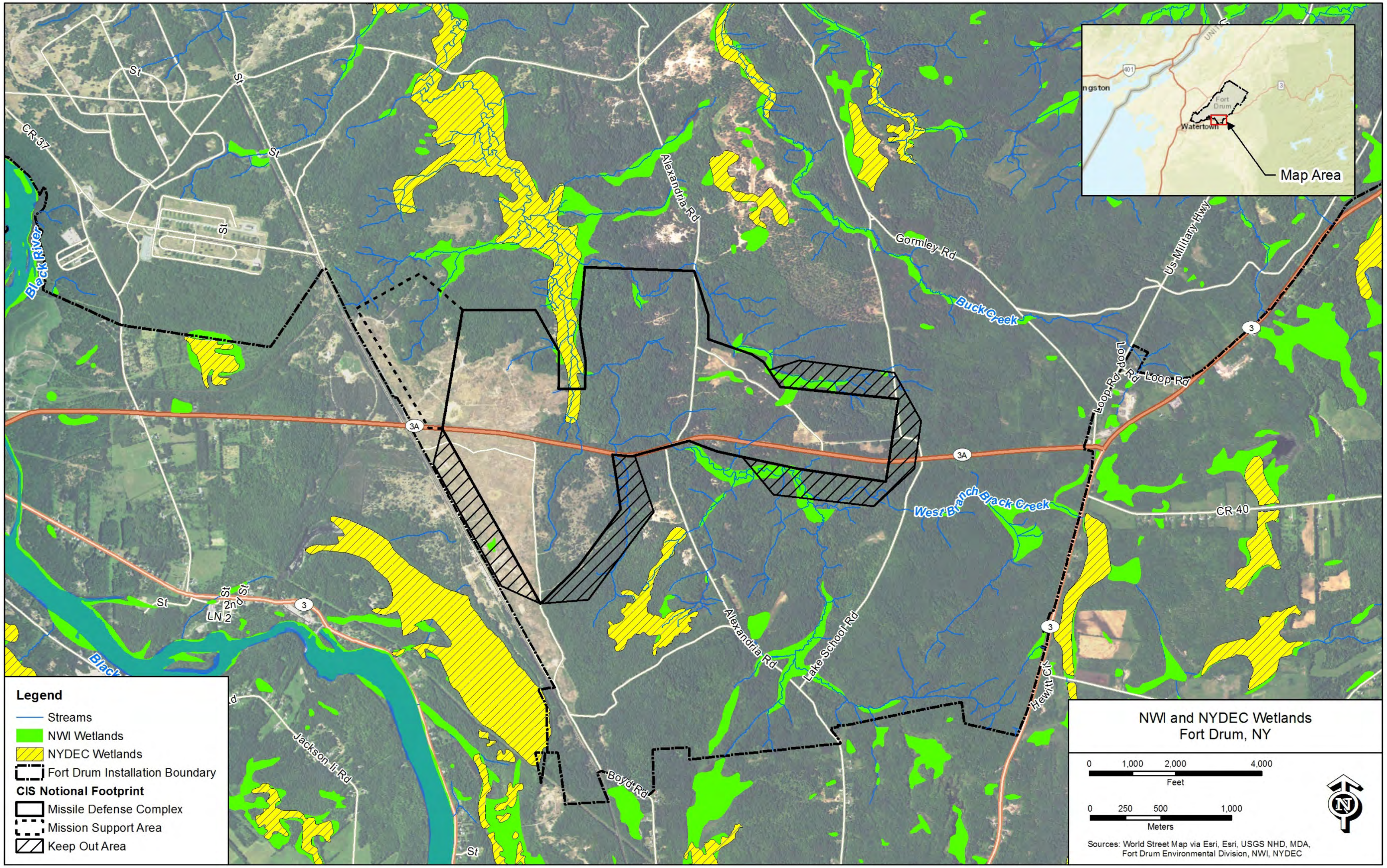
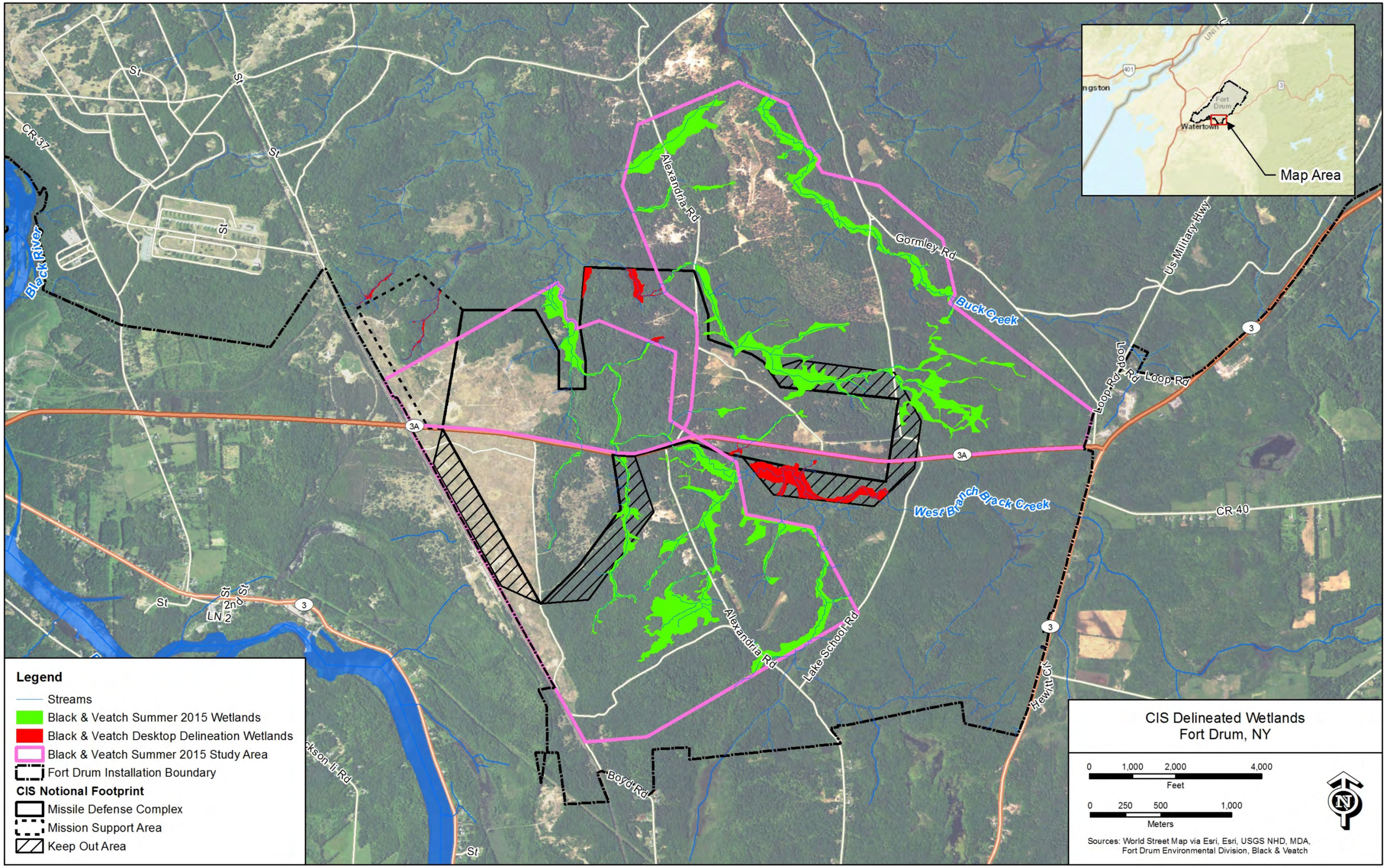


Figure 3.5.15-2 Delineated Wetlands – FTD



3-956

Figure 3.5.15-3 Delineated Wetlands by Cowardin Classification - FTD

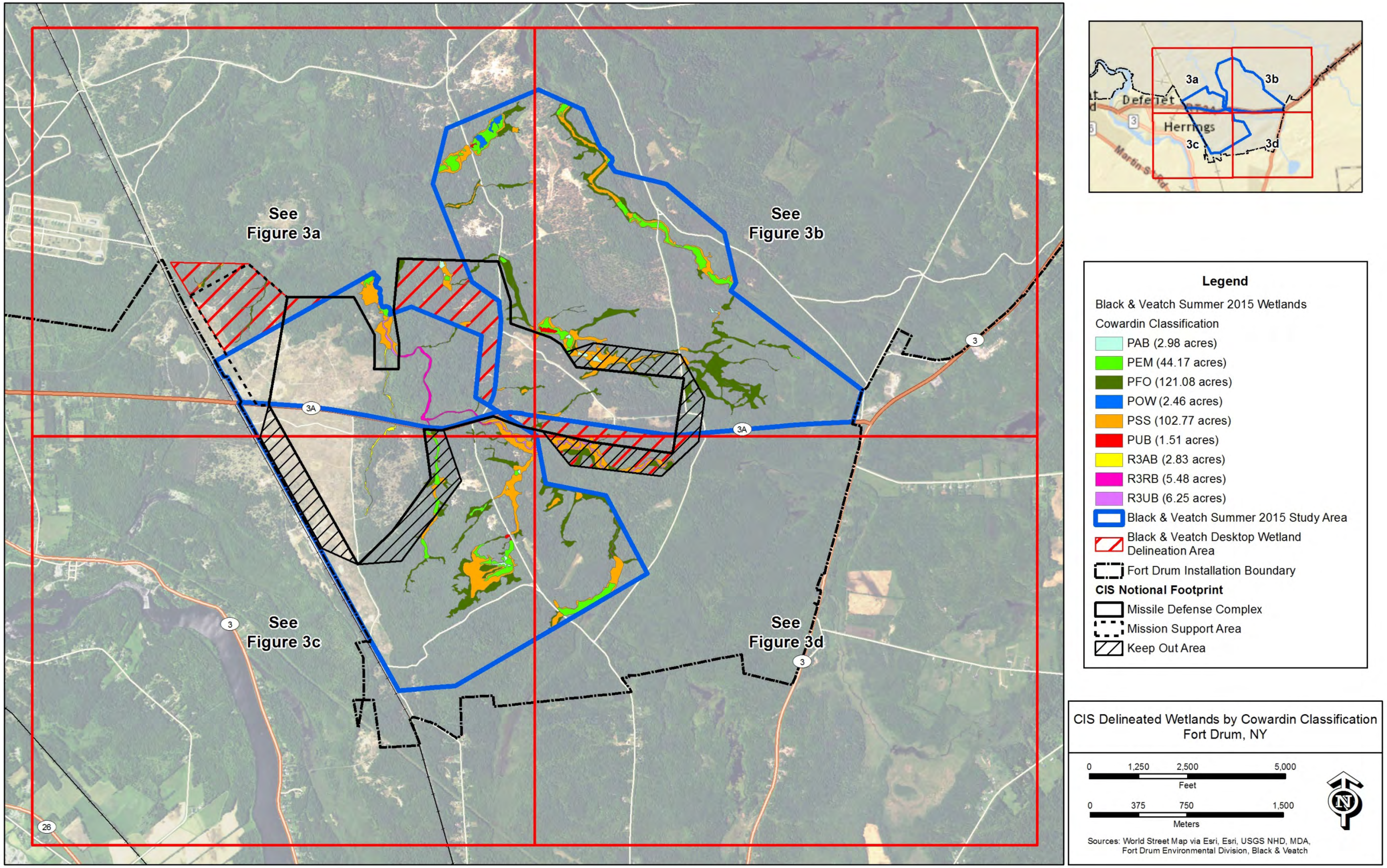


Figure 3.5.15-3a Delineated Wetlands by Cowardin Classification Sheet 3a - FTD

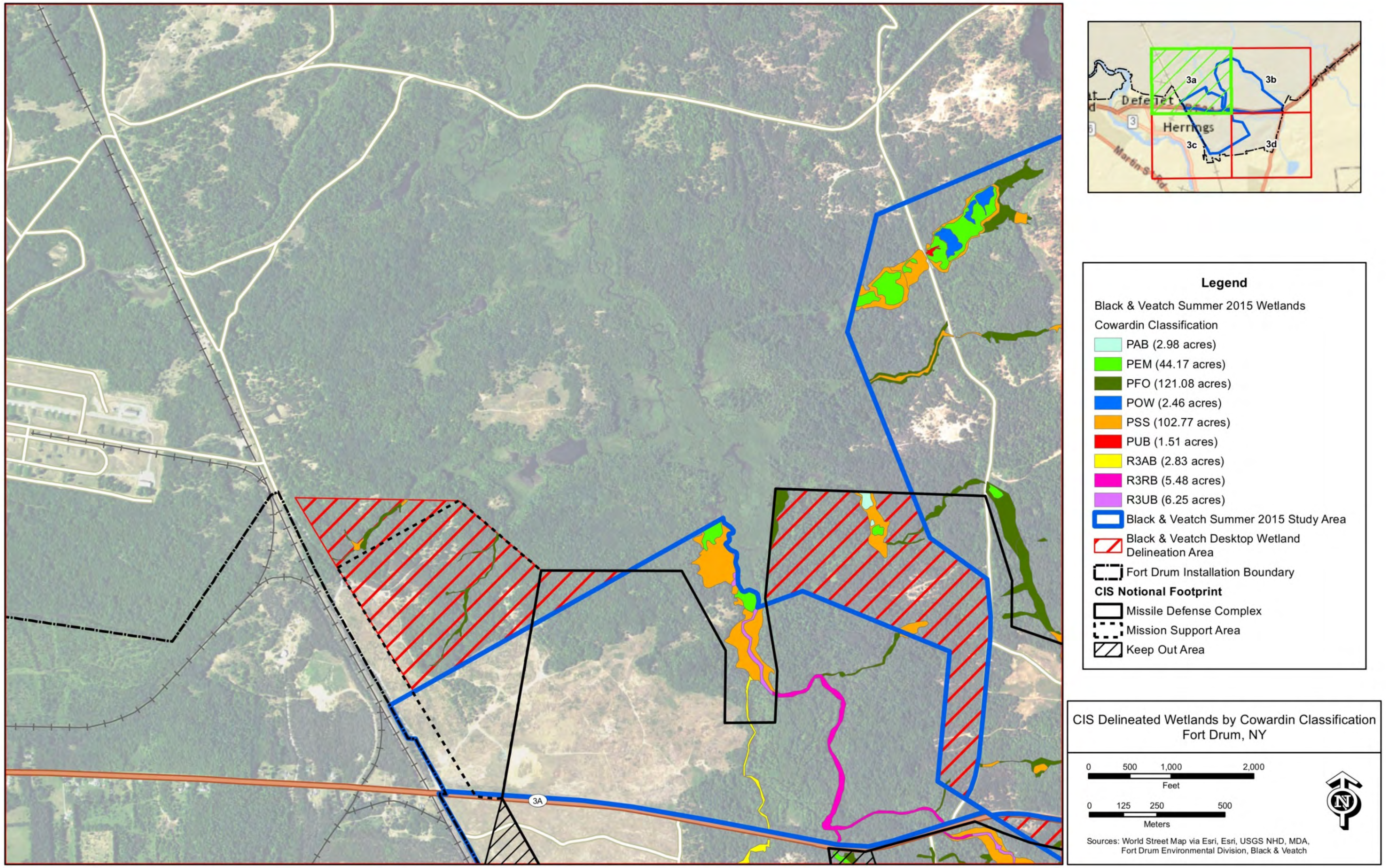


Figure 3.5.15-3b Delineated Wetlands by Cowardin Classification Sheet 3b - FTD

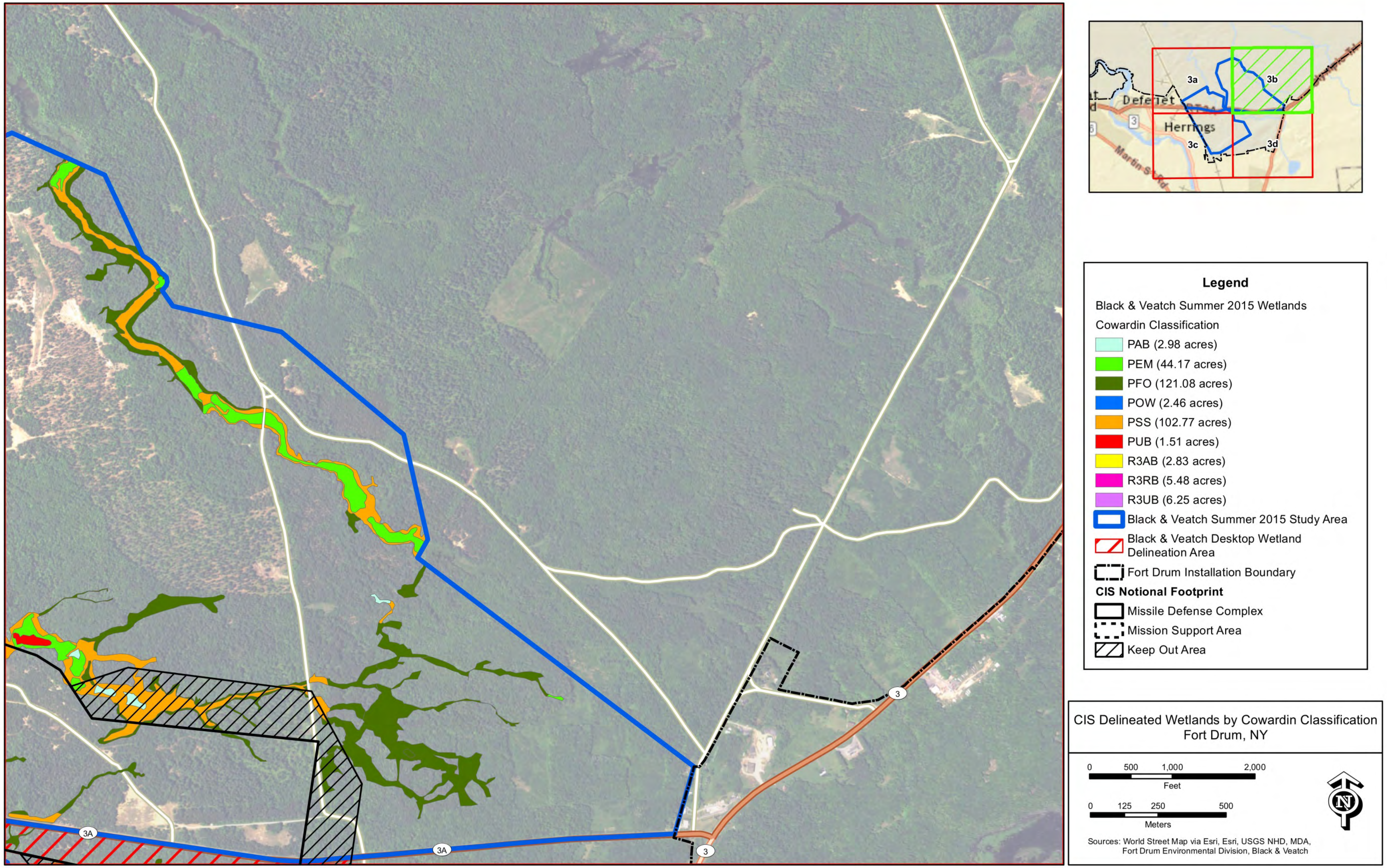


Figure 3.5.15-3c Delineated Wetlands by Cowardin Classification Sheet 3c - FTD

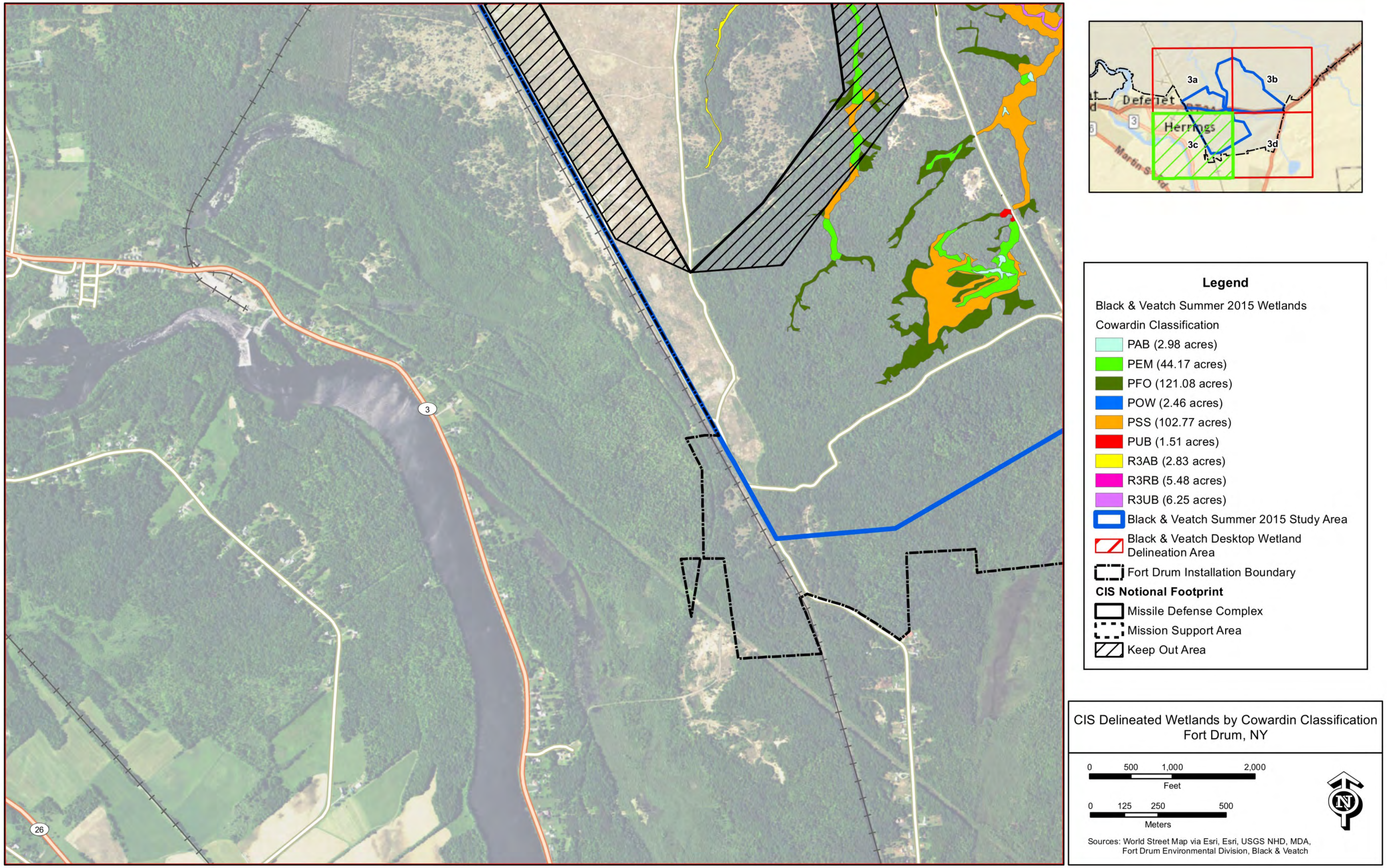


Figure 3.5.15-3d Delineated Wetlands by Cowardin Classification Sheet 3d – FTD

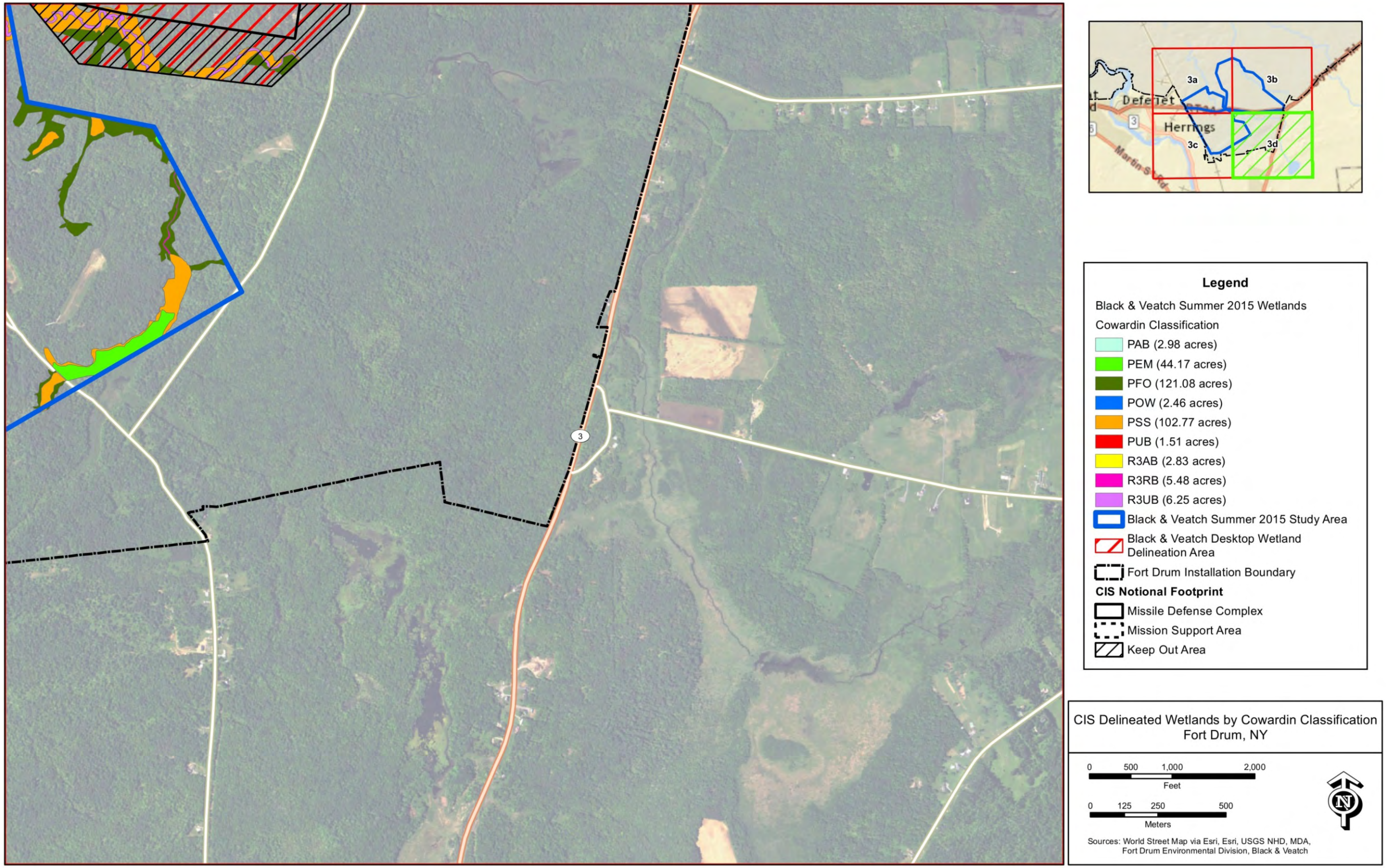


Figure 3.5.15-4 Cleared Footprint Wetland Impacts – FTD

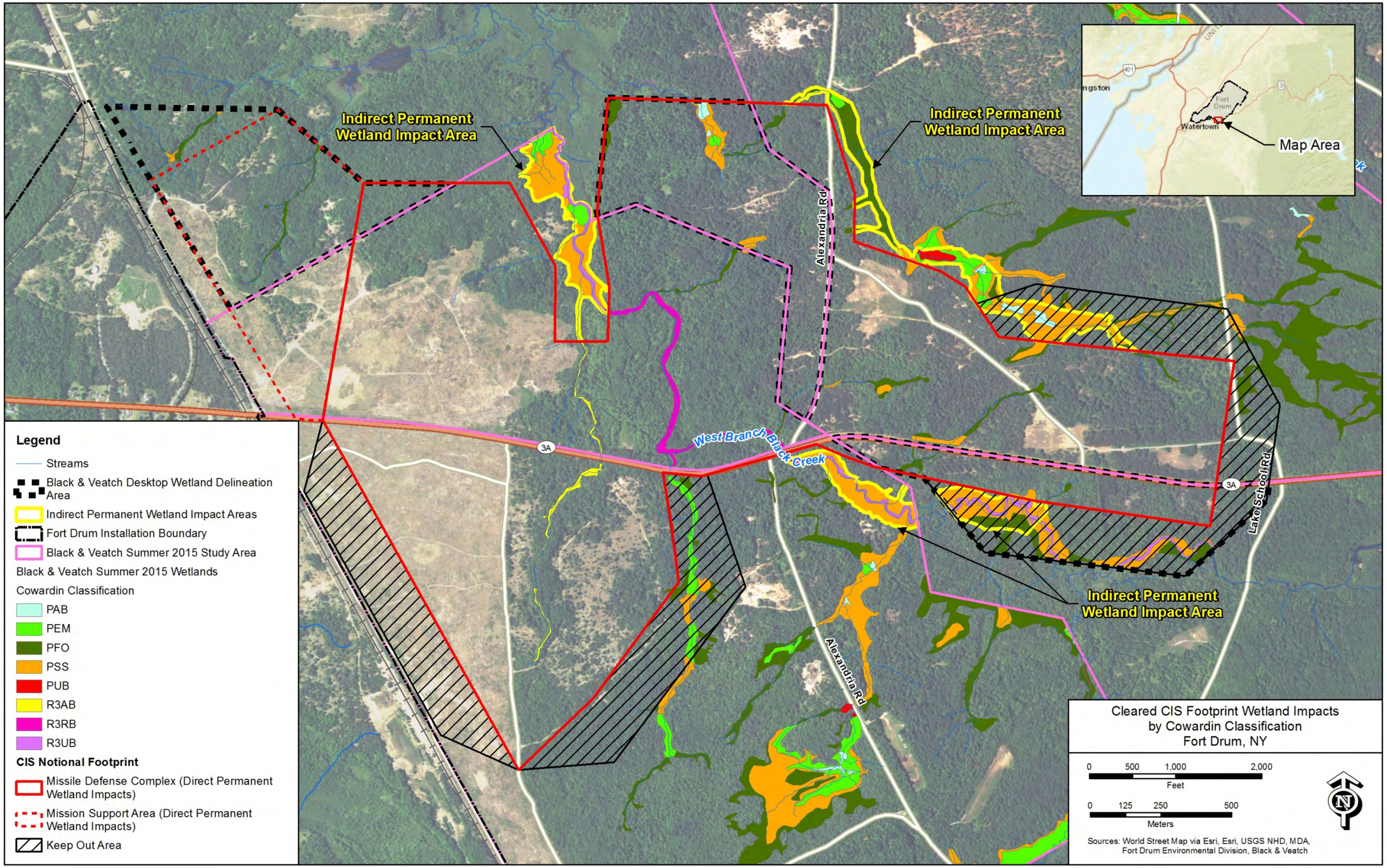
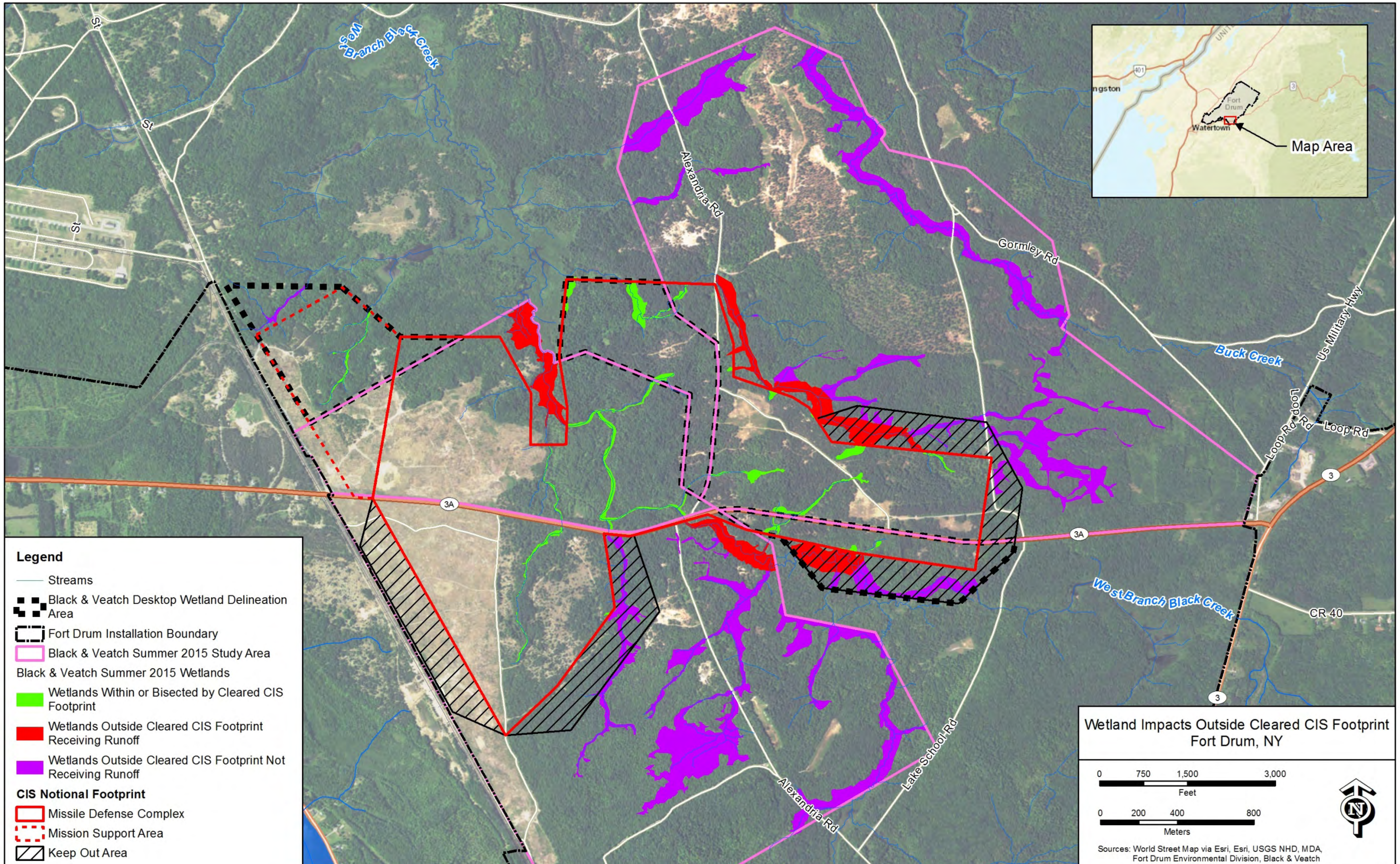


Figure 3.5.15-5 Wetlands Impacts Outside the Cleared Footprint – FTD



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3.5.16 Visual/Aesthetics– FTD

Visual resources are the natural and man-made features that constitute the aesthetic character of an area. Topography, surface water, vegetation, and man-made features define the visual environment and form the overall impression that an observer receives of an area. The importance of visual resources and any changes in the visual character of an area is subjective and influenced by social considerations, including the public value placed on the area, public awareness of the area, and community concern about the visual resources in the area.

3.5.16.1 Regulatory Environment – Visual/Aesthetics – FTD

Viewsheds are regulated by federal, state, and local land use and zoning codes. For example, local jurisdictions may independently designate scenic highways or other features that are of local importance. Federal laws governing this resource include the following:

- Wild and Scenic Rivers Act of 1968 (16 USC 1271) - Preserves certain rivers with outstanding natural, cultural and recreational values in a free-flowing condition for the enjoyment of present and future generations. Preserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.
- National Trails System Act of 1968 (Public Law 90-543, 16 USC 1241) - Institutes a national system of recreation, scenic and historic trails and prescribes methods by which components may be added to the system. Institutes a national system of recreation, scenic and historic trails and prescribes methods by which components may be added to the system.
- NHPA of 1966, as amended (36 CFR Part 800) – Preserves historic and archaeological sites in the U.S. Preserves historic and archaeological sites in the U.S.

3.5.16.2 Affected Environment – Visual/Aesthetics – FTD

3.5.16.2.1 Visual Impact Assessment Methodology

The Visual Impact Assessment characterized the visual quality of the FTD area and defined CIS-related effects on visual quality from the perspective of local residents and/or visitors (the public). Specifically, the Visual Impact Assessment determined the following information about the potential CIS:

- Visibility from critical locations or vantage points by members of the general public.
- Effect on visual quality within the project viewshed. The total geographic area visible from a specified point is called the viewshed.
- Effect on scenic resources of state or national significance.

The potential CIS deployment at FTD, including the security lighting associated with the project, may impact the rural landscape in the surrounding area.

A Visual Impact Assessment was conducted using Google Earth and GIS to determine the project viewshed (the areas from which the potential CIS would be visible) and areas where there would be public sensitivity to views of the FTD site. A site visit was also made to FTD and the surrounding area to confirm the areas identified as having potentially sensitive views. Areas from which there would likely be public views, in the professional judgment of the visual impact assessment specialist, were documented through photographs. AutoDesk Revit and Adobe Photoshop software were used for day and night photograph-based simulations to estimate the visual impacts of the potential CIS deployment.

Viewshed Analysis

The project viewshed was determined using GIS-based elevation, land contour, and land cover data and assuming the tallest structure on the potential CIS would be 50 feet AGL. The majority of the potential CIS structures would be less than 50 feet tall; the communication tower(s) would be the tallest and would have heights of approximately 50 feet.

A 5-mile viewshed is typically considered adequate for viewshed analysis for most major actions. This 5-mile distance criterion originated from the U.S. Forest Service "distance zones" described in their 1973 landscape management journal (USDA, 1973). The USDA reasoned that an area that is 5 miles from an observer is still largely considered background, or a distance at which most activities are not a point of interest to a casual observer.

GIS viewshed data and Google Earth image investigations indicated that there would be relatively few publicly accessible views of the site from the surrounding area when vegetative screening is taken into account. It was verified during a field visit to FTD that the forested areas near FTD generally contain various sizes (height and spread) and ages of trees and substantial understory plants that screen views.

Key Observation Points (KOPs)

As part of the desktop viewshed determination and evaluation, KOPs were identified within the viewshed. KOPs are intended to provide the reader with a representative view of the object of interest (in this case, the project site) from selected vantage points that are publicly accessible and/or have potential visual sensitivity.

KOPs for the visual assessment were selected based on the results of the viewshed analysis, desktop review of topography and sensitive features near the site, accessibility, and the professional judgment of the visual impact specialist (refer to Figure 3.5.16-1 for a map of preliminary KOP locations). The KOP locations were verified during the field visit and were subsequently narrowed down to account for accessibility and location-specific conditions that were not as apparent during the desktop review (or that changed based on the site layout change after the visual fieldwork was conducted). These field-verified areas are the residences west of the CIS footprint and FTD western boundary and the east end of Highway 3A as it exits the CIS footprint area of the FTD installation; however, there is an existing view of the installation that drivers on Highway 3A are likely already accustomed to seeing as they drive through. The KOPs evaluated included the locations listed in Table 3.5.16-1 and shown on Figure 3.5.16-1.

Table 3.5.16-1 Key Observation Points at FTD and Field Observations

KOP or Location Visited (refer to Figure 3.5.16-1)	Field Observations
1-Unnamed hills SE of site (throughout this area)	Topography in the area southeast of the potential CIS prevents views.
2-Alexandria St (both sides of Hwy 3A)	Would no longer be a public viewpoint with current site layout; portion north of Highway 3A would be in the CIS footprint; portion south of Highway 3A would have view mostly shielded by forest.
3-Oliphant Hill	No public view available
4-Hewitt Park	Topography in the area southeast of the potential CIS prevents views.
5-NRHP Listing – Jefferson County, NY	Distance and topography prevent views.
6-NRHP Listing – Jefferson County, NY	Distance and topography prevent views.
7-NRHP Listing – Jefferson County, NY	Distance and topography prevent views.
8-NRHP Listing – Jefferson County, NY	Distance and topography prevent views.
9-Black River	Distance and topography prevent views.
10-Boyd Rd.	No public view; not a public road – is the perimeter road along the west boundary inside FTD.
11-Hwy 3A through site	Expansive view both north and south; would be closed to the public if potential CIS deployed at FTD.
12-Hwy 3A & Lake School Rd Intersection	Forest near intersection would block views.
13-West side intersection Hwy 3 & Hwy 3A	Forest for about 0.92 mile blocks view between this area and CIS footprint.
14-Gormley Rd.	No public view; forest prevents views.
15-Ney Hill	No accessible/public view.
16-Commercial/homes around Loop Road	Forest and distance prevent views.
17-Barr Hill	No accessible/public view.
18-Ward Hill	No accessible/public view.
19-Orvis Hill/Peck Rd.	View of main residential part of FTD; no view of CIS footprint.

3.5.16.2.2 Visual Character of the Continental United States Interceptor Site Footprint and FTD

The visual environment of the potential CIS deployment includes characteristics of a natural successional community, with low vegetation, scrub-shrub, and mature forest all present on the site. There is limited evidence of human use, such as military installation roads around the perimeters of the multiple range areas overlapped by the site. Highway 3A, a two-lane, paved state highway, passes east-west through the site toward the southern portion, and there are occasional additional gravel roads that traverse the ranges comprising the CIS footprint. Much of the area north of Highway 3A is forested or features scrub-shrub vegetation, while the portion south of Highway 3A is covered by lower growing vegetation and scrub-shrub with more limited forest areas. Much of the site appears to be in transition from previous clearing toward successional forest; some of this clearing was performed and is maintained to facilitate restoration of northern sandplain grassland habitat in the CIS footprint.

The interior of FTD and the ranges on the installation are largely shielded from public view except in the area along what would be the potential CIS western boundary, which is an open area with low-growing, scrub vegetation. There are several residences just west of the FTD installation boundary at the southwest corner of Highway 3A and the railroad tracks that have relatively little visual screening from the west and southwest of the CIS footprint. Highway 3A provides road access to this group of residences, some of which have much more surrounding forest screening than others. Views from Highway 3A include parts of the FTD ranges directly off the highway to the north and south. Highway 3 has views dominated by forest outside the FTD installation; it branches into Highway 3A in the portion that crosses FTD property (refer to Figure 3.5.16-2). The current level of traffic using Highway 3A is an annual average of 2,298 vehicles per day (NYSDOT, 2013).

FTD performs forest management actions on a regular basis to maintain range areas for military maneuverability, forest health, and wildlife habitat. Some tree removal is done through small clearcuts, but most is accomplished through thinning of forest vegetation or selective cutting of specific trees, depending on the goal for each area. This management style allows the overall visual character of the CIS deployment area and ranges to remain consistent, with minor changes occurring to specific areas as dictated by management goals. Members of the public traveling through FTD on Highway 3A would not typically be able to perceive these continuous, small changes in the visual landscape; however, there are occasional large timber cuts adjacent to Highway 3A that are clearly visible to motorists.

There are no formally recognized aesthetic or visual resources within the FTD footprint. In general, relatively dense forest cover and, to a lesser degree, limited topographic relief over most of the installation limits line-of-sight visibility and inhibit large-scale landscape viewing. Overall, site views are dominated by extensive areas of forest, expanses of open scrub vegetated areas used as training ranges, views of interior plant gravel roads, and the paved, two-lane Highway 3A running east-west through the CIS footprint south of the center of the footprint.

Forested areas are managed through the Forest Management Program using both clear cutting and selective cutting tree harvest methods. A minor concern that is considered in all installation forest management activities is aesthetics; however, aesthetic concerns do not prevent tree harvesting activities in any area. FTD is known for its pine plains in “old post” and its large maple forests in “new post” areas. Maintaining these species and the general size of the existing mixture of trees, as well as awareness of aesthetic concerns, leads to the Forest Management Program’s preference for selective cutting management methods whenever possible.

The visual character and the viewshed at FTD are influenced by the installation’s timber management and harvesting program. The installation is divided into various areas from which trees are cleared at certain time intervals, which creates a gradual and semi-regular minor change to the viewshed inside the installation. The sudden absence of trees and their attendant screening effect in some areas is likely to be noticed by public recreational users of FTD training areas and viewers outside the installation boundary such as residents west of the FTD boundary and drivers on Highway 3A (USAG, 2011).

Moderately rich wildlife viewing is available in most habitat areas, particularly in wetlands, secondary successional scrub-brush lands, and mature forest. The hardwood forest areas provide vibrant color displays in the fall, although views from any one area are limited by the density of surrounding vegetation (USAG, 2011).

FTD allows public access to 69,000 acres of the installation within the range area (approximately 66,000 acres) and cantonment area (approximately 3,000 acres) (USAG, 2011). Some of the public recreational uses allowed in the CIS footprint include hunting (including firearms use), cold water angling, trapping, camping, and hiking. Training areas are available for public access on a daily basis unless they are being used for military training purposes.

Night views of FTD from public areas are largely dependent on the intensity of natural lighting and, to a lesser degree, artificial light sources. Typically, nighttime visibility of natural features is limited. The several large entrances into FTD have security lighting and large, controlled entry portal areas. Other than the residential and cantonment areas on the opposite side of the installation from the CIS footprint, the entrance areas are the other main potential sources of glare or skyglow originating from the FTD installation. Streetlights (not downward directed) are present along the main thoroughfares of FTD and on residential streets in the installation residential neighborhoods.

There is virtually no light at night in the CIS footprint. This area is part of the range complex that is used for ground and helicopter practice maneuvers specifically because of the lack of artificial lights in that area. Some of this training includes night vision goggle training that requires minimal artificial lighting.

3.5.16.2.2.1 Cultural and Historic Sites

The NHPA requires federal agencies to take into account the effect of their actions on cultural resources. Cultural resources may be affected when a potential project may directly or indirectly alter any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The visual character of historic or cultural resources can be affected through such changes as physical destruction or damage, removal of the property from its historic location, change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance, and introduction of visual elements that diminish the integrity of the property's significant historic features (BLM, 2012).

Phase I archaeological surveys performed on various portions of the FTD installation indicate that there are numerous potential archaeological, cultural, or historic resources present, including structures, archaeological sites and districts, historic cemeteries, and traditional cultural properties. There are no currently listed cultural resources on the installation other than the LeRay Mansion Historic District in the western portion of the property (opposite side from the potential CIS); however, an unknown number of archaeological sites found in previous surveys have been identified as potentially eligible or eligible for NRHP listing (Army, 2010).

There are six NRHP sites on the FTD installation including five archaeological protected districts. These NRHP sites are discussed in Section 3.5.4 Cultural Resources. Outside FTD, the nearest NRHP listed properties to the potential CIS are multiple properties in the village of Carthage. The NRHP-listed and eligible resources in Table 3.5.16-2 were identified during desktop evaluation as those that could be potentially visually impacted based on distance from the site and terrain and other features between the FTD site and each listed property.

Table 3.5.16-2 National Register of Historic Places-Listed and Eligible Resources near Footprint – FTD

Name on the Register	Date Listed	Location	City or Town	Approximate Distance from FTD Installation Boundary (nearest point)
First Baptist – Church and Cook Memorial Building	02/05/2005	511 State St.	Carthage	2.7 miles S
State Street Historic District	09/22/1983	249-401 State St., 246-274 State St. and 106-108 Mechanic St.	Carthage	3 miles S
U.S. Post Office – Carthage	09/17/1988	521 State St.	Carthage	2.8 miles S
LeRay Mansion Historic District	07/11/1974	Northeast of Black River on FTD	Black River	Inside western FTD property (over 5 miles west of CIS footprint)

Based on visual impact assessment fieldwork in August 2015, LeRay Mansion Historic District is more than 5 miles west of the potential CIS and in a residential area characterized by winding streets and relatively heavy forest cover. Based on a field visit to the LeRay Mansion property, the view would extend only over its own property and the immediate vicinity.

Further information on these resources is included in Section 3.5.4 Cultural Resources.

3.5.16.2.2.2 Representative Views

Figures 3.5.16-3 through 3.5.16-6 show representative views of various areas on and near the CIS footprint, including views of installation roads, forest, and helicopter exercise areas near some of the potential CIS interceptor fields.

Figure 3.5.16-2 shows the locations where many of the photographs discussed in this section were taken on and around the FTD installation. The photo numbers on Figure 3.5.16-2 correspond to the last digits of the figure number in the text for the photo locations. For example, the location of Photo 3 corresponds to the photo shown as Figure 3.5.16-3. Photos located outside the area shown on the map view are not labeled.

3.5.16.2.3 Visual Character of the Linear Corridors

The existing offsite linear corridors serving FTD would be adequate to accommodate the potential CIS with water and electrical service. Design work is ongoing to determine the locations of the offsite and onsite corridors that would be needed to serve the potential CIS deployment. On the FTD installation, new utilities, if needed, would be installed within a 25-foot corridor of each side of existing installation roads. The corridor boundary of 25 feet on each side of roads would also apply to utilities that would need to be installed outside of the FTD installation. Refer to Section 3.5.13 for more information on utilities. Any new utility corridor to serve the CIS deployment, if needed, would follow one of the major internal roads to the point where it would transition to an offsite corridor.

Linear corridors in the area typically appear as cleared or low vegetation (grass) corridors through forest similar to that on the FTD installation.

3.5.16.2.4 Visual Character of the Surrounding Area

New Yorkers from the North Country, as the region around FTD is called, are known for their strength, courage, and rugged individualism. Generally, residents of the project area value the sense of place, the natural resources, agricultural heritage, and local, rural character associated with living in this region.

The FTD, New York area features a relatively flat landscape with some hilly features and extensive forest, with a moderate degree of development interspersed. Because forest shielding of most views beyond several hundred feet of major roads or highways is common in this area and because of its history of military use, the FTD area would generally not be considered visually sensitive.

The area surrounding the FTD installation is characterized by rural and agricultural views, with mostly small towns and relatively few major highways present in the surrounding area.

3.5.16.2.4.1 Potentially Sensitive Viewpoints

Typically, potentially visually sensitive locations include residential areas, recreation areas, or parks and tourist attractions. There are a few residences near the FTD western boundary east of the location that Highway 3 becomes Highway 3A as it crosses onto FTD property; however, the nature of this area is not visually sensitive. The prominent features in the area of these residences are the highway, the railroad tracks, and FTD. Some members of the public who recreate on FTD land may consider some of the forest and other natural-appearing areas sensitive, but views are generally not available beyond the immediate area of forested parcels on FTD. Potentially sensitive views based on the desktop analysis can be seen on Figure 3.5.16-1 (Viewshed Map) and are pictured on Figures 3.5.16-7 through 3.5.16-10.

Existing FTD main and auxiliary entrance infrastructure is very visible from access points off Interstate 781, and signage for FTD is present along Interstate 81 and other major travel routes in the surrounding area. However, the FTD installation is not obviously visible from most of the surrounding area other than the controlled access points. Because FTD has been an existing military installation in various forms since the early 1940s and generally appears unobtrusive in areas other than the main access gates, infrastructure associated with FTD is likely to be accepted by most observers and recreational users as part of the expected view in the area.

3.5.16.2.4.2 Night Views

At night, lighting is concentrated near the towns surrounding FTD and some hotel, gas station, and restaurant developments along I-81. The area visible from the highway at night is generally confined to that illuminated by the security lighting, which would be bright enough to make any available views of the lighted portions of the FTD installation much dimmer by comparison to a driver on the highway. The FTD main entrance lighting can be seen momentarily from certain vantage points on I-81.

There is little artificial night lighting in the immediate vicinity of the FTD installation, and especially near the CIS footprint. Along some local roads near residential areas in proximity to the installation, there are standard residential streetlights, as well as periodic lighting along I-81.

Existing night views from the west boundary of the CIS footprint are shown on Figures 3.5.16-11 and 3.5.16-12.

3.5.16.3 Environmental Consequences and Mitigation– Visual/Aesthetics – FTD

3.5.16.3.1 Construction – Baseline Schedule

3.5.16.3.1.1 Environmental Consequences

Onsite Impacts (CIS Footprint and FTD Installation)

The potential construction would first require clearing the wooded and shrub vegetation from the project site, dewatering the interceptor installation area, and constructing the potential access roads to the multiple groups of buildings that are part of the site. Refer to Section 2.9.3 for cleared area acreage. Interceptor field areas in the west and southwest portion of the CIS footprint would require minimal clearing, as this relatively large area north and south of Highway 3A is occupied mostly by low-growing scrub vegetation.

Site Clearing and Construction Activities. Activities contributing to visual impacts would include clearing of trees and vegetation and associated piles of vegetative debris, and views of workers cutting the debris to smaller sizes or otherwise preparing it for sale or disposal. Views of construction workers and machinery, including bulldozers, chainsaws, and logging equipment, would be seen during the site clearing stage. The overall view of the site would change from largely natural or unmaintained rural landscape and forest to a denuded, flat expanse of soil through the site preparation and utilities construction. Underground water and other service lines and underground and aboveground lines as needed to connect the potential CIS structure construction areas into the local substation and electrical grid would appear during this time, with soil from buried lines being stockpiled, as well as accumulations of power line poles and other equipment in various areas of the site. The number of visible construction workers would substantially increase after site clearing, particularly with the onset of heavy construction. Incoming and outgoing construction vehicular traffic on Highway 3A would likewise increase, although Highway 3A would be closed to public traffic if the FTD site is selected.

The majority of the visual impacts of potential CIS construction would be confined to the interior of the FTD installation and would be most visible to personnel working at the installation. Public views of the major clearing and construction locations would be limited in most locations by the shielding effect of the dense tree cover between the perimeter of the FTD installation and the interior of the site, with the exception of the residential area along the west side of the potential CIS, where a few residents would still access their homes at what would be the eastern terminus of Highway 3 and where there is little vegetation or other screening of the view toward the CIS footprint. The potential CIS fencing and construction areas north and south of Highway 3A would be very visible to these nearest residents and would be about 546 feet northeast of the nearest residence on the north side of Highway 3A and 900 feet east of it south of Highway 3A. The heavy construction portion of the work on the potential CIS (and the accompanying traffic) would be clearly visible to the nearest residence at this distance and a substantial change from the pre-construction view of this area (refer to Figures 3.5.16-5 and Figure 3.5.16-6).

Fugitive Dust. A primary concern at many large construction sites is the potential for visible dust to be created by construction equipment traffic or windborne clouds of dust rising from cleared areas. Construction of the potential CIS would involve large acreages of exposed soil and soil stockpiles after clearing is completed. This exposed soil may become windborne and, if present in large quantities, could accumulate on surfaces inside and outside the site, including vegetation, residences, vehicles, and other nearby features. This type of fugitive dust can create a negative visual impression of the area as being unclean or less scenic than it would otherwise be if construction were not ongoing. Similarly, the visible presence of construction equipment exhaust, especially after machines are started after a period of suspended construction work (such as a weekend, holiday, weather delay, etc.) or longer idle period before being used again at the site, may result in views of air pollution in the area. Refer to Section 3.5.1 for further information about air emissions during construction.

Litter. Improperly discarded waste from construction worker meals, material packaging, and other activities may also become windborne and accumulate along fence lines or on properties outside the site, degrading the viewshed on the site and in the surrounding area and potentially creating a negative impression of the project from the perspective of local residents.

Erosion and Sedimentation. Erosion and sedimentation from storm water runoff entraining bare soil in the onsite cleared areas, if not properly controlled, could change the appearance of onsite streams near the construction area from the typical clear to a brown, sediment-filled or cloudy and turbid appearance. However, such impacts would be very short-term or negligible with the implementation of BMPs.

Views of Construction Equipment and Facilities. Aspects of construction that may also negatively affect public and/or local perceptions of the viewshed could include the location of large aboveground oil or gasoline storage tanks near construction areas, the presence of increased fencing and fenced areas, lines of heavy construction vehicles waiting for access at a controlled access location, temporary parking and storage of construction equipment and materials, and large expanses of gravel surfacing over a formerly natural area. These types of changes may represent a positive impact to some viewers in terms of economic activity, while others may perceive this view in a negative way associated with the removal of the natural features that have been present over a long period of time at FTD.

Summary of Onsite CIS Footprint. The visual environment in the western boundary area of FTD would change from an open highway through residential, scrub, and forest landscape to a separated, controlled access environment divided into public and military access areas. The visual aspect of this area would change from a wide-open landscape with no fences into a divided landscape with residential properties on the west, an access control gate and fence to divide FTD from the residential area, and military lands separated from the rest of the area on the east.

Because of the general lack of visual sensitivity of the FTD area and the low likelihood of visual impacts in most areas outside the FTD installation, the potential CIS deployment's impacts on the aesthetics of the FTD area would not be major from a public perspective except at the few residences nearest to the west side of the CIS footprint, for which the visual impact would be moderate, especially if this area is used as a construction traffic access point in addition to the view of the actual construction activities in the distance. From the viewpoint of members of the public permitted to be on FTD for recreation, the visual impact would be moderate because of the large degree of change over an 977-acre area from largely forested and scrub vegetated natural looking areas with occasional clearings to an expansive cleared site featuring new buildings and structures; however, this type of change may be expected on a military installation where uses of certain portions of the property may be adjusted in accordance with training needs. There would be visual impacts related to increased traffic, but these would likely be confined to a portion of Highway 3/3A west of the potential CIS that has historically had heavy traffic. This pre-construction level of traffic is assumed to be rerouted south and through Carthage on Highway 3 rather than continuing to use Highway 3A if the FTD site was selected. Beyond the immediate area of Highways 3 and 3A, there is a relatively large degree of forest screening of the view from many residences in the area.

Overall, the magnitude of visual impacts on the potential CIS and that portion of the FTD installation would be moderate, mostly because of traffic increases that would be visually obvious and the 5-year duration of the CIS construction. The 5-year duration of construction impacts can be considered long-term temporary. The extent of impacts, which are largely onsite with limited offsite impacts mostly from traffic in and out of the site on Highway 3, would be considered localized and would not be noticeable in the wider region around the FTD site; however, this traffic would represent a visual impact for several nearby residents, because of the lack of visual screening by trees from the western boundary location.

<u>Onsite Impacts Linear Corridors and Substation</u>

Utility-related construction and installation of any new utilities needed would occur both outside the FTD installation (new 2-acre electric substation and lines along existing road ROWs) as well as along existing FTD interior installation roads. Utilities installed in existing road ROWs may impact an area of up to 25 feet out from road edges on both sides of roads where they are installed.

The visual impacts from construction at the new substation, the location of which has not yet been finalized, would depend on the environmental features surrounding the 2-acre site. Visual impacts would be moderated if the substation is constructed in an area removed from main local trafficways and residences and surrounded by forest vegetation or the industrial park; however, visual impacts would be greater if the substation is located in an agricultural area or open field or is near frequently used local roads or near residential areas. Linear corridor impacts would be experienced by both the public and onsite personnel, as utility lines would parallel existing roads on and offsite. These impacts would be very similar to the onsite construction impacts and would be temporary and minor because of the small area involved and the likelihood that at least part of the substation site would be screened from view by surrounding forest or other features. Construction visual impacts from linear corridors outside the FTD site would be more clearly visible, but would likely be in areas where infrastructure alongside roads is already present, which would somewhat reduce the degree of perceived impact and more easily blend with existing scenery.

If utilities were installed on the FTD installation along one of the main roads, depending on the location along the road, there may be a clear view of these construction activities for local residents near the installation boundaries. If utilities were installed in the interior of FTD, there would be no visibility to the public because of the distance from public viewpoints and the degree of screening by forested areas, in addition to the size of the FTD installation. Some residences near the installation boundaries may have views of construction personnel, activities, equipment, and any attendant dust or exhaust from utility construction.

<u>Offsite Impacts (Beyond FTD Installation)</u>

Most construction impacts, such as visible dust and exhaust, landscape scars, visible equipment, decreased forest from thinning, views of the security fences around the disturbed areas, additional truck traffic, and the presence of workers and construction equipment, would occur below the tree line of the forest around the perimeter of the FTD installation. Impacts would primarily be visible to nearby locations with little or no screening forest cover, such as the several residences just outside the west FTD installation boundary near Highway 3. Based on visual assessment fieldwork and the CIS footprint, the surrounding area beyond these points would not have views into the potential CIS during construction.

According to U.S. Army fieldwork studies conducted in 1963, in summer in a deciduous or coniferous forest, visibility was found to be limited to 330 feet or less into the forest in about 95 percent of cases. Visibility is between 100 and 200 feet in approximately 50 percent of cases, and visibility in forests with greater amounts of understory growth and taller understory plants decreases distance. In deciduous forests, visibility is generally about 40 percent greater in winter versus summer, or up to approximately 460 feet into a typical deciduous forest (DoD, 1964). The forested area between most residents nearest to FTD and the FTD installation boundary covers more than this distance at most locations except the residences just west of the installation and located along Highway 3. Based on the visual impact assessment field visit, there is substantial variety of types, heights, and spreads of vegetation in most forested areas on the installation, even without leaves on most trees. Because of this forest screening and the substantial distance between most residences and the nearest edge of the potential cleared area for the CIS deployment, views of the potential CIS from public areas outside the installation would generally not be available except along the west side of the installation where this screening is absent in the area of Highway 3/3A.

Large infrastructure projects can be perceived to compromise what residents feel is part of the quality of life in this region and the character of an area. Recreational users of lands near and on FTD may experience viewshed impacts depending on the season, especially during early morning and later evening hours when the security lighting for the project would be most visible and would have the highest contrast with the surrounding unlit environment. However, screening by forest vegetation between off-installation recreation areas and FTD would prevent substantial viewshed impacts beyond the FTD installation. The nearest major recreation area is Adirondack Park, over 6 miles east of the FTD installation.

Major adverse impacts to visual aesthetics of the site and vicinity are generally not expected from the construction of a potential CIS at FTD because of the closure of Highway 3A associated with the CIS deployment and visual shielding of the remaining portions of the site from public view by forest. Additionally, the FTD installation property completely surrounds the CIS footprint, precluding public views of the potential CIS with the exception of views from several residences just west of the western FTD boundary.

Transportation. Construction of the potential CIS at FTD would involve increased traffic, especially during the heavy construction period. Highway 3 (off FTD) going into Highway 3A (on FTD) may be used as a main construction entrance. There would be a large amount of vehicle and human traffic in this area, which is near a few residences just off the highway.

The existing average traffic level on Highway 3A is 2,298 vehicles per day (NYSDOT, 2013). If the potential CIS were to be deployed at FTD, Highway 3A would be closed to the public in preparation for project construction. All traffic that formerly used Highway 3A would likely use Highway 3. Highway 3 branches into Highway 3A across FTD and the portion of Highway 3 that continues through Carthage. The existing average traffic level on the portion of Highway 3 before the split is 5,470 vehicles per day, which is likely representative of what the total load on Highway 3 may be without public access to Highway 3A. The combined traffic levels on Highway 3 after the Highway 3A closure would almost double the traffic on the west side of Highway 3 (2,850 vehicles per day) and more than double that on the east side (2,060 vehicles per day) assuming that vehicles travel the whole route around FTD. This level of traffic equates to almost five vehicles per minute on Highway 3, assuming for purposes of estimation only that most traffic is spread evenly throughout 20 hours of each 24-hour day.

This traffic rerouting would increase traffic and the visual impacts of that traffic through the towns of Herrings and Carthage. Combined traffic levels on Highway 3 would have a noticeable visual impact through these small villages. The rural, small town atmosphere could be perceived as degraded because of the visible increase in traffic and potential congestion in Carthage at rush hour in the morning and evening. The potential for increases in traffic congestion and other impacts such as increased vehicle emissions and noise in Carthage and degradation in the LOS of Highway 3 are likely to occur. Additional details on impacts from the rerouting of traffic from

Highway 3A to Highway 3 are included in Sections 3.5.12 Transportation, 3.5.1 Air Quality, and 3.5.10 Noise.

Visual impacts from transportation during construction would be most noticeable to residents or other users of the area near FTD, especially regarding the increased quantity of vehicles that would be using Highway 3 and nearby highways. For transportation of potential CIS components to the site at night, the lighting on vehicles and their headlights in greater quantities than the typical area traffic would be the most noticeable impact. Visual impacts of transportation of potential CIS components to the site from their arrival port are not expected to be distinguishable from impacts of normal, existing traffic on highways along the route except for the potentially larger size and slower speed of the transport vehicles. Because the construction traffic near the site would vary with the stages of construction and views of increased traffic would be temporary and spread out over time across the 5-year construction period, and it would not be expected that nearby residents would spend long intervals observing the traffic, visual impacts from transportation are expected to be minor except to the several residences just west of the western FTD installation boundary near the potential CIS location which would likely experience moderate impacts. Refer to Section 3.5.12 for further information about transportation during construction.

Lighting. Site clearing would most likely take place in the winter months and activities would likely extend into the evening hours. Nighttime construction activities may also take place at other times if required. Night construction activities are planned, but would be temporary and of short daily duration (about 30 percent of the total construction time period). It is expected that there would be minimal impact from lighting during construction. It is not expected that constant security lighting would be used during construction because the construction site would be located inside an access-controlled military installation.

Lighting impacts during construction would vary seasonally and be more pronounced during the portions of fall, winter, and spring when there is decreased daylight available in each working day. Depending on the start time of construction work shifts, the 10 hour daily shift would potentially need lighting for two or more hours each shift, especially in the later part of each year approaching winter.

Snow and its increased reflectance of light would also affect the seasonal impact of night lighting at the potential CIS during construction. Most terrestrial environments have reflectance, or albedo, of about 30 percent. New snow and melting snow have approximate reflectances of 80 and 70 percent, respectively, which would represent an albedo about 2.5 times higher than the non-snow covered surface (Warren, 2007). As construction progresses and greater numbers of lights are used at the site, the lighting impacts to the nearest group of residences would increase, especially in winter with the heavy snow cover typical at FTD. Snow removal would occur in various areas of the CIS footprint as required for proper function of the potential CIS and access to the various areas. Depending on where snow is stockpiled and where it is left without removal, light may be reflected inward toward the potential CIS and slightly decrease the reflectance of the artificial lighting. Where snow is not removed, the more reflective surface could result in more noticeable skyglow, especially during cloudy conditions. The effect of the presence of snow on the visual environment would be an increase in the overall brightness of the CIS footprint area at night.

Linear Corridors. Utilities installed in existing road ROWs may impact an area of up to 25 feet out from road edges on both sides of roads where they are installed. MDA has conducted a utility study that would be referenced to determine the specific locations of offsite utility corridors (BVSPC, 2016a). The visual impacts of these offsite corridors are expected to be very similar to impacts for onsite linear corridors, except that the offsite corridors would have their entire extents in public ROWs that would be visible to motorists on local roads and highways and to pedestrians and cyclists using area sidewalks and roads. Because the offsite utilities would be installed along existing road corridors and most roads already have cleared and maintained ROWs of 15 to 20 feet on each side, any forest or other vegetation clearing required and the visual impact from clearing and construction of the line would be relatively minimal, and substantially less than creating an entirely new corridor cleared through forest. The general area around FTD is not considered scenic or visually sensitive except in locations farther east that are in closer proximity to Adirondack Park (over 6 miles east); therefore, offsite utilities should have only a minor visual impact on existing road corridors.

Cultural and Historic Sites. Numerous archaeological, cultural, and historic resources on the FTD installation may be or are eligible for NRHP listing; however, before potential CIS construction would begin, detailed surveys would be conducted on the entire CIS footprint to be disturbed. Any resources that would be impacted would be fully inventoried and documented before being impacted if they could not be avoided by the CIS deployment. Any resources eligible for NRHP listing that could be impacted would be subject to the New York SHPO's advice and agreement about how to minimize impacts to the resource. For any of these resources outside the CIS footprint, it is expected that the substantial forest cover on much of the rest of the FTD installation would negate the potential for views between any NRHP listed or eligible cultural resources and the CIS footprint.

The potential CIS would not be visible from any of the NRHP listed or eligible sites in the vicinity of the FTD installation (outside the installation boundary). The general forest cover in the area that serves to screen views, as well as the topography and the distance to the NRHP listed properties, preclude the possibility of the views from these properties being impacted by construction of the potential CIS. Because of the distance and topography between the NRHP listed properties and the potential CIS and because of the minimal lighting levels expected to be used, it is also unlikely that skyglow or other night lighting during the potential CIS operation would be visible from cultural or historic sites. Visual impacts to cultural and historic sites are therefore expected to be negligible.

Baseline Construction - Overall Visual Impact Summary

Moderate public (offsite) visual impacts would consist mainly of views of utility infrastructure and greatly increased traffic on area roads and especially at the west CIS entrance, as well as the change in visual environment for motorists that would come with the closure of Highway 3A. Overall, there would be moderate onsite impacts from forest removal and clearing, and the potential for fugitive dust.

Nighttime impacts would be moderate because, although construction would mainly be performed during the daytime, lighting would have a large impact on the few residences near the west FTD and CIS boundary due to the high degree of contrast from pre-construction to construction conditions. There would also be a greater potential for skyglow and visibility of lighting impacts, mainly from the west FTD and CIS boundary, during the winter season when lighting is needed at the start and end of each day of construction work.

3.5.16.3.1.2 Mitigation

The following impact minimization and mitigation measures may be implemented to reduce visual impacts at the CIS deployment construction.

The size of the CIS has been compacted as much as possible while still meeting military-specified clearances and distances for each type of building that is part of the CIS. CIS facility buildings would be designed to use materials and colors that avoid high visual contrast with the existing surroundings to the extent feasible.

Existing facilities (largely roads) would be used to the extent feasible so that additional structures and linear corridors may not need to be constructed. FTD, as a more developed and heavily used installation, has existing infrastructure that would partially accommodate the potential CIS deployment.

CIS preconstruction activities would include tree and brush clearing on the site, dewatering, grading, road building and/or improvement, and upgrading of existing utilities. Preservation of a buffer of existing forest between the FTD installation and the CIS footprint boundaries would minimize the potential for visual impacts from public and most nearby residential viewpoints. Consideration could be given to further limiting the removal of trees and other vegetation during construction to minimize visual impacts, especially with regard to clearing and construction that would be visible from the west boundary of the CIS footprint.

Dust control measures, potentially including water spray onto construction roads and gravel surfacing on bare, heavily trafficked areas, would be used to control visible dust from construction areas on the potential CIS. Erosion control and storm water BMPs would also be implemented during construction. Refer to Section 3.5.9 Land Use and 3.5.14 Water Resources for further information about dust and erosion control measures to be used.

Disturbed areas within utility ROWs would be reseeded with grass, but large bushes and trees would be prevented from growing in these areas as part of routine maintenance activities. Permanently cleared ROWs on such corridors would be visible wherever a line of sight between the observer and ROW in question occurs (mainly road and wetland crossings).

The use of fully recessed, Dark Sky approved lighting in accordance with the guidelines of the International Dark Sky Association would be used as a lighting impact minimization measure throughout the potential CIS deployment, in particular to reduce the lighting and skyglow impacts on nearby areas such as the residences near the west side of the CIS footprint. Nighttime construction activities would occur. Temporary construction lights would be directed downward, would be the minimum size and number needed to do the work, and would only be used onsite for the amount of time they are needed.

Besides the use of LED and Dark Sky approved fixtures, the use of other measures could be incorporated, if practicable, to help with a more natural lighting appearance. These could potentially include the use of correlated color temperatures (CCT) at or below 3000 Kelvin to more closely approximate natural moon lighting to minimize human and wildlife circadian rhythm disruption by artificial lighting. Security specifications for lighting may conflict with this type of more natural lighting, but more natural lighting could be considered where security specifications allow.

Also, if practicable, a vegetation screening area could be planted in the area of the potential CIS entry/exit to shield some of the visual and lighting impacts from the nearest residences west of the FTD boundary.

3.5.16.3.2 Construction - Expedited Schedule

3.5.16.3.2.1 Environmental Consequences

Visual impacts would be very similar during the expedited schedule and the baseline schedule; the clear difference would be the earlier timeframe when the visual impacts would begin to occur with regard to the construction schedule, the greater intensity of the impacts, and the increase in the number of overlapping impacts with many activities occurring concurrently during the expedited schedule work. The visual impacts would be moderate, especially to the several residences just outside the west gate with almost constant day and night large truck traffic. At night, vehicle headlights and construction lighting would be visible to these residences at almost all times during the nighttime work and the shorter daylight seasons (late fall, winter, and early spring).

There would be a controlled access gate (entry and exit assumed to occupy both former lanes of Highway 3A) just east of the railroad tracks at the west end of the FTD property that would partially block the view from the residences just outside the gate; however, they would continue to be able to see the majority of the CIS footprint. This view would include day and night construction machinery and logging equipment activities, entry and exit of a relatively constant stream of worker, delivery, and construction vehicles to support the three work shifts per day, construction lighting for night activities, shift change traffic, clearing, grading, temporary excavated soil piles and piles of cleared trees, construction of buildings, fences, temporary fuel storage tanks for refueling construction equipment, portable toilets, and similar sights typical of a large construction project. Snow removal equipment would also be a common sight during the winter months.

Construction temporary lighting would be installed sooner than in the baseline and more lights would be used at the same time to accomplish more of the work more quickly.

Although impact minimization measures such as wetting of roads, addition of gravel surfacing, and adherence to speed limits would be implemented during the expedited construction, the continuous high level of construction activity on the site would be likely to raise substantial amounts of visible dust, particularly because the site is expected to be fully cleared rather than cleared only in areas where structure construction would occur. With no vegetation remaining to stabilize the soil, especially in dry and/or windy conditions, the heavy construction machinery traffic would sink into the soil, grind the top layer and compress the soil, and potentially release large quantities of dust as traffic increases during construction. As with the majority of visual impacts to the general public, the dust in the construction area would be visible to several residences outside the west boundary of the CIS footprint and any curious drivers who may pause to look in from the east extent of the former Highway 3A.

Expedited Construction - Overall Visual Impact Summary. Visual impacts from expedited construction would be moderate and very similar to the baseline schedule impacts with increased intensity of construction activities and vehicle traffic from the compressed/expedited schedule and more directly observable lighting and skyglow (at residences outside west CIS boundary) from use of construction lighting all night, every night.

3.5.16.3.2.2 Mitigation

Mitigation measures for visual impacts during expedited construction would be the same as those for the baseline schedule. If visual screening through vegetation planting was found to be practicable to minimize the visual impacts to the group of several residences just west of the FTD west boundary, it would be expected that the vegetative screening area would be planted in the earliest stages of site design and permitting to maximize its effectiveness. The vegetation planting area would be expected to be completed before heavy construction traffic begins to use the former Highway 3A as an entrance to the CIS footprint.

3.5.16.3.3 Operation

3.5.16.3.3.1 Environmental Consequences

After construction activities are complete, visual impacts would remain at a relatively constant level for the remainder of the life of the potential CIS deployment. The view would become familiar in time to the residents in the area around FTD such that the increased level of traffic and views of the CIS facility buildings near the west side of the CIS footprint would be an expected part of the view. Impacts to views from other areas are expected to be minor largely because of the degree of visual screening from forest that would be present between the CIS footprint and most public views into FTD.

During the growing seasons especially, the potential CIS and cleared security areas would be screened from almost all viewpoints, with visibility to the public only from the west side of the potential CIS at the nearest residence, which is only minimally shielded from view by widely spaced pine trees. The fence on the west side of the CIS footprint is 546 feet from the closest residence on the north side of Highway 3A and 900 feet from it south of Highway 3A.

In the winter with no leaves on most trees, the potential visibility of the structures would increase slightly, but views from any location other than the residence near the western part of the CIS footprint would be very unlikely.

Visible air emissions are possible, but unlikely, from the occasional maintenance start of the oil-fired power plant. Refer to Section 3.5.1 for further information about air emissions during operation.

Transportation. Transportation activities during operation would not be expected to impact the aesthetic character of the FTD installation area, as the potential CIS area has been used as a military training range and is not considered visually sensitive. Operation of the potential CIS would involve a level of traffic greater than what was present before construction, but much less than the volume of traffic during the time construction was at its height. During operation, it is likely that various shifts of workers would arrive at the potential CIS deployment at different times, and this in addition to Highway 3A being closed to the public would lessen the visual impact of traffic on roads near FTD. Traffic in general into and out of the site would be more regular, with less noticeable surges except for slight visible increases during traditional rush hour times on weekday mornings and evenings.

The visual impact of the rerouted traffic along Highway 3 through Carthage would continue, with increased traffic ongoing through the potential CIS operation period (permanent change).

The former Highway 3A would have a controlled access entry gate and would be visible to a group of residences close to the FTD western boundary in the CIS footprint. The FTD boundary on the east side of the former Highway 3A would be expected to be fenced to prevent public access. The former view from Highway 3A through the potential CIS at FTD would no longer be available to the public; the public views into this area would be limited to the area visible from each end of the former Highway 3A at the access control gates and/or fence.

Refer to Section 3.5.12 for further assessment of traffic impacts during CIS operation.

Lighting. Permanent lighting for security on buildings and in perimeter areas would consist of fully recessed, downward directed LED, International Dark Sky Association approved lights designed to minimize light pollution at night. This design, along with any vegetation left in place to help obscure the light, would ensure that the potential CIS lighting creates the least possible light trespass, glare, and skyglow for viewers and the public at neighboring properties.

The most noticeable continuing visual effect during operation would be the CIS lighting and its impacts on those who work at the CIS, live nearby (especially just west of the potential CIS near Highway 3A), or visit the installation for recreation. The potential CIS is located within the FTD installation such that the potential for moderate visual impact to the public, including impacts from lighting, would be limited to the extent practicable because the location has substantial forest screening from most locations and is situated in the interior of the installation rather than adjacent to most of the boundaries (except the west boundary). The residence nearest to the western boundary of the potential CIS would be moderately impacted by potential CIS deployment lighting, but these residences were present when the same area was used for helicopter maneuvers (with flashing lights) and when Highway 3A was a public, heavily traveled highway where headlights would have been seen regularly during low light conditions and at night. Even with the use of fully recessed lighting to prevent light pollution from the potential CIS deployment as much as practicable, the visual impacts from the potential CIS permanent lighting to these residences would be moderate because of the degree of change in the view from largely dark without permanent lighting to be developed with permanent night lighting. Views similar to what could be seen from these residences are simulated (without vegetation screening) on Figures 3.5.16-14 and 3.5.16-15.

Figures 3.5.16-13 through 3.5.16-15 show daytime views of existing conditions and simulated views at the same area during operation during day and night. Refer to Figure 3.5.16-15 for a simulated night view with a portion of the potential CIS deployment fully lit.

Because of changes in seasonal vegetation cover, visual impacts of the potential CIS deployment during the growing season when trees are leafed out would be somewhat less than those simulated and described herein; however, the west side of the CIS footprint is generally not shielded by forest vegetation as it is from other vantage points. MDA and the FTD environmental staff may choose to manage the forest in the areas subject to public view so that visual impacts would be further lessened, if practicable.

Security lighting around each block of buildings for the CIS would increase the visibility of the facility in the early morning, evening, and at night in comparison to its current, largely unlit state. The lighting to be used at the site would be fully recessed, Dark Sky approved, downward directed LEDs to minimize light trespass, light pollution, glare, and skyglow effects and to keep the lighting focused on the secure area around each group of potential CIS buildings. Because of their design, these light fixtures are not expected to have moderate skyglow effects above the height of the lights.

No FAA lighting would be required on the potential CIS structures because of the estimated maximum 50-foot height of potential CIS buildings, which does not trigger the 200-foot threshold for FAA lighting requirements.

An indirect impact of operational lighting of the potential CIS at night would involve the potential need for FTD to relocate some nighttime training activities formerly carried out in what was a naturally dark environment before potential CIS construction. Some night vision goggle training and helicopter training may need to be moved east toward areas of FTD that would maintain a greater level of natural darkness, where training would be more effective. It is expected that this impact would be minor because FTD nighttime training activities have been successfully conducted in the past even with sources of artificial light in relatively close proximity.

Overall, largely because of the fully recessed design of the lighting, the distance from most residences, and the forested areas expected to remain in place during operation, the visual impact from operation of the FTD potential CIS would be minor in that it would not be noticeable in most areas except at night, when the lights may contribute to a soft skyglow over the site in contrast to the largely unlit surrounding area. The lighting would be directly visible to several of the nearest residences west of the CIS footprint. Other nearby residences have more substantial forest between their locations and the potential CIS that would shield them from direct lighting impacts.

No direct public views are expected except those from outside the west potential CIS fence, which would be seen by only a few residents living in the area as they travel to and from their homes on what would be the eastern terminus of the public portion of Highway 3A. There would likely also be some visibility of the potential CIS from the former east end of Highway 3A, but the view would be linear along the forest-lined road opening into the more open area of the potential CIS in the distance. Otherwise, any direct view of the potential CIS deployment would only be available from inside the installation boundary.

Lighting impacts during operation would vary seasonally and be more pronounced during the portions of fall, winter, and spring when daylight decreases, especially in the later part of each year approaching winter.

Snow and its increased reflectance of light would also affect the seasonal impact of night lighting at the potential CIS during operation and could combine with the decreased daylight to increase the lighting impact, especially in winter with the heavy snow cover typical at FTD. Snow removal would occur in various areas of the CIS footprint as required for proper function of the potential CIS and access to the various areas. Depending on where snow is stockpiled and where it is left without removal, light may be reflected inward toward the potential CIS and slightly decrease the reflectance of the artificial lighting. Where snow is not removed, the more reflective surface could result in more noticeable skyglow, especially during cloudy conditions. The effect of the presence of snow on the visual environment would be an increase in the overall brightness of the potential CIS at night.

Cultural and Historic Sites. Numerous archaeological, cultural, and historic resources on the FTD installation may be or are eligible for NRHP listing; however, by the time of potential CIS operation, any of these sites that would be impacted would have been fully surveyed, a decision made on whether to list them in the NRHP, and sites would have either been inventoried or avoided by the potential CIS. For any of these resources outside the CIS footprint, it is expected that the substantial forest cover on much of the rest of the FTD installation would negate the potential for views between any NRHP listed or eligible cultural resources and the potential CIS.

The potential CIS would not be visible from any of the NRHP listed or eligible sites in the vicinity of the FTD installation (outside the installation boundary). The general forest cover in the area that serves to screen views, as well as the topography and the distance to the NRHP listed properties precludes the possibility of the views from these properties being impacted by operation of the potential CIS. Because of the distance and topography between the NRHP listed properties and the potential CIS deployment and because of the minimal lighting levels expected to be used, it is also unlikely that skyglow or other night lighting during the potential CIS operation would be visible from cultural or historic sites. Visual impacts to cultural and historic sites would be negligible.

Operation – Overall Visual Impact Summary. Minor to moderate aesthetic impacts would occur during operation. The majority of the visual impacts from operation of the CIS would be minor including skyglow effects; however, the clear visibility of CIS lighting from the residences west of the FTD and CIS boundary would continue to be a moderate impact at night.

3.5.16.3.3.2 Mitigation - Visual/Aesthetics

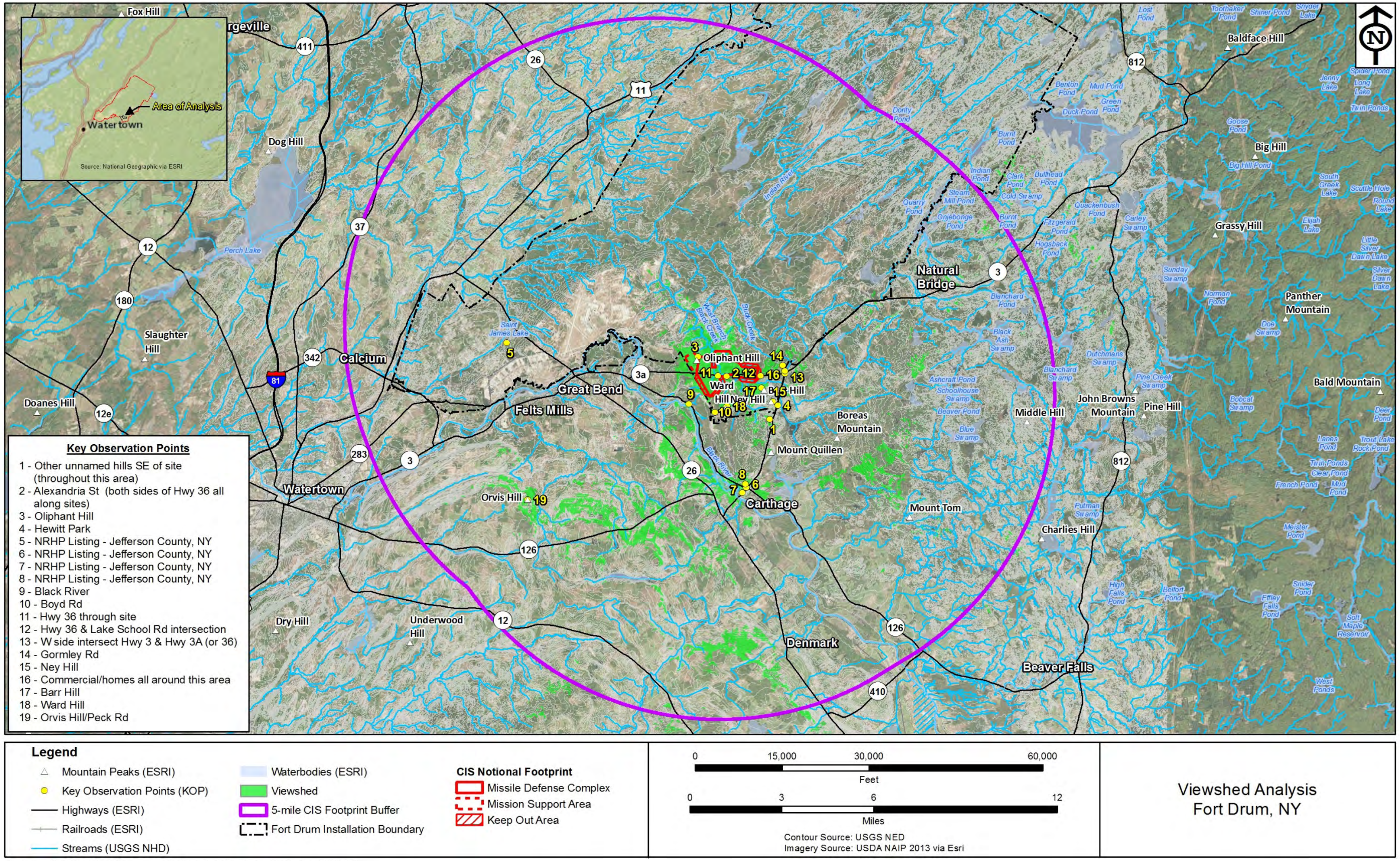
Mitigation for visual impacts during operation would be similar to the mitigation during construction in a general sense, and would include implementation of measures such as dust control if needed, although traffic and activity would be potentially creating dust at a much lower level during operation because roads and other surfaces would likely be covered by additional gravel layers and would have already been upgraded for use during CIS operation. It is unlikely that nearby residents would have views of the facility during operation with the exception of the residents at several homes just west of the FTD boundary, which is a few hundred feet west of the western CIS footprint fence. These homes would have views over a portion of the southern interceptor field area and the central mission support facility buildings, along with substantial views of potential CIS entrance/exit gate, perimeter fencing, and lighting.

Mitigation for the lighting and other visual impacts to the residences just west of the potential CIS and FTD boundary could include, to the extent practicable, a tree and vegetation planting area for visual screening near and around the western terminus of the former Highway 3A (this may be continued from construction or not implemented until operation). This vegetation screening along with the controlled access gate would shield the fairly extensive FTD potential CIS view from the nearby residences and would decrease the level of visual impact from the potential CIS night lighting. This mitigation measure could be implemented on both the east and west sides of the former Highway 3A, as needed.

MDA does not currently plan to plant vegetative screening or include other mitigation measures to reduce visual impacts from this area, as the area was used for helicopter training and other military exercises previous to the construction and operation of the potential CIS; the residences would have historically had views of helicopter activity and lighting; however, the permanent night lighting and perimeter fence would be a new visual aspect of the area near the residences to the west.

The CIS facility lighting plan would also seek to minimize aesthetic impacts and consider effects on night sky views. During the time before construction and operation of the FTD potential CIS, there was regular creation of temporary lighting and skyglow impacts from low-flying helicopter exercises conducted in the western portion of the potential CIS. Skyglow from operation of the potential CIS deployment would be visible in the area surrounding the FTD installation; however, the forest buffer around much of the potential CIS would reduce this effect except on cloudy nights, when it would be more noticeable as a slightly lighter area above the facility because of the light reflection off the clouds and back down toward viewers on the ground. Skyglow effects would be minimized during operation through use of fully recessed light fixtures that direct all light downward so that there is no glare from direct observation of the lights and very little light travels outside the area being lit or upward toward the sky.

Figure 3.5.16-1 Preliminary Viewshed Map - FTD



Ft_Drum_Viewshed_092816.mxd Author: K. Gallagher November 22, 2016

Figure 3.5.16-2 Photo Locations - FTD

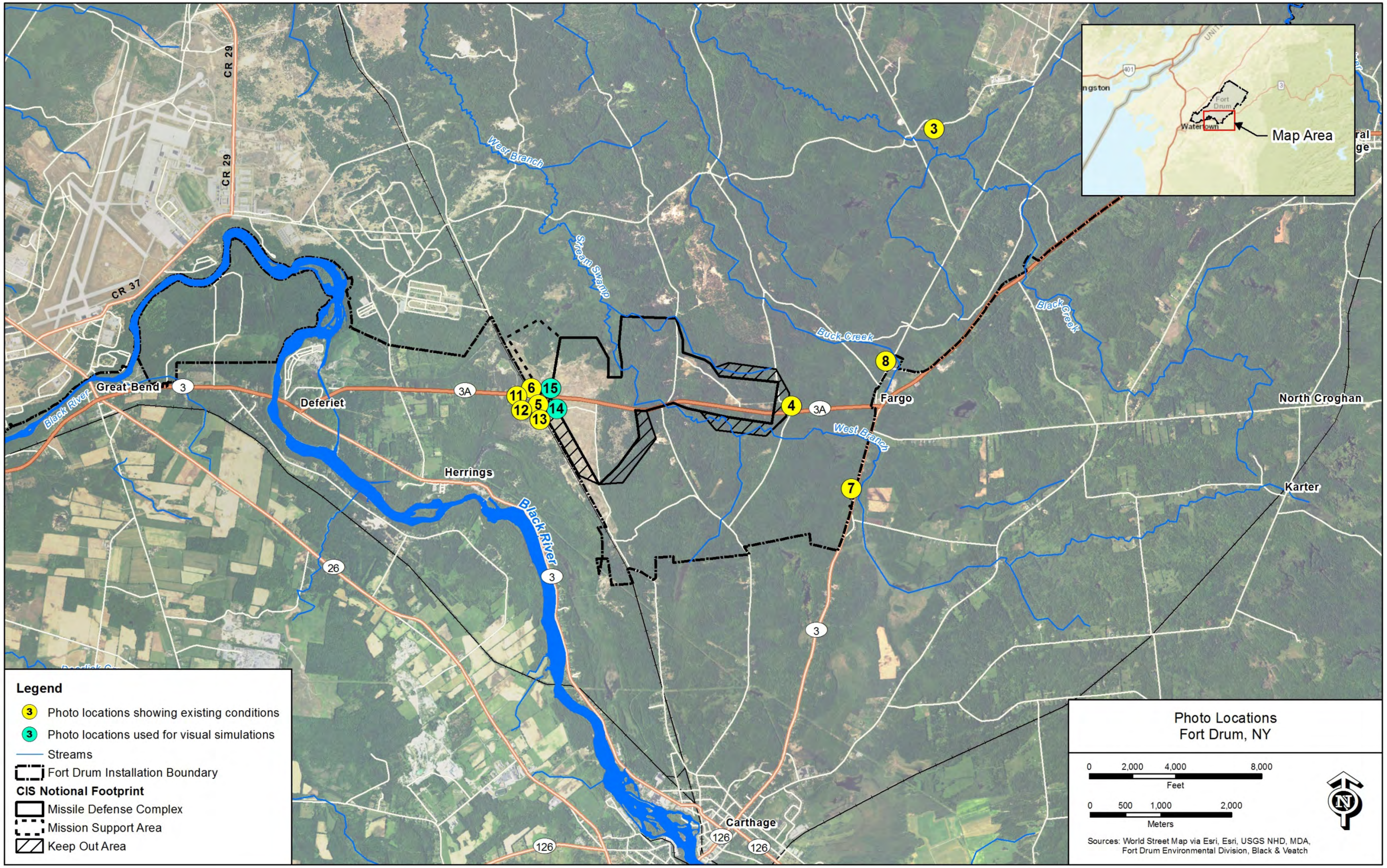


Figure 3.5.16-3   Representative View – Internal Roads - FTD

Photo Description: Installation internal roads.

Figure 3.5.16-4   Representative Public View - FTD

Photo Description: Public view from Highway 3A and Lake School Road intersection, facing north-northwest.

Figure 3.5.16-5 Representative View from Highway 3A –Looking Southeast - FTD

Photo Description: Just south of Highway 3A toward southeast (helicopter training area). Representative of current public view.

Figure 3.5.16-6 Representative View from Highway 3A –Looking Southwest – FTD

Photo Description: Just south of Highway 3A toward northeast (helicopter training area). Representative of current public view.

Figure 3.5.16-7 Potentially Sensitive Public View - FTD

Photo Description: Public view from Hewitt Park northwest toward CIS area.

Figure 3.5.16-8 Potentially Sensitive Public View – Loop Road - FTD

Photo Description: Pubic view from Loop Road residence toward CIS area, blocked by forest.

Figure 3.5.16-9 Potentially Sensitive Public View – Biomass Plant Area - FTD

Photo Description: Public view northwest toward FTD biomass plant area (in far distance) from Peck Road.

Figure 3.5.16-10 Potentially Sensitive Public View – Peck Road - FTD

Photo Description: Public view from Peck Road toward CIS area, blocked by forest.

Figure 3.5.16-11 Nighttime View – Natural Darkness – FTD

Photo Description: Looking southeast from railroad near portion of CIS footprint south of Highway 3A, showing natural darkness.

Figure 3.5.16-12 Nighttime View with Helicopter Skyglow – FTD

Photo Description: Looking southeast from railroad near portion of CIS footprint south of Highway 3A, showing momentary skyglow created by low-flying helicopter during cloudy conditions.

Figure 3.5.16-13 Existing View Over Western Portion of Site Footprint North of Highway 3A - FTD

Photo Description: Looking east-northeast. Representative of current public view.

Figure 3.5.16-14 Simulated Public Daytime View – FTD

Photo Description: Simulated daytime appearance of CIS gate north of Highway 3A. Existing view shown in Figure 3.5.16-13.

Figure 3.5.16-15 Simulated Public Nighttime View – FTD

Photo Description: Simulated nighttime appearance of CIS gate north of Highway 3A. Existing view shown in Figure 3.5.16-13.

3.5.17 Cumulative Impacts - FTD

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR Part 1508.7). Cumulative impacts can result from individually minor but collectively substantial actions taking place over a period of time.

Several steps are involved in determining cumulative impacts. First, the significant cumulative effects issues associated with the potential action must be identified and the assessment goals defined. Second, the geographic scope or boundaries must be established; this is often referred to as the "project impact zone." Third, the timeframe for the analysis must be determined taking into consideration the timeframe of the project-specific analysis. Lastly, other actions affecting the resources, ecosystems, and human communities of concern should be identified (CEQ, 1997).

In order to evaluate cumulative impacts due to the potential CIS, FTD personnel and several local and regional agencies, departments, and/or groups were contacted to identify projects within or near FTD which may be impacting or providing contributing impacts to resources within the same geographic area, spatial timeframes, and duration as the CIS (CEQ, 1997). Specific criteria considered for identifying applicable projects included the following:

- Geographic boundaries – the project must occur within the same site boundaries (installation), community, and/or region as the potential CIS.
- Timeframe – the project must be ongoing or occur within the same timeframe as the anticipated CIS project construction.
- Impacts to resources – the project must impact the same resources as evaluated in this EIS (e.g., air quality, biological resources, etc.).

Responses were received from FTD personnel, Jefferson County Commissioner, City of Carthage Mayor's Office, and Lewis County. As of the date of this EIS, responses have not been received from the Town of Wilna, Lewis County Attorney's Office, West Carthage Planning Board, Town of Diana, Town of LeRay, and Town of Philadelphia (BVSPC, 2016c).

In addition, the NYSDOT "Projects in Your Neighborhood" List was reviewed to identify DOT projects within the geographic region of the CIS (NYSDOTA, 2016b). Several DOT projects are scheduled to occur prior to 2017 which include culvert replacements and bridge construction. Given the small scale of these projects, impacts to resources are not expected to be significant either individually or cumulatively with the construction of the potential CIS.

Based on the criteria outlined above, and the information provided by the agencies/groups contacted, there were no past, present, or foreseeable future projects identified within the installation, community, or region which could result in cumulative impacts on the resources evaluated in this EIS (FTD, 2015e; BVSPC, 2016c; NYSDOT, 2016b).

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