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DRAFT
ENVIRONMENTAL ASSESSMENT
FOR
ENERGY SAVINGS PERFORMANCE AT
JOINT BASE McGUIRE–DIX–LAKEHURST,
NEW JERSEY



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Prepared by
Department of the Air Force
Joint Base McGuire-Dix-Lakehurst, New Jersey

15

February 2021

1 **DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

2 **Energy Savings Performance at Joint Base McGuire-Dix-Lakehurst, New Jersey**

3 Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States
4 Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ)
5 Regulations, Title 40, Code of Federal Regulations (CFR) §1500-1508, and 32 CFR §989,
6 Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential
7 environmental consequences associated with implementation of Energy Conservation
8 Measures (ECMs) at Joint Base McGuire-Dix-Lakehurst (JB MDL) in Burlington and Ocean
9 Counties, New Jersey, through an Energy Savings Performance Contract (ESPC).

10 The purpose of the Proposed Action is to increase JB MDL's energy security, resiliency, and
11 conservation. The Proposed Action is needed to comply with federal energy directives such as
12 the Energy Policy Act of 2005; Executive Order (EO) 13834, Efficient Federal Operations; and
13 DoD Instruction 4170.11, Installation Energy Management. It is also needed to support the
14 goals of the 2017-2036 Air Force Energy Flight Plan, which are to improve resiliency, optimize
15 demand, and assure supply (Air Force 2017).

16 The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the
17 potential environmental consequences of activities associated with implementation of ECMs and
18 provides environmental protection measures to avoid or reduce adverse environmental impacts.

19 The EA considers all potential impacts of Alternative 1 and the No-Action Alternative. The EA
20 also considers cumulative environmental impacts with other projects in the Region of Influence.

21 **ALTERNATIVE 1 (Preferred Alternative)**

22 The Proposed Action is to implement ECMs for electrical power and energy savings at JB MDL
23 through an ESPC with Ameresco. The proposed ECMs would modernize and optimize base
24 building systems while providing resiliency and mission continuity through a mix of distributed
25 generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.
26 At McGuire, Ameresco would install ground-mounted solar photovoltaic (PV) arrays at two
27 locations—North Run and Back 9. The PV arrays would collectively occupy about 50 acres and
28 generate a maximum of about 17 megawatts (MW) of electricity. The PV arrays would be
29 connected to a microgrid control system (MCS) and an 4-MW/8-MWh lithium-ion battery energy
30 storage system (BESS) would be integrated with the MCS to store energy generated by the PV
31 arrays and provide power in the event of a grid outage. The BESS would work in conjunction
32 with the on-base generation assets and the new MCS to allow the base to continue mission
33 critical operations in the event of a regional grid failure, brownout, terrorist attack, or utility
34 request for demand reduction. Additionally, solar PV panels would be mounted on one or two
35 carports to generate an additional 53 kilowatts (kW) or more of energy. Ameresco would also
36 install roof-mounted, ballasted solar PV systems on rooftops. At Dix, Ameresco would install
37 roof-mounted, ballasted solar PV systems on rooftops. The rooftop arrays would be installed on
38 approximately 10 to 15 buildings and generate approximately 5,000 to 8,000 kW of electricity.
39 At Lakehurst, Ameresco would install a ground-mounted 4-MW solar PV array on about 12
40 acres. An MCS serving the system would operate similarly as the system at McGuire. Each
41 solar PV array would be connected to existing electrical distribution system. The point of
42 connection would be within or near each site. Ameresco would also install roof-mounted,
43 ballasted solar PV systems on rooftops. Throughout JB MDL, Ameresco would also replace or
44 upgrade most luminaries and fixtures with new light-emitting diode (LED) fixtures and lamps;

1 upgrade existing heating, ventilation, and air conditioning (HVAC) control systems; replace
2 numerous transformers; install thermal glazing window film; replace failing mechanical
3 insulation; and replace a combined total of approximately 25 chillers, boilers, air handling units
4 (AHUs), and Air Conditioning Packaged units. Reasonable alternatives to the Proposed Action
5 were considered. A set of selection standards were developed to determine if reasonable
6 alternatives exist that are technically and economically feasible that would also meet the
7 purpose and need for the Proposed Action. Multiple alternative locations for the ground-
8 mounted solar PV arrays were considered. Only the Preferred Alternative met all the selection
9 standards.

10 **NO-ACTION ALTERNATIVE**

11 Under the No-Action Alternative, the Preferred Alternative would not occur and the identified
12 ECMs would not be implemented at JB MDL. Because no action would be taken, JB MDL's
13 security and resiliency would not be improved, since the installation would not be able to
14 produce electrical energy on-base. A reduced reliance on external power sources and continued
15 operation of mission critical assets in the event of a disruption in the regional power supply
16 would not occur. In addition, energy consumption would not be reduced.

17 **SUMMARY OF FINDINGS**

18 The analyses of the affected environment and environmental consequences of implementing
19 the Preferred Alternative presented in the EA concluded that by implementing standing
20 environmental protection measures and operational planning, the Air Force would be in
21 compliance with all terms and conditions and reporting requirements. The requirements of the
22 U.S. Fish and Wildlife Service's Programmatic Biological Opinion on the Final 4(d) Rule for
23 northern long-eared bat (NLEB) would be followed. The general conformity rules would not
24 apply to the Proposed Action because air emissions would be below significance indicators.

25 The Air Force has concluded that no significant adverse effects would result to the following
26 resources as a result of the Preferred Alternative: air quality water resources, safety and
27 occupational health, hazardous materials / waste, infrastructure and utilities, biological
28 resources / natural resources, cultural resources, and earth resources. No significant adverse
29 cumulative impacts would result from activities associated with Alternative 1 (Preferred
30 Alternative) when considered with past, present, or reasonably foreseeable future projects.

31 **FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

32 Based on my review of the facts and analyses contained in the attached EA, conducted under
33 the provisions of NEPA, CEQ Regulations, and 32 CFR §989, I conclude that the Preferred
34 Alternative for the implementation of ECMs would not have a significant environmental impact,
35 either by itself or cumulatively with other known projects. Accordingly, an Environmental Impact
36 Statement is not required. The signing of this Finding of No Significant Impact completes the
37 environmental impact analysis process.

38

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40 _____
SIGNATORY NAME, Rank/Title

Date

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ABW	Air Base Wing
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
AFMAN	Air Force Manual
AHU	air handling unit
APE	area of potential effect
BESS	battery energy storage system
BMP	best management practice
BOMARC	Boeing Michigan Aeronautical Research Center Missile Site
CAA	Clean Air Act
CdTe	Cadmium Telluride
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO ₂	carbon dioxide
DDC	direct digital control
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
EA	Environmental Assessment
ECM	energy conservation measures
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESPC	Energy Savings Performance Contract
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FY	fiscal year
GHG	greenhouse gas
GIS	geographic information system
HVAC	heating, ventilation, and air conditioning
ICRMP	Integrated Cultural Resources Management Plan
IICEP	Intergovernmental/Interagency Coordination of Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Con
IRP	Installation Restoration Program
JB MDL	Joint Base McGuire-Dix-Lakehurst
JCP&L	Jersey Central Power & Light
kW	kilowatt
LBP	lead-based paint
LED	light-emitting diode
Li-ion	Lithium-ion

LTA	Lighter-Than-Air
MBTA	Migratory Bird Treaty Act
MCS	microgrid control system
MMRP	Military Munitions Response Program
MW	megawatt
MWh	megawatt hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NLEB	northern long-eared bat
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NR	National Register
NRHP	National Register of Historic Places
O ₃	ozone
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PM _{2.5}	particulate matter 2.5 micrometers or less in diameter
PM ₁₀	particulate matter 10 micrometers or less in diameter
PV	photovoltaic
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SAGE	Semi-Automatic Ground Environment
SO ₂	sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
U.S.C.	United States Code
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compounds

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1 **1. PURPOSE OF AND NEED FOR ACTION**

2 **1.1 INTRODUCTION**

3 The United States Air Force (USAF) proposes to implement Energy Conservation Measures
4 (ECMs) to reduce energy consumption at Joint Base McGuire-Dix-Lakehurst (JB MDL) in
5 Burlington and Ocean Counties, New Jersey, through an Energy Savings Performance Contract
6 (ESPC). The proposed ECMs would modernize and optimize base building systems while
7 providing resiliency and mission continuity through a mix of distributed generation, energy
8 efficiency, infrastructure and targeted microgrid operation for critical loads.

9 JB MDL is approximately 16 miles south-southeast of Trenton and approximately 40 miles
10 north-northeast of Philadelphia (**Figure 1-1**). JB MDL was the Department of Defense’s (DoD’s)
11 first joint base and is the only joint base that consolidated Air Force, Army, and Navy
12 installations. It is home to five wings. The 87th Air Base Wing (ABW) provides installation
13 support to more than 88 mission partners across 42,000 acres at JB MDL. Base-wide energy
14 security and resiliency are critical elements to ensure the continuity of JB MDL’s mission.

15 This Environmental Assessment (EA) was prepared in compliance with the National
16 Environmental Policy Act (NEPA) of 1969 (*42 United States Code* [U.S.C.] section 4331 et
17 seq.), the regulations of the President’s Council on Environmental Quality (CEQ) that implement
18 NEPA procedures (*40 Code of Federal Regulations* [CFR] Part 1500–1508), as updated July
19 16, 2020 (CEQ 2020), and the United States Air Force’s *Environmental Impact Analysis*
20 *Process* regulations at 32 CFR Part 989.

21 **1.2 PURPOSE OF THE ACTION**

22 The purpose of the Proposed Action is to increase JB MDL’s energy security, resiliency, and
23 conservation. The Proposed Action would reduce energy consumption at JB MDL, which would
24 in turn reduce greenhouse gas (GHG) emissions at the base and regionally. It would increase
25 JB MDL’s security and resiliency by enabling the installation to produce electrical energy on-
26 base, reducing reliance on external power sources and allowing for continued operation of
27 mission critical assets in the event of a disruption in the regional power supply.

28 **1.3 NEED FOR THE ACTION**

29 The Proposed Action is needed to comply with federal energy directives such as the Energy
30 Policy Act of 2005; Executive Order (EO) 13834, Efficient Federal Operations; and DoD
31 Instruction 4170.11, Installation Energy Management. It is also needed to support the goals of
32 the *2017-2036 Air Force Energy Flight Plan*, which are to improve resiliency, optimize demand,
33 and assure supply (Air Force 2017).

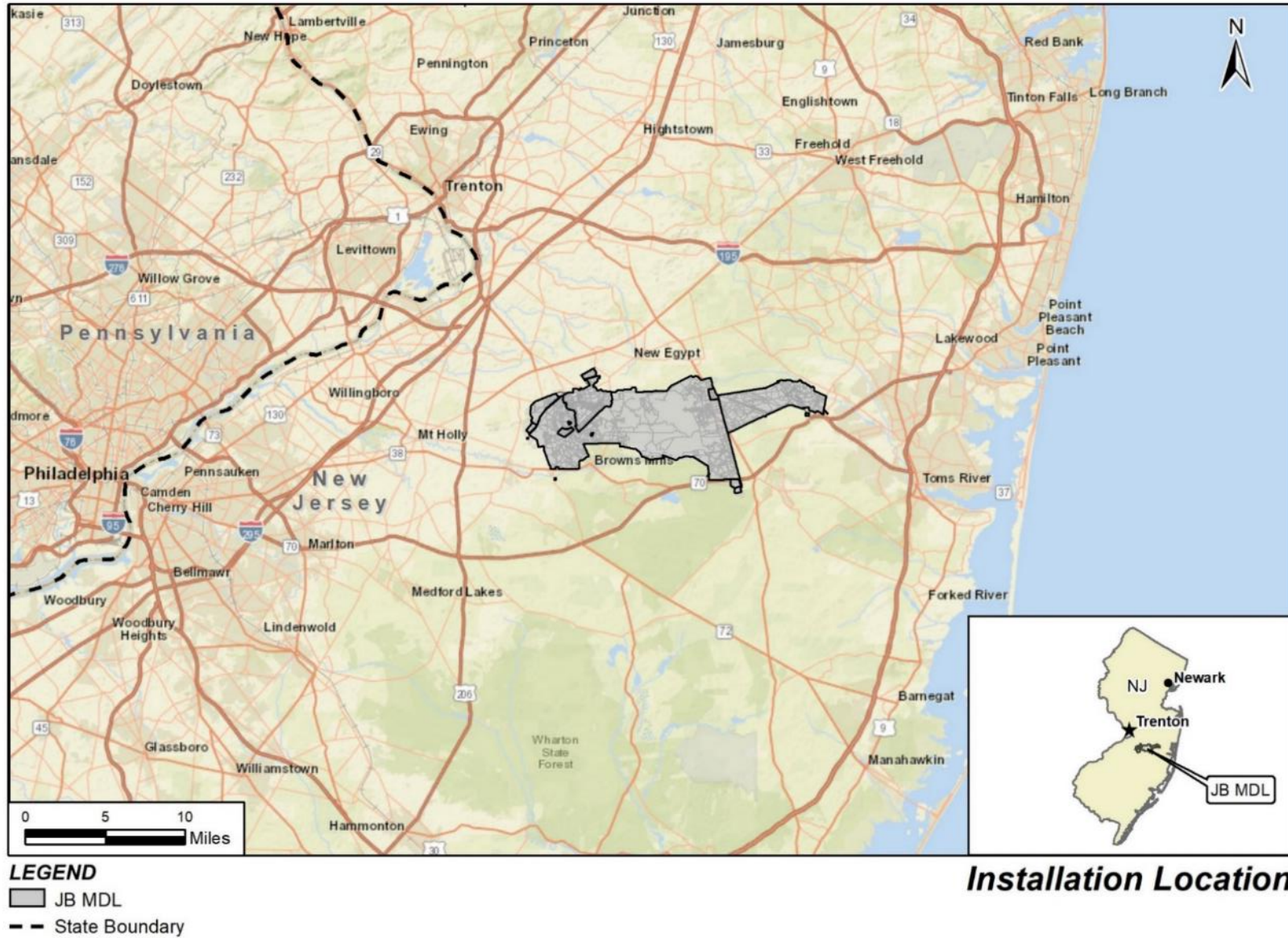


Figure 1-1

1 **1.4 DECISION TO BE MADE**

2 This EA provides the Air Force with documentation of environmental impacts associated with
3 implementing the Proposed Actions. The decision to be made is the selection of an alternative
4 for the JB MDL Commander to support ECMs for electrical power and energy savings at
5 JB MDL. The decision options are:

- 6 • To continue with current operations (the No Action Alternative);
- 7 • Selecting an alternative and preparing a Finding of No Significant Impact (FONSI); or
- 8 • Preparing an Environmental Impact Statement if the alternatives would result in
9 significant environmental impacts.

10 **1.5 AGENCY AND INTERGOVERNMENTAL COORDINATION / CONSULTATIONS**

11 **1.5.1 Interagency and Intergovernmental Coordination and Consultations**

12 Federal, state, and local agencies with jurisdiction that could be affected by the alternative
13 actions were notified and consulted during the development of this EA. Appendix A contains the
14 list of agencies consulted during this analysis and copies of correspondence. Each agency
15 received a scoping letter and a copy of the Final Description of Proposed Action and
16 Alternatives (DOPAA). An example of the scoping letter sent to each agency is provided in
17 Appendix A.

18 **1.5.2 Government to Government Consultations**

19 EO 13175, Consultation and Coordination with Indian Tribal Governments (*6 November 2000*)
20 directs federal agencies to coordinate and consult with Native American tribal governments
21 whose interest might be directly and substantially affected by activities on federally administered
22 lands. To comply with legal mandates, federally recognized tribes that are affiliated historically
23 with the JB MDL geographic region were invited to consult on all proposed undertakings that
24 have a potential to affect properties of cultural, historical, or religious significance to the tribes.
25 The tribal coordination process is distinct from NEPA consultation or the Intergovernmental/
26 Interagency Coordination of Environmental Planning (IICEP) processes and requires separate
27 notification of all relevant tribes. The timelines for tribal consultation are also distinct from those
28 of intergovernmental consultations. The JB MDL point-of-contact for Native American tribes is
29 the Installation Commander. The JB MDL point-of-contact for consultation with the Tribal
30 Historic Preservation Officer and the Advisory Council on Historic Preservation is the Cultural
31 Resources Manager.

32 The Native American tribal governments that will be coordinated with regarding this action are
33 listed in section 6.

34 **1.6 PUBLIC AND AGENCY REVIEW OF EA**

35 A Notice of Availability (NOA) of the Draft EA and FONSI was published in the newspapers of
36 record (listed below) announcing the availability of the EA for review on February 28 and March
37 1, 2021. The NOA invited the public to review and comment on the Draft EA. The public and

DRAFT ENVIRONMENTAL ASSESSMENT

Environmental Assessment
Purpose of and Need for Action

Energy Savings Performance
Joint Base McGuire-Dix-Lakehurst, New Jersey

1 agency review period ended on March 29, 2021. Public and agency comments are provided in
2 Appendix A.

3 The NOA was published in the following newspapers: *Asbury Park Press* and *Burlington County*
4 *Times* (February 28 and March 1, 2021).

5 Copies of the Draft EA and FONSI were also made available for review at the following
6 locations:

Manchester Library Branch Ocean County 21 S. Colonial Dr. Manchester, NJ 08759	Pemberton Branch Library Burlington County 16 Broadway Browns Mills, NJ 08015	Burlington County Library Main Branch 5 Pioneer Boulevard Westampton, NJ 08060
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8 Interested parties also will be able to review the documents by accessing them on the JB MDL
9 website under the heading *Environmental Publications* at [https://www.jbmdl.jb.mil/About-](https://www.jbmdl.jb.mil/About-Us/About-Us/Environmental-Publications/)
10 [Us/About-Us/Environmental-Publications/](https://www.jbmdl.jb.mil/About-Us/About-Us/Environmental-Publications/).

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action is to implement ECMs for electrical power and energy savings at JB MDL through an ESPC. The measures are described below and listed in **Table 2-1**, and site locations are shown in **Figure 2-1**. Conceptual site plans are shown in **Figures 2-2** and **2-3** and in the subsequent site figures in this EA. The project is expected to commence in late 2021 or early 2022 and be completed in 3 years.

Table 2-1. JB MDL ESPC Proposed Action

McGuire	Site Location	Direct Current (DC) Capacity	#Photovoltaic (PV) Modules
Two ground-mounted solar PV arrays <ul style="list-style-type: none"> Concrete foundations or ballasted Fixed-angle mounting racks Underground distribution lines Perimeter fences and access roads Running trail around Back 9 site Carport solar PV (one or two) <ul style="list-style-type: none"> One on an existing carport One constructed Roof-mounted solar PV panels <ul style="list-style-type: none"> Ballasted Electrical output interconnected with existing electrical service to building(s) 	North Run (about 25 acres [ac])	8.5 Megawatt (MW)	20,230
	Back 9 (about 26 ac)	8.4 MW	20,000
	Carports	0.053 MW	126
	Roofs (approximately 20 to 30 buildings)	10–12 MW	24,000 to 28,000
	Total		26.95–28.95 MW
Microgrid control system (MCS) <ul style="list-style-type: none"> Operate in two modes: grid-connected and islanded after a loss of utility 	Near existing substations	Not Applicable (NA)	NA
Battery energy storage system (BESS) <ul style="list-style-type: none"> Approximate footprint: 25 feet x 65 feet 		4 MW/ 8 MW hour (MWh)	NA
Natural Gas Generators <ul style="list-style-type: none"> Two new 2-MW generators Investigating potential of integrating existing generators 		4 MW	NA
Dix	Site Location	DC Capacity	#PV Modules
Roof-mounted solar PV panels <ul style="list-style-type: none"> Ballasted Electrical output interconnected with existing electrical service to building(s) 	Approximately 10 to 15 buildings	70–1,500 kilowatt (kW)	130 to 2,300
	Total	5,000–8,000 kW	11,190 to 20,000
Lakehurst	Site Location	DC Capacity	#PV Modules
Ground-mounted solar PV array <ul style="list-style-type: none"> Ballasted Fixed-angle mounting racks Underground distribution lines Perimeter fence and access road 	Approximately 12–15 ac, all open space	4–5.5 MW	9,524 to 13,095
	Roof-mounted solar PV panels <ul style="list-style-type: none"> Ballasted Electrical output interconnected with existing electrical service to building(s) 	Approximately 10 to 15 buildings	140–800 kW
Total		4,000–6,000 kW	10,000 to 15,000
MCS <ul style="list-style-type: none"> Operate in two modes: grid-connected and islanded 	Close to main substation serving critical loads	NA	NA
BESS <ul style="list-style-type: none"> Approximate footprint: 25 feet x 35 feet 		2 MW/4 MWh	NA

Table 2-1. JB MDL ESPC Proposed Action

Backup Stand-by Generators • 1 new 2-MW generator		2 MW	NA
Construction Staging Areas (for ground-mounted solar PV arrays)			
One construction staging area for each solar PV array: • Two sites at McGuire • One site at Lakehurst			
JB MDL			
Heating, Ventilation, and Air Conditioning (HVAC) Pneumatic Controls Replacement			
• Boilers, Chillers, Air Handling Units (AHUs), Air Conditioning Packaged Units (approximately 25 total of these elements): Approximately 12 buildings total within all installations			
Other Proposed Action Elements			
<ul style="list-style-type: none"> • Transformers Replacement: Approximately 41 buildings total within all installations • Thermal Glazing Window Film: Approximately 45 buildings total within all installations • Mechanical Insulation: Approximately 89 buildings total within all installations • Controls: Approximately 135 buildings total within all installations • Lighting: Approximately 428 buildings will be surveyed; actual replacement number would be lower after evaluation 			
<i>Source: Ameresco 2020.</i>			

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2 Separate electrical infrastructures serve the three areas of JB MDL—McGuire, Dix, and
3 Lakehurst. The Proposed Action does not include consolidating the infrastructures into one
4 electrical system serving JB MDL. The electrical infrastructure on Dix is privatized, with utility
5 meters serving individual buildings or groups of buildings. Different energy resiliency and
6 security actions, therefore, are proposed to occur at the three JB MDL areas as described
7 below.

8 **2.1.1 Solar Energy Systems**

9 **McGuire.** At McGuire, Ameresco would install ground-mounted solar photovoltaic (PV) arrays at
10 two locations—North Run and Back 9 (**Figure 2-1**). The PV arrays would collectively occupy
11 about 50 acres and generate a maximum of about 17 megawatts (MW) of electricity. The PV
12 arrays would be fenced. Ameresco would install access roads within the fence lines and might
13 install running trails around the outer perimeter of the fence lines. Depending on site conditions,
14 the PV arrays would be mounted on concrete foundations (or anchors) sized appropriately for
15 site conditions (e.g., soil type and maximum wind speed) or on poles driven into the ground. If
16 mounted on concrete anchors (called a *ballasted* system), individual poles supporting the racks
17 for the solar panels would each have an anchor. Because the anchors are set on top of the
18 ground, this anchoring system causes little ground disturbance. The Back 9 site will primarily
19 consist of concrete foundations. At the North Run site, a combination of the concrete foundation
20 method and a ballasted system would be used to install the PV array. To avoid digging in areas
21 on top of the landfill at the North Run site, a ballasted system would be used in areas above the
22 landfill. The solar PV panels would be fixed-angle (i.e., they would not track the position of the
23 sun) set at an angle to maximize energy production.

24 The PV arrays would be connected to a microgrid control system (MCS) that would operate in
25 two modes: grid-connected and islanded. In grid-connected mode, the MCS would provide
26 power to the regional grid. When a disturbance or interruption of the regional grid is detected,
27 the MCS would switch to islanded mode, disconnect from the regional grid, and provide power
28 only to McGuire to serve the installation’s critical loads. A 4-MW/8-MWh lithium-ion battery
29 energy storage system (BESS) would be integrated with the MCS to store energy generated by
30 the PV arrays and provide power in the event of a grid outage. The BESS would have a footprint

1 of approximately 1,625 square feet (about 25 feet by 65 feet). The BESS would work in
2 conjunction with the on-base generation assets and the new MCS to allow the base to continue
3 mission critical operations in the event of a regional grid failure, brownout, terrorist attack, or
4 utility request for demand reduction. The BESS has the capability of providing the full 4 MW of
5 energy for up to 2 hours, giving time for backup generation to come online. As part of the
6 system, two new 2-MW generators would be installed and integrated into the overall system
7 controlled by the MCS. Existing generators on site are also being evaluated for possible
8 integration into the MCS.

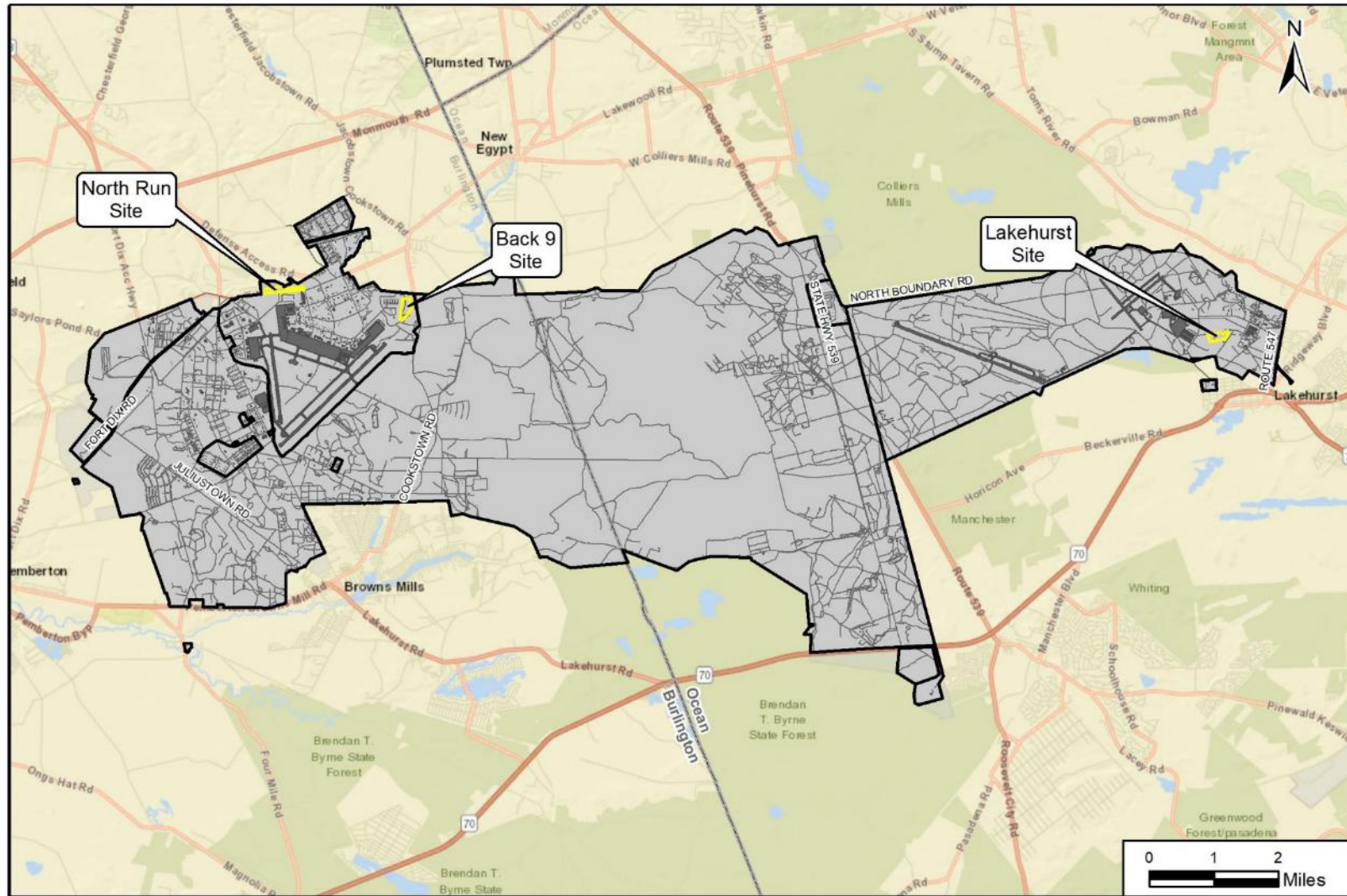
9 Additionally, Ameresco would mount solar PV panels on one or two carports to generate an
10 additional 53 kilowatts (kW) or more of energy. One carport suitable for mounting solar PV
11 panels exists at McGuire, and Ameresco might construct a second carport for solar PV panels.
12 Ameresco would also install roof-mounted, ballasted solar PV systems on rooftops. The rooftop
13 arrays would be installed on approximately 20 to 30 buildings and generate approximately
14 10,000 to 12,000 kW of electricity tied to the existing electrical distribution system.

15 **Dix.** At Dix, Ameresco would install roof-mounted, ballasted solar PV systems on rooftops. The
16 rooftop arrays would be installed on approximately 10 to 15 buildings and generate
17 approximately 5,000 to 8,000 kW of electricity. As mentioned earlier, Dix has a privatized
18 electrical infrastructure where individual utility meters serve a building or groups of buildings.
19 Electrical output of the solar PV system at each building would be interconnected with the
20 existing electric service to the building(s) and be sized appropriately for the loads at the meter
21 serving the building(s).

22 **Lakehurst.** At Lakehurst, Ameresco would install a ground-mounted 4-MW solar PV array on
23 about 12 acres within the 20-acre site boundary. Details of the solar PV array at Lakehurst are
24 similar to those for the arrays at McGuire: the array would consist of concrete foundations,
25 panels would be fixed-angle, a perimeter fence would surround the array, and a perimeter
26 access road would be inside the fence. An MCS serving the system would operate similarly as
27 the system at McGuire, operating in both grid-connected and islanded modes. A 2-MW/4-MWh
28 BESS would be integrated into the system to ensure additional energy security and resiliency.
29 The BESS would have a footprint of approximately 525 square feet (about 21 feet by 25 feet). A
30 2-MW back-up stand-by generator would be integrated into the system.

31 Each solar PV array would be connected to existing electrical distribution system. The point of
32 connection would be within or near each site. Existing communications conduit would be used,
33 and new fiber would be pulled through the existing conduit.

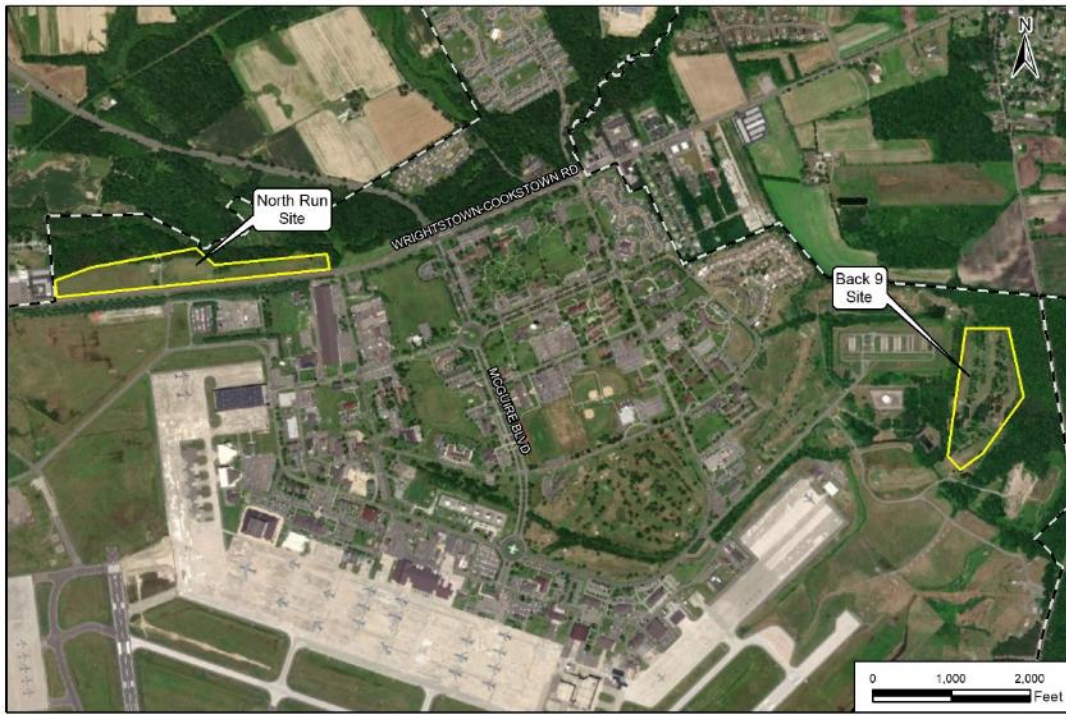
34 Ameresco would also install roof-mounted, ballasted solar PV systems on rooftops. The rooftop
35 arrays would be installed on approximately 10 to 15 buildings and generate approximately 4,000
36 to 5,000 kW of electricity tied to the existing electrical distribution system.



LEGEND
■ JB MDL
■ Project Site
— County Boundary

Project Locations

Figure 2-1



LEGEND
-- Installation Boundary

North Run and Back 9 Sites

Figure 2-2

1



Lakehurst Site

Figure 2-3

2

1 **2.1.2 Lighting**

2 Throughout JB MDL, Ameresco would replace or upgrade most
3 luminaries and fixtures with new light-emitting diode (LED) fixtures
4 and lamps (**Figure 2-4**). Wireless outdoor lighting management
5 systems serving each area would be installed to monitor and control
6 selected outdoor lighting infrastructure. The systems would provide
7 flexible control of outdoor lighting, improve security and safety,
8 minimize maintenance costs, decrease energy use, and improve the
9 nighttime environment. Downward facing lights with opaque shields
10 would be used for all outdoor lighting upgrades. Ameresco would survey
11 approximately 428 buildings on the base, though the actual buildings
12 requiring lighting replacement and upgrade would be less than the number of buildings surveyed.



Figure 1-4.
LED ceiling lighting fixture.

13 **2.1.3 Control Systems**

14 Ameresco would upgrade existing heating, ventilation, and air conditioning (HVAC) control
15 systems with direct digital controls (DDC). Buildings on JB MDL have various types of HVAC
16 equipment and systems, including pneumatic controls and local DDC. Ameresco would replace
17 pneumatic controls, upgrade conventional controls to DDC, and make other HVAC performance
18 improvements in numerous buildings. Buildings with controllers that can be interfaced with new
19 control systems would continue to be used but be reprogrammed to include energy savings
20 strategies. Ameresco would improve control systems in approximately 135 buildings.

21 Control system improvements would include:

- 22 • Install hot water boiler control valve monitors to operate at the lowest possible supply
23 temperature at any time to increase boiler efficiency.
- 24 • Install occupancy sensors in buildings throughout the base to control air distribution
25 systems to reduce temperatures when rooms are unoccupied, install new controls to
26 schedule space temperature setpoints to reduce unoccupied space heating and cooling
27 loads, and install controls to vary outdoor air intake based on actual ventilation
28 requirements in real time, reducing air intake during low-occupancy periods.
- 29 • Attach variable frequency drives (VFDs) to chilled water and hot water pump motors as
30 necessary flow rates would vary as heating and cooling loads fluctuate.

31 **2.1.4 Transformers**

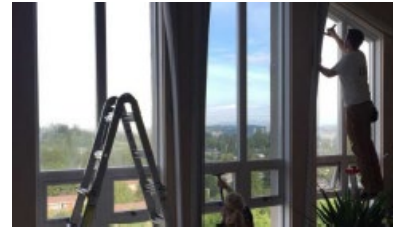
32 Ameresco would replace numerous transformers to increase efficiency,
33 reduce noise and heat generation, and reduce the risk of unplanned
34 failures of transformers that are nearing the end of their expected
35 service life (**Figure 2-5**). Ameresco would replace transformers at
36 approximately 41 buildings.



Figure 2-5.
Old transformer.

1 **2.1.5 Thermal Glazing Window Film**

2 Ameresco would install thermal glazing window film in targeted
3 locations to reduce radiation and thermal heat gain during the
4 cooling-dominated summer months (**Figure 2-6**). Ameresco
5 would install thermal glazing window film in approximately 45
6 buildings.



7 **Figure 2-6.**
8 **Window film installation.**

7 **2.1.6 Boilers, Chillers, Air Handling Units, Air**
8 **Conditioning Packaged Units**

9 Ameresco would replace a combined total of approximately 25
10 chillers, boilers, air handling units (AHUs), and Air Conditioning Packaged units within 12
11 buildings on base.

12 Ameresco would replace older boilers that have surpassed their useful service life, targeting
13 boilers that are inefficient and replacing them with high-efficiency condensing boilers (**Figure**
14 **2-7**).

15 Ameresco would also replace water chillers that have reached the end of
16 their useful service life with high-efficiency chillers at McGuire only. The
17 average efficiency of the existing chillers is estimated to be 0.95 kW/ton (12.6
18 Energy Efficiency Ratio [EER]) at full load capacity. High-efficiency air-
19 cooled chillers can operate at efficiencies as low as 0.7 kW/ton and water-
20 cooled chillers can operate at efficiencies as low as 0.45 kW/ton.



21 **Figure 2-7.**
22 **Old boiler.**

23 Many AHUs throughout JB MDL are single or multizone constant volume
24 units. The AHUs fans in these units operate at constant speed and can result
25 in simultaneous heating and cooling occurring. New AHU controllers would be installed to replace
26 existing AHU fans that operate at constant speed. Ameresco will also assess and replace air
27 conditioning packaged units.

26 **2.1.7 Mechanical Insulation**

27 The building envelope includes the foundation, roof, walls, insulation, doors and windows.
28 Ameresco would replace failing mechanical insulation that is part of heating hot water, steam,
29 domestic hot water, and chilled water system to improve system performance and reduce energy
30 consumption within approximately 89 total buildings within all installations.

31 **2.2 SELECTION STANDARDS**

32 NEPA and CEQ regulations mandate the consideration of reasonable alternatives for the
33 Proposed Action. “Reasonable alternatives” are those that are technically and economically
34 feasible and that also could be used to meet the purpose of and need for the Proposed Action.
35 Per the requirements of 32 CFR Part 989, selection standards are used to identify alternatives
36 for meeting the purpose and need for the USAF action.

1 The Proposed Action alternatives must meet the following selection standards:

- 2 • **Standard A, Resilience and Sustainability:** The Proposed Action must increase
3 resiliency by reducing the installation's dependency on external sources of energy and
4 increase sustainability by reducing the installation's environmental footprint.
- 5 • **Standard B, Energy Savings Cost Benefit:** The Proposed Action must reduce long-
6 term energy expenditures enough to justify the project's cost.
- 7 • **Standard C, Environmental Constraints:** The Proposed Action must be located on
8 base and avoid and minimize environmental impacts, such as to biological and cultural
9 resources, to the extent practicable.
- 10 • **Standard D, Built Constraints:** The Proposed Action must be implementable within
11 reasonable constraints of the existing built environment at JB MDL. For carport and
12 rooftop PV arrays, the surface on which the PV panels would be mounted must meet
13 structural load requirements per an engineer's assessment. For ground-based facilities,
14 the location must not interfere with mission activities and must avoid major relocations of
15 existing utilities or other infrastructure.

16 2.3 SCREENING OF ALTERNATIVES

17 The following alternative locations for ground-mounted solar PV arrays that might meet the
18 purpose of and need for the Proposed Action were considered:

- 19 • Preferred Alternative (Proposed Action): This alternative includes the North Run and
20 Back 9 sites at McGuire and a site at Lakehurst that is an open space grassland area
21 (see **Figure 2-1**).
- 22 • North Houghton Road site (Lakehurst): This site is the tarmac north of Houghton Road. It
23 was eliminated because the tarmac is in the boundary for the Lighter-Than-Air (LTA)
24 Historic District and is in the viewshed of Hangar 1, a National Historic Landmark and a
25 contributing element of the LTA Historic District.
- 26 • Staging Area site (Lakehurst): This site is currently used by JB MDL for staging of
27 equipment. In addition, there are potential contamination issues in a portion of this site.
28 Due to these issues, the site was eliminated.
- 29 • Proposed Area 1 (Lakehurst), North of Saniuk Road: This site is in a landfill area. It was
30 eliminated due to this issue and since the size would not be large enough to provide an
31 energy savings cost benefit.
- 32 • Proposed Area 2 (Lakehurst), North of Front Gate: This site was eliminated since the
33 size would not be large enough to provide an energy savings cost benefit.
- 34 • Proposed Area 3 (Lakehurst), North of Saniuk Road: This site consists of disturbed
35 grassland areas with some pine trees colonizing the area. It was eliminated due to this
36 issue and since the size would not be large enough to provide an energy savings cost
37 benefit.

- 1 The roof-mounted and carport systems and other elements of the Proposed Action (lighting,
- 2 transformers, window glazing, etc.) are the same regardless of the sites chosen for the ground-
- 3 mounted solar PV arrays.
- 4 The selection standards described in section 2.2 were applied to these alternatives to determine
- 5 which alternative(s) would fulfill the purpose and need for the action.
- 6 **Table 2-2** presents the alternatives and whether each one would meet the selection standards.

Table 2-2. Alternatives Screening Matrix

Alternative	Selection Standards			
	A: Resilience and Sustainability	B: Energy Savings Cost Benefit	C: Environmental Constraints	D: Built Constraints
Preferred Alternative (Proposed Action)	Yes	Yes	Yes	Yes
North Houghton Road site (Lakehurst)	Yes	Yes	No	Yes
Staging Area site (Lakehurst)	Yes	Yes	No	No
Proposed Area 1, Lakehurst	Yes	No	No	Yes
Proposed Area 2, Lakehurst	Yes	No	Yes	Yes
Proposed Area 3, Lakehurst	Yes	No	Yes	Yes
No Action Alternative	No	No	Yes	Yes

- 7
- 8 Only the Preferred Alternative met all the selection standards, and it is carried forward for
- 9 detailed analysis in this EA. In addition, the No Action Alternative, described below, is analyzed
- 10 in full in the EA.

2.4 DETAILED DESCRIPTION OF THE ALTERNATIVES

12 Two alternatives, Alternative 1 (Preferred Alternative) and “No-Action,” are analyzed in full in the
13 EA.

2.4.1 Alternative 1 (Preferred Alternative)

15 The Preferred Alternative is the Proposed Action, as described in section 2.1. This alternative
16 meets all selection standards.

2.4.2 No Action Alternative

18 Under the No Action Alternative, the identified ECMs would not be implemented at JB MDL.
19 Because no action would be taken, this alternative would not realize the benefits needed to
20 meet selection standards A or B; however, it would meet selection standards C and D because

1 taking no action would not conflict with the master plan or require relocation of existing
2 infrastructure. Although the No Action Alternative would not meet the purpose of and need for
3 the Proposed Action, it is carried forward for detailed analysis in accordance with the
4 requirements of the CEQ's implementing regulations for NEPA.

5 **2.4.3 Best Management Practices**

6 To minimize impacts on the environment, JB MDL would incorporate the following best
7 management practices (BMPs) into implementation of the Proposed Action:

- 8 • All construction would be done in accordance with the erosion and sedimentation control
9 measures (e.g., silt fencing, swales, and detention basins) in the project-specific
10 Stormwater Pollution Prevention Plan (SWPPP), which would minimize erosion of soil
11 into surface waters and wetlands. All soil erosion and sediment control plans would be
12 certified by the Burlington and Ocean County Soil Conservation Districts and
13 authorization to discharge stormwater under the New Jersey Department of
14 Environmental Protection (NJDEP) general permit for construction activities would be
15 attained.
- 16 • Only approved cleaning solutions that would not contribute to groundwater or surface
17 water contamination would be used to clean the solar panels after installation. The
18 cleaning products and methods of cleaning would be pre-approved by JB MDL.
- 19 • Site-specific health and safety plans would be prepared prior to commencing work. The
20 health and safety plans would be prepared in accordance with DoD and Air Force
21 regulations and would comply with OSHA standards.
- 22 • Ground clearing and digging operations would require prior coordination with JB MDL
23 environmental personnel and approved dig permits prior to commencing work, and
24 documentation indicating that any fill brought on site is clean.
- 25 • No pesticides or herbicides would be used during project construction or operation.
- 26 • Ground disturbance would not occur within 150 feet of wetlands. All 150-foot wetland
27 buffers would be flagged in the field by a qualified biologist prior to the start of
28 construction and periodic checks would be conducted during construction activities to
29 ensure that the wetland buffers are maintained at all times.
- 30 • Tree cutting and trimming would be scheduled to avoid the northern long-eared bat
31 (NLEB) active season and the nesting bird season (April 1 to September 30). If project
32 work must be conducted between April 1 and September 30, a pre-construction survey
33 by a qualified biologist would be required. The survey would be conducted no more than
34 5 days prior to scheduled work and performed within the project sites and adjacent
35 buffer areas that contain potential suitable habitat for roosting bats and nesting birds. If
36 nesting birds or roosting bats are found, an appropriate buffer for protection of the
37 species would be established around the nest or roost. No project work would be
38 allowed within the buffer until after the applicable season has ended or the species has
39 vacated the area as determined by a qualified biologist. In addition, once the project
40 became operational, if bird nests were found on project equipment, they would be
41 managed in compliance with the Migratory Bird Treaty Act (MBTA).

- 1 • The JB MDL Natural Resources Manager would periodically monitor the sites prior to
2 and during vegetation clearing for the presence of special-status species, particularly
3 reptiles. If any are discovered, construction personnel would be required to contact the
4 Natural Resources Manager. The Natural Resources Manager would attempt to capture
5 and relocate the species to other suitable habitat on the base and would determine if
6 additional consultations or measures would be required.

- 7 • A qualified biologist would monitor the Lakehurst site daily during vegetation clearing for
8 the presence of special-status species, particularly the northern pine snake. If any are
9 discovered, construction personnel would stop work, and the JB MDL Natural Resources
10 Manager would be contacted for attempted capture and relocation to other suitable
11 habitat on the base and would determine if additional consultations or measures would
12 be required.

- 13 • JB MDL would create artificial hibernacula for northern pine snakes in similar grassland
14 areas on Lakehurst to compensate for habitat loss resulting from the construction of the
15 solar array. Details of this effort would be coordinated with the New Jersey Division of
16 Fish and Wildlife.

- 17 • Downward facing lights with opaque shields would be used for all outdoor lighting
18 upgrades to prevent light pollution and disturbance to migratory birds or bats at night.

- 19 • Native warm season grass would be planted in areas where vegetation is cleared after
20 the PV panels are installed. The seed blend would be approved by JB MDL Natural
21 Resources prior to use.

- 22 • If archaeological artifacts are uncovered during construction, the contractor would follow
23 procedures in standard operating procedure *7.4 Discovery of Archaeological Resources*
24 *and NAGPRA Cultural Items* (Air Force 2019).

- 25 • If the solar PV array at the Lakehurst site is visible from the adjacent LTA Historic
26 District, appropriate landscaping would be installed at the site to minimize visual
27 impacts.

- 28 • At the North Run Site, soils removed from IRP site ST007 during construction would be
29 tested for potential contamination (every 200 cubic yards removed) and disposed of
30 properly should it be identified. If the tested soil reveals no contamination, it will be
31 reused on site for site preparation and grading.

- 32 • The Federal Green Construction Guide for Specifiers, which is based on the U.S.
33 Environmental Protection Agency (EPA) Region 2 Greening Recommendations, would
34 be followed to the extent feasible.

- 35 • All on-road vehicles and non-road construction equipment operating at, or visiting, the
36 construction site shall comply with the three minute idling limit, pursuant to New Jersey
37 Administrative Code (N.J.A.C.) 7:27-14 and N.J.A.C. 7:27-15.

- 38 • All non-road diesel construction equipment greater than 100 horsepower used on the
39 project for more than 10 days shall have engines that meet the EPA Tier 4 non-road
40 emission standards, or the best available emission control technology that is
41 technologically feasible for that application and is verified by the EPA or the California

1 Air Resources Board as a diesel emission control strategy for reducing emissions of
2 particulate matter and/or nitrogen oxides (NO_x).

3 **2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION**

4 As none of the other alternatives that were considered would meet the purpose and need, the
5 following alternatives were eliminated from further consideration:

- 6 • North Houghton Road site (Lakehurst)
- 7 • Staging area site (Lakehurst)
- 8 • Proposed Area 1 (Lakehurst)
- 9 • Proposed Area 2 (Lakehurst)
- 10 • Proposed Area 3 (Lakehurst)

11 These alternatives are not carried forward for analysis in this EA.

1 **3. AFFECTED ENVIRONMENT**

2 The Region of Influence (ROI) for the Proposed Action is the proposed project sites, as shown
3 in **Figures 2-1** through **2-3**, unless otherwise specified below for a particular resource area
4 where a resource would have a different ROI.

5 **3.1 SCOPE OF THE ANALYSIS**

6 This chapter describes the current conditions of the environmental resources, either man-made
7 or natural, that would be affected by implementing the Proposed Action or No Action Alternative.

8 Based on the scope of the Proposed Action, issues with minimal or no impacts were identified
9 through a preliminary screening process. The following describes those resource areas not
10 carried forward for a detailed analysis, along with the rationale for their elimination.

11 **Airspace.** Implementing the Proposed Action would not adversely affect airspace. The action
12 would not alter navigable airspace, flight patterns, air traffic or air operations. The ground-
13 mounted solar PV arrays would not be adjacent to the airfield or be high enough to interfere with
14 airspace. Based on a preliminary analysis, there would be no significant glint or glare issues
15 from the solar panels that would adversely affect airfield operations or pilot safety. The roof-
16 mounted solar PV panels would not perceptibly change the height of the buildings on which they
17 are placed, nor would the panels on top of the carports. The MCSs, BESSs, and generators
18 would be near the existing substations. The other proposed ECMs (i.e., LED lighting, HVAC
19 control systems, transformers, thermal glazing window film, new boilers, chillers, AHUs, air
20 conditioning packaging units, and mechanical insulation) would be inside or adjacent to
21 buildings. Potential effects on the safety of pilots from glare associated with the PV panels is
22 discussed in **sections 3.4 and 4.4**. Therefore, the Proposed Action would not affect air traffic or
23 air operations at JB MDL. The Air Force anticipates no adverse effects on airspace; therefore,
24 this resource area is not carried forward for detailed analysis.

25 **Environmental Justice.** Implementing the Proposed Action would not adversely affect
26 environmental justice populations. EO 12898, Federal Actions to Address Environmental Justice
27 in Minority Populations and Low-Income Populations requires that federal agencies take into
28 consideration disproportionately high and adverse environmental effects of governmental
29 decisions, policies, projects, and programs on minority and low-income populations.

30 The threshold used for identifying minority and low-income populations was developed
31 consistent with CEQ guidance (CEQ 1997) for identifying minority and low-income populations
32 using either the 50 percent threshold or another percentage deemed “meaningfully greater” than
33 the percentage of minority or low-income individuals in the general population. **Table 3-1** lists
34 minority and poverty data for the ROI, which is comprised of Burlington and Ocean counties,
35 New Jersey, as well as for the state and the nation for comparison. The ROI percentage of
36 minority or low-income residents does not exceed the 50 percent threshold and are not
37 meaningfully greater than that of the state or the nation. Environmental justice communities are
38 not present; therefore, this resource area is not carried forward for detailed analysis.

Table 3-1. Socioeconomic Data for JB MDL

Location	Minority Population (percent)	Population below Poverty (percent)
Burlington County	33%	6%
Ocean County	16%	10%
ROI Total	23%	8%
New Jersey	45%	9%
United States	40%	11%

Source: U.S. Census Bureau 2020.

1
2

3 **Land Use.** Implementing the Proposed Action would not adversely affect land use. JB MDL’s
4 designated land cover types for the North Run site are developed open space, and developed
5 low-, medium-, and high-intensity space; for the Back 9 site, land use is classified as developed
6 open space; and for the Lakehurst site, land use is classified as developed open space and
7 developed low- and medium-intensity space. The proposed ground-mount solar PV arrays
8 would not conflict with these land cover designations. The North Run site would be adjacent to
9 off-base commercial and forested land, which would not create land-use incompatibilities. The
10 Back 9 and Lakehurst sites do not border any off-base property. The roof-mounted solar PV
11 systems would be on top of existing buildings and carport canopies. The MCSs, BESSs, and
12 generators would be near the existing substations and therefore be a compatible land use. The
13 other Proposed Action energy improvement upgrades (i.e., LED lighting, HVAC control systems,
14 transformers, thermal glazing window film, new boilers, chillers, AHUs, air conditioning
15 packaging units, and mechanical insulation) would be inside or adjacent to buildings and would
16 not affect land use. The Air Force anticipates no adverse effects on land use; therefore, this
17 resource area is not carried forward for detailed analysis.

18 **Noise.** Implementing the Proposed Action would not result in appreciable changes in the noise
19 environment. The installation of the ground-mount and rooftop solar PV arrays, MCSs, and
20 BESSs would require use of light and heavy equipment that would generate temporary short-
21 term increases in noise. Project activities would not be near any on- or off-base sensitive
22 receptors (e.g., churches, hospitals, residences, retirement homes, schools). The closest noise-
23 sensitive receptor to the North Run site would be an on-base child development center about
24 0.5 mile away, with buildings, roads, trees, and open areas in between; to the Back 9 site would
25 be an off-base residential area about 0.5 mile away, with agricultural land, forested land, and
26 roads in between; and to the Lakehurst site would be an on-base child development center
27 about 0.6 mile away, with buildings, open space, roads, and trees in between. Contractors
28 would limit construction to occur primarily during normal weekday business hours. Solar PV
29 array inverters, which convert the power produced by the solar arrays from direct current to
30 alternating current, emit a hum, but it should not be heard above normal ambient noise of a
31 neighborhood (Proven Energy 2019), and the arrays would not be near sensitive receptors.
32 Overall, solar PV array construction and operating noise effects would be negligible. For the
33 other proposed ECMs, the energy-saving transformers would be installed inside building
34 mechanical rooms and would produce less noise than the existing transformers, improving the
35 indoor noise environment and not affecting the outdoor noise environment. Because the Air
36 Force anticipates negligible adverse effects on the noise environment, this resource area was
37 not carried forward for detailed analysis.

1 **Socioeconomics.** Implementing the Proposed Action would not adversely affect socioeconomic
2 resources. The Proposed Action does not include assigning new, permanent personnel from
3 outside the region to JB MDL; therefore, implementing the action would not change the
4 population or employment of JB MDL or the surrounding region, nor would it change the
5 demand for housing or public services such as schools, law enforcement, fire protection,
6 healthcare, or social assistance. The Proposed Action would have a slight beneficial economic
7 effect from the construction activity associated with the proposed solar PV arrays and the
8 installation of other proposed ECMs. The effect would not be significant and would be negligible
9 relative to the size of the economy of the ROI. The Air Force anticipates no adverse
10 socioeconomic effects; therefore, this resource area is not carried forward for detailed analysis.

11 **Transportation.** The Proposed Action would not adversely affect transportation resources. The
12 Proposed Action would have minor, short-term effects during construction activities due to the
13 involvement of truck and privately owned vehicle traffic. However, implementing the Proposed
14 Action would not change the Level of Service on local roads, and there would be no changes to
15 transportation during operations. Therefore, the Air Force anticipates no adverse transportation
16 effects, and this resource area is not carried forward for detailed analysis.

17 3.2 AIR QUALITY

18 3.2.1 Definition of Resource

19 The EPA established National Ambient Air Quality Standards (NAAQS) under the Clean Air Act
20 (CAA) Amendments of 1990. These standards represent the maximum allowable atmospheric
21 concentration of designated air pollutants that are considered protective of public health and
22 welfare. NAAQS have been set for six criteria pollutants: carbon monoxide (CO), ozone (O₃),
23 nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead, and particulate matter (PM₁₀ and PM_{2.5}).

24 Based on measured ambient air pollutant concentrations, the EPA determines whether
25 geographic areas are in compliance with the NAAQS. Areas in compliance with the NAAQS are
26 designated as *attainment areas*; areas not in compliance are *nonattainment areas*.
27 Nonattainment areas that subsequently achieve compliance with the NAAQS are designated
28 *maintenance areas* to ensure air quality continues to comply with the NAAQS. Proposed actions
29 that would result in direct or indirect emissions in a designated nonattainment or maintenance
30 area are subject to a conformity evaluation under the General Conformity Rule (40 CFR Part 93)
31 and the Air Force Environmental Impact Analysis Process for air quality in 32 CFR 989.30. For
32 project sites in nonattainment or maintenance areas, a site-specific analysis is required to
33 determine if local thresholds for Conformity would be exceeded, requiring a Conformity
34 Determination.

35 Each state has the primary responsibility for air pollution prevention and control. The CAA
36 requires each state to develop a State Implementation Plan that provides for implementation,
37 maintenance, and enforcement of the NAAQS in each Air Quality Control Region in the state. In
38 addition, the CAA allows states to adopt air quality standards more stringent than the federal
39 standards.

40 Atmospheric ozone occurs when NO_x, CO, and volatile organic compounds (VOCs) react in the
41 atmosphere in the presence of sunlight (a photochemical reaction). NO_x and VOCs are called
42 ozone precursors. Motor vehicle exhaust, industrial emissions, and chemical solvents are the
43 major anthropogenic sources of these chemicals. Although these precursors often originate in

1 urban areas, winds can carry NO_x and VOCs hundreds of miles, causing ozone formation to
2 occur in less populated areas as well. Therefore, NO_x and VOC emissions are regulated as a
3 means of controlling ozone production.

4 GHGs are components of the atmosphere (e.g., water vapor, carbon dioxide [CO₂], methane,
5 and nitrous oxide) that trap heat relatively near the surface of the earth, contributing to the
6 greenhouse effect and climate change. GHGs are derived from natural sources such as
7 volcanic activity and forest fires, and from man-made sources such as the use of aerosols and
8 the burning of fossil fuels. The primary GHGs are CO₂, methane, nitrous oxide, and fluorinated
9 gases. In the United States, most GHG emissions are attributed to energy use. Such emissions
10 result from combustion of fossil fuels used for electricity generation, transportation, industry,
11 heating, and other needs.

12 To address potential effects of climate change, EO 13834, Efficient Federal Operations, directs
13 the federal government to enhance the resiliency of its infrastructure and operations. While EO
14 13834 does not require a formal planning process for evaluating and managing climate change,
15 federal agencies are nonetheless directly involved in addressing climate resilience and adapting
16 to its implications across their services, programs, and assets (FedCenter 2018). For example,
17 DoD identifies climate change as a national security concern and reduced its GHG emissions by
18 approximately 12 percent between fiscal year 2008 (FY08) and FY15 (DOE 2016).

19 3.2.2 Existing Conditions

20 JB MDL is located in Burlington and Ocean Counties, New Jersey. New Jersey's location along
21 the northeast corridor between the major metropolitan centers of Boston and Washington, D.C.,
22 places New Jersey at the epicenter of pollutants transported from other states. In addition,
23 westerly winds from the Ohio River Valley and nighttime reservoirs of pollutants from southern
24 states along the Appalachian Mountain Range have been shown to contribute to high ozone
25 and particulate concentrations in New Jersey. Burlington and Ocean Counties are part of the
26 Philadelphia-Wilmington-Atlantic City air quality control region which is within the Ozone
27 Transport Region. Both counties are classified as marginal nonattainment for the 8-hr O₃
28 NAAQS, and Burlington is also designated a maintenance area for the 2006 PM_{2.5} NAAQS.

29 NJDEP considers installations that have a potential to emit greater than 25 tons per year (tpy) of
30 VOCs, 25 tpy of NO_x, or 100 tpy of CO, PM₁₀, or SO₂ major sources of air emissions. McGuire,
31 Dix, and Lakehurst each have a potential to emit greater than these thresholds, each is
32 considered a major source, and each hold a Title V air operating permit. As a part of their permit
33 requirements, they are required to submit an annual emissions statement to the NJDEP. Air
34 quality emissions inventories for the three installations for reporting year 2019 compared against
35 the permitting thresholds are presented in Table 3-2.

Table 3-2 Annual Air Quality Emissions Inventories for Stationary Sources at JB MDL

Annual Emissions (tpy)					
Installation	NO _x	VOC	CO	SO _x	PM ₁₀
McGuire	10.58	9.09	6.13	0.08	1.08
Dix	25.60	8.57	20.60	3.59	4.57
Lakehurst	7.03	6.88	7.13	0.05	0.64
TOTAL	43.21	24.54	33.86	3.72	6.29

Table 3-2 Annual Air Quality Emissions Inventories for Stationary Sources at JB MDL

Annual Emissions (tpy)					
Installation	NO _x	VOC	CO	SO _x	PM ₁₀
<i>New Jersey Title V Permitting Threshold</i>	25	25	100	100	100

Source: C. Brunson personal communication November 3, 2020.

3.3 WATER RESOURCES

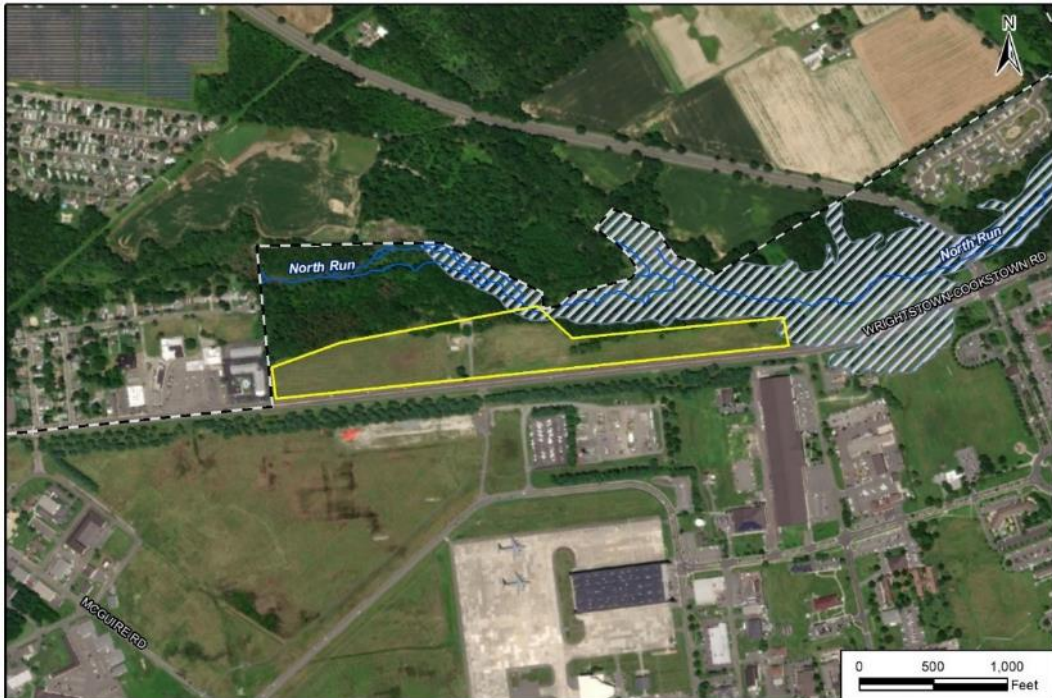
3.3.1 Definition of Resource

Water resources include surface waters, groundwater, stormwater, and floodplains. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands. Groundwater is found in underground spaces, known as aquifers, that consist of permeable and porous rock or unconsolidated substrate where water is naturally stored. Aquifers have recharge areas, and some allow for withdrawals for potable, agricultural, and industrial uses. Groundwater and surface water are both impacted by stormwater infiltration and runoff generated during rain events. Stormwater refers to runoff generated by rainfall, snow, and snowmelt. Floodplains are areas that are flooded periodically by the lateral overflow of surface water bodies.

Water resources are vulnerable to contamination and quality degradation and are protected federally by the Clean Water Act (33 U.S.C. §1251 eq seq.) and the state-administered National Pollutant Discharge Elimination System (NPDES). The ROI for water resources is the project sites, any adjacent water resources, and areas that could receive stormwater runoff from the project sites.

3.3.2 Existing Conditions

A 100-year floodplain is located directly north of the North Run site and occurs within a small portion of the site (**Figure 3-1**). A 100-year floodplain is also located directly west and south of the Back 9 site and occurs within a small portion of the site (**Figure 3-2**). No floodplains are located in the vicinity of the Lakehurst site. While floodplains are located within the North Run and Back 9 sites (**Figures 3-1** and **3-2**), no construction would occur in these areas. Air Force installations have a responsibility under EO 11998, Floodplain Management, to determine if proposed actions would occur in a floodplain, evaluate and document the potential effects, and consider alternatives to avoid these effects and incompatible development in the floodplain.



LEGEND
 North Run Site
 Installation Boundary
 Stream/Creek
 100-Year Floodplain

**North Run Site-
Floodplains**

Figure 3-1

Source: JB MDL GIS 2020.

1



LEGEND
 Back 9 Site
 Installation Boundary
 Stream/Creek
 Waterbody
 100-Year Floodplain
 500-Year Floodplain

**Back 9 Site-
Floodplains**

Figure 3-2

Source: JB MDL GIS 2020.

2

1 The North Run stream and associated wetlands are located north of the North Run site and are
2 directly adjacent to the site at the closest point. Wetlands are discussed in the section 3.7 and
3 shown in **Figures 3-3 and 3-4 below**. The South Run stream is located south, east, and west of
4 the Back 9 site and is approximately 100 feet away from the site at the closest point (**Figure 3-
5 4**). Wetlands are also located north, south, east, and west of the Back 9 site and are directly
6 adjacent to the site at the closest point. In addition, two small waterbodies are located northwest
7 (approximately 250 feet) and southwest (approximately 150 feet) of the Back 9 site. The
8 Manapaqua Branch stream is located west of the Lakehurst site, approximately 200 feet away
9 from the site at the closest point (**Figure 3-5**). Wetlands are also located west of the Lakehurst
10 site and are directly adjacent to the site at the closest point. While some of these surface waters
11 and wetlands are within 150 feet of the sites (**Figures 3-3, 3-4, and 3-5**), no construction would
12 occur within 150 feet of these areas. Wetlands information was obtained from the JB MDL GIS.
13 The source of the wetlands data in the JB MDL GIS is the National Wetlands Inventory dataset.
14 Wetlands on Lakehurst were ground truthed in 1996 by Dames and Moore and in 2000 by Geo-
15 Marine (Air Force 2020). Wetlands on McGuire were delineated in 2007 (Air Force 2020; JB
16 MDL 2007). The 2007 delineation area included the Back 9 site but did not include the North
17 Run site (JB MDL 2007).

18 Air Force installations have a responsibility under EO 11990, Protection of Wetlands, to
19 minimize destruction, loss or degradation of wetlands, and to preserve and enhance the natural
20 and beneficial values of wetlands. Pursuant to EO 11990, the Air Force shall avoid new
21 construction located in wetlands unless there is no practicable alternative to such construction,
22 and the proposed action includes all practicable measures to minimize harm to wetlands which
23 may result from such use. In addition, the New Jersey Freshwater Wetlands Protection Act
24 regulates and protects wetlands in the State. The NJDEP requires a protective buffer around
25 wetlands and regulated waters during construction that ranges from 50 to 300 feet depending
26 on the resource value of the wetland or specific designation by the state. No designated
27 Category One waters or upstream tributaries of these waters occur near the project sites that
28 would require a 300-foot buffer. A conservatively protective buffer of 150 feet would be used
29 during implementation of the Proposed Action. This is the most protective buffer that is applied
30 to wetlands of exceptional resource value. No permits from the NJDEP would be required since
31 all project activities would be conducted outside the 150-foot buffer. Although the conceptual
32 site plans show minor overlap into the wetland buffer areas, the buffers will be flagged in the
33 field by a qualified biologist and no construction will occur in wetlands or the 150-foot buffers.

34 The North Run and Back 9 sites are underlain by the Kirkwood Aquifer/Formation (Dynamic
35 Earth 2020a, 2020b). Groundwater at the North Run site occurs at depths ranging between
36 approximately 10 and 13 feet below the ground surface (Dynamic Earth 2020a). Groundwater at
37 the Back 9 site occurs at depths ranging between approximately 5 and 11 feet below the ground
38 surface (Dynamic Earth 2020b). The Lakehurst site is underlain by the Cohansey
39 Aquifer/Formation (Dynamic Earth 2020c). Groundwater in the vicinity of the Lakehurst site
40 occurs at depths ranging between approximately 5.5 feet and 6.5 feet below the ground surface
41 (Dynamic Earth 2020c). Groundwater levels at the sites are expected to fluctuate seasonally
42 and following significant periods of precipitation.

43 Stormwater runoff on the North Run site follows existing site topography toward inlet structures
44 located along adjacent roadways (Dynamic Earth 2020a). Stormwater runoff on the Back 9 site
45 is expected to follow the existing topography of the golf course and drain along paved and
46 gravel paths to vegetated areas on the site (Dynamic Earth 2020b). Stormwater runoff on the

1 Lakehurst site is expected to follow existing site topography toward inlet structures located
2 along adjacent roadways (Dynamic Earth 2020c).

3 Water resources do not occur at the rooftop and carport solar sites or at the buildings where
4 indoor energy upgrades would occur.

5 **3.4 SAFETY AND OCCUPATIONAL HEALTH**

6 **3.4.1 Definition of Resource**

7 Safety and occupational health includes risks to the public and workers from conducting daily
8 activities and exposure to unsafe or unhealthful environments. Although many routine activities
9 involve some degree of risk, there are numerous ways to enhance safety and minimize health
10 risks. Safety and occupational health for this analysis addresses workers' health and public
11 safety during construction activities, installation of project equipment and subsequent
12 operations, including potential glint/glare. The ROI for this analysis is the project sites.

13 **3.4.2 Existing Conditions**

14 Safety and occupational health is largely a matter of adherence to regulatory requirements
15 imposed for the benefit of workers and implementation of operational practices that reduce risks
16 of illness, injury, death, and property damage. The health and safety of onsite military and
17 civilian workers, the public, and the environment are safeguarded by numerous DoD and Air
18 Force regulations designed to comply with standards issued by the Occupational Safety and
19 Health Administration (OSHA) and EPA. These standards specify the amount and type of
20 training required for workers, the use of protective equipment and clothing, engineering controls,
21 maximum exposure limits for workplace stressors such as noise and chemicals, construction
22 site safety such as fencing to prevent unauthorized entry, and controls to prevent release of
23 contaminants to the environment. All personnel working at JB MDL are required to follow
24 applicable regulations and standards to ensure the safety of themselves, others, the
25 environment, and property.

26 To eliminate or reduce risks associated with construction and operation and maintenance
27 activities, contractors are required to prepare project specific health and safety plans that
28 analyze the risks or hazards associated with projects and how to mitigate or control those risks.
29 Reduction or control of risks can include wearing protective clothing and equipment,
30 implementing engineering controls, and ensuring personnel are properly trained. The successful
31 control of risks can be assessed by monitoring employee exposure to workplace chemicals such
32 as asbestos or hazardous materials and ensuring personnel who could be subject to chemical
33 exposures are enrolled in a medical surveillance program.

34 The Federal Aviation Administration (FAA) has established guidelines and tolerances from
35 experience gained from solar energy systems installed on airports to mitigate the effects of
36 glint/glare from solar arrays (FAA 2018). In accordance with 14 CFR Part 77, the FAA must be
37 notified of the intention to construct a solar PV array near an airfield by filing FAA Form 7460-1,
38 *Notice of Proposed Construction or Alteration*. The project component cannot make or permit
39 any changes or alterations in the airport or any of its facilities that are not in conformity with the
40 airport layout plan that might, in the opinion of the FAA, adversely affect the safety, utility, or
41 efficiency of the airport. The FAA published *Technical Guidance for Evaluating Selected Solar*
42 *Technologies on Airports* in 2018 as a reference for FAA technical staff who review proposed

1 airport solar projects and for airport sponsors that might be considering a solar installation (FAA
2 2018). The FAA reviewed multiple sections of the technical guidance, particularly with respect to
3 compatibility and glint/glare. As a result of the review, the FAA issued *Interim Policy, FAA*
4 *Review of Solar Energy System Projects on Federally Obligated Airports* in 2013 (78 FR 63276,
5 October 23, 2013).

6 Other safety issues, such as lead, asbestos, and Installation Restoration Program (IRP) sites,
7 are discussed in more detail in sections 3.5 and 4.5.

8 **3.5 HAZARDOUS MATERIALS / WASTE**

9 **3.5.1 Definition of Resource**

10 The terms “hazardous materials” and “hazardous waste” refer to substances defined as
11 hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act
12 (42 U.S.C. 9601 et seq.) and the Solid Waste Disposal Act, as amended by the Resource
13 Conservation and Recovery Act (RCRA, 42 U.S.C. 6901 et seq.). Hazardous wastes that are
14 regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste
15 or any combination of wastes that exhibits one or more of the hazardous characteristics of
16 ignitability, corrosivity, toxicity, or reactivity or is listed as a hazardous waste under 40 CFR Part
17 261. In general, hazardous materials include substances that, because of their quantity;
18 concentration; or physical, chemical, or infectious characteristics; may present substantial
19 danger to public health or the environment when released into the environment or otherwise
20 improperly managed.

21 This analysis of hazardous materials and wastes includes discussion of the management of
22 hazardous materials, hazardous waste, and petroleum products; hazardous building materials
23 such as asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated
24 biphenyls (PCBs); and Environmental Restoration Program sites within and adjacent to the
25 project sites. The primary agencies responsible for regulation of hazardous materials and waste
26 are the EPA and the NJDEP. The ROI for the hazardous materials and waste analysis is the
27 proposed project areas and surrounding areas that could affect or be affected by activities at
28 those sites.

29 **3.5.2 Existing Conditions**

30 The DoD’s Enterprise Resource Planning requires installations to identify, investigate, and clean
31 up contaminated sites on their installation. The program provides a uniform methodology to
32 evaluate past disposal sites, control the migration of contaminants, minimize potential hazards to
33 human health and the environment, and clean up contamination through a series of stages until
34 it is decided that no further remedial action is warranted.

35 JB MDL works closely with the EPA and the NJDEP to ensure environmental issues are
36 appropriately addressed. The Environmental Restoration Program at JB MDL contains two
37 programs, the IRP and the Military Munitions Response Program (MMRP). The IRP includes
38 sites managed under the Comprehensive Environmental Response, Compensation, and
39 Liability Act. The IRP sites are categorized as either National Priorities List or non-National
40 Priorities List sites and petroleum sites and are managed under RCRA or applicable states
41 laws. The MMRP addresses non-operational range lands that are suspected or known to

1 contain unexploded ordnance, discarded military munitions, or munition constituent
2 contamination.

3 During normal operations, JB MDL uses hazardous materials and petroleum products such as
4 fuels, solvents, paints, oils, lubricants, adhesives, corrosives, pesticides, deicing fluid,
5 refrigerants, and cleaners. Older buildings at JB MDL may contain ACM and LBP. JB MDL
6 manages ACM in accordance with AFI 32-1052, Facility Asbestos Management, and its
7 Asbestos Management Plan. JB MDL manages LBP in accordance with its Lead-Based Paint
8 Management Plan. The plan complies with state and federal guidelines regarding the proper
9 management of LBP. PCBs are a group of chemical mixtures used as insulators in electrical
10 equipment, such as transformers and fluorescent light ballasts. The Toxic Substances Control
11 Act banned the manufacturing of PCBs in 1979 and regulates their disposal.

12 The base adheres to the Environmental Management System framework and its “Plan, Do,
13 Check, Act” cycle for ensuring mission success to manage the risks associated with those
14 materials. EO 13693, Planning for Federal Sustainability in the Next Decade, U.S. Department
15 of Defense Instruction 4715.17, Environmental Management Systems, AFI 32-7001,
16 Environmental Management, and international standard, ISO 14001:2004, provide guidance on
17 how environmental programs should be established, implemented, and maintained to operate
18 under the Environmental Management System framework. That guidance establishes the
19 procedures to comply with applicable federal, state, and local standards for hazardous and solid
20 waste management.

21 **3.6 INFRASTRUCTURE AND UTILITIES**

22 **3.6.1 Definition of Resource**

23 Infrastructure consists of utilities, buildings and other structures, and waste management.
24 Utilities include electrical, natural gas, liquid fuel, water supply, sanitary sewage/wastewater,
25 stormwater and communication systems. However, for the purposes of this analysis, this section
26 discusses the stormwater and electrical infrastructure of the proposed project locations. Other
27 utility systems (natural gas, wastewater, potable water, communications) would not be affected
28 by the Proposed Action and therefore are not discussed.

29 **3.6.2 Existing Conditions**

30 ***Stormwater Infrastructure***

31 **McGuire.** Surface runoff on the North Run site follows existing site topography toward inlet
32 structures located along adjacent roadways (Wrightstown-Cookstown Road) (Dynamic Earth
33 2020a). Surface runoff on the Back 9 site also follows existing site topography present from the
34 site’s former use as a golf course. Paved and gravel paths drain to adjacent vegetated areas
35 and wooded areas have natural drainage patterns (Dynamic Earth 2020b).

36 **Dix.** Stormwater on Dix is directed by natural drainage patterns or modified drainage facilities
37 (EHS 2013). Stormwater in developed areas of Dix are collected by extensive stormwater
38 drainage networks that discharge to various surface waters on the base.

39 **Lakehurst.** Surface runoff on the proposed Lakehurst site follows existing site topography
40 toward inlet structures located along adjacent roadways (Houghton Road) (Dynamic Earth
41 2020c).

1 **Electrical Infrastructure**

2 **McGuire.** Electrical infrastructure on the North Run site consists of an underground electrical
3 line running from the remnant concrete slab on the site to the underground electrical system on
4 the south side of Wrightstown-Cookstown Road (JB MDL GIS 2020). The closest electrical
5 infrastructure to the Back 9 site is an underground line along Station Road south of the site,
6 which joins additional electrical line infrastructure along North Ammo Road.

7 **Dix.** The electrical system on the Dix portion of JB MDL was privatized in 1996 and is now
8 owned, operated, and maintained by Jersey Central Power & Light (JCP&L), A FirstEnergy
9 Company. The privatization agreement with JCP&L requires that electricity be provided on an
10 uninterrupted basis.

11 **Lakehurst.** JCP&L provides electricity to the Lakehurst area of JB MDL. Underground electric
12 lines run along Houghton Road along the north edge of and pass through the proposed site (JB
13 MDL GIS 2020).

14 **Other Infrastructure**

15 JB MDL lighting systems use approximately 100,000 aging and inefficient incandescent lighting
16 fixtures, few of which are on a smart control system. Electrical transformers on the base are
17 outdated and inefficient, as are boilers and air conditioning units on the base.

18 **3.7 BIOLOGICAL / NATURAL RESOURCES**

19 **3.7.1 Definition of Resource**

20 Biological resources include native, non-native, and invasive plants and animals, sensitive and
21 protected plant and animal species, and the habitats, such as wetlands, forests, and grasslands,
22 in which they exist. Habitat can be defined as the resources and conditions in an area that
23 support a defined suite of organisms. The ROI for biological resources is the project sites.

24 JB MDL has an Integrated Natural Resources Management Plan (INRMP) that serves as a
25 guide for managing and protecting natural resources at the base (Air Force 2020). It also
26 informs compliance with natural resource regulations including the Endangered Species Act
27 (ESA, 16 U.S.C. §1531 et seq.) and the MBTA (16 U.S.C. §703 et seq.).

28 **3.7.2 Existing Conditions**

29 JB MDL consists of a total 41,995 acres, of which approximately 33 percent is developed and
30 barren land, 25 percent is wetlands and marsh, 18 percent is pitch pine (*Pinus rigida*), 16
31 percent is forest, 4 percent is harvested forest, 2 percent is floodplain forest, less than 1 percent
32 is open water, and less than 1 percent is shrub and scrub (Air Force 2020). Much of JB MDL is
33 forested with pine/oak or oak/pine forest communities and includes an abundant understory
34 vegetation that provides excellent cover for wildlife (Air Force 2020). Approximately 29,162
35 acres (24,609 acres on Dix, 4,230 acres on Lakehurst, and 324 acres on McGuire) are wooded
36 (Air Force 2020). There are 4,540 acres of grasslands on JB MDL (Air Force 2020). Vegetation
37 communities at Dix and Lakehurst are diverse, ranging from grasslands to forests, whereas
38 most of McGuire is developed and consists of maintained grasslands, lawns, and landscaped
39 areas (Air Force 2020).

1 Vegetation on the North Run site on McGuire consists of approximately 25 acres of mowed
2 grasslands. An adjacent wooded wetland area and the North Run stream occur to the north of
3 the site. A small portion of the North Run site also overlaps with an environmental restoration
4 site (landfill, LF 003) and an IRP site (ST007). This issue is discussed more in section 3.5 and
5 section 3.9. Vegetation on the Back 9 site on McGuire consists of approximately 26 acres of
6 landscaped golf course with turf lawn and ornamental trees. An adjacent wooded wetland area
7 occurs to the north, south, east, and west of the site, and the South Run stream occurs to the
8 south, east, and west of the site. The Back 9 golf course was closed in late summer 2018 (Air
9 Force 2020). Vegetation on the Lakehurst site consists of approximately 12 to 15 acres of
10 grasslands. An adjacent wooded wetland area and the Manapaqua Branch stream occur to the
11 west of the site. Table 3-3 summarizes the habitats within and adjacent to the project sites.

Table 3-3. Habitats Within and Adjacent to the Project Sites

Site	Acres	Habitat Onsite	Adjacent Habitats	Notes
North Run (McGuire)	25	Mowed grasslands	Wooded wetlands and North Run Stream, potential barred owl (<i>Strix varia</i>) habitat	Landfill and IRP site within project site
Back 9 (McGuire)	26	Landscaped golf course (lawn and ornamental trees)	Wooded wetlands and South Run Stream, potential barred owl habitat	Golf course closed in late summer 2018
Lakehurst	12-15	Grasslands	Wooded wetland area and Manapaqua Branch stream, potential barred owl habitat	None

12

13 Many wildlife species occur on JB MDL. Some are habitat generalists that do not have very
14 specific habitat requirements and seem to thrive despite human disturbance, such as American
15 robins (*Turdus migratorius*) and white-tailed deer (*Odocoileus virginianus*) (Air Force 2020).
16 Others require very specific habitats and do not fare as well with human disturbance, such as
17 brook trout (*Salvelinus fontinalis*) and barred owls (*Strix varia*) (Air Force 2020).

18 JB MDL is located within the Pinelands National Reserve. The Pinelands National Reserve was
19 created through the passage of the National Parks and Recreation Act of 1978 and
20 encompasses approximately 1.1 million acres, or 22 percent of New Jersey's land area
21 (Pinelands Commission 2020). Due to its location within the Pinelands National Reserve, along
22 with its diversity of habitat and large land area, JB MDL supports many rare, threatened, and
23 endangered plant and animal species protected at the federal level, as well as those protected
24 by the State of New Jersey (Air Force 2020), collectively referred to as special-status species.
25 Many special-status species surveys have been conducted on JB MDL throughout the years
26 (Air Force 2020). Resident and migratory birds protected under the MBTA and EO 13186,
27 Responsibilities of Federal Agencies to Protect Migratory Birds, also use JB MDL, including
28 seasonal migrants on the Atlantic Flyway migratory route (Air Force 2020).

29 Of the 57 special-status fauna species that may occur on JB MDL, 24 State threatened or
30 endangered species have been documented on the installation (Air Force 2020). The U.S. Fish
31 and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool was also
32 used to determine federally listed species that may occur in the area. Federally listed species
33 that have been documented on JB MDL include swamp-pink (*Helonias bullata*), Knieskern's
34 beaked-rush (*Rhynchospora knieskernii*), bog turtle (*Glyptemys muhlenbergii*), and northern

1 long-eared bat (*Myotis septentrionalis*) (Air Force 2020). Swamp-pink and Knieskern's beaked-
2 rush both occur in wetland habitats (Air Force 2020). Swamp-pink has been previously found at
3 Dix, but in no other locations on JB MDL. Knieskern's beaked-rush has been found at the Jump
4 Circle on the Lakehurst portion of JB MDL (Air Force 2020), which is approximately 2 miles west
5 of the Lakehurst site. While one bog turtle was previously documented on Lakehurst in 1988
6 and again in 1993, no bog turtles have been found on JB MDL since that time despite multiple
7 surveys for the species (Air Force 2020). A recent survey in 2018 by Herpetological Associates
8 indicated that no suitable bog turtle habitat remained on the base due to a combination of
9 vegetative succession by wetland trees and invasive plants and changing water levels due to
10 beavers (Air Force 2020). Chaffseed (*Schwalbea americana*), a federally and State listed plant
11 species, has never been observed at JB MDL but occurs in the vicinity of JB MDL's boundary
12 and suitable habitat for this species exists on the installation (Air Force 2020). No designated
13 USFWS critical habitat is in or adjacent to the ROI. The bald eagle (*Haliaeetus leucocephalus*),
14 a State listed species, has been documented nesting in trees on Lakehurst and Dix (Air Force
15 2020) and is also protected by the Federal Bald and Golden Eagle Protection Act. Special-
16 status species that may occur on the project sites and their full listing status are shown in **Table**
17 **3-4**.

18 Given the developed and mowed habitats within the North Run and Back 9 sites, those sites
19 provide marginal habitat for wildlife species and do not provide habitat for special-status plant
20 species. Since the habitat is marginal, birds and other wildlife would likely only be transient
21 visitors to those sites. While trees on the Back 9 site could be used by wildlife such as nesting
22 birds, large areas of much higher quality forest habitat occur adjacent to the site and are more
23 likely to be used by these species. Lakehurst has a higher potential to support wildlife and plant
24 species given the grasslands onsite. However, many of the special-status species listed in
25 **Table 3-4** have not been found nearby or within the project sites. If they have been found
26 nearby or within the project sites, notes on those occurrences are provided in the table and that
27 table entry is in bold. In addition, species that do not have the potential to occur on the sites are
28 not included in the table because habitat that could support them does not occur, such as
29 wetland species. For example, since the swamp-pink and Knieskern's beaked rush occur in
30 wetland habitats, which do not occur in the project sites, these species are not included in the
31 analysis below.

32 Since rooftops are the only proposed solar sites on Dix, habitat for ground-dwelling species
33 does not occur at these sites and these species would not occur. The rooftop sites on McGuire,
34 Lakehurst, and Dix and the carport sites on McGuire could be used by nesting birds and bats.

35 Based on current JB MDL GIS data, no special-status species have been documented in the
36 vicinity of the North Run site (**Figure 3-3**). Mowed grasslands on the site are unlikely to support
37 most special-status species. However, some special-status birds or reptiles have potential to
38 occur on the site (**Table 3-4**). Potential forest habitat for the barred owl, a State listed
39 threatened species, occurs adjacent to the North Run site (Air Force 2020). However, preferred
40 habitat for this species does not occur on the site, which is defined as large, unbroken stands of
41 mature lowland, upland deciduous, or mixed coniferous/deciduous forests. Since forest habitat
42 is not present on the site, barred owl is unlikely to occur within the North Run site. Wetlands that
43 occur in the vicinity of the North Run site are shown in **Figure 3-3**.

44

Table 3-4. Special-status Species with the Potential to Occur on the Project Sites

Scientific Name	Common Name	Status	Habitat	Site(s)
Plants				
<i>Amianthium muscaetoxicum</i>	Fly poison	State Special Concern	Dry to moist woods, meadows, and open fields.	Lakehurst Site
<i>Andropogon gyrans</i> var. <i>gyrans</i>	Elliott's beardgrass	State Special Concern	Dry sandy roadsides, embankments, fields, and pine or oak woodlands.	Lakehurst Site
<i>Aristida dichotoma</i> var. <i>curtissii</i>	Curtis' three-awn grass	State Special Concern	Sandy fields and clearings, disturbed sites, pine woods and granitic outcrops.	Lakehurst Site
<i>Desmodium strictum</i>	Pineland tick-trefoil	State Special Concern	Dry woodlands, sandhills, and fields.	Lakehurst Site
<i>Gymnopogon ambiguous</i>	Bearded skeletongrass	State Special Concern	Glades, prairies, dry pinelands and woodlands, dry fields, and barrens.	Lakehurst Site
<i>Helianthemum bicknellii</i>	Hoary frostweed	State Special Concern	Sandy or rocky barrens, glades, sandhills, prairies, fields, pine-oak woodlands, oak-hickory woodlands, montane outcrops and balds.	Lakehurst Site
<i>Juncus greenei</i>	Greene's rush	State Special Concern	Dry, sandy sites such as sandplains, sandy road shoulders, dry fields and rock outcrops.	Lakehurst Site
<i>Myosotis verna</i>	Spring forget-me-not	State Special Concern	Open woodlands, barren wooded slopes, sandy savannas and prairies, fields, roadside embankments, along railroads, and disturbed areas.	Lakehurst Site
<i>Pityopsis falcata</i>	Sickleleaf silk-grass	State Special Concern	Open fields, plains, and woodland openings on dry, sandy soils.	Lakehurst Site. This species has been previously documented in multiple grassland areas near the Lakehurst Site (Figure 3-5).
<i>Rubus recurvicaulis</i> var. <i>inarmatus</i>	Arching dewberry	State Special Concern	Disturbed areas, forest edges, grasslands, meadows and fields, woodlands.	Lakehurst Site

Table 3-4. Special-status Species with the Potential to Occur on the Project Sites

Scientific Name	Common Name	Status	Habitat	Site(s)
<i>Schwalbea americana</i>	Chaffseed	Federal Endangered, State Endangered	Requires frequent fire or understory removal. Grassland areas with prescribed burns or mowing. Early successional habitats such as open, moist pine flatwoods, fire-maintained savannas, ecotonal areas between peaty wetlands and dry sandy soils, bog borders, and other open grass-sedge.	Lakehurst Site
<i>Tridens flavus</i> var. <i>chapmanii</i>	Chapman's redbop	State Endangered	Open woodlands, roadsides, dry fields.	Lakehurst Site
Birds				
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Federal Bird of Management Concern, State Endangered	Open fallow and grassy fields, sedge meadows, and pastures. Prefer habitats of high, dense vegetation and a thick layer of ground litter.	Lakehurst Site (nesting)
<i>Ammodramus savannarum pratensis</i>	Grasshopper sparrow	Federal Bird of Management Concern, State Threatened (Breeding)	Natural and disturbed grasslands with short- to medium-height bunch grasses interspersed with patches of bare ground, a shallow litter layer, scattered forbs, and few shrubs.	Lakehurst Site (nesting). This species has been previously documented in grassland habitat approximately 0.5 miles east of the Lakehurst Site (Figure 3-5).
<i>Ardea herodias</i>	Great blue heron	State Special Concern (Breeding)	Nests in trees in upland and wetland areas near bodies of water.	Back 9 Site (nesting)
<i>Barramia longicauda</i>	Upland sandpiper	Federal Bird of Management Concern, State Endangered	Upland meadows and short grass grasslands provide habitat for nesting. Habitats that contain a mix of tall and short grasses and forbs provide both foraging and nesting habitat.	Lakehurst Site (nesting). Nesting pairs of this species have been observed approximately 2 miles northwest of the Lakehurst Site and on the McGuire Airfield.

Table 3-4. Special-status Species with the Potential to Occur on the Project Sites

Scientific Name	Common Name	Status	Habitat	Site(s)
<i>Chordeiles minor</i>	Common Nighthawk	State Special Concern	Nests and forages in open coniferous forest, forest clearings, grasslands, fields, and open areas within urban areas. Can nest on rooftops. Nests on bare ground with no nesting material, usually in an open area.	North Run Site, Back 9 Site, Lakehurst Site, rooftops and carports (nesting)
<i>Circus cyaneus</i>	Northern harrier	Federal Bird of Management Concern, State Endangered (Breeding)	Open areas such as tidal marshes, emergent wetlands, fallow fields, grasslands, meadows, airports, and agricultural areas for nesting and foraging.	Lakehurst Site (nesting)
<i>Dendroica discolor</i>	Prairie Warbler	Federal Bird of Conservation Concern	Nests in trees or shrubs in various habitats, such as regenerating forests, open fields, and Christmas-tree farms.	Back 9 Site (nesting)
<i>Dolichonyx oryzivorus</i>	Bobolink	Federal Bird of Conservation Concern, State Threatened (Breeding)	Nests in low-intensity agricultural habitats, fallow fields and meadows of grasses, forbs, and wildflowers.	Lakehurst Site (nesting)
<i>Eremophila alpestris</i>	Horned lark	Threatened (Breeding)	Open habitats with short, sparse grasses and wildflowers, bare ground, and few shrubs.	North Run Site, Back 9 Site, Lakehurst Site (nesting)
<i>Falco sparverius</i>	American kestrel	State Threatened	Open, grassy habitats – especially that have trees or structures that provide cavities for nesting and perches for hunting. Can nest under the eaves of buildings.	Back 9 Site, rooftops and carports (nesting); Lakehurst Site (foraging)

Table 3-4. Special-status Species with the Potential to Occur on the Project Sites

Scientific Name	Common Name	Status	Habitat	Site(s)
<i>Haliaeetus leucocephalus</i>	Bald eagle	Federal Bald and Golden Eagle Protection Act, State Endangered (Breeding)	Nests in trees away from human disturbance usually within close proximity to open water. Remain in the area surrounding their nest.	Back 9 Site (nesting); Lakehurst Site (foraging). A nesting bald eagle has been documented approximately 1.5 miles west of the Lakehurst Site.
<i>Melanerpes erythrocephalus</i>	Red-headed woodpecker	Federal Bird of Management Concern, State Threatened	Nest in trees in open upland and wetland forested areas.	Back 9 Site (nesting)
<i>Pandion haliaetus</i>	Osprey	State Threatened (Breeding)	Nests close to water on tall, dead trees, live trees, channel markers, old duck blinds, and telephone poles.	Back 9 Site (nesting)
<i>Passerculus sandwichensis</i>	Savannah sparrow	State Threatened (Breeding)	Nests in a variety of open habitats, including fields with a mix of short and tall grasses, a thick litter layer, dense ground vegetation, and scattered shrubs, saplings, or forbs.	Lakehurst Site (nesting)
<i>Poocetes gramineus</i>	Vesper sparrow	State Endangered (Breeding), State Special Concern (Non-Breeding)	Nests and forages in fields, grasslands, and pastures.	Lakehurst Site (nesting)
<i>Sturnella magna</i>	Eastern meadowlark	Federal Bird of Management Concern, State Special Concern	Nests and forages in grasslands, prairies, lightly grazed pastures, mixed-grass hayfields, and fallow areas with dense cover of grasses.	Lakehurst Site (nesting)

Table 3-4. Special-status Species with the Potential to Occur on the Project Sites

Scientific Name	Common Name	Status	Habitat	Site(s)
<i>Strix varia</i>	Barred owl	State Threatened	Lives and breeds in large, unbroken stands of mature lowland, upland deciduous, or mixed coniferous/deciduous forests.	North Run Site, Back 9 Site, Lakehurst Site (foraging). This species has been documented approximately 1 mile east of the Back 9 Site. Potential habitat for this species occurs adjacent to the North Run, Back 9, and Lakehurst Sites.
<i>Tyto alba</i>	Barn owl	State Special Concern	Nests and forages in open habitats such as agricultural fields, pastures, and marshland. May nest and roost in structures.	North Run Site, Back 9 Site, Lakehurst Site (foraging), rooftops and carports (nesting)
Mammals				
<i>Myotis septentrionalis</i>	Northern long-eared bat	Federal Threatened, State Endangered	Roosts in forest trees and rarely in structures, roosts and hibernates in caves and mines. Forages in forest understory.	Rooftops and carports (roosting). This species has been previously documented approximately 0.3 miles east of the Lakehurst Site (Figure 3-5).
Reptiles				
<i>Pituophis melanoleucus</i>	Northern pine snake	State Threatened	Pine-oak forest on sandy soils, occur equally in disturbed and undisturbed sites. Found at road edges, railroad beds, field margins, and other open areas.	North Run Site, Back 9 Site, Lakehurst Site. This species has been previously documented within the Lakehurst project site (Figure 3-5).
<i>Lampropeltis getula</i>	Eastern king snake	State Special Concern	Pine forests, rocky areas, fields, swamps, farmlands, rural and suburban areas. Normally are found close to a water source.	North Run Site, Back 9 Site, Lakehurst Site

Table 3-4. Special-status Species with the Potential to Occur on the Project Sites

Scientific Name	Common Name	Status	Habitat	Site(s)
<i>Terrapene carolina</i>	Eastern box turtle	State Special Concern	Open woodlands and meadows, grasslands and fields, and rural and suburban areas. Predominantly terrestrial, but usually not far from streams or ponds.	North Run Site, Back 9 Site, Lakehurst Site
Invertebrates				
<i>Callophrys iris</i>	Frosted elfin	State Threatened	Dry clearings and open areas that are natural (e.g. savannas) or of human origin (e.g., power-line right of ways and roadsides) with host plant.	Lakehurst Site
<i>Hesperia attalus slossonae</i>	Dotted skipper	State Special Concern	Dry, sandy areas and favors areas where host grasses grow.	Lakehurst Site

1 Source: Air Force 2020.

2 Note: Special-status species found nearby or within the project sites are in **bold**.

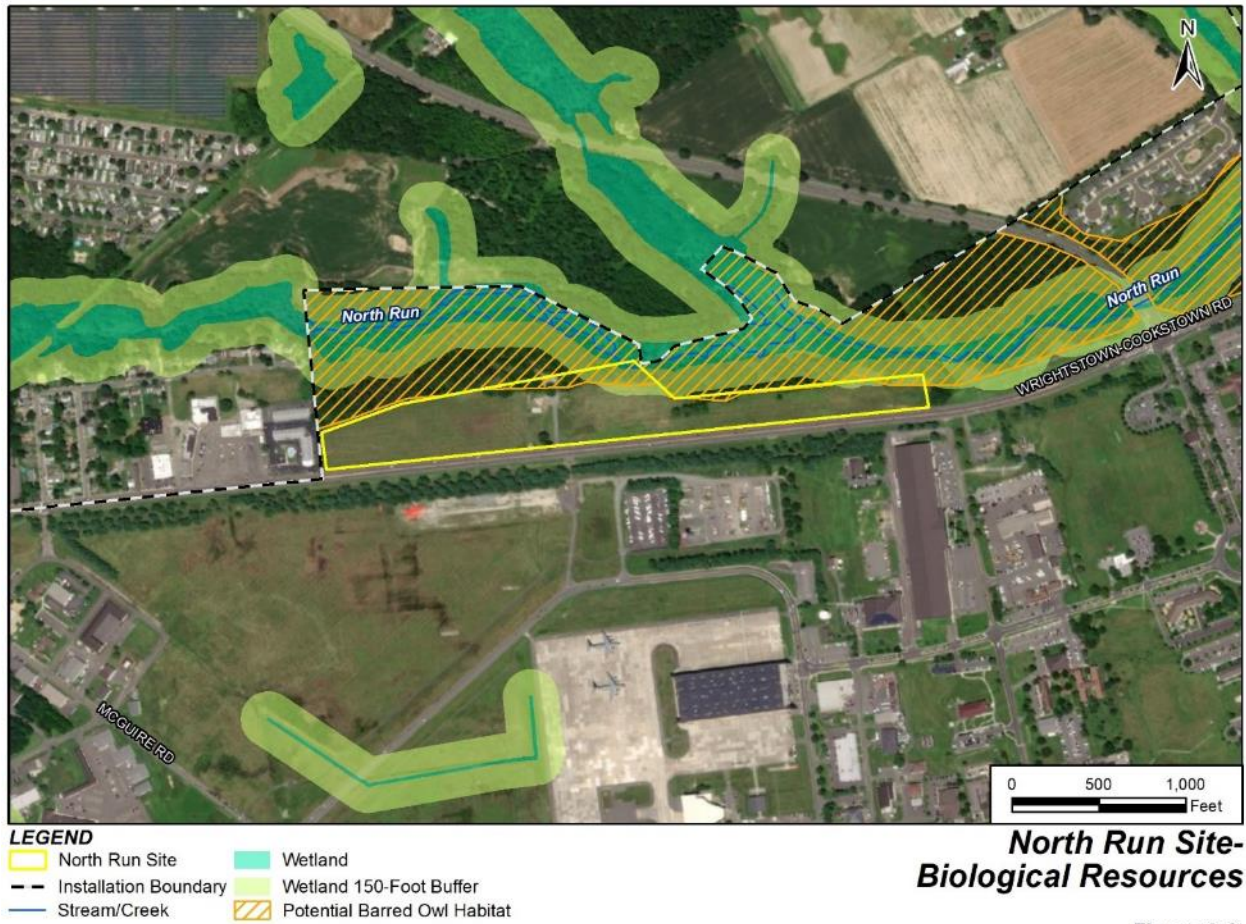
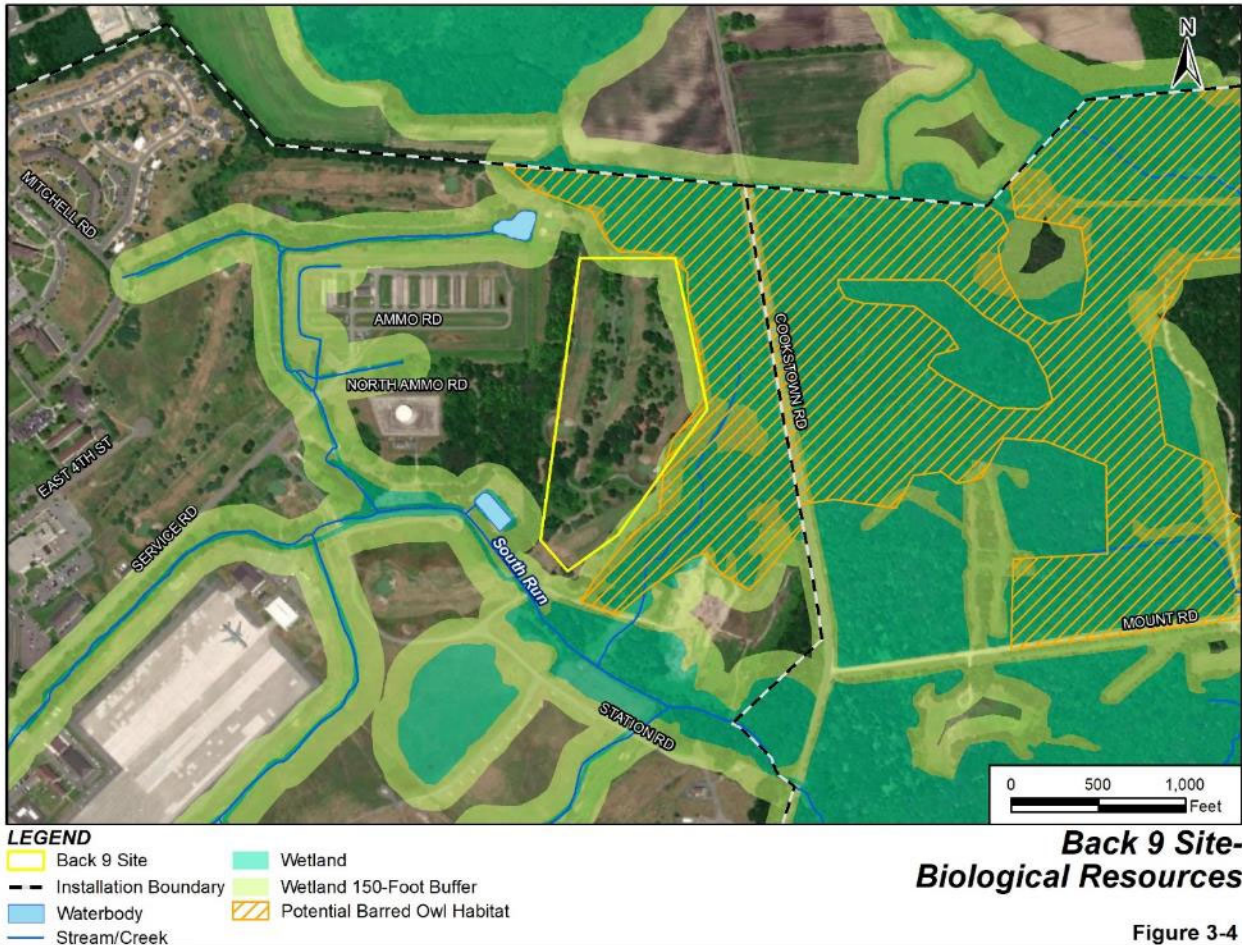


Figure 3-3

1 Source: JB MDL GIS 2020.

2 Based on current JB MDL GIS data, no special-status species have been documented in the
 3 vicinity of the Back 9 site (**Figure 3-4**). Barred owl has been documented approximately 1 mile
 4 east of the Back 9 site and potential habitat for this species occurs adjacent to the site (Air
 5 Force 2020). However, preferred habitat for this species does not occur on the site. Therefore,
 6 this species is unlikely to occur on the site. Species that may exist in landscaped lawn and tree
 7 areas, such as special-status bird species and reptiles, could occur on the site (**Table 3-4**).
 8 Wetlands that occur in the vicinity of the Back 9 site are shown in **Figure 3-4**.



Source: JB MDL GIS 2020.

1

2 Special-status species and wetlands documented in the vicinity of the Lakehurst site are shown
 3 in **Figure 3-5**. Numerous hibernacula and individuals of northern pine snake (*Pituophis*
 4 *melanoleucus melanoleucus*), a State listed threatened species, have been documented within
 5 the Lakehurst site. One occurrence of NLEB, a federally listed threatened and State listed
 6 endangered species, has been documented approximately 0.3 mile east of the site. This NLEB
 7 was discovered roosting on the side of an engineering building in 2018 (Air Force 2020). The
 8 project site is outside the 0.25-mile buffer required by the USFWS for protection of NLEB
 9 hibernacula, as shown in **Figure 3-5**. A 0.5-mile buffer is also shown in the figure for reference.
 10 NLEB may briefly traverse through the Lakehurst site to adjacent wooded areas. However, it is
 11 unlikely to forage or occur on the site because preferred foraging habitat of forest understory is
 12 not present (USFWS 2015).

13 Additional special-status species that have been historically documented in the vicinity of the
 14 Lakehurst site are:

- 15 • the federally and State listed endangered bog turtle in wetland habitat approximately 0.5
 16 mile southeast of the site,
- 17 • the State listed threatened grasshopper sparrow approximately 0.5 mile east of the site,

- 1 • the State plant species of concern pale beaksedge (*Rhynchospora pallida*) in wetland
2 habitat approximately 0.4 mile south of the site,
- 3 • the State plant species of concern sickleleaf silk-grass (*Pityopsis falcata*) in multiple
4 grassland areas near the site,
- 5 • nesting pairs of the state endangered and federal bird of management concern upland
6 sandpipers approximately 2 miles northwest of the site and on the McGuire Airfield; and
- 7 • the state endangered and federally protected nesting bald eagle approximately 1.5 miles
8 west of the site.

9 Of these species, the grasshopper sparrow, sickleleaf silk-grass, and upland sandpiper
10 could occur in the dry grasslands present on the Lakehurst site.

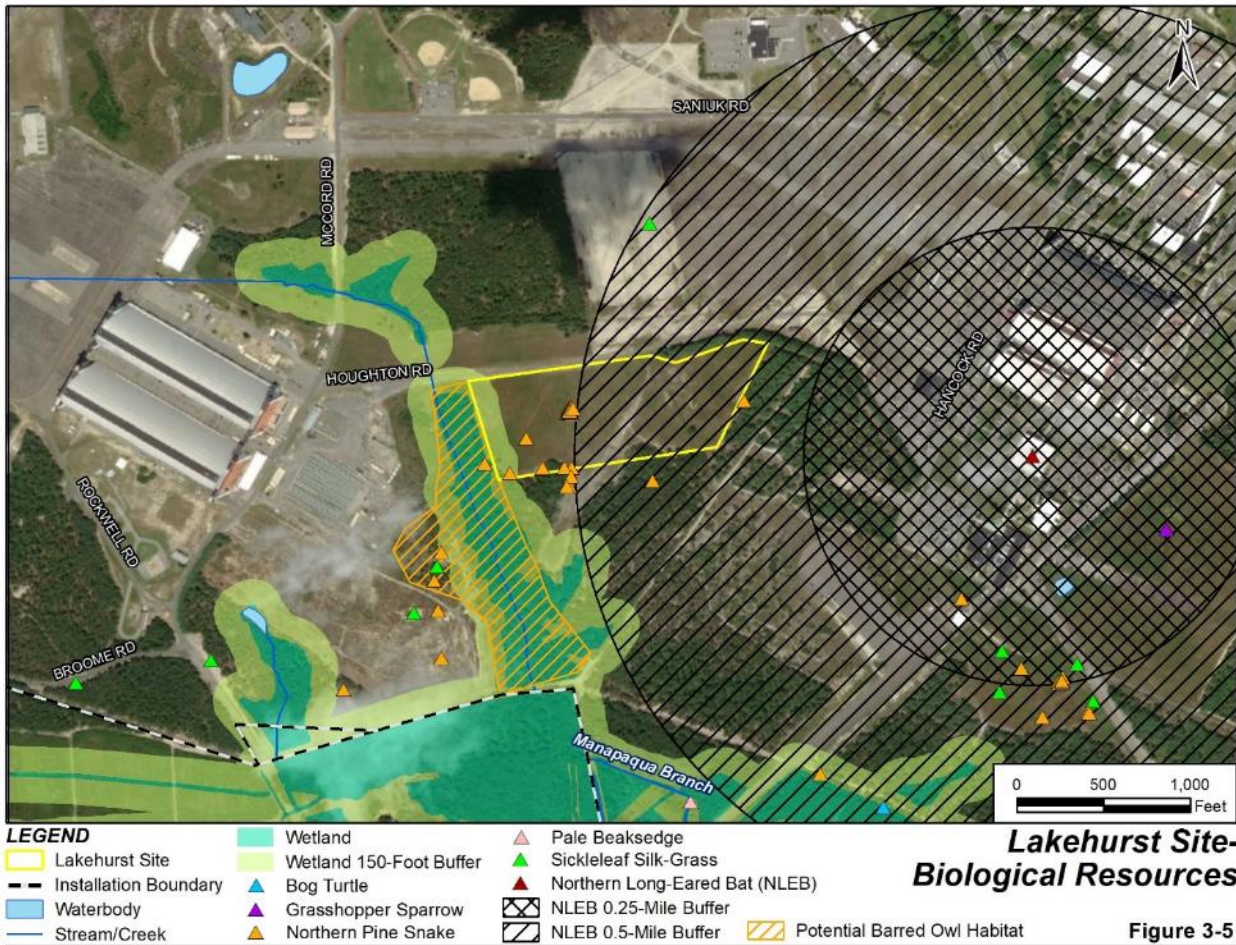
11 There is no suitable bog turtle habitat on JB MDL, therefore, this species is unlikely to occur
12 (Air Force 2020).

13 Bald eagles typically nest in trees. Given the lack of trees within the Lakehurst site, bald
14 eagles are unlikely to nest in the site, but could occur as transient visitors.

15 Potential barred owl habitat occurs adjacent to the site. However, preferred habitat for this
16 species does not occur on the site. Therefore, this species is unlikely to occur on the site.

17 The State listed threatened American kestrel could also occur within the Lakehurst site,
18 since the site contains grassy, open areas that this species prefers. The nearest
19 documented occurrence of American kestrel from the Lakehurst site is approximately 7.2
20 miles west of the site. The site does not contain trees or structures that would be likely to be
21 used for nesting by the American kestrel.

22 Additional special-status species listed in Table 3-4 that utilize grassland habitats could also
23 occur in the vicinity of the Lakehurst site, but they have not been previously documented on
24 or near the site.



Source: JB MDL GIS 2020.

3.8 CULTURAL RESOURCES

3.8.1 Definition of Resource

The term “cultural resources” refers to any place, site, building, structure, object, or collection of these resources built or used by humans. It may include material remains of the past and the beliefs, traditions, rituals, and cultures of the present. As mandated by law, all federal installations and personnel must participate in the preservation and stewardship needs of archaeological and cultural resources and must consider potential impacts to these resources prior to any installation undertaking.

Cultural resources include historic properties as defined by the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.); cultural items as defined by the Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001 et seq.); archaeological resources as defined by the Archaeological Resources Protection Act (16 U.S.C. §§ 470aa-470mm); and sacred sites as defined in EO 13007, Indian Sacred Sites, to which access is provided under the American Indian Religious Freedom Act (42 U.S.C. § 1996).

Cultural resources can include locations with enduring significance to the beliefs, customs, and/or practices of living communities. The term “historic property” is defined in the NHPA as:

1 “any prehistoric or historic district, site, building, structure, or object included in, or eligible for
2 inclusion on the National Register of Historic Places (NRHP)”. This includes artifacts, records,
3 and remains which are related to historic districts, sites, buildings, structures or objects.
4 Buildings and structures over 50 years of age require an Air Force evaluation of the property to
5 determine eligibility for NRHP listing prior to implementing any action that may affect such
6 resources.

7 Per NHPA regulations promulgated by the Advisory Council on Historic Preservation, the Air
8 Force is required to consider the effects of its undertakings on historic properties. The process
9 requires the Air Force to consult with the State Historic Preservation Office and/or applicable
10 federally recognized Native American Tribes (Tribes). The Air Force, in consultation with the
11 State Historic Preservation Office and Tribes, is required to assess direct and indirect effects of
12 a proposed action on historic properties and to resolve any adverse effects that may occur.
13 NHPA Section 106 consultation requirements are detailed in 36 CFR Part 800. Early
14 coordination with the installation’s cultural resources manager also guides the appropriate
15 cultural resources consultation process.

16 For the purposes of this analysis, the term ROI is synonymous with the area of potential effect
17 (APE) as defined under cultural resources legislation. The ROI for archaeological resources is
18 limited to the footprint of ground-disturbing activities. The ROI for architecture is buildings that
19 are or have the potential to be within historic districts or listed on the NRHP and includes a 150-
20 foot buffer beyond the buildings where Proposed Action work would occur.

21 **3.8.2 Existing Conditions**

22 JB MDL operates its cultural resources management program in accordance with Air Force
23 Manual (AFMAN)-7003, Environmental Conservation, Chapter 2, Cultural Resources
24 Management. The Integrated Cultural Resources Management Plan (ICRMP, Air Force 2019)
25 provides the internal compliance and management tool that integrates the entirety of the cultural
26 resources program with ongoing mission activities. The ICRMP establishes priorities for the
27 identification and standards for the evaluation of cultural resources and provides a schedule to
28 accomplish program objectives during a 5-year program.

29 ***Prehistoric and Historic Archaeological Resources***

30 **McGuire.** In 1993, the National Park Service conducted an assessment of the archaeological
31 potential of McGuire, including all of its discontinuous properties, in order to identify which areas
32 of the base required intensive archaeological survey in order to comply with Section 306101 of
33 NHPA (Herbert and Grumet 1993). This assessment identified five archaeologically sensitive
34 areas on the main base. The authors recommended that areas on the main base outside these
35 five areas were not archaeologically sensitive. Neither the North Run site nor the Back 9 site are
36 within any of the identified sensitivity areas. Sensitivity Area 4, which is just southwest of the
37 North Run site, comprises the historic center of the base. Sensitivity Area 5, which is
38 approximately one-half mile southwest of the Back 9 site, is in an undeveloped area at the
39 northeastern end of the present flightline (Herbert and Grumet 1993).

40 A basewide survey was conducted in 1995 by the Argonne National Laboratory (Moeller et al
41 1995) for archaeological resources and pre-Cold War-era buildings and structures. The five
42 sensitivity areas defined by Herbert and Grumet (1993) were reconsidered, and a sixth area
43 was added, based on the potential for buried prehistoric remains in undisturbed alluvial deposit,

1 and on the basis of buildings shown on historic maps. Sensitivity Area 6 is just east of the North
2 Run site.

3 Overall, no evidence for National Register (NR)-eligible prehistoric archaeological resources has
4 been found on McGuire. Two sites were recorded in 1941 (28-Bu-428 and 28-Bu-429).
5 However, later surveys failed to relocate the sites, indicating that both may have been
6 destroyed. A Phase I archaeological survey was conducted in 1994 as part of the Moeller et al
7 (1995) study in areas thought to be of high archaeological sensitivity at McGuire. The survey
8 found areas of prehistoric and historic potential along the North Run. Shovel testing in these
9 areas failed to produce evidence of Native American sites or other prehistoric sites. While the
10 stream courses that once crossed McGuire may have been occupied by Native American
11 populations in prehistory, archaeological survey indicates that much of McGuire has been
12 disturbed and is not likely to contain intact sites (Air Force 2019). The 1994 Phase I survey also
13 identified 11 historical archaeological sites, of which the report recommended eight as
14 potentially eligible for the NR. Phase II archaeological surveys of the 11 sites were conducted.
15 As a result, three historic archaeological sites were found eligible for listing in the NR (28-Bu-
16 458, 28-Bu-459, and 28-Bu-473) (Air Force 2019). However, no known sites occur within the
17 archaeology APE on McGuire for the ground-mounted solar arrays, and the rooftop-mounted
18 components at McGuire associated with the Proposed Action would not affect archaeological
19 resources in the APE.

20 **Dix.** In 1982 and 1983, Louis Berger & Associates and Heritage Studies, Inc. conducted a
21 Phase I survey of the Dix (1985). The project included a 10 percent sample of Dix's 31,000
22 acres. Four prehistoric sites were located, and five archaeologically sensitive areas on Dix were
23 identified. None of the prehistoric sites identified are within one-half mile of any of the proposed
24 solar arrays. One archaeologically sensitive area was identified just east of the Back 9 site and
25 is in the vicinity of Taylor's Mountain, primarily along the Browns Mill-Cookstown Road and
26 Mount Road (Louis Berger & Associates and Heritage Studies 1985).

27 Additional studies were conducted in 1996, 1997, 1998, 2003, and 2017 (Air Force 2019). To
28 date, approximately 70 percent of the total accessible land within the Dix area, excluding active
29 ranges, has been surveyed at the Phase I level. Over 100 archaeological sites have been
30 identified. Approximately 25 percent of the sites have been evaluated for eligibility. Thirteen
31 were found eligible for inclusion in the NRHP (Air Force 2019). Historic archaeological sites at
32 Dix include the Hanover Furnace site, which is NRHP-listed, and the Cherry Valley Tavern site
33 which was discovered in 1983 but no longer exists in situ, although associated features and
34 additional sites are known for the immediate vicinity of the former site. Since at Dix the
35 Proposed Action would consist only of rooftop solar arrays, and no ground disturbance would
36 occur, no archaeological sites would be in the APE.

37 **Lakehurst.** An identification level cultural resource survey was completed at Lakehurst in 1994
38 (Baystate Environmental Consultants). The survey defined and recommended eligible the LTA
39 Historic District and recorded the contributing elements of the District. Additional information
40 regarding the LTA Historic District is provided below under Historic Architectural Resources.
41 The survey also identified areas with potential to contain archeological sites, although no
42 subsurface testing was completed. Areas thought to be high potential sensitivity with respect to
43 prehistoric archaeological sites were defined as areas within 325 feet of wetlands (Baystate
44 Environmental Consultants 1994), which would include the area adjacent to the Lakehurst site,
45 as described in Section 3.7.2 for Biological Resources. Subsequent studies conducted in 2008
46 and 2013 included subsurface testing, however, produced no evidence of prehistoric occupation

1 in any of the test areas, although undisturbed and unsurveyed areas have the potential to
2 contain historic archaeological remains (Air Force 2019).

3 As such, no prehistoric archaeological sites have been identified on the Lakehurst area (Air
4 Force 2019). Two historic archaeological resources are within the Lakehurst area: the Knoll Site
5 (28-Oc-177) and the Russian Proving Ground (28-Oc-178) (also known as Eddystone, the
6 Lakehurst Proving Ground, or World War I Proving Ground). The Knoll site is approximately 1-
7 mile northwest of the proposed ground-mounted array, and the Russian Proving Ground is over
8 1-mile northwest of the proposed array. Camp Kendrick is located 3 miles west of the Lakehurst
9 site. The Lakehurst ground-mounted solar array site is located between the former Camp
10 Kendrick and the Russian Proving Ground. However, no sites are known to occur within the
11 archaeology APE on Lakehurst and the APE for the Lakehurst ground-mounted solar array is
12 historically disturbed by use as a golf course; therefore, there is low potential for intact
13 archaeological sites to occur in the project area (Air Force 2019). Rooftop-mounted components
14 at Lakehurst associated with the Proposed Action would not affect archaeological resources in
15 the APE.

16 **Historic Architectural Resources**

17 **McGuire.** All buildings and structures at McGuire with the potential to be eligible for inclusion in
18 the NR built prior to 1947 and Cold War era facilities less than 50 years old have been
19 inventoried and evaluated. In 1998, two Cold War era resources were found eligible for the NR
20 for exceptional significance: the Boeing Michigan Aeronautical Research Center Missile Site
21 (BOMARC) and Semi-Automatic Ground Environment (SAGE) Complex. The BOMARC facility
22 associated with McGuire was constructed between 1957 and 1959 and is a complex of 110 one-
23 story buildings and structures developed as a launch site for the BOMARC missile. It is located
24 6 miles east of the Back 9 site and 8 miles east of the North Run site. The SAGE Complex
25 consists of Building 1907, a square, four-story tall, windowless, reinforced concrete structure
26 built in 1956 which functioned as a control center for communications and remote missile
27 launching for the NIKE and BOMARC missile systems, and Buildings 1908 and 1909 which
28 were part of the original SAGE building and served to power and cool the building. These
29 buildings are located just over one-half mile west of the Back 9 site. A fourth building, Building
30 1506, was constructed in 1957 as a communications transmitter and is located one-half mile
31 south of the Back 9 site. Because of the relationship between the BOMARC facility and SAGE
32 Complex, they are considered a single, discontinuous historic district: the McGuire BOMARC-
33 SAGE Historic District, eligible as “a keystone in the U.S. strategy of deterrence and air defense
34 during the early stages of the Cold War” (Air Force 2019).

35 The closest historic buildings to the North Run site at McGuire are Building 3109 (approximately
36 500 feet south of the site), Building 3013 (approximately 700 feet southeast) and Building 3209
37 (approximately one-quarter mile south). According to the ICRMP (Air Force 2019), Building
38 3109 was determined not eligible in 2018 by Potomac-Hudson Engineering, Building 3013 still
39 requires evaluation, and Building 3209 was determined eligible for being an outstanding
40 example of a double cantilever hangar by Tetra Tech in 2013 and received SHPO concurrence
41 in August 2014.

42 The closest historic buildings to the Back 9 site at McGuire are Buildings 1914, 1915, 1916,
43 1917, 1918, 1919, and 1922, which are less than 700 feet west of the site. Building 1922 still
44 requires evaluation, and the other buildings were subject to a Program Comment from the
45 Advisory Council on Historic Preservation (ACHP) in 2006. This program alternative allows a

1 federal agency to request that the ACHP comment on a category of undertakings in lieu of
2 commenting on a case-by-case basis. This includes ammunition storage facilities such as
3 Buildings 1914 through 1919. This grouping of buildings is subject to a minimum prescribed
4 distance between munitions site handling and storage areas and inhabited areas of 500 feet (Air
5 Force 2008).

6 None of the solar arrays or project features proposed at McGuire are on historic buildings or
7 within a half mile of an Historic District.

8 **Dix.** Historic architectural resources at Dix include the Scott Plaza Historic District and several
9 buildings (Buildings 3135, 5353, 9726, and 9004) that are eligible for listing in the NR. However,
10 none of the rooftop solar arrays sites at Dix are proposed on historic buildings.

11 **Lakehurst.** The Lakehurst LTA Historic District is an early air transportation historic district
12 located at Lakehurst. It has a period of significance spanning the entire period of Navy LTA
13 operations from 1921 to 1962. The District is comprised of 74 contributing properties and 10
14 non-contributing properties. Originally delineated as part of the *Cultural Resources Survey for*
15 *Naval Air Engineering Station, New Jersey* in 1994, the District was determined eligible for
16 inclusion in the NRHP in 1996. Most of the contributing properties were constructed between
17 1919 and 1945. The main body of the District consists of an industrial area and two arms that
18 extend northwest along Lansdowne Road to a residential/administrative area and southwest
19 along Saniuk Road to Mat 3. A third arm extends northeast to include Hangar 4. The industrial
20 area along Hancock Road contains the main concentration of operational facilities. Hangar 1 is
21 a National Historic Landmark built in 1921. It is best known as the intended destination of the
22 rigid airship Hindenburg prior to when it crashed on May 6, 1937 (Air Force 2019). The
23 proposed solar site at Lakehurst is adjacent to this part of the LTA Historic District. Hangar 1 is
24 approximately one-quarter mile east of the solar site. The District also has two non-contiguous
25 outlying areas and one isolated property. The first consists of Hangars 5 and 6 (Buildings 194
26 and 195), Landing Mat 3, and various support facilities. This area is less than a quarter of a mile
27 from the Lakehurst site. The second non-contiguous area consists of the Cathedral of the Air
28 (Building 264) and associated grounds located approximately one mile southeast of the solar
29 site (Air Force 2019).

30 **Native American Consultation**

31 As discussed in section 1.5.2, EO 13175, Consultation and Coordination with Indian Tribal
32 Governments (6 November 2000) directs federal agencies to coordinate and consult with Native
33 American tribal governments whose interest might be directly and substantially affected by
34 activities on federally administered lands. The Native American tribal governments that will be
35 coordinated with regarding this action are listed in section 6.

36 There are two federally recognized tribes that have historical association with JB MDL and have
37 expressed interest in activities at JB MDL: the Delaware Nation and the Delaware Tribe of
38 Indians. The Air Force is in the process of consultation with these tribes. To date, no traditional
39 cultural properties or sacred sites have been identified at JB MDL.

3.9 EARTH RESOURCES

3.9.1 Definition of Resource

Earth resources are the soil types, geologic features and processes, and topography of an area. Soils are the unconsolidated materials overlying bedrock or other parent material. Differences among soil types in terms of their structure, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or land uses. Geologic features may include caves, rock outcroppings, canyons, or other unique features. Relevant geologic processes include slides, erosion, and sinkholes. Topography refers to the earth's surface features, such as mountains, hills, valleys, and canyons. The ROI for earth resources is the Proposed Action sites.

3.9.2 Existing Conditions

Soils throughout JB MDL are varied given the amount of acreage the installation covers, which is a total of 41,995 acres. The most prevalent soil types on JB MDL as delineated in the two county soil maps include Lakewood Sand (9,663 acres; 23 percent), Lakehurst Sand (7,455 acres; 18 percent), and Atsion Sand (4,560 acres; 11 percent) (Air Force 2020). Many other soil types that each represent less than 10 percent of the land area on JB MDL also occur on the base (Air Force 2020). The North Run and Back 9 sites are underlain by the Tertiary Aged, Lower member of the Kirkwood Formation (Dynamic Earth 2020a, 2020b). The Lower member of the Kirkwood Formation consists of light yellow to white, massive to thick bedded (i.e., layered), fine to medium grained sands interbedded with clay (Dynamic Earth 2020a, 2020b). The Lakehurst site is underlain by the Tertiary Aged, Cohansey Formation (Dynamic Earth 2020c). The Cohansey Formation consists of white to yellow sand with local gravel and clay deposit; the sand is typically medium grained and moderately sorted but can range from very coarse to fine grained and poorly to well sorted (Dynamic Earth 2020c).

The soil series at the North Run site are Adelpia, Collington, Fluvaquents, Freehold, and Udorthents (Dynamic Earth 2020a). Adelpia and Freehold are fine sandy loam soils and Collington, Fluvaquents, and Udorthents are loam to loamy soils, all of which have a high capacity to transmit water (Dynamic Earth 2020a). Adelpia, Collington, Fluvaquents and Freehold are gently sloping and Udorthents are moderately sloping (Dynamic Earth 2020a). Adelpia, Collington, Freehold, and Udorthents are well drained, whereas Fluvaquents are poorly drained with frequent ponding and flooding (Dynamic Earth 2020a). Soils on the North Run site include existing fill material and natural coastal plain deposits (Dynamic Earth 2020a). These materials are preliminarily expected to be suitable for reuse as structural fill material (Dynamic Earth 2020a). However, portions of the soils on the site are considered extremely moisture sensitive and will require moisture conditioning and/or become impractical for reuse if exposed to moisture (Dynamic Earth 2020a). Soils on the landfill (LF 003) that occupies that northern portion of the site are not anticipated to be suitable for reuse as structural fill (Dynamic Earth 2020a). Soils in the IRP site ST007 that are within the project site would also not be reusable since they are contaminated with PCBs at levels that exceed the NJDEP Residential Direct Soil Remediation Level (or NJDEP unrestricted use). If soils are removed from IRP site ST007 during construction, they will be tested (every 200 cubic yards removed) and disposed of properly. Additional details on the IRP site are provided in sections 3.6 and 4.6. Additional clean fill is being added to some areas of the landfill that overlap with the project site as a separate remedial action. This work is expected to occur in the summer of 2021 prior to the Proposed Action (K. Mak, personal communication, December 8, 2020).

1 The soil series at the Back 9 site are Jade Run, Galloway, and Shrewsbury (Dynamic Earth
2 2020b). These series consist of sand and fine sandy loam soils that have a high capacity to
3 transmit water and are gently sloping (Dynamic Earth 2020b). Jade Run and Shrewsbury are
4 poorly drained, and Galloway is moderately well drained (Dynamic Earth 2020b). Soils on the
5 Back 9 site include existing fill material and natural coastal plain deposits (Dynamic Earth
6 2020b). These materials are preliminarily expected to be suitable for reuse as structural fill
7 material (Dynamic Earth 2020b). However, portions of the soils on the site are considered
8 extremely moisture sensitive and will require moisture conditioning and/or become impractical
9 for reuse if exposed to moisture (Dynamic Earth 2020b).

10 The soil series at the Lakehurst site are Atsion and Lakehurst (NRCS 2020). The Atsion soil
11 series represents a very small percentage of the site. These series consist of sand that has a
12 high capacity to transmit water and are gently sloping (NRCS 2020). Atsion is poorly drained
13 and Lakehurst is moderately well drained (NRCS 2020). The Urban Land soil series also occurs
14 at the Lakehurst site, but a detailed description of this soil is not reported (NRCS 2020). Soils
15 located in the vicinity of the Lakehurst site include natural coastal plain deposits (Dynamic Earth
16 2020c). Therefore, soils on the Lakehurst site are expected to include these deposits. These
17 materials are preliminarily expected to be suitable for reuse as structural fill material (Dynamic
18 Earth 2020c).

19 Major geologic features do not occur within the project sites. The topography of the sites is
20 relatively flat with minor/gradual changes in elevation within each site. In addition, soils are not
21 of concern at the rooftop and carport solar sites or at the buildings where indoor energy
22 upgrades would occur since these are previously developed areas.

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4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes the potential environmental consequences that are likely to occur as a result of implementation of all Alternatives that are being considered and analyzed. Impacts described in this chapter are evaluated in terms of type (positive/beneficial or adverse), context (setting or location), intensity (none, negligible, minor, moderate, severe), and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of an impact on a resource are explained under each resource area. Unless otherwise noted, short-term impacts are those that would result from the activities associated with a project's construction and/or demolition phase, and that would end upon the completion of those phases. Long-term impacts are generally those resulting from the operation of a proposed project.

4.2 AIR QUALITY

Alternative 1 (Preferred Alternative)

Short-term minor adverse effects on air quality would occur from construction activities associated with implementation of the Proposed Action. Short-term emissions would result from on-road vehicles (e.g., employee vehicles and delivery trucks) and off-road vehicles and equipment (e.g., backhoes, dozers, portable generators, and cranes) associated with site preparation, grading and construction of new project components. Short-term emissions would end once the 36-month construction phase is complete.

Long-term minor adverse effects on direct criteria pollutant air emissions would occur from the installation of three 2-MW emergency generators and numerous boilers. Additionally, there would be long-term beneficial effects on air quality from the installation of the solar photovoltaic arrays, reducing power generated offsite from the burning of fossil fuels, and subsequently reducing regional air emissions of both criteria pollutants and GHGs.

To be conservative, it was assumed that new commercial-grade boilers, sufficient to heat up to 25 million square feet of indoor space, would be installed as new units as part of this project. The emissions from these assumed units account for the large majority of operational emissions and represent the worst-case scenario. All necessary permits would be secured for the new generators and boilers and the appropriate Title V permits would be amended to incorporate new equipment and to remove old equipment.

The Air Conformity Applicability Model was used to estimate both the construction and operational emissions from the Proposed Action (**Table 4-1**). These emission estimates include construction, heating of proposed buildings, and back-up generators. To determine if the Proposed Action would have a significant impact on air quality, and to determine if the general conformity rule applies, annual emissions of nonattainment pollutants and precursors were compared to the *de minimis* threshold values of 50 tpy for VOCs, and 100 tpy for NO_x, SO₂, and PM_{2.5}. Annual emissions of attainment pollutants were compared to the major source thresholds of 25 tpy for lead, and 100 tpy for CO and PM₁₀. The total direct and indirect emissions would be below the significance indicators for each criteria pollutant; therefore, the general conformity rules would not apply, and the level of effects would be minor. Air Conformity Applicability Model output files containing detailed emissions calculations are included in Appendix B.

Table 4-1. Emissions of Criteria Pollutants Compared to Significance Indicators

Pollutant	Emissions (tons per year)		Significance Indicator	
	Construction	Operations	Threshold (tpy)	Exceedance (Yes or No)
Volatile organic compounds	0.3	1.2	50	No
Nitrogen oxides	1.9	17.9	100	No
Carbon monoxide	1.9	14.5	250	No
Sulfur oxides	<0.1	<0.1	100	No
PM ₁₀	21.9	1.1	250	No
PM _{2.5}	<0.1	1.1	100	No
Lead	<0.1	<0.1	25	No
Greenhouse gasses (as CO ₂ e)	434	18,387	-	-

Source: 40 CFR 93.153, and 40 CFR 52.21.

Notes: CO₂e = carbon dioxide equivalent; PM₁₀ = particulate matter less than 10 microns in diameter; PM_{2.5} = particulate matter less than 2.5 microns in diameter.

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5 As a reasonable upper bound, it was assumed that all on-base construction activities would be
6 compressed into a single 12-month period. Therefore, regardless of the ultimate implementation
7 schedule, annual emissions would be less than those specified herein. Small changes in
8 facilities sites and ultimate design, and moderate changes in quantity and types of equipment
9 used would not substantially change these emission estimates, the determination under the
10 general conformity rule, or level of effects under NEPA. Notably, the emissions for all criteria
11 pollutants would be below the *de minimis* thresholds; therefore, the general conformity rule
12 would not apply regardless of any changes in the attainment status of the region for any criteria
13 pollutant.

14 The power generated by the proposed solar arrays would indirectly reduce annual GHG
15 emissions by approximately 27,900 tons CO₂e per year, from off-base power generation
16 facilities (i.e., fossil fuel power plants) (Appendix B, EPA 2012, EPA 2019). Other project
17 features such as upgrading existing lighting and control systems, replacing transformers, AHUs,
18 air conditioning packaged units, and mechanical insulation would also help reduce emissions by
19 offsetting emissions from conventional energy sources.

20 **No Action Alternative**

21 Under the No Action Alternative, the Proposed Action would not be implemented, and there
22 would be no changes in air emissions or air quality when compare to existing conditions. The
23 beneficial effects from the upgrade in energy management throughout the base (e.g.,
24 installation of solar arrays) would not be realized.

25 **4.3 WATER RESOURCES**

26 **Alternative 1 (Preferred Alternative).**

27 Short-term minor adverse effects would be expected on water resources from implementing the
28 Proposed Action. These minor impacts would result from soil disturbed during construction
29 activities potentially entering surface waters. No long-term effects on water resources would be
30 expected. In addition, no impacts to water resources would result from the installation of rooftop
31 or carport solar panels or other indoor energy upgrades.

1 Small portions of the North Run and Back 9 sites are located on floodplains. However, the
2 ground-mounted solar arrays would not be constructed on the entirety of the sites, and no
3 construction would occur within the floodplains in the sites. No modifications to floodplains
4 would occur under the Proposed Action. Therefore, no impacts to floodplains would occur. In
5 addition, based on the topography of the sites, the proposed solar arrays would not be impacted
6 by flooding.

7 Minor soil disturbance would occur on the North Run, Back 9, and Lakehurst sites during
8 construction. No ground disturbance would occur within a 150-foot buffer from wetlands, which
9 would be flagged in the field prior to construction and checked periodically. All construction
10 would be done in accordance with the erosion and sedimentation control measures (e.g., silt
11 fencing, swales, and detention basins) in the project-specific SWPPP, which would minimize
12 erosion of soil into surface waters and wetlands. All soil erosion and sediment control plans for
13 the project would be certified by the Burlington and Ocean County Soil Conservation Districts. In
14 addition, authorization to discharge stormwater under the NJDEP general permit for
15 construction activities would be attained. Therefore, impacts to surface waters would be short-
16 term, minor, and minimized by implementing measures.

17 During operations, the project may change stormwater runoff patterns within the sites. However,
18 the engineering design includes stormwater management features that would prevent soil
19 erosion. In addition, the installation of ground-mounted panels would also have a beneficial
20 effect of shielding the soils beneath the panels and reducing erosion of soil under the panels.

21 Installation of the solar arrays on the ground surface would not disturb groundwater. In addition,
22 only approved cleaning solutions that would not contribute to groundwater or surface water
23 contamination would be used to clean the solar panels after installation. Therefore, no impacts
24 to groundwater would occur.

25 ***No Action Alternative.***

26 Under the No Action Alternative, the project would not occur and there would be no effects on
27 water resources.

28 **4.4 SAFETY AND OCCUPATIONAL HEALTH**

29 ***Alternative 1 (Preferred Alternative).***

30 Short- and long-term minor adverse effects would be expected from implementing the Proposed
31 Action. These effects would result from construction activities and installation and maintenance
32 of project equipment. Workers would be exposed to risks associated with site preparation,
33 grading, and construction. Also, workers installing project equipment on rooftops and inside
34 buildings could be exposed to building materials containing ACM or LBP.

35 Prior to installation of project equipment, the contractor would coordinate with base
36 environmental personnel and review ACM and LBP surveys, if available, to determine health
37 and safety protective measures. If surveys are not available, the areas to be disturbed by
38 equipment installation would be surveyed prior to commencing work or affected building
39 components would be treated as if they contain ACM or LBP. Therefore, no exposure to
40 hazardous building materials would be expected; as a result, there would be no adverse effect.

1 Contractors would also prepare site-specific health and safety plans prior to commencing work.
2 Health and safety plans would outline plans to ensure work would be conducted in a way that is
3 protective of workers, the public, and the environment. Health and safety plans would be
4 prepared in accordance with DoD and Air Force regulations and would comply with OSHA
5 standards. Therefore, short-term safety and occupational health risks associated with
6 construction would be minor.

7 Once operational, project equipment would require routine maintenance. Activities performed by
8 maintenance workers would involve some risks such as risk of electrical shock and working at
9 heights (on roofs or ladders). These risks would be addressed in the site-specific health and
10 safety plan that would conform with applicable DoD and Air Force regulations and comply with
11 OSHA standards. Therefore, long-term safety and occupational health risks associated with
12 operation and maintenance would be minor.

13 A FAA glint/glare study has been conducted by Ameresco for all proposed ground-mounted
14 solar locations. Based on the angle of incoming aircraft at the JB MDL airfields, no glint/glare
15 impacts were identified. The roof-mounted solar PV systems on rooftops and carports are
16 unlikely to have glint/glare issues; however, all solar systems on rooftops would be screened
17 prior to finalizing the project design and if issues are identified, another rooftop without
18 glint/glare issues would be chosen. Therefore, there would be no safety or health impacts from
19 glint/glare associated with the Proposed Action.

20 ***No Action Alternative.***

21 Under the No Action Alternative, the Proposed Action would not be implemented. There would be
22 no change to the baseline at the project sites, so there would be no effect on safety and
23 occupational health.

24 **4.5 HAZARDOUS MATERIALS / WASTE**

25 ***Alternative 1 (Preferred Alternative).***

26 **Solar Photovoltaic (PV) Arrays and Battery Energy Storage Systems (BESS):**

27 Short-term and long-term minor adverse effects would be expected from implementing the
28 Proposed Action. During construction, the Proposed Action would generate nonhazardous
29 vegetation waste (green waste) from clearing and grubbing the sites for the PV arrays. While
30 the North Run site at McGuire and the proposed PV site at Lakehurst are open space, the Back
31 9 site has existing vegetation that would generate green waste from site work. It is not
32 anticipated that land-clearing and grading activities at the Back 9 site would generate a need for
33 off-site disposal of green waste. If feasible, green waste would either be chipped and re-used
34 on-site as mulch to control soil erosion or burned in place under an open burning permit if
35 applicable. No pesticides or herbicides would be used during construction or operation.
36 Therefore, no adverse health effects to the public, construction personnel, wildlife, or sensitive
37 vegetation would occur.

38 Grading, drilling, or excavation at the site has the potential to mobilize hazardous materials
39 currently in the soil. This could result in exposure of personnel and other sensitive receptors to
40 contaminant levels that could result in short-term and/or long-term health effects. To avoid
41 potential contamination and hazardous releases, the project would utilize a mix of ballasted and
42 traditional concrete foundations to support the PV arrays. The ballasted systems limit ground

1 disturbance and would be utilized on the roof-mounted arrays as well as portions of the North
2 Run site. The North Run site is located atop two IRP sites, ST007 and LF003. ST007 was active
3 from 1960 to 1998 and used as a material and hazardous waste storage facility. Land use
4 controls were selected in the draft final Record of Decision for ST007. The land use control for
5 the site is to prevent any future residential use. The installation of a solar PV array at ST007
6 would be consistent with the land use controls at the site (K. Mak, personal communication,
7 December 8, 2020). Soils in the IRP site ST007 that are within the project site would not be able
8 to be reused. Soils that are removed from IRP site ST007 during construction would be tested
9 (every 200 cubic yards removed) and disposed of properly. LF0003 was a mixed waste landfill
10 site operated between 1950 through the 1960s (USACE 2019). Additional clean fill is being
11 added to some areas of the landfill that overlap with the project site as a separate remedial
12 action. This work is expected to occur in the summer of 2021 prior to the Proposed Action (K.
13 Mak, personal communication, December 8, 2020).

14 Although the specific type of PV solar modules has not been selected for the project, it is likely
15 that the modules may utilize mono- or poly crystalline silicon or Cadmium Telluride (CdTe)
16 technology. PV modules may contain small amounts of regulated materials (e.g., cadmium [Cd],
17 lead [Pb], selenium [Se], copper [Cu], nickel steel [9Ni], and silver [Ag]), which vary from one
18 technology to another. Because such materials are in a solid and non-leachable state, potential
19 broken crystalline silicon PV panels would not be a source of pollution to surface water,
20 stormwater, or groundwater. In PV modules using CdTe technology, the cadmium is in the
21 environmentally stable form of a compound rather than the leachable form of a metal. CdTe
22 releases are unlikely to occur during accidental breakage. Furthermore, studies of the panels
23 where the stability of the encapsulation has been jeopardized, such as if a broken panel were
24 exposed to fire, have indicated that such events still result in negligible cadmium (Fthenakis
25 2002). Therefore, the PV solar modules would have no effect on hazardous materials and
26 waste.

27 Installation of rooftop solar arrays that would require modification of or connections to existing
28 building components would require confirmation that ACM or LBP are not present in areas being
29 disturbed. If such data are not available, materials would be tested prior to disturbance or
30 treated as if they contained ACM or LBP to ensure proper handling and disposal. Operations
31 involving ACM and LBP would be done in accordance with all applicable regulations and JB
32 MDL's Hazardous Materials Management Plans for ACM and LBP. Therefore, no adverse effect
33 on hazardous materials and waste would be expected.

34 During the operational period, solid waste generated by the operation and maintenance of the
35 PV and BESS systems is expected to be minimal. It would include waste associated with the
36 repair and/or replacement of damaged PV and BESS system components and green waste
37 associated with the clearing of vegetation around the PV systems, as needed during operations.
38 While the PV panels may contain hazardous materials, the panels are sealed under normal
39 operating conditions and would not pose a threat of release as a hazardous waste. However,
40 coolant used in inverters, mineral oil used in transformers, and vehicle antifreeze, petroleum,
41 oils, lubricants are considered hazardous substances. Inverters, transformers and vehicles
42 utilize closed systems, and only accidental damage to the equipment would release hazardous
43 materials.

44 The BESS would utilize a closed system of lithium-ion (Li-ion) batteries. The McGuire BESS
45 installation would provide 4-MW/8-MWh capacity and the Lakehurst BESS would be a 2-MW/4-
46 MWh facility. Li-ion batteries are ubiquitous and found in a wide-array of products from

1 smartphones to electric cars. The main hazards associated with Li-ion batteries are from a
2 thermal event (fire), electrical event, or mechanical failure. To prevent hazardous conditions
3 associated with the BESS such as a fire, the BESS would be designed to meet engineering and
4 fire codes and include ventilation and containment systems. Batteries would be regularly
5 inspected and properly maintained until the end of their service life, and then recycled or
6 disposed of properly in accordance with applicable regulations. Therefore, there would be no
7 adverse effect on hazardous materials and waste.

8 **Other Energy Conservation Measures:**

9 In addition to the PV arrays and BESS, the Proposed Action includes the installation of other
10 energy conservation elements including: natural gas generators, lighting, control systems,
11 transformers, thermal window glazing film, boilers, chillers, AHUs, air conditioning packaged
12 units, and mechanical insulation. These proposed energy conservation measures are regularly
13 implemented in both public and private applications with limited risk of adverse effects.

14 In all cases, hazardous materials would be stored and handled in accordance with all federal,
15 state, and local regulations and codes. Incompatible materials would be stored in separate
16 storage and containment areas. Containerized hazardous materials would be stored in original
17 containers appropriately designed for the individual characteristics of the contained material.
18 Maintenance and service personnel would be trained to handle these materials.

19 Hazardous substances used and waste generated during construction and operation of the
20 proposed project would be minimal. These materials would be handled and disposed of in
21 accordance with local, state, and federal regulations and with established Air Force and DoD
22 hazardous materials management procedures, as applicable. Construction vehicles that use
23 petroleum, oil, and lubricants, and construction contractors would be responsible for preventing
24 spills by implementing proper storage and handling procedures and following base procedures.
25 Ground clearing and digging operations would require prior coordination with base
26 environmental personnel and approved dig permits prior to commencing work, and
27 documentation indicating that any fill brought on site is clean. Therefore, there would be no
28 adverse effect on hazardous materials and waste from implementing the Proposed Action.

29 ***No Action Alternative.***

30 Under the No Action Alternative, the Proposed Action would not be implemented. There would
31 be no additional generation of solid or hazardous waste as the PV array, BESS, and other
32 energy conservation measures would not be installed or implemented.

33 **4.6 INFRASTRUCTURE AND UTILITIES**

34 ***Alternative 1 (Preferred Alternative).***

35 *Stormwater.* Short-term minor adverse effects on stormwater infrastructure would be expected
36 from construction activities associated with implementing the Proposed Action. All construction
37 activities that disturb 1 acre or more of land would require coverage under New Jersey's
38 Stormwater Construction General Permit (Permit 5G3). Contractors would use stormwater
39 BMPs such as silt fencing, swales, and detention basins as necessary to control stormwater
40 runoff from construction locations, thereby altering the existing stormwater infrastructure on
41 each site where ground disturbance would occur. Upon completion of construction and in
42 accordance with both the construction general permit and the NPDES stormwater program (40

1 CFR Part 122), contractors would leave in place a combination of structural and/or non-
2 structural stormwater BMPs appropriate for each site to ensure that post-construction runoff
3 does not exceed the pre-construction stormwater runoff rate or quantity. No long-term or
4 significant adverse effects on the stormwater infrastructure at any project location or on the
5 larger stormwater infrastructure of JB MDL would be expected, and no modifications to any
6 NPDES permit held by JB MDL would be required. No effects on stormwater systems on JB
7 MDL would be expected from operations of the solar PV arrays and other infrastructure installed
8 as part of the Proposed Action. After construction activities were completed the contractor would
9 leave in place appropriate stormwater infrastructure to ensure that stormwater runoff from the
10 base would be in accordance with all applicable NDPEs permits and state and local regulations.

11 *Electrical.* Short-term minor adverse effects on the electrical infrastructure of JB MDL would be
12 expected from construction activities associated with implementing the Proposed Action. Short-
13 term impacts would be caused by localized service interruptions while new system components
14 were being installed and tied into the existing system. Any interruptions to electrical service at
15 JB MDL would be coordinated well in advance with base operations and environmental
16 personnel. Interruptions would be scheduled to minimize disturbance of base operations. No
17 long-term or significant adverse effects on the electrical infrastructure of JB MDL would be
18 expected. Long-term moderate beneficial effects on the electrical systems at JB MDL would be
19 expected from implementing the Proposed Action. Ameresco would complete a detailed
20 analysis of the proposed solar PV arrays, BESSs, and other aspects of the Proposed Action to
21 ensure the existing distribution, electrical infrastructure and substation interconnection points
22 would be able to accommodate the base load plus the power generated the PV assets, and that
23 of the proposed generators and BESSs. The modeling would ensure that the system would
24 integrate well with the existing electrical systems at JB MDL and no adverse operational effects
25 would result. Over the long term, the solar PV arrays, upgraded lighting fixtures, integrated
26 energy control systems, and modern boilers, chillers, and AHUs would reduce JB MDL's
27 demand on the public electrical grid, save on energy costs, and improve energy resiliency and
28 security, resulting in a beneficial effect. No long-term adverse or significant effects would be
29 expected.

30 *Other Infrastructure.* Short-term minor adverse effects on other aspects of infrastructure at JB
31 MDL would be expected from construction activities associated with implementing the Proposed
32 Action. As with work on the electrical system, replacing lighting fixtures and lamps,
33 transformers, boilers, and air conditioning units, and installing window thermal sheeting would
34 involve temporary interruptions to services in individual buildings or use of areas in the
35 buildings, but any interruptions would be coordinated with base operations and environmental
36 personnel and scheduled to minimize disturbance of base operations. Long-term minor
37 beneficial effects on other aspects of infrastructure at JB MDL would be expected from
38 implementing the Proposed Action. The new infrastructure elements (lighting, energy control
39 systems, transformers, boilers, chillers, and air handling units) would be expected to require
40 less maintenance and repair than the existing systems, which would mean fewer interruptions of
41 service in individual buildings and less strain on base operations caused by such interruptions.

42 **No Action Alternative.**

43 Under the No Action Alternative, the Proposed Action would not be implemented. There would
44 be no effects on infrastructure and utilities.

1 **4.7 BIOLOGICAL / NATURAL RESOURCES**

2 ***Alternative 1 (Preferred Alternative).***

3 Short-term minor adverse effects and long-term minor adverse effects to biological resources
4 would occur from implementation of the Proposed Action. Short-term minor impacts would result
5 from noise and the presence of workers during vegetation removal and site preparation at the
6 ground-mounted solar sites, and construction at the ground-mounted and rooftop/carport sites.
7 These activities are expected to cause wildlife to temporarily leave the sites. Long-term minor
8 impacts would result from permanent removal of vegetation and habitat. Permanent removal of
9 vegetation and habitat at the ground-mounted solar sites is expected to displace species that
10 may use the sites. No impacts to biological resources would result from the installation of indoor
11 energy upgrades because these locations do not provide habitat for plants or wildlife. In
12 addition, all outdoor lighting upgrades would use downward facing lights with opaque shields to
13 prevent light pollution and disturbance to migratory birds or bats at night.

14 While wetlands are known to occur near the ground-mounted solar sites, ground disturbance
15 would not occur within 150 feet of wetlands. The 150-foot wetland buffers would be flagged in
16 the field by a qualified biologist prior to the start of construction, periodic checks would be
17 conducted during construction activities to ensure that the wetland buffers are maintained at all
18 times, and appropriate BMPs would be implemented to eliminate potential off-site stormwater
19 impacts. Therefore, no impacts to wetlands would occur.

20 Birds protected by the MBTA might use the ROI for roosting, foraging, or nesting. Birds may
21 nest in trees, shrubs, grass, or buildings depending on their habitat preferences. Active nests of
22 birds listed under the MBTA are protected and may not be removed until after the young have
23 left the nest. To avoid impacts to nesting birds, no tree trimming, tree removal, vegetation
24 clearing, soil excavation, or construction would occur during the nesting season of April 1 to
25 September 30. If it is necessary to conduct these activities during the nesting season, the
26 project sites and adjacent buffer areas would be surveyed for active nests by a qualified
27 biologist. The survey would be conducted no more than 5 days prior to scheduled work and
28 performed within the project sites and adjacent buffer areas with potential suitable habitat for
29 nesting birds. If nesting birds are found, an appropriate buffer for protection of the species would
30 be established around the nest. No project work would be allowed within the buffer until after the
31 applicable season has ended or the species has vacated the area as determined by a qualified
32 biologist. In addition, once the project became operational, if bird nests were found on project
33 equipment, they would be managed in compliance with the MBTA. Therefore, no impacts to
34 MBTA species would be expected.

35 Special-status roosting bats could use the proposed rooftop solar locations on McGuire, Dix,
36 and Lakehurst, and the proposed carport solar locations on McGuire. If project work is
37 conducted at these locations during the NLEB active season (April 1 to September 30), a pre-
38 construction survey of the project sites and adjacent buffer areas with potential suitable habitat
39 will be conducted by a qualified biologist would be required. The survey would be conducted no
40 more than 5 days prior to scheduled work. If roosting bats are found, an appropriate buffer for
41 protection of the species would be established around the roost. No project work would be
42 allowed within the buffer until after the applicable season has ended or the species has vacated
43 the area as determined by a qualified biologist. Therefore, impacts to these species at the
44 rooftop and carport locations are unlikely to occur and would be minor.

1 In addition, the JB MDL Natural Resources Manager would periodically monitor the sites prior to
2 and during vegetation clearing for the presence of special-status species, particularly reptiles. If
3 any are discovered, construction personnel would be required to contact the Natural Resources
4 Manager. The Natural Resources Manager would attempt to capture and relocate the species to
5 other suitable habitat on the base and would determine if additional consultations or measures
6 would be required. Therefore, impacts to special-status species are unlikely to occur.

7 The solar array at the North Run site would remove up to 25 acres of mowed grasslands. This
8 represents less than 1 percent of the grasslands on JB MDL. Native warm season grass would
9 also be planted in areas where vegetation is cleared after the PV panels are installed, which
10 would reduce the potential for establishment of invasive species and may create habitat for
11 some wildlife species. No special-status species have been documented in the vicinity of the
12 site. However, special-status birds and reptiles may use the site for breeding and foraging. The
13 measures described above would be implemented to avoid impacts to wildlife. Therefore,
14 impacts to these species are unlikely to occur and would be minor.

15 The solar array at the Back 9 site would remove up to 26 acres of golf course, which includes
16 turf lawn and ornamental trees. This represents less than 1 percent of the wooded areas on JB
17 MDL. The PV panels would be sited to avoid tree removal when possible. Native warm season
18 grass would also be planted in areas where vegetation is cleared as described above. The State
19 listed threatened barred owl is known to occur approximately 1 mile from the site. However,
20 preferred barred owl forest habitat does not occur on the site, and therefore, this species is
21 unlikely to occur. No other special-status species are known to occur in the vicinity of the site.
22 However, special-status birds may use the grasslands and trees at the site for breeding and
23 foraging, and reptiles may use the grasslands. The measures described above would be
24 implemented to protect these species at the Back 9 site. The pre-construction nesting bird
25 survey requirement at the Back 9 site would include the tree removal activities. Therefore,
26 impacts to these species are unlikely to occur and would be minor.

27 The solar array at the Lakehurst site would remove up to 15 acres of grasslands. This
28 represents less than 1 percent of the grasslands on JB MDL. No trees would be removed on
29 Lakehurst. Native warm season grass would also be planted in areas where vegetation is
30 cleared as described above. The USFWS IPaC tool was used to determine federally listed
31 species that may occur in the area, which included the NLEB. Applicability of the Proposed
32 Action under the Final 4(d) Rule for NLEB was determined by completing the USFWS NLEB
33 Consultation and 4(d) Rule Consistency Determination Key Overview. Additional federally listed
34 plant and wildlife species found in the IPaC were evaluated based on habitat on the site and
35 documented occurrences in the vicinity of the site. This analysis determined that only the NLEB
36 would require section 7 consultation. JB MDL is currently consulting with the USFWS using the
37 streamlined consultation framework for the NLEB, which relies on the USFWS's January 5,
38 2016 intra-Service Programmatic Biological Opinion on the Final 4(d) Rule for section 7(a)(2)
39 compliance. Therefore, the requirements of the Programmatic Biological Opinion on the Final
40 4(d) Rule for NLEB would also be followed. With respect to NLEB (federally listed threatened
41 and State listed endangered), there are no known active maternity trees within 150 feet of or
42 known hibernaculum within 0.25 mile of the site. As such, incidental take of individuals would be
43 allowable under ESA provisions during construction on the site. However, the site is unlikely to
44 provide roosting or foraging habitat for this species and no trees would be removed at the site
45 adjacent to the recorded NLEB occurrence. Therefore, incidental take of this species is unlikely
46 to occur and no impacts to this species are anticipated.

1 Impacts to bog turtle (federally and State listed endangered) would be unlikely based on a
2 recent survey of JB MDL in 2018 that found that no suitable bog turtle habitat remained on the
3 base (Air Force 2020). In addition, a 150-foot buffer will be maintained around all wetlands and
4 appropriate BMPs would be implemented to eliminate potential off-site stormwater impacts.

5 Hibernacula for the State listed threatened northern pine snake are known to occur on the
6 Lakehurst site and other special-status reptiles have the potential to occur. Therefore, a
7 qualified biologist would monitor the site daily during vegetation clearing for the presence of
8 special-status species, particularly the northern pine snake. If any are discovered, construction
9 personnel would stop work and the JB MDL Natural Resources Manager would be contacted for
10 attempted capture and relocation to other suitable habitat on the base. JB MDL would also
11 create artificial hibernacula for northern pine snakes in similar grassland areas on Lakehurst to
12 compensate for habitat loss resulting from the construction of the solar array. This effort would
13 be coordinated with the New Jersey Division of Fish and Wildlife. Therefore, the loss of this
14 habitat would not pose an irreversible adverse impact to the survival of the relatively abundant
15 local population of northern pine snakes on Lakehurst. The measures described above would
16 be implemented to avoid impacts to wildlife. The special-status plants and invertebrates with
17 potential to occur on the Lakehurst site have not been previously documented on the site
18 despite many rare plant and animal species surveys that have been conducted on the base (Air
19 Force 2020). In addition, the federally listed chaffseed has never been observed at JB MDL.
20 The invertebrate species are closely tied to the presence of their host plants, which are also not
21 known to occur on the site. Therefore, impacts to these species are unlikely to occur and would
22 be minor.

23 ***No Action Alternative.***

24 Under the No Action Alternative, the project would not occur and there would be no effects on
25 biological resources.

26 **4.8 CULTURAL RESOURCES**

27 ***Alternative 1 (Preferred Alternative).***

28 No short-term effects would occur to cultural resources, although long-term minor indirect
29 adverse effects to historic resources would occur from implementation of the Proposed Action.

30 Installation of the ground-mounted solar PV arrays would require ground disturbance of up to 25
31 acres at the North Run site, up to 26 acres of golf course at the Back 9 site, and up to 15 acres
32 at the Lakehurst site. As discussed in Section 3.8.2, the areas where ground disturbance would
33 be required do not contain documented prehistoric or historic archaeological resources and are
34 unlikely to contain undocumented archaeological resources, so no effects are anticipated. In the
35 unlikely event that archaeological artifacts are uncovered during construction, the contractor
36 would follow procedures in standard operating procedure 7.4 *Discovery of Archaeological*
37 *Resources and NAGPRA Cultural Items* (Air Force 2019).

38 Other project features such as installing carport solar PV at an existing carport, roof-mounted
39 solar PV panels, upgrading existing lighting and control systems, replacing transformers,
40 boilers, chillers, AHUs, air conditioning packaged units, and mechanical insulation would not
41 require any ground disturbance and, therefore, would not affect any prehistoric or historic
42 archaeological resources. In addition, the upgrades to existing lighting and control systems and

1 replacement of transformers, boilers, chillers, AHUs, air conditioning packaged units, and
2 mechanical insulation would occur completely inside existing structures, therefore, they would
3 not impact historic resources. None of the roof-mounted solar PV panels would be installed on
4 historic buildings and, therefore, would not directly affect any historic resources.

5 The closest eligible historic building to the North Run site at McGuire is Building 3209 (a
6 hangar), which is approximately one-quarter mile south of the site. The ground-mounted solar
7 PV array would be visible from this distance resulting in an indirect effect but, given its low-
8 profile, impacts would be minimal.

9 The closest historic buildings to the Back 9 site at McGuire are Buildings 1914, 1915, 1916,
10 1917, 1918, 1919, and 1922, which are less than 700 feet west of the site. They are ammunition
11 storage facilities in an area designated for industrial uses at McGuire (Air Force 2008) and have
12 a required buffer of 500 feet from inhabited areas. The solar array would be visible from this
13 distance but impacts would be minimal given the low profile of the solar array and the need to
14 keep people away from the ammunition storage facilities.

15 There are no Historic Districts within a half mile of the proposed ground-mounted solar arrays at
16 McGuire (North Run and Back 9). As discussed in Section 3.8.2, the ground-mounted solar PV
17 array at the Lakehurst site is adjacent to part of the LTA Historic District and less than a quarter
18 of a mile from another part of the District. The closest historic buildings to the Lakehurst site are
19 associated with the LTA Historic District and include Hangars 5 and 6 (Buildings 194 and 195)
20 which are less than a quarter mile west of the site, and Hangar 1 which is approximately one-
21 quarter mile east of the site. The PV array at Lakehurst may result in indirect visual effects to
22 the District if it is visible from the District. Appropriate landscaping would minimize this effect.

23 ***No Action Alternative.***

24 Under the No Action Alternative, the project would not occur and there would be no effects on
25 cultural resources.

26 **4.9 EARTH RESOURCES**

27 ***Alternative 1 (Preferred Alternative)***

28 Short-term minor adverse effects would be expected on earth resources from implementing the
29 Proposed Action. Short-term impacts would result from soil disturbance during construction of
30 the ground-mounted solar arrays. No long-term effects on earth resources would be expected.
31 In addition, no impacts to earth resources would result from the installation of rooftop solar
32 panels or other indoor energy upgrades.

33 Installation of the solar arrays would include minor grading of soils on the North Run, Back 9,
34 and Lakehurst sites during construction. However, no substantial changes to the topography of
35 the sites would be required. No digging would occur in areas above the landfill on the North Run
36 site. While digging may occur in the IRP site ST007 on the North Run site, all soils removed
37 would be tested (every 200 cubic yards removed) and disposed of properly. All construction
38 would be done in accordance with the erosion and sedimentation control measures in the
39 project-specific SWPPP, which would prevent erosion. Therefore, construction would not
40 adversely affect large areas of native soils or cause or substantially increase the risk of erosion.
41 In addition, the installation of panels on the landfill and IRP site ST007 would have a beneficial
42 effect of shielding the soils beneath the panels and reducing erosion of soil under the panels.

1 Following construction, the project may change runoff patterns within the sites. However, the
2 engineering design includes stormwater management features that would prevent soil erosion.
3 All soil erosion and sediment control plans for the project would be certified by the Burlington
4 and Ocean County Soil Conservation Districts. In addition, authorization to discharge
5 stormwater under the NJDEP general permit for construction activities would be attained.
6 Therefore, minimal impacts to earth resources would occur.

7 ***No Action Alternative.***

8 Under the No Action Alternative, the project would not occur and there would be no effects on
9 earth resources, including geology, soils, and topography.

10 **4.10 OTHER NEPA CONSIDERATIONS**

11 **4.10.1 Unavoidable Adverse Effects**

12 This EA identifies any unavoidable adverse impacts that would be required to implement the
13 Proposed Action and the significance of the potential impacts to resources and issues.

14 Unavoidable short-term adverse impacts associated with implementing the Proposed Action
15 would include temporary erosion and sedimentation from soils disturbance, a temporary
16 increase in fugitive dust and air emissions during construction, intermittent noise, minor
17 alterations to local traffic, and short-duration, limited interruptions to JB MDL's electrical supply.
18 Most of these effects would be minor and confined to the immediate area of the project work.
19 Use of environmental controls and implementing controls required in permits and approvals
20 obtained would minimize the potential impacts.

21 **4.10.2 Relationship of Short-Term Uses and Long-Term Productivity**

22 The relationship between short-term uses and enhancement of long-term productivity from
23 implementation of the Proposed Action is evaluated from the standpoint of short-term effects
24 and long-term effects. Short-term effects would be effects associated with the construction
25 activities. The long-term enhancement of productivity would be the effects associated with
26 increased energy resiliency and security at JB MDL, lowered GHG emissions and impact on
27 climate change, and reduced occurrence of non-productive periods due to equipment
28 malfunctions or off-line time for repairs at individual buildings.

29 **4.10.3 Irreversible and Irretrievable Commitments of Resources**

30 This EA identifies any irreversible and irretrievable commitments of resources that would be
31 involved in the Proposed Action if implemented. An irreversible effect results from the use or
32 destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An
33 irretrievable effect results from loss of resources (e.g., endangered species) that cannot be
34 restored as a result of the Proposed Action. The irreversible commitments of resources that
35 would occur primarily would include building materials and supplies and energy resources used
36 during construction, all of which would be unavailable for use elsewhere once committed to this
37 project. No irretrievable losses of resources would be anticipated from implementing the
38 Proposed Action.

4.11 CUMULATIVE EFFECTS

This EA also considers cumulative effects in accordance with the requirements of the CEQ's implementing regulations for NEPA, as updated July 16, 2020 (CEQ 2020). Actions announced for the ROI for this project that could occur during the same time period as the Proposed Action are listed in **Table 4-2**.

Table 4-2. Announced Actions

Project	Location	Status
Water Line Replacement	Across JB MDL.	In progress.
Wellhouse #5	Lakehurst.	In progress.
Lakehurst Commercial Vehicle Gate	Lakehurst.	EA near completion.
Munitions Storage Area	Rebuild of munitions storage area on McGuire.	EA in progress.
Hot Cargo Loading Area	Rebuild of pad on flightline on McGuire.	EA in progress.
Lakehurst Airfield Vegetation	Lakehurst.	EA in progress (INRMP project).
Tactical Training Area 10C, D, E	Dix.	Description of Proposed Action and Alternatives complete.
Eight Bed Confinement Facility	Construct building on McGuire.	AF813 in progress.
Construct Snow Barn	Lakehurst.	Planned in Fiscal Year 2022.
144 Bed Dormitory	Construct building on Dix.	Planned in Fiscal Year 2022.
Area Development B5651 and 5652	Paving parking lots, storm drains on Dix.	Planned in Fiscal Year 2022.
MSBL 16 1006 Repair Underground Distribution System	Lakehurst.	In design.
Jet Car Track Site (ALRE Support)	Lakehurst.	In design.
Range 6 Renovations	Dix.	In design.
Site LF003 Landfill Soil Cap	McGuire.	In design.
Army NG Readiness Center	Construct building on Lakehurst.	In design.

For this EA analysis, these announced actions are addressed from a cumulative perspective and are analyzed in this section. These announced future actions would be evaluated under separate NEPA actions conducted by the appropriate involved federal agency. Based on the best available information for these proposals by others, the USAF cumulative impact analysis does consider them.

Descriptions of the cumulative effects for the resource areas follow:

1 Air Quality

2 Construction emissions would combine with those from other projects in the area; however,
3 emissions associated with the project would represent a negligible fraction of total emissions in
4 the region, so cumulative effects would be minor.

5 Under the No Action Alternative, the Proposed Action would not be implemented, and there
6 would be no changes in air emissions or air quality when compare to existing conditions. The
7 beneficial effects from the upgrade in energy management throughout the base (e.g.,
8 installation of solar arrays) would not be realized.

9 Water Resources

10 The Proposed Action would have a minor short-term adverse effect on water resources from soil
11 disturbed during construction activities potentially entering surface waters. All construction
12 would be done in accordance with the two County-approved erosion and sedimentation control
13 measures in the project-specific SWPPP, which would minimize impacts to surface water and
14 wetlands. In addition, authorization to discharge stormwater under the NJDEP general permit for
15 construction activities would be attained. Other projects in the region may result in minor
16 impacts to water resources; however, the project's contribution to this cumulative effect would
17 be negligible.

18 Under the No Action Alternative, the project would not occur and there would be no effects on
19 water resources. Therefore, the No Action Alternative would not contribute to cumulative effects.

20 Safety and Occupational Health

21 The Proposed Action would have a minor adverse effect to safety and occupational health from
22 short-term construction and long-term operational activities. Compliance with site-specific health
23 and safety plans would ensure work would be conducted in a way that is protective of workers,
24 the public, and the environment. Health and safety plans would be prepared in accordance with
25 DoD and Air Force regulations and would comply with OSHA standards. Other projects in the
26 region would likely result in minor impacts to safety and occupational health; however, the
27 project's contribution to this cumulative effect would be negligible.

28 Under the No Action Alternative, the project would not occur and there would be no effects on
29 safety and occupational health. Therefore, the No Action Alternative would not contribute to
30 cumulative effects.

31 Hazardous Materials and Wastes

32 Although the Proposed Action would use hazardous materials and generate hazardous waste,
33 these activities are highly regulated and compliance with applicable laws would ensure proper
34 management and disposal of these materials and prompt response to any spills or releases that
35 did occur. Other projects in the region would likely also use hazardous materials and generate
36 hazardous waste; however, the project's contribution to this cumulative effect would be
37 negligible.

38 Under the No Action Alternative, the project would not occur and there would be no effect on
39 hazardous materials and waste. Therefore, the No Action Alternative would not contribute to
40 cumulative effects.

1 Infrastructure and Utilities

2 Other development projects in the area would be expected to increase demand on utilities and
3 infrastructure. Although implementing the upgrades under this Proposed Action could cause
4 short-term adverse impacts due to disruptions from construction activities, long-term cumulative
5 impacts on infrastructure and utilities would be beneficial as infrastructure would be upgraded to
6 provide better service and functionally.

7 Under the No Action Alternative, the project would not occur and there would be no effects on
8 infrastructure and utilities. Therefore, the No Action Alternative would not contribute to cumulative
9 effects.

10 Biological / Natural Resources

11 The Proposed Action would have a minor adverse effect from limited vegetation and habitat
12 removal. Compliance with regulations and implementation of all required measures would
13 ensure that impacts to biological resources are avoided or minimized to the maximum extent.
14 Other projects in the region would likely result in a loss of vegetation and habitat and
15 displacement of wildlife; however, the project's contribution to this cumulative effect would be
16 negligible.

17 Under the No Action Alternative, the project would not occur and there would be no effects on
18 biological resources. Therefore, the No Action Alternative would not contribute to cumulative
19 effects.

20 Cultural Resources Impacts

21 The areas where ground disturbance would be required do not contain documented
22 archaeological resources and are unlikely to contain undocumented archaeological resources,
23 so no effects are anticipated. Other project features would not require any ground disturbance
24 and, therefore, would not affect any archaeological resources. None of the roof-mounted solar
25 PV panels would be installed on historic buildings and, therefore, would not affect any historic
26 resources. Other projects in the area could uncover buried archaeological resources or alter
27 historic buildings; however, the project's contribution to this cumulative effect would be
28 negligible.

29 Under the No Action Alternative, the project would not occur and there would be no effects on
30 cultural resources. Therefore, the No Action Alternative would not contribute to cumulative
31 effects.

32 Earth Resources

33 The Proposed Action and other projects in the region would involve soil disturbance during
34 construction and may change stormwater runoff patterns and the potential for erosion. However,
35 once each project is constructed and/or installed, there would be no further disturbance of the
36 sites and soils would be stabilized. Therefore, there would be no cumulative effect on earth
37 resources.

38 Under the No Action Alternative, the project would not occur and there would be no effects on
39 earth resources. Therefore, the No Action Alternative would not contribute to cumulative effects.

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1 **5. LIST OF PREPARERS**

2 This EA has been prepared under the direction of the Air Force Civil Engineer Center, USAF, and
3 JB MDL.

4 The individuals that contributed to the preparation of this EA are listed in **Table 5-1**.

Table 5-1. List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
Michelle Bates, Tetra Tech	MESM, Environmental Science and Management, University of California, Santa Barbara BS, Biology, Pepperdine University	Project Manager, senior NEPA review, quality control	21
Daniel Berg, Tetra Tech	BS, Environmental Studies, University of California, Santa Barbara	Water Resources, Biological/Natural Resources, Earth Resources	6
Jonas Berge, Tetra Tech	BS, Chemistry, University of Wisconsin BS, Conservation Biology, University of Wisconsin	Air Quality	12
Michelle Cannella, Tetra Tech	BS, Mineral Economics, Penn State University	Airspace, Environmental Justice, Land Use, Noise, and Socioeconomics	22
Dawn Fitzpatrick, Tetra Tech	MEd, Educational Technology and Management, University of West Florida BA, Art History, Marymount College, Fordham University	Quality Assurance	13
Jennifer Jarvis, Tetra Tech	BS, Environmental Resource Management	Geographic information system (GIS) / Figures	22
Mary McKinnon, Tetra Tech	BS, Environmental Earth Science, Stanford University	Air Quality, Cultural Resources	32
Amy Noddings, Tetra Tech	MESM, Environmental Science and Management, University of California, Santa Barbara BS, Environmental Science, University of Notre Dame	Safety and Occupational Health, quality control	12
Sam Pett, Tetra Tech	MS, Environmental Policy, University of Massachusetts/Boston BS, Wildlife Biology, Michigan State University	Infrastructure and Utilities	25

Table 5-1. List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
Sean Rose, Tetra Tech	BA, Urban Affairs and Planning, Virginia Polytechnic Institute and State University MPS, Real Estate Development, Georgetown University	Hazardous Materials and Waste	10

6. PERSONS AND AGENCIES CONSULTED/COORDINATED

The Persons and Agencies that were contacted in preparation of this EA are listed in **Table 6-1**.

Table 6-1. Persons and Agencies Consulted/Coordinated

Federal Agencies	
Mr. Ron Popowski U.S. Fish and Wildlife Service New Jersey Field Office, Ecological Services 4 East Jimmie Leeds Road, Unit 4 Galloway, NJ 08205	United States Environmental Protection Agency Environmental Review Section Chief of Environmental Review EPA Region 2 290 Broadway New York, NY 10007-1866
State Agencies	
New Jersey Department of Environmental Protection Division of Fish, Game, and Wildlife Endangered and Nongame Species Program Mail Code 501-03 P.O. Box 420 Trenton, NJ 08625-0420	Ms. Megan Brunatti New Jersey Department of Environmental Protection Office of Permit Coordination and Environmental Review 401 East State Street Mail Code 401-07J P.O. Box 420 Trenton, NJ 08625
Dr. Katherine Marcopul New Jersey Department of Environmental Protection Historic Preservation Office Mail Code 501-04B P.O. Box 420 Trenton NJ, 08625-0420	Ms. Sara Cureton New Jersey Department of State Historical Commission 225 West State Street P.O. Box 305 Trenton, NJ 08625
Ms. Nancy Wittenberg New Jersey Pinelands Commission P.O. Box 359 15 Springfield Road New Lisbon, NJ 08064	
Local Agencies	
Manchester Township Environmental Commission 1 Colonial Drive Manchester, NJ 08759	Ms. Christine Raabe Ocean County Soil and Water Conservation District 714 Lacey Road Forked River, NJ 08731
Mr. Anthony Agliata Ocean County Department of Planning 129 Hooper Avenue P.O. Box 2191 Toms River, NJ 08754	Planning Board of Burlington County Engineering Complex 1900 Briggs Road Mt. Laurel, NJ 08054
Burlington County Soil Conservation District 1971 Jacksonville-Jobstown Road Columbus, NJ 08022	
Tribal Agencies	
Ms. Erin Paden Delaware Nation P.O. Box 825 Anadarko, OK 73005	Dr. Brice Obermeyer Delaware Tribe of Indians 1200 Commercial St. Emporia, KS 66801

DRAFT ENVIRONMENTAL ASSESSMENT

Environmental Assessment
Persons and Agencies Consulted

Energy Savings Performance
Joint Base McGuire-Dix-Lakehurst, New Jersey

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Appendix A
Interagency/Intergovernmental Coordination
and Public Participation

1

Example Agency Scoping Letter**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST**

Carl Champion
Installation Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Ave
Joint Base McGuire-Dix-Lakehurst, NJ 08641

Planning Board of Burlington County
Engineering Complex
1900 Briggs Road
Mt. Laurel, NJ 08054

Attn: Planning Board of Burlington County

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with the implementation of energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL) through an Energy Savings Performance Contract (ESPC) (Proposed Action). The EA will be prepared in compliance with the National Environmental Policy Act (NEPA), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA, and the USAF's Environmental Impact Analysis Process. The EA will consider the potential consequences to human health and the natural environment. One action alternative has been identified. The No Action Alternative will be carried forward in accordance with the requirements of the CEQ's implementing regulations for NEPA. The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

The purpose of the Proposed Action is to increase JB MDL's energy security, resiliency, and conservation. The Proposed Action is needed to comply with federal energy directives such as the Energy Policy Act of 2005; Executive Order 13834, *Efficient Federal Operations*; and Department of Defense Instruction 4170.11, *Installation Energy Management*. It is also needed to support the goals of the *2017-2036 Air Force Energy Flight Plan*, which are to improve resiliency, optimize demand, and assure supply.

The proposed project is expected to commence in 2021 and be completed in 3 years. The ECMs proposed on McGuire Air Force Base (AFB) include the following: two ground-mounted solar PV arrays, one at North Run (approximately 25 acres) and one at Back Nine (approximately 26 acres); carport solar PV panels on one existing carport and one constructed carport; roof-mounted solar PV panels on approximately 20-30 buildings; and, one microgrid control system (MCS), one battery energy storage system (BESS), and two natural gas generators near existing substations. The ECMs proposed on Fort Dix include roof-mounted solar PV panels on approximately 10 to 15 buildings. The ECMs proposed on Naval Air Engineering Station (NAES) Lakehurst include the following: one ground-mounted solar PV array on approximately 12 acres; roof-mounted solar PV panels on approximately 10 to 15

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buildings; and, one MCS, one BESS, and one backup stand-by generator near the existing substation. The attached Description of the Proposed Action and Alternatives provides more details on the Proposed Action.

If you have information regarding potential impacts of the Proposed Action on the natural environment or other environmental aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the NEPA compliance process. We look forward to and welcome your participation in this process. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA.

Please send your written responses to me at carl.champion.1@us.af.mil and I will coordinate responses with our environmental compliance program staff. Thank you in advance for your participation.

Sincerely,

CHAMPION.CARL Digitally signed by
CHAMPION.CARL.E.JR.11860386
.E.JR.1186038602 02
Date: 2021.01.06 22:00:28 -05'00'

Carl Champion
Installation Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office

Attachments:

- 1) Description of the Proposed Action and Alternatives

1

Tribal Letters



**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST**

Carl Champion
Installation Tribal Liaison Officer
Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Ave
Joint Base McGuire-Dix-Lakehurst, NJ 08641

Delaware Nation
P.O. Box 825
Anadarko, OK 73005
Attn: Erin Paden, Director of Cultural Resources & Section 106

Dear Erin,

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with the implementation of energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL) through an Energy Savings Performance Contract (ESPC) (Proposed Action). The EA will be prepared in compliance with the National Environmental Policy Act (NEPA), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA, and the USAF's Environmental Impact Analysis Process. The EA will consider the potential consequences to human health and the natural environment. One action alternative has been identified. The No Action Alternative will be carried forward in accordance with the requirements of the CEQ's implementing regulations for NEPA. The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

The purpose of the Proposed Action is to increase JB MDL's energy security, resiliency, and conservation. The Proposed Action is needed to comply with federal energy directives such as the Energy Policy Act of 2005; Executive Order 13834, *Efficient Federal Operations*; and Department of Defense Instruction 4170.11, *Installation Energy Management*. It is also needed to support the goals of the *2017-2036 Air Force Energy Flight Plan*, which are to improve resiliency, optimize demand, and assure supply.

The proposed project is expected to commence in 2021 and be completed in 3 years. The ECMs proposed on McGuire Air Force Base (AFB) include the following: two ground-mounted solar PV arrays, one at North Run (approximately 25 acres) and one at Back Nine (approximately 26 acres); carport solar PV panels on one existing carport and one constructed carport; roof-mounted solar PV panels on approximately 20-30 buildings; and, one microgrid control system (MCS), one battery energy storage system (BESS), and two natural gas generators near existing substations. The ECMs proposed on Fort Dix include roof-mounted solar PV panels on approximately 10 to 15 buildings. The ECMs proposed on Naval Air

2

Engineering Station (NAES) Lakehurst include the following: one ground-mounted solar PV array on approximately 12 acres; roof-mounted solar PV panels on approximately 10 to 15 buildings; and, one MCS, one BESS, and one backup stand-by generator near the existing substation. The attached Description of the Proposed Action and Alternatives provides more details on the Proposed Action.

Pursuant to 36 CFR § 800.3, USAF is seeking your input on this project so that you may have an opportunity to comment on cultural resources and/or other concerns regarding the Proposed Action and the proposed archaeological and architectural Areas of Potential Effect (Attachment 2). Your feedback is important and a response within 30 days of receipt of this letter would enable us to ensure that your concerns are fully considered in our evaluation. Thank you in advance for your participation.

Please send your written responses to me at carl.champion.1@us.af.mil and I will coordinate responses with our environmental compliance program staff. Thank you in advance for your participation.

Sincerely,

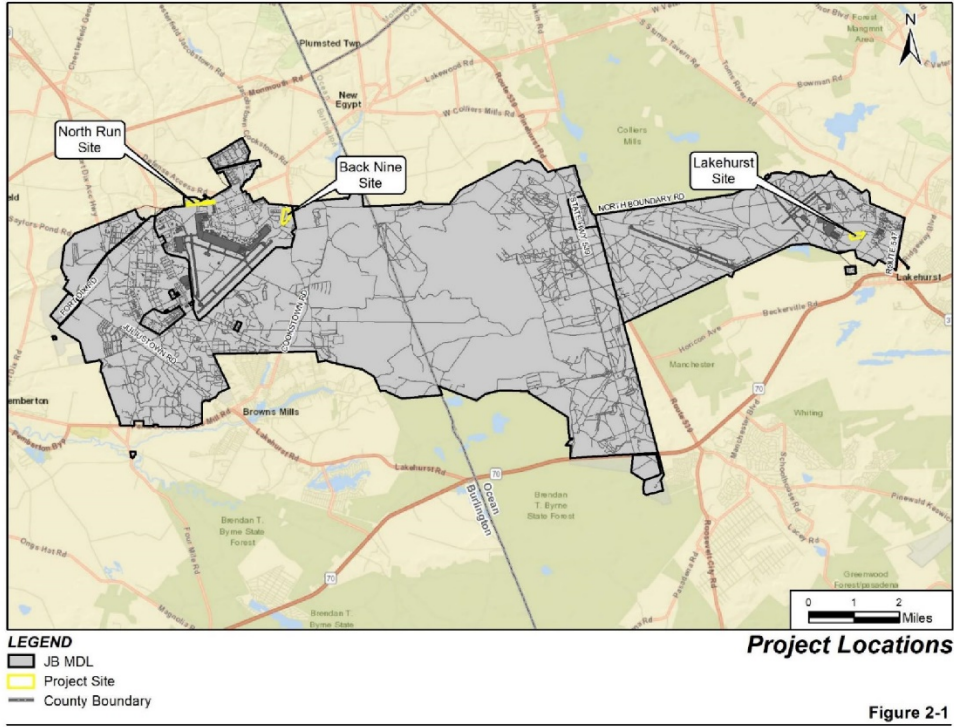
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Carl Champion
Installation Tribal Liaison Officer
Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office

Attachments:

- 1) Description of the Proposed Action and Alternatives
- 2) Proposed Areas of Potential Effects

Attachment 2: Proposed Areas of Potential Effect



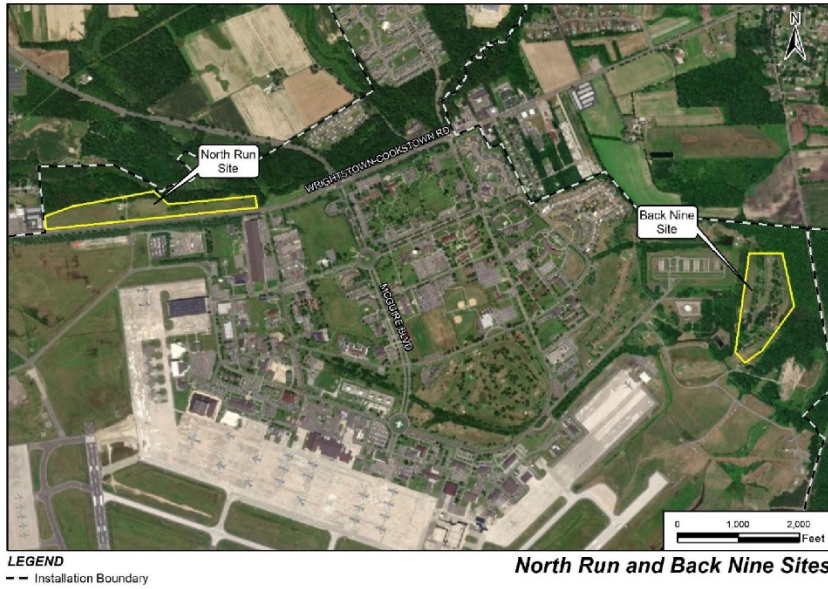


Figure 2-2



Figure 2-3

**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST**

Carl Champion
Installation Tribal Liaison Officer
Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Ave
Joint Base McGuire-Dix-Lakehurst, NJ 08641

Delaware Tribe of Indians
Director, Delaware Tribe Historic Preservation Office
Roosevelt Hall, Room 212
1200 Commercial Street
Emporia, KS 66801
Attn: Dr. Brice Obermeyer, Tribal Historic Preservation Officer

Dear Dr. Obermeyer,

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with the implementation of energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL) through an Energy Savings Performance Contract (ESPC) (Proposed Action). The EA will be prepared in compliance with the National Environmental Policy Act (NEPA), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA, and the USAF's Environmental Impact Analysis Process. The EA will consider the potential consequences to human health and the natural environment. One action alternative has been identified. The No Action Alternative will be carried forward in accordance with the requirements of the CEQ's implementing regulations for NEPA. The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

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solar PV panels on approximately 10 to 15 buildings. The ECMs proposed on Naval Air Engineering Station (NAES) Lakehurst include the following: one ground-mounted solar PV array on approximately 12 acres; roof-mounted solar PV panels on approximately 10 to 15 buildings; and, one MCS, one BESS, and one backup stand-by generator near the existing substation. The attached Description of the Proposed Action and Alternatives provides more details on the Proposed Action.

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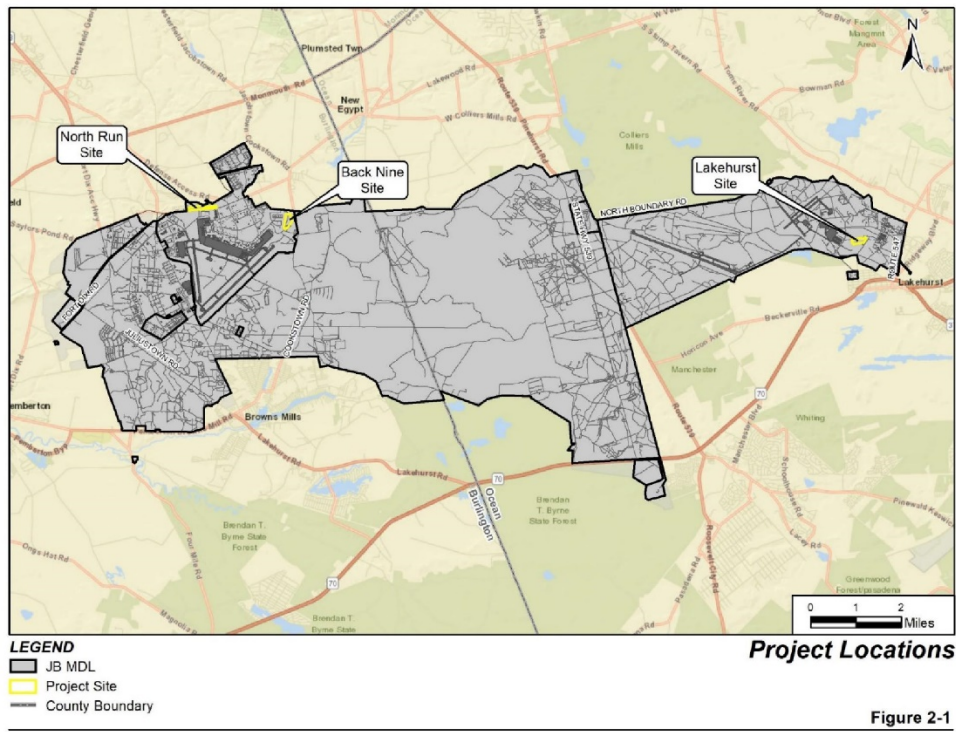
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Carl Champion
Installation Tribal Liaison Officer
Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office

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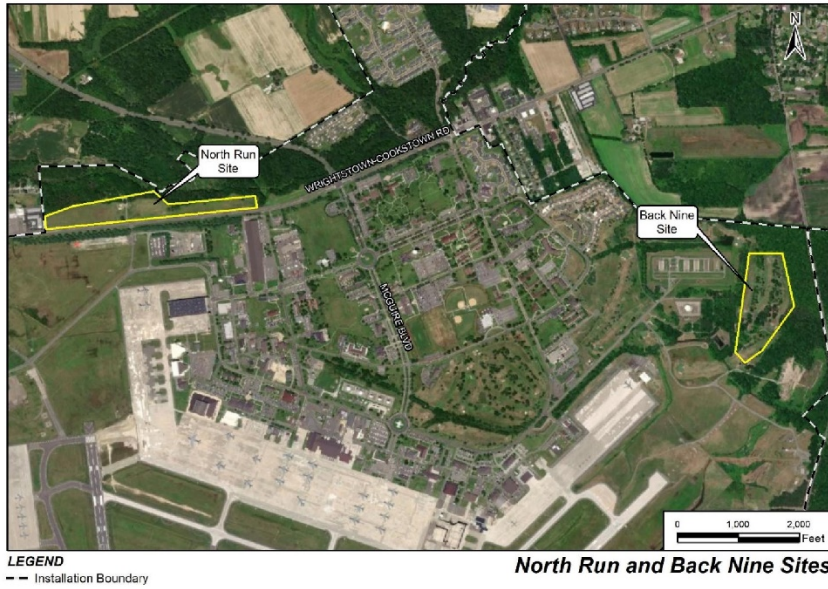


Figure 2-2



Figure 2-3

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Historical Commission Letter**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST**

Dr. Sharon D. White
JB MDL Cultural Resources Manager
2404 Vandenberg Avenue
Joint Base MDL, NJ 08641

Ms. Sara Cureton
New Jersey Department of State
Historical Commission
225 West State Street
P.O. Box 305
Trenton, NJ 08625

Dear Ms. Cureton,

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with the implementation of energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL) through an Energy Savings Performance Contract (ESPC) (Proposed Action). The EA will be prepared in compliance with the National Environmental Policy Act (NEPA), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA, and the USAF's Environmental Impact Analysis Process. The EA will consider the potential consequences to human health and the natural environment. One action alternative has been identified. The No Action Alternative will be carried forward in accordance with the requirements of the CEQ's implementing regulations for NEPA. The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

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The ECMs proposed on Fort Dix include roof-mounted solar PV panels on approximately 10 to 15 buildings. The ECMs proposed on Naval Air Engineering Station (NAES) Lakehurst include the following: one ground-mounted solar PV array on approximately 12 acres; roof-mounted solar PV panels on approximately 10 to 15 buildings; and, one MCS, one BESS, and one backup stand-by generator near the existing substation. The attached Description of the Proposed Action and Alternatives (Attachment 1) provides more details on the Proposed Action.

Pursuant to 36 CFR § 800.3, USAF is seeking your input on this project so that you may have an opportunity to comment on cultural resources and/or other concerns regarding the Proposed Action and the proposed archaeological and architectural Areas of Potential Effect (Attachment 2). Your feedback is important and a response within 30 days of receipt of this letter would enable us to ensure that your concerns are fully considered in our evaluation. Thank you in advance for your participation.

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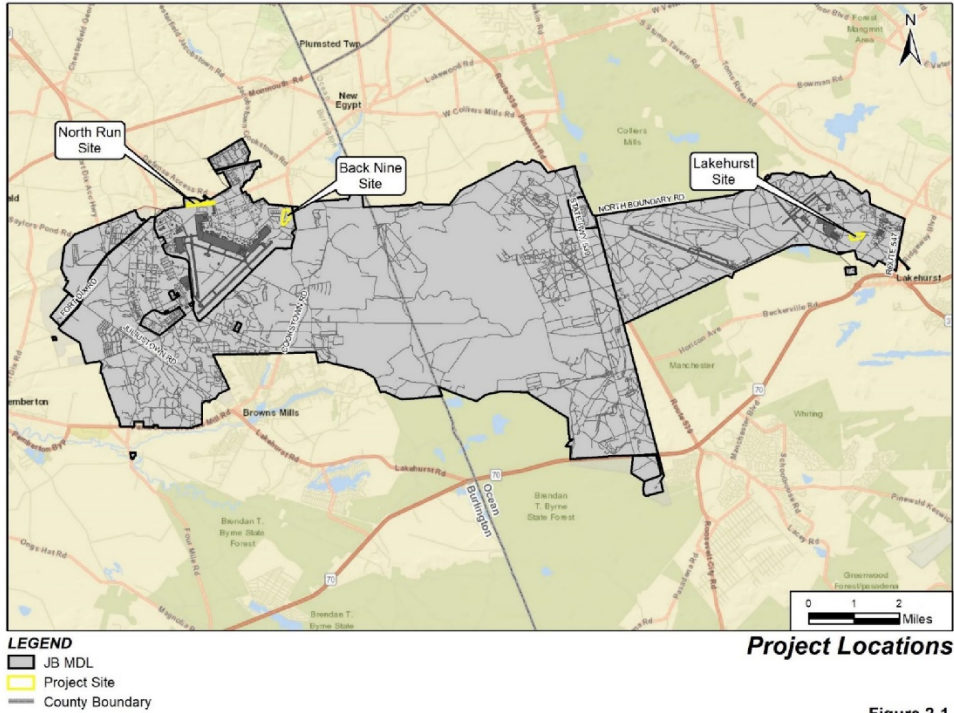
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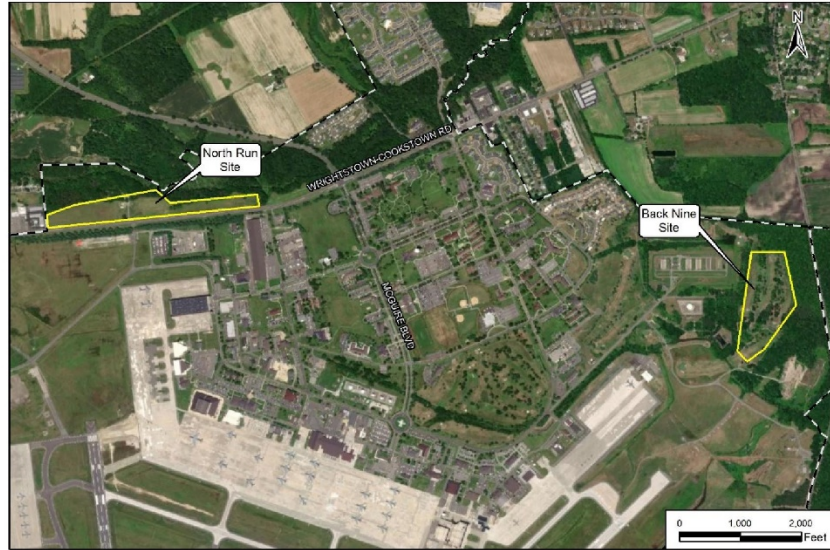
DR. SHARON D. WHITE, USAF
JB MDL, Cultural Resources Manager

Two (2) Attachments:

1. Description of the Proposed Action and Alternatives
2. Proposed Areas of Potential Effect

Attachment 2: Proposed Areas of Potential Effect





LEGEND
-- Installation Boundary

North Run and Back Nine Sites

Figure 2-2



Lakehurst Site

Figure 2-3

1

SHPO Letter



**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST**

Dr. Sharon D. White
JB MDL Cultural Resources Manager
2404 Vandenberg Avenue
Joint Base MDL, NJ 08641

Dr. Katherine Marcopul
New Jersey Department of Environmental Protection
Historic Preservation Office
P.O. Box 420
Trenton, NJ 08625-0420

Dear Dr. Marcopul,

The U.S. Air Force (USAF) is in the process of preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with the implementation of energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL) through an Energy Savings Performance Contract (ESPC) (Proposed Action). The EA will be prepared in compliance with the National Environmental Policy Act (NEPA), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA, and the USAF's Environmental Impact Analysis Process. The EA will consider the potential consequences to human health and the natural environment. One action alternative has been identified. The No Action Alternative will be carried forward in accordance with the requirements of the CEQ's implementing regulations for NEPA. The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

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Pursuant to Section 106 of the National Historic Preservation Act and in accordance with 36 Code of Federal Regulations Part 800 (Protection of Historic Properties), USAF would like to initiate consultation concerning the Proposed Action and the proposed archaeological and architectural Areas of Potential Effect (Attachment 2) to allow you the opportunity to provide comments, concerns, and/or suggestions you might have. That information will be used to determine whether there are any cultural resources present that are eligible for listing on the National Register of Historic Places, and if so, whether the Proposed Action would cause adverse effects that must be addressed. Your feedback is important and a response within 30 days of receipt of this letter would enable us to ensure that your concerns are fully considered in our evaluation. Thank you in advance for your participation.

Sincerely,

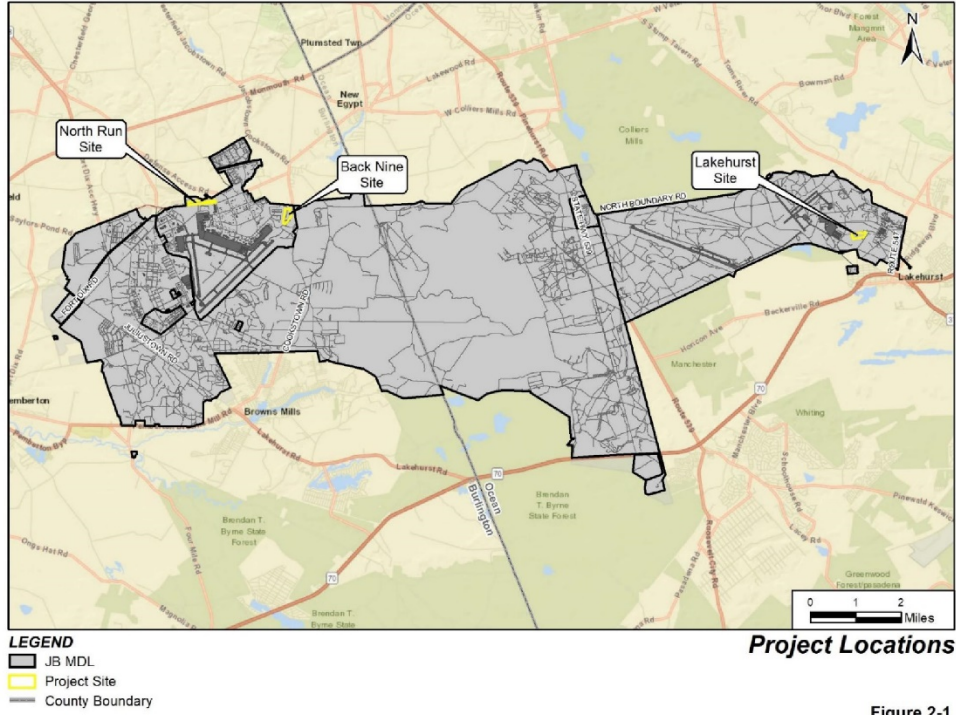
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DR. SHARON D. WHITE, USAF
JB MDL, Cultural Resources Manager

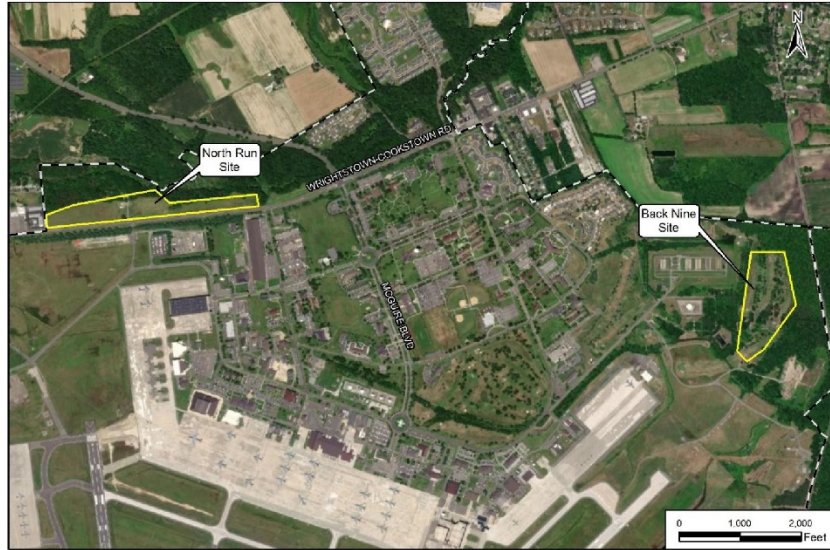
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North Run and Back Nine Sites

Figure 2-2



Lakehurst Site

Figure 2-3

1

Comments Received During the Scoping Period

JAMES RUSSELL, CHAIRMAN
EARL F. SUTTON, JR., VICE CHAIRMAN
JOSEPH H. VICARI, FREEHOLDER DIRECTOR
GARY QUINN, FREEHOLDER
JOHN N. ERNST, COUNTY ENGINEER
JOSEPH BILOTTA
DENNIS LIBERATORE
ELAINE McCRYSTAL
SCOTT K. TIRELLA
JOHN P. KELLY, FREEHOLDER ALTERNATE
MARK JEHNKE, ENGINEERING ALTERNATE
ALAN W. AVERY, JR., ALTERNATE
JOSEPH R. MARRA, ALTERNATE



OCEAN COUNTY PLANNING BOARD

P O Box 2191
Toms River, New Jersey 08754-2191
Telephone (732) 929-2054
Fax (732) 244-8396

ANTHONY M. AGLIATA
PLANNING DIRECTOR

JOHN C. SAHRADNIK
COUNSEL

ROBIN L. FLORIO
SECRETARY

January 11, 2021

Carl Champion
Installation Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Ave
Joint Base McGuire-Dix-Lakehurst, NJ 08641

Re: DOPAA for Energy Savings Performance at Joint Base McGuire-Dix-Lakehurst

Dear Mr. Champion,

Thank you for your letter containing the Description of Proposed Action and Alternatives for Energy Savings Performance (DOPAA) at Joint Base McGuire-Dix-Lakehurst (JB MDL). The County remains engaged in matters concerning the Joint Base, its operations, and quality of life issues for our service members.

The County supports the implementation of energy conservation measures for electrical power and energy savings at JB MDL. The projects discussed in the DOPAA will be a great benefit to the base, and would increase energy resiliency and the ability to prepare for, mitigate, and recover from potential energy disruptions.

Based on our review of the proposed action, we support the project and believe any environmental impacts would be minimal. Please keep us updated if there is anything that the County can do to assist with this or any other project, and do not hesitate to contact me at (732) 929-2054.

Sincerely,


Mark A. C. Villinger
Supervising Planner

MCV/vk

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SPECIAL ASSISTANCE/ACCOMMODATIONS UPON REQUEST.

2



State of New Jersey

PHILIP D. MURPHY
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Permitting & Project Navigation
Mail Code 401-07J
P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/pcer

SHAWN M. LATOURETTE
Acting Commissioner

SHEILA Y. OLIVER
Lt. Governor

January 26, 2021

Mr. Carl Champion
Installation Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Ave
Joint Base McGuire-Dix-Lakehurst, NJ 08641

RE: NEPA Scoping Document
USAF/Joint Base – Energy Conservation Measures (ECM)

Dear Mr. Champion,

On January 8, 2021, the New Jersey Department of Environmental Protection’s (NJDEP) Office of Permitting and Project Navigation (OPPN) received a NEPA Scoping Document for the U.S. Air Force’s (USAF) proposed solar panels and other energy conservation measures within Manchester Twp, Ocean County and New Hanover Twp, Burlington County of Joint Base McGuire-Dix-Lakehurst.

In response to your request for guidance on whether the proposal will have any adverse impacts to land and water resources, historical or cultural resources, threatened and endangered species and migratory birds, the Department offers the following comments for your consideration.

Land Resource Protection Division

Freshwater Wetlands Rules

Any proposed activities within areas regulated by the Freshwater Wetland Protection Act rules will require a permit authorization from the Division of Land Resource Protection (DLRP), if the New Jersey Pineland Commission declines to take jurisdiction over the freshwater wetlands. In addition, a certificate of filing to the Commission may be required as a part of any application submitted to DLRP.

Flood Hazard Area Rules

Impacts to regulated areas under the jurisdiction of the Flood Hazard Area Control Act (i.e. streams, flood hazard areas and/or riparian zones) require a permit authorization from DLRP. DLRP remains the responsible entity for implementing this set of regulation within the Pinelands.

Coastal Zone Management Rules

Impacts to areas regulated by the Waterfront Development Act and/or CAFRA shall require a Federal Consistency. DLRP encourages submitting a Coastal Jurisdiction Determination to obtain official documentation that the project activities do not require coastal permits.

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USAF/Joint Base Solar NEPA Scoping Response
Page 2 of 5

If you have any questions, please contact Brett Kosowski at Brett.Kosowski@dep.nj.gov for FWW or Keith Stampfel at Keith.Stampfel@dep.nj.gov for FHA. They can also be reached at (609) 633-2289.

Division of Fish & Wildlife (NJDFW)

New Jersey Division of Fish & Wildlife (DFW) recommends that any ground clearing or site preparation for ground mounted solar be done outside the nesting season (April 1 to August 31), to minimize impact to ground nesting birds.

The DFW relies on the Integrated Natural Resources Management Plan (INRMP) to protect resources under the purview of DFW. The comments and recommendations of the DFW's Office of Environmental Review (OER) are subject to change, if any additional environmental issues or concerns that may negatively affect resources under the purview of the DFW are discovered during pre-construction surveys or the construction phase. The OER should be contacted upon discovery at (609) 960-4502 or (609) 292-9451.

If you have any questions, please contact Kelly Davis of the Division of Fish & Wildlife at (908) 236-2118 or Kelly.Davis@dep.nj.gov

State Historic Preservation Office

Based on the documentation submitted, the proposed project will require consultation with the SHPO, pursuant to Section 106 of the National Historic Preservation Act, for the identification, evaluation, and treatment of historic properties within the project's area of potential effects. The United State Department of the Air Force (USAF) has initiated consultation with our office. As a result, the SHPO looks forward to further consultation with the USAF, pursuant to their obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, and it's implementing regulations, 36 CFR §800.

If you have any questions, please contact Jesse West-Rosenthal of the State Historic Preservation Office at (609) 984-6019 or Jesse.West-Rosenthal@dep.nj.gov

Air Quality Bureau of Evaluation and Planning

Joint Base McGuire-Dix-Lakehurst, specifically McGuire and Lakehurst, have emission budgets for VOCs and NOx that were established under the Federal General Conformity regulation in order to ensure that any increase in activity at McGuire or Lakehurst conform to the State Implementation Plan (SIP). The emission budgets for McGuire and Lakehurst can be found in the 1997 8-Hour Ozone Attainment Demonstration SIP at https://www.nj.gov/dep/baqp/8hrsip/Final_CompleteSIP.pdf.

If the emissions associated with this project and the proposed activity are not accounted for in the established emission budgets, then a General Conformity Applicability Analysis and possibly a Conformity Determination will be required for this project in accordance with the USEPA's Federal General Conformity regulation (40 CFR, part 93, Subpart B, Determining Conformity of General Federal Actions to State or Federal Implementation Plans). Fort Dix does not have an emission budget established, so the activity occurring at Fort Dix should be addressed and evaluated separately from the activity occurring at McGuire and Lakehurst.

If you have any questions, please contact Connor Milligan of the Division of Air Quality, Bureau of Evaluation and Planning at (609) 292-9906 or Connor.Milligan@dep.nj.gov

Air Quality Permitting

In general, no person shall cause, suffer, allow, or permit to be emitted into the outdoor atmosphere substances in quantities which shall result in air pollution as defined in N.J.A.C. 7:27-5.

USAF/Joint Base Solar NEPA Scoping Response
Page 3 of 5

Air permitting rules are found at N.J.A.C. 7:27-8 for minor facilities and N.J.A.C. 7:27-22 for major facilities. Based on Table 2-1 in the Environmental Assessment, there will be:

- Two new 2-MW generators at McGuire. If used for an emergency, a General Permit may be applicable (must meet all pre-determined requirements in the GP).
- One new 2-MW “stand-by” generator at NAES. If used for an emergency, a General Permit may be applicable (must meet all pre-determined requirements in the GP).
- Boilers, Chillers, Air Handling Units, Air Conditioning Packaged Units – please refer to N.J.A.C. 7:27-8 and N.J.A.C. 7:27-22 to determine if an authorization is required.
- Any other sources of air emissions as listed in N.J.A.C. 7:27-8/N.J.A.C. 7:27-22 may require permits.

If you have any questions, please contact Danny Wong of Air Permitting at 609-984-2608 or Danny.Wong@dep.nj.gov

Bureau of Mobile Sources

Diesel exhaust contributes the highest cancer risk of all air toxics in New Jersey and is a major source of NO_x within the state. Therefore, NJDEP recommends that construction projects involving non-road diesel construction equipment operating in a small geographic area over an extended period of time implement the following measures to minimize the impact of diesel exhaust:

1. All on-road vehicles and non-road construction equipment operating at, or visiting, the construction site shall comply with the three minute idling limit, pursuant to N.J.A.C. 7:27-14 and N.J.A.C. 7:27-15. Consider purchasing “No Idling” signs to post at the site to remind contractors to comply with the idling limits. Signs are available for purchase from the Bureau of Mobile Sources at 609/292-7953 or <http://www.stopthesoot.org/sts-no-idle-sign.htm>.
2. All non-road diesel construction equipment greater than 100 horsepower used on the project for more than ten days should have engines that meet the USEPA Tier 4 non-road emission standards, or the best available emission control technology that is technologically feasible for that application and is verified by the USEPA or the CARB as a diesel emission control strategy for reducing particulate matter and/or NO_x emissions.
3. All on-road diesel vehicles used to haul materials or traveling to and from the construction site should use designated truck routes that are designed to minimize impacts on residential areas and sensitive receptors such as hospitals, schools, daycare facilities, senior citizen housing, and convalescent facilities.

If you have any questions, please contact Kris Dahl of the Bureau of Mobile Sources at (609) 692-1122 or Kris.Dahl@dep.nj.gov.

Bureau of Water Allocation

Most of the proposed actions fall outside the purview of the Bureau of Water Allocation and Well Permitting. The only element that may require some form of authorization from the Bureau would be the installation of any ground anchors or supports for the proposed solar arrays. The submitted documentation stated that minimal ground disturbance would occur and, although unlikely, some form of construction related dewatering could be required. If dewatering is necessary, construction dewatering guidance can be found at the following link: <https://www.state.nj.us/dep/watersupply/pdf/dewater-crg.pdf>

USAF/Joint Base Solar NEPA Scoping Response
Page 4 of 5

If you have any questions, please contact Ken Komar of the Bureau of Water Allocation at (609) 292-8803 or Ken.Komar@dep.nj.gov

Bureau of Surface Water Permitting

If a surface water discharge becomes necessary during construction (i.e., dewatering), a NJPDES Discharge to Surface Water permit will be needed.

Provided that the discharge is not contaminated, the appropriate NJPDES discharge to surface water permit will be the B7 - Short Term De Minimis permit (see <http://www.nj.gov/dep/dwq/gp-b7.htm>). This is determined by running a pollutant scan as described in the application checklist where the data can be collected up to a year in advance of the discharge. However, if the discharge is contaminated and the analytical results demonstrate levels greater than the limitations specified in Attachment 1 of the B7 permit (see <http://www.state.nj.us/dep/dwq/pdf/b7-deminimis-final-permit-5-20-15.pdf>), the appropriate NJPDES discharge to surface water permit will be the BGR – General Remediation Cleanup permit (see http://www.nj.gov/dep/dwq/gp_bgr.htm). The BGR permit can generally be processed in less than 30 days although a treatment works approval may be needed for any treatment.

If you have any questions, please contact Dwayne Kobesky of the Division of Water Quality, Bureau of Surface Water Permitting at (609) 777-0285 or Dwayne.Kobesky@dep.nj.gov

NJ Pinelands Commission

Sections of the outlined activities may require the completion of a formal application to the Pinelands Commission, whereas other sections of the activities may not be defined as development under N.J.A.C. 7:50-4.1.

The Pinelands Commission will issue a letter advising the applicant to schedule a pre-application meeting with the Commission to discuss the proposed development activities.

If you have any questions, please contact Ernest Deman of the Pinelands Commission at 609-894-7300 or Ernest.Deman@pinelands.nj.gov.

Site Remediation JBMDL

Please determine if the site has been part of a remediation activity and whether ground disturbance associated with the proposed project will potentially impact groundwater.

Additionally, the solar array must be added to any monitoring and maintenance plan that may be in place for the site.

If you have any questions, please contact Kristine Iazzetta of the Site Remediation Program for Lakehurst at (609) 777-0376 or Kristine.iazzetta@dep.nj.gov, or Haiyesh Shah for McGuire and Dix at 609-633-0718 or Haiyesh.Shah@dep.nj.gov

Bureau of Non-Point Pollution Control

Construction projects that disturb 1 acre or more of land, or less than 1 acre but are part of a larger common plan of development that is greater than 1 acre, are required to obtain coverage under the Stormwater construction general permit (5G3). Applicants must first obtain certification of their soil erosion and sediment control plan (251 plan) from their local soil conservation district office. Upon certification, the district office will provide the applicant with two codes process (SCD certification code and 251 identification code) for use in the DEPonline portal system application. Applicants must then become a registered user for the DEPonline system and complete the application for the Stormwater Construction General Authorization. Upon completion of the application the applicant will receive a temporary

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USAF/Joint Base Solar NEPA Scoping Response
Page 5 of 5

authorization which can be used to start construction immediately, if necessary. Within 3-5 business days, the permittee contact identified in the application will receive an email including the application summary and final authorization.

For any additional stormwater questions, please contact Eleanor Krukowski at Eleanor.Krukowski@dep.nj.gov or (609) 633-7021.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the information provided for the proposed energy conservation measures at Joint Base McGuire-Dix-Lakehurst. If you have any additional questions, please do not hesitate to call me at (609) 292-3600.

Sincerely,



Megan Brunatti, Director
Office of Permitting & Project Navigation



MANCHESTER TOWNSHIP

1 COLONIAL DRIVE • MANCHESTER, NJ 08759 • (732)657-8121
ENVIRONMENTAL COMMISSION

RORY WELLS
CHAIRPERSON OF THE ENVIRONMENTAL COMMISSION

KENNETH T. PALMER
MAYOR

February 1, 2021

Mr. Carl Champion

Installation Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Avenue
Joint Base McGuire-Dix-Lakehurst, NJ 08641

**RE: Proposed Implementation of Energy Conservation Measures
Joint Base McGuire-Dix-Lakehurst**

Dear Mr. Champion,

Thank you for your letter regarding the above-referenced report and the opportunity to provide input. After reviewing the report, the Manchester Township Environmental Commission has the following comments in regard to potential environmental impacts:

1. We recommend that the proposed emergency generators be fueled with natural gas, if available, as it is the cleanest fossil fuel energy source available.
2. We are not in favor of the removal of trees to accommodate solar panels and, in general, feel the best location for them is over existing buildings and parking lots.
3. Please provide site plans, if available.

The Commissioners would like to extend an invitation to you (or a representative) to attend one of their regular Zoom meetings to discuss this project in more detail. Their next meeting is scheduled for February 23, 2021 at 5:00 pm. Please contact Commission Secretary Lauren Frazee at 732-657-8121 Ext. 3107.

We look forward to hearing from you.

Kind regards,

Manchester Township Environmental Commission

WWW.MANCHESTERTWP.COM

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

February 10, 2021

Carl Champion
Installation Environmental Supervisor, 787th CES/CEIE
Civil Engineering Squadron, Environmental Office
2404 Vandenberg Ave
Joint Base McGuire-Dix-Lakehurst, NJ 08641

RE: Joint Base McGuire-Dix-Lakehurst – Energy Conservation Measures – Proposed Action

Dear Mr. Champion,

The U.S. Environmental Protection Agency (EPA) has received the Joint Base McGuire-Dix-Lakehurst (JB MDL) Description of the Proposed Action and Alternatives (DOPAA) regarding the implementation of energy conservation measures (ECMs). The document addresses JB MDL's plans to comply with and support federal energy directives and agency objectives to reduce energy consumption by installation of a microgrid control system (MCS), solar photovoltaic (PV) arrays and panels, a battery energy storage system (BESS), natural gas generators, replacement of heating, ventilation and air conditioning (HVAC) pneumatic controls, and supporting work to ensure the proper construction and operation to meet JB MDL's goals.

JB MDL has requested EPA's assistance in obtaining any information or preliminary concerns regarding projects associated with the upcoming Environmental Assessment (EA). These may include potential effects to: physical, ecological, social, cultural, and archaeological resources.

EPA offers the following notes for consideration when performing the environmental analysis:

- According to NEPA Assist, JB MDL has some significant portions of land designated as freshwater forested/shrub wetlands; potential impacts due to construction on these areas should be assessed.
- There is a superfund site on the National Priorities List (NPL) that is located on the McGuire Air Force Base; any proposed work should consider impacts on this site.
- Consult with New Jersey Department of Environmental Protection (NJDEP) to address any statewide standards, including but not limited to: tree removal & replacement, emissions standards, etc.

We would also like to take this opportunity to encourage JB MDL to consider the following when preparing the forthcoming EA based on the EPA Region 2 Greening Recommendations:

- The Federal Green Construction Guide for Specifiers includes helpful information for procuring green building products and construction/renovation services within the Federal government: <http://www.wbdg.org/design/greenspec.php>
- Promote markets for environmentally preferable products by referencing EPA's multi-attribute Sustainable Marketplace: <https://www.epa.gov/greenerproducts>
- Implement diesel controls, cleaner fuel, and cleaner construction practices for on-road and

Internet Address (URL) • <http://www.epa.gov>

off-road equipment used for transportation, soil movement, or other construction activities, including: Strategies and technologies that reduce unnecessary idling, including auxiliary power units, the use of electric equipment, and strict enforcement of idling limits; Use of clean diesel through add-on control technologies like diesel particulate filters and diesel oxidation catalysts, repowers, or newer, cleaner equipment.

- Many industrial and construction byproducts are available for use in road, building or infrastructure construction. Use of these materials can save money and reduce environmental impacts.

As a means to improve communications on NEPA-related matters with EPA Region 2, please direct all inquiries to me through email at austin.mark@epa.gov or (212) 637-3954. For questions related to this particular proposed action by JB MDL, please contact Arielle Benjamin at (212) 637-3650 or benjamin.arielle@epa.gov.

Thank you for the opportunity to assist JB MDL with their upcoming project. We look forward to working with your team throughout the NEPA review process and in the future.

Sincerely,

Mark Austin

Mark Austin, Team Leader
Environmental Review Team

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USFWS Scoping Letter Response**Pett, Sam**

From: Popowski, Ron <ron_popowski@fws.gov> on behalf of NJFO Project Review, FW5 <NJFO_ProjectReview@fws.gov>
Sent: Monday, January 11, 2021 1:59 PM
To: Pett, Sam
Subject: Fw: [EXTERNAL] Joint Base McGuire-Dix-Lakehurst National Environmental Policy Act Scoping Materials
Attachments: JBMDL Energy Project Scoping Letter for USFWS District Office-sgnd.pdf; Final DOPAA_JB MDL Energy Savings EA_Nov2020 clean.docx

Hi Sam,

This is in reference to your January 8, 2021 email below. In addition, we also received the same in hard copy via FED EX package today.

We are writing to provide you guidance on how to submit consultation package for our review. You can use our office's project screening procedures to submit consultation package for your project. Please review our ['step by step' project consultation procedures](#) we have on our office website.

Essentially, you determine your project area and draw it in IPaC to get a species list (step 1 and 2). The procedures say you can use the preliminary species list (the one with the not for consultation watermark), but Federal projects really need to take the extra step and request an official species list in IPaC (it should be shown as an option on IPaC somewhere after the preliminary species list is generated). The official species list looks almost identical to the preliminary species list (sans watermark), but the process of requesting an official species list will generate a official record of the project in the Service's database.

After you have your *official* species list, you go to step 3 on the guidance and use the NJFO's [project screening chart](#) to determine if Service review of the project is needed. You answer the questions in the chart columns *only for species that were included on your species list*. If project screening chart requires you to submit the consultation package, please send it to NJFO_ProjectReview@fws.gov and attach all necessary documents, including official species list. Please also include your FEMA Point of Contact in cc. You will need follow this procedure for each project.

Let me know if you have any questions or difficulty going through this process.

Thanks,

Ron Popowski, Supervisor
 Endangered Species Program/Conservation Planning Assistance

U.S. Fish and Wildlife Service
 Department of the Interior - Region 1
 North Atlantic - Appalachian
 New Jersey Field Office - Ecological Services
 4 E. Jimmie Leeds Road, Suite 4

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Tribal Response**Bates, Michelle**

From: Brice Obermeyer <bobermeyer@delawaretribe.org>
Sent: Wednesday, January 13, 2021 11:02 AM
To: sbachor@delawaretribe.org; Pett, Sam
Subject: Fwd: Joint Base McGuire-Dix-Lakehurst National Environmental Policy Act Scoping Materials
Attachments: Final DOPAA_JB MDL Energy Savings EA_Nov2020 clean.docx; JBMDL Energy Project Scoping Letter for Delaware Tribe of Indians-sgnd.pdf

Sam,

I am forwarding your project to Susan Bachor in our eastern Office. Susan handles all projects in the state of New Jersey and will be the point of contact for this and all future projects.

Brice Obermeyer
 Delaware Tribe Historic Preservation Office
 Roosevelt Hall, Rm 212
 1 Kellogg Drive
 Emporia, KS 66801

From: "Pett, Sam" <Sam.Pett@tetrattech.com>
To: "bobermeyer@delawaretribe.org" <bobermeyer@delawaretribe.org>
Sent: 1/8/2021 11:46 AM
Subject: Joint Base McGuire-Dix-Lakehurst National Environmental Policy Act Scoping Materials

Dear Mr. Obermeyer:

The U.S. Air Force is preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with implementing energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL). The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

The proposed project is expected to commence in 2021 and be completed in 3 years. The ECMs proposed on JB MDL include ground-mounted solar photovoltaic (PV) arrays, carport solar PV panels, roof-mounted solar PV panels, a microgrid control system, a battery energy storage system, and natural gas generators near existing substations.

The attachments to this email are the Description of the Proposed Action and Alternatives, which provides more details on the Proposed Action, and a cover letter. Note that these materials have been sent to you in hard copy but are also being sent via email because we understand that many people are teleworking and might not be able to retrieve packages sent to offices.

If you have information regarding potential impacts of the Proposed Action on the natural environment or other environmental aspects of which we are unaware, we would appreciate receiving such information for inclusion and consideration during the National Environmental Policy Act compliance process. We look forward to and welcome your participation in this process. Please respond within 30 days of receipt of these materials to ensure your concerns are adequately addressed in the EA.

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Historical Commission Response

Bates, Michelle

From: Cureton, Sara <Sara.Cureton@sos.nj.gov>
Sent: Tuesday, January 12, 2021 7:37 AM
To: Pett, Sam
Subject: Re: Joint Base McGuire-Dix-Lakehurst National Environmental Policy Act Scoping Materials

Dear Mr. Pett:

I am happy to forward this information to Ms. Marcopul at NJHPO. I will copy you so that you have her email address for future reference.

Best regards,

Sara Cureton

From: Pett, Sam <Sam.Pett@tetrattech.com>
Sent: Friday, January 8, 2021 12:29 PM
To: Cureton, Sara <Sara.Cureton@sos.nj.gov>
Subject: [EXTERNAL] Joint Base McGuire-Dix-Lakehurst National Environmental Policy Act Scoping Materials

***** CAUTION *****

This message came from an **EXTERNAL** address (**Sam.Pett@tetrattech.com**). **DO NOT** click on links or attachments unless you know the sender and the content is safe. **Suspicious?** Forward the message to spamreport@cyber.nj.gov.

Dear Ms. Cureton:

The U.S. Air Force is preparing an Environmental Assessment (EA) evaluating potential environmental impacts associated with implementing energy conservation measures (ECMs) for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL). The Proposed Action would modernize and optimize base building systems while providing resiliency and mission continuity through a mix of distributed generation, energy efficiency, infrastructure and targeted microgrid operation for critical loads.

The proposed project is expected to commence in 2021 and be completed in 3 years. The ECMs proposed on JB MDL include ground-mounted solar photovoltaic (PV) arrays, carport solar PV panels, roof-mounted solar PV panels, a microgrid control system, a battery energy storage system, and natural gas generators near existing substations.

The attachments to this email are the Description of the Proposed Action and Alternatives, which provides more details on the Proposed Action, and a cover letter. Note that these materials have been sent to you in hard copy but are also being sent via email because we understand that many people are teleworking and might not be able to retrieve packages sent to offices.

Ms. Cureton: If it wouldn't be too much bother, would you please forward the attached DOPAA and letter for Ms. Katherine Marcopul to her. I could not find an email address for Ms. Marcopul on the NJDEP Historic Preservation Office website. If you prefer and you have an email address for Ms. Marcopul, send her email address to me at

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Appendix B
Air Pollutant Emissions Calculations

**AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)**

1. General Information: The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: McGuire
State: New Jersey
County(s): Burlington
Regulatory Area(s): Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE; Philadelphia-Wilmington, PA-NJ-DE

b. Action Title: Solar JB MDL Installation

c. Project Number/s (if applicable): Solar JB MDL Installation

d. Projected Action Start Date: 1 / 2021

e. Action Description:

Solar JB MDL Installation

f. Point of Contact:

Name: Jonas Berge
Title: Contractor
Organization: Tetra Tech
Email: jonas.berge@tetrattech.com
Phone Number: 805-895-2054

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: applicable
 not applicable

Conformity Analysis Summary:

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE			
VOC	0.313	50	No
NOx	1.931	100	No
CO	1.852		

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2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
SOx	0.005		
PM 10	21.883		
PM 2.5	0.083		
Pb	0.000		
NH3	0.001		
CO2e	464.4		
Philadelphia-Wilmington, PA-NJ-DE			
VOC	0.313	100	No
NOx	1.931	100	No
CO	1.852		
SOx	0.005	100	No
PM 10	21.883		
PM 2.5	0.083	100	No
Pb	0.000		
NH3	0.001	100	No
CO2e	464.4		

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2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE			
VOC	1.238	50	No
NOx	17.924	100	No
CO	14.510		
SOx	0.092		
PM 10	1.135		
PM 2.5	1.135		
Pb	0.000		
NH3	0.000		
CO2e	18386.6		
Philadelphia-Wilmington, PA-NJ-DE			
VOC	1.238	100	No
NOx	17.924	100	No
CO	14.510		
SOx	0.092	100	No
PM 10	1.135		
PM 2.5	1.135	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	18386.6		

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2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE			
VOC	1.238	50	No

DRAFT ENVIRONMENTAL ASSESSMENT

Environmental Assessment
Appendices

Energy Savings Performance
Joint Base McGuire-Dix-Lakehurst, New Jersey

2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOx	17.924	100	No
CO	14.510		
SOx	0.092		
PM 10	1.135		
PM 2.5	1.135		
Pb	0.000		
NH3	0.000		
CO2e	18386.6		
Philadelphia-Wilmington, PA-NJ-DE			
VOC	1.238	100	No
NOx	17.924	100	No
CO	14.510		
SOx	0.092	100	No
PM 10	1.135		
PM 2.5	1.135	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	18386.6		

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None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Electronically signed
Jonas Berge, Contractor

December 21, 2020
DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: McGuire

State: New Jersey

County(s): Burlington

Regulatory Area(s): Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE; Philadelphia-Wilmington, PA-NJ-DE

- Action Title: Solar JB MDL Installation

- Project Number/s (if applicable): Solar JB MDL Installation

- Projected Action Start Date: 1 / 2021

- Action Purpose and Need:

Solar JB MDL Installation

- Action Description:

Solar JB MDL Installation

- Point of Contact

Name: Jonas Berge

Title: Contractor

Organization: Tetra Tech

Email: jonas.berge@tetrattech.com

Phone Number: 805-895-2054

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Solar JB MDL Installation
3.	Emergency Generator	Three 2-MW Generators
4.	Heating	Boilers

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Burlington

Regulatory Area(s): Philadelphia-Wilmington, PA-NJ-DE; Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE

- Activity Title: Solar JB MDL Installation

- Activity Description:

Solar JB MDL Installation
A total of 66 acres graded - assumes 25 acres at a time, assumes 1 month to grade for each section as a reasonable upper bound.
1,600 square feet of construction for the BESS
2 acres paving
1,700 square feet of fencing/trenching

- Activity Start Date

Start Month: 1
Start Month: 2021

- Activity End Date

Indefinite: False
End Month: 3
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.313366
SO _x	0.004740
NO _x	1.930525
CO	1.851784
PM 10	21.883087

Pollutant	Total Emissions (TONs)
PM 2.5	0.083070
Pb	0.000000
NH ₃	0.000754
CO _{2e}	464.4

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
Start Quarter: 1
Start Year: 2021

- Phase Duration

Number of Months: 2
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 109,4000
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

1 - Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rollers Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

2
3 - Vehicle Exhaust

4 Average Hauling Truck Capacity (yd³): 20 (default)
5 Average Hauling Truck Round Trip Commute (mile): 20 (default)

6
7 - Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HGGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

8
9 - Worker Trips

10 Average Worker Round Trip Commute (mile): 20 (default)

11
12 - Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HGGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

13
14 2.1.3 Site Grading Phase Emission Factor(s)

15
16 - Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rollers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0539	0.0007	0.3483	0.3816	0.0205	0.0205	0.0048	67.160
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1814	0.0026	1.2262	0.7745	0.0491	0.0491	0.0163	262.89
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

17

1 **- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.266	000.002	000.209	003.068	000.008	000.007		000.023	00313.914
LDGT	000.309	000.003	000.353	004.101	000.010	000.009		000.024	00406.448
HdGV	000.630	000.005	001.017	014.444	000.024	000.021		000.044	00756.575
LDDV	000.120	000.003	000.138	002.513	000.004	000.004		000.008	00303.783
LDDT	000.254	000.004	000.390	004.285	000.007	000.006		000.008	00432.722
HDDV	000.671	000.013	006.097	002.135	000.173	000.159		000.031	01528.646
MC	002.146	000.003	000.796	012.783	000.027	000.024		000.056	00399.526

2
 3 **2.1.4 Site Grading Phase Formula(s)**

4
 5 **- Fugitive Dust Emissions per Phase**

6 $PM10_{FD} = (20 * ACRE * WD) / 2000$

- 7
 8 PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
 9 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
 10 ACRE: Total acres (acres)
 11 WD: Number of Total Work Days (days)
 12 2000: Conversion Factor pounds to tons

13
 14 **- Construction Exhaust Emissions per Phase**

15 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

- 16
 17 CEE_{POL}: Construction Exhaust Emissions (TONs)
 18 NE: Number of Equipment
 19 WD: Number of Total Work Days (days)
 20 H: Hours Worked per Day (hours)
 21 EF_{POL}: Emission Factor for Pollutant (lb/hour)
 22 2000: Conversion Factor pounds to tons

23
 24 **- Vehicle Exhaust Emissions per Phase**

25 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

- 26
 27 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 28 HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
 29 HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
 30 HC: Average Hauling Truck Capacity (yd³)
 31 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
 32 HT: Average Hauling Truck Round Trip Commute (mile/trip)

33
 34 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

- 35
 36 V_{POL}: Vehicle Emissions (TONs)
 37 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 38 0.002205: Conversion Factor grams to pounds
 39 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 40 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 41 2000: Conversion Factor pounds to tons

42
 43 **- Worker Trips Emissions per Phase**

44 $VMT_{WT} = WD * WT * 1.25 * NE$

- 45
 46 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

- 1 WD: Number of Total Work Days (days)
- 2 WT: Average Worker Round Trip Commute (mile)
- 3 1.25: Conversion Factor Number of Construction Equipment to Number of Works
- 4 NE: Number of Construction Equipment

5
6 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

- 7
- 8 V_{POL} : Vehicle Emissions (TONs)
- 9 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
- 10 0.002205: Conversion Factor grams to pounds
- 11 EF_{POL} : Emission Factor for Pollutant (grams/mile)
- 12 VM: Worker Trips On Road Vehicle Mixture (%)
- 13 2000: Conversion Factor pounds to tons

14
15 **2.2 Trenching/Excavating Phase**

16
17 **2.2.1 Trenching / Excavating Phase Timeline Assumptions**

18
19 **- Phase Start Date**

- 20 **Start Month:** 1
- 21 **Start Quarter:** 1
- 22 **Start Year:** 2021

23
24 **- Phase Duration**

- 25 **Number of Month:** 2
- 26 **Number of Days:** 0

27
28 **2.2.2 Trenching / Excavating Phase Assumptions**

29
30 **- General Trenching/Excavating Information**

- 31 **Area of Site to be Trenched/Excavated (ft²):** 1,700
- 32 **Amount of Material to be Hauled On-Site (yd³):** 0
- 33 **Amount of Material to be Hauled Off-Site (yd³):** 0

34
35 **- Trenching Default Settings**

- 36 **Default Settings Used:** Yes
- 37 **Average Day(s) worked per week:** 5 (default)

38
39 **- Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

40
41 **- Vehicle Exhaust**

- 42 **Average Hauling Truck Capacity (yd³):** 20 (default)
- 43 **Average Hauling Truck Round Trip Commute (mile):** 20 (default)

44
45 **- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

1 - Worker Trips
2 Average Worker Round Trip Commute (mile): 20 (default)

3 - Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5
6 **2.2.3 Trenching / Excavating Phase Emission Factor(s)**

7
8 - Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rollers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0539	0.0007	0.3483	0.3816	0.0205	0.0205	0.0048	67.160
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1814	0.0026	1.2262	0.7745	0.0491	0.0491	0.0163	262.89
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

9
10 - Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.266	000.002	000.209	003.068	000.008	000.007		000.023	00313.914
LDGT	000.309	000.003	000.353	004.101	000.010	000.009		000.024	00406.448
HDGV	000.630	000.005	001.017	014.444	000.024	000.021		000.044	00756.575
LDDV	000.120	000.003	000.138	002.513	000.004	000.004		000.008	00303.783
LDDT	000.254	000.004	000.390	004.285	000.007	000.006		000.008	00432.722
HDDV	000.671	000.013	006.097	002.135	000.173	000.159		000.031	01528.646
MC	002.146	000.003	000.796	012.783	000.027	000.024		000.056	00399.526

11
12 **2.2.4 Trenching / Excavating Phase Formula(s)**

13
14 - Fugitive Dust Emissions per Phase

15 $PM_{10FD} = (20 * ACRE * WD) / 2000$

- 16
17 PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)
18 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
19 ACRE: Total acres (acres)
20 WD: Number of Total Work Days (days)
21 2000: Conversion Factor pounds to tons
22

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

- CEE_{POL}: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment
- WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
- HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
- HC: Average Hauling Truck Capacity (yd³)
- (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
- HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Vehicle Exhaust On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

- VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
- WD: Number of Total Work Days (days)
- WT: Average Worker Round Trip Commute (mile)
- 1.25: Conversion Factor Number of Construction Equipment to Number of Works
- NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

- Start Month: 1
- Start Quarter: 1

1 **Start Year:** 2021

2
3 **- Phase Duration**

4 **Number of Month:** 3
5 **Number of Days:** 0

6
7 **2.3.2 Building Construction Phase Assumptions**

8
9 **- General Building Construction Information**

10 **Building Category:** Office or Industrial
11 **Area of Building (ft²):** 1,600
12 **Height of Building (ft):** 12
13 **Number of Units:** N/A

14
15 **- Building Construction Default Settings**

16 **Default Settings Used:** Yes
17 **Average Day(s) worked per week:** 5 (default)

18
19 **- Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

20
21 **- Vehicle Exhaust**

22 **Average Hauling Truck Round Trip Commute (mile):** 20 (default)

23
24 **- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

25
26 **- Worker Trips**

27 **Average Worker Round Trip Commute (mile):** 20 (default)

28
29 **- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

30
31 **- Vendor Trips**

32 **Average Vendor Round Trip Commute (mile):** 40 (default)

33
34 **- Vendor Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

35

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.266	000.002	000.209	003.068	000.008	000.007		000.023	00313.914
LDGT	000.309	000.003	000.353	004.101	000.010	000.009		000.024	00406.448
HDGV	000.630	000.005	001.017	014.444	000.024	000.021		000.044	00756.575
LDDV	000.120	000.003	000.138	002.513	000.004	000.004		000.008	00303.783
LDDT	000.254	000.004	000.390	004.285	000.007	000.006		000.008	00432.722
HDDV	000.671	000.013	006.097	002.135	000.173	000.159		000.031	01528.646
MC	002.146	000.003	000.796	012.783	000.027	000.024		000.056	00399.526

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

- CEE_{POL}: Construction Exhaust Emissions (TONs)
- NE: Number of Equipment
- WD: Number of Total Work Days (days)
- H: Hours Worked per Day (hours)
- EF_{POL}: Emission Factor for Pollutant (lb/hour)
- 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- BA: Area of Building (ft²)
- BH: Height of Building (ft)
- (0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
- HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

- V_{POL}: Vehicle Emissions (TONs)
- VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
- 0.002205: Conversion Factor grams to pounds
- EF_{POL}: Emission Factor for Pollutant (grams/mile)
- VM: Worker Trips On Road Vehicle Mixture (%)
- 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

2.4 Paving Phase**2.4.1 Paving Phase Timeline Assumptions****- Phase Start Date**

Start Month: 1

Start Quarter: 1

Start Year: 2021

- Phase Duration

Number of Month: 1

Number of Days: 0

2.4.2 Paving Phase Assumptions**- General Paving Information**

Paving Area (ft²): 87120

- 1 - Paving Default Settings
- 2 Default Settings Used: Yes
- 3 Average Day(s) worked per week: 5 (default)

4 - Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

6 - Vehicle Exhaust

7 Average Hauling Truck Round Trip Commute (mile): 20 (default)

8 - Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

11 - Worker Trips

12 Average Worker Round Trip Commute (mile): 20 (default)

13 - Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

16 2.4.3 Paving Phase Emission Factor(s)

17 - Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rollers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0539	0.0007	0.3483	0.3816	0.0205	0.0205	0.0048	67.160
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Scrapers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1814	0.0026	1.2262	0.7745	0.0491	0.0491	0.0163	262.89
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

1 **- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.266	000.002	000.209	003.068	000.008	000.007		000.023	00313.914
LDGT	000.309	000.003	000.353	004.101	000.010	000.009		000.024	00406.448
HdGV	000.630	000.005	001.017	014.444	000.024	000.021		000.044	00756.575
LDDV	000.120	000.003	000.138	002.513	000.004	000.004		000.008	00303.783
LDDT	000.254	000.004	000.390	004.285	000.007	000.006		000.008	00432.722
HDDV	000.671	000.013	006.097	002.135	000.173	000.159		000.031	01528.646
MC	002.146	000.003	000.796	012.783	000.027	000.024		000.056	00399.526

2
 3 **2.4.4 Paving Phase Formula(s)**

4
 5 **- Construction Exhaust Emissions per Phase**

6 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

7
 8 CEE_{POL}: Construction Exhaust Emissions (TONs)

9 NE: Number of Equipment

10 WD: Number of Total Work Days (days)

11 H: Hours Worked per Day (hours)

12 EF_{POL}: Emission Factor for Pollutant (lb/hour)

13 2000: Conversion Factor pounds to tons

14
 15 **- Vehicle Exhaust Emissions per Phase**

16 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

17
 18 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

19 PA: Paving Area (ft²)

20 0.25: Thickness of Paving Area (ft)

21 (1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

22 HC: Average Hauling Truck Capacity (yd³)

23 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

24 HT: Average Hauling Truck Round Trip Commute (mile/trip)

25
 26 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

27
 28 V_{POL}: Vehicle Emissions (TONs)

29 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

30 0.002205: Conversion Factor grams to pounds

31 EF_{POL}: Emission Factor for Pollutant (grams/mile)

32 VM: Vehicle Exhaust On Road Vehicle Mixture (%)

33 2000: Conversion Factor pounds to tons

34
 35 **- Worker Trips Emissions per Phase**

36 $VMT_{WT} = WD * WT * 1.25 * NE$

37
 38 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

39 WD: Number of Total Work Days (days)

40 WT: Average Worker Round Trip Commute (mile)

41 1.25: Conversion Factor Number of Construction Equipment to Number of Works

42 NE: Number of Construction Equipment

43
 44 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

45
 46 V_{POL}: Vehicle Emissions (TONs)

- 1 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
- 2 0.002205: Conversion Factor grams to pounds
- 3 EF_{POL}: Emission Factor for Pollutant (grams/mile)
- 4 VM: Worker Trips On Road Vehicle Mixture (%)
- 5 2000: Conversion Factor pounds to tons

6
7 **- Off-Gassing Emissions per Phase**

8 $VOC_P = (2.62 * PA) / 43560$

- 9
- 10 VOC_P: Paving VOC Emissions (TONs)
- 11 2.62: Emission Factor (lb/acre)
- 12 PA: Paving Area (ft²)
- 13 43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)
- 14
- 15

16 **3. Emergency Generator**

17
18 **3.1 General Information & Timeline Assumptions**

19
20 **- Add or Remove Activity from Baseline?** Add

21
22 **- Activity Location**

23 **County:** Burlington
24 **Regulatory Area(s):** Philadelphia-Wilmington, PA-NJ-DE; Philadelphia-Wilmington-Atlantic City, PA-
25 NJ-MD-DE

26
27 **- Activity Title:** Three 2-MW Natural Gas Fired Emergency Generators

28
29 **- Activity Description:**

30
31
32 **- Activity Start Date**

33 **Start Month:** 1
34 **Start Year:** 2022

35
36 **- Activity End Date**

37 **Indefinite:** Yes
38 **End Month:** N/A
39 **End Year:** N/A

40
41 **- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.4169
SO _x	0.0024
NO _x	2.9954
CO	1.9700
PM 10	0.0004

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.0004
Pb	0.000000
NH ₃	0.000000
CO _{2e}	414.1

42
43 **3.2 Emergency Generator Assumptions**

44
45 **- Emergency Generator**

46 **Type of Fuel used in Emergency Generator:** Natural Gas - 4 Stroke Lean Burn

1 **Number of Emergency Generators:** 3

2
3 - **Default Settings Used:** No

4
5 - **Emergency Generators Consumption**
6 **Emergency Generator's Horsepower:** 3000
7 **Average Operating Hours Per Year (hours):** 100

8
9 **3.3 Emergency Generator Emission Factor(s)**

10
11 - **Emergency Generators Emission Factor (lb/hp-hr)**

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
0.000927	0.000005	0.006656	0.004377	0.000001	0.000001			0.920156

12
13 **3.4 Emergency Generator Formula(s)**

14
15 - **Emergency Generator Emissions per Year**

16 $AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

17
18 AE_{POL} : Activity Emissions (TONs per Year)
19 $NGEN$: Number of Emergency Generators
20 HP : Emergency Generator's Horsepower (hp)
21 OT : Average Operating Hours Per Year (hours)
22 EF_{POL} : Emission Factor for Pollutant (lb/hp-hr)

23
24
25 **4. Heating**

26
27 **4.1 General Information & Timeline Assumptions**

28
29 - **Add or Remove Activity from Baseline?** Add

30
31 - **Activity Location**

32 **County:** Burlington

33 **Regulatory Area(s):** Philadelphia-Wilmington, PA-NJ-DE; Philadelphia-Wilmington-Atlantic City, PA-
34 NJ-MD-DE

35
36 - **Activity Title:** Boilers

37
38 - **Activity Description:**

39 Boilers
40 This an upperbound assessment assumes 2,500,000 sqft of heated area. This could be 10 boilers for
41 10 buildings that are 250,000 sqft each - or 25 boilers for 25 buildings that are 100,000 each.

42
43 - **Activity Start Date**

44 **Start Month:** 1

45 **Start Year:** 2022

46
47 - **Activity End Date**

48 **Indefinite:** Yes

49 **End Month:** N/A

50 **End Year:** N/A

51

1 - Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.821071
SO _x	0.089571
NO _x	14.928571
CO	12.540000
PM 10	1.134571

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.134571
Pb	0.000000
NH ₃	0.000000
CO _{2e}	17972.5

2
3 **4.2 Heating Assumptions**

4
5 - Heating

6 Heating Calculation Type: Heat Energy Requirement Method

7
8 - Heat Energy Requirement Method

9 Area of floorspace to be heated (ft²): 2,500,000
 10 Type of fuel: Natural Gas
 11 Type of boiler/furnace: Commercial (0.3 - 10 MMBtu/hr)
 12 Heat Value (MMBtu/ft³): 0.00105
 13 Energy Intensity (MMBtu/ft²): 0.1254

14
15 - Default Settings Used: No

16
17 - Boiler/Furnace Usage

18 Operating Time Per Year (hours): 8760

19
20 **4.3 Heating Emission Factor(s)**

21
22 - Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

23
24 **4.4 Heating Formula(s)**

25
26 - Heating Fuel Consumption ft³ per Year

27 $FC_{HER} = HA * EI / HV / 1000000$

28
29 FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
 30 HA: Area of floorspace to be heated (ft²)
 31 EI: Energy Intensity Requirement (MMBtu/ft²)
 32 HV: Heat Value (MMBTU/ft³)
 33 1000000: Conversion Factor

34
35 - Heating Emissions per Year

36 $HE_{POL} = FC * EF_{POL} / 2000$

37
38 HE_{POL}: Heating Emission Emissions (TONs)
 39 FC: Fuel Consumption
 40 EF_{POL}: Emission Factor for Pollutant
 41 2000: Conversion Factor pounds to tons

1

Net Emission Savings from Solar Projects

Emission Factors (lbs/MWh)		1.51	1.163	1,059.0	0.0274	0.01703	-		
		Net Emissions Savings from Displaced Electricity (tpy)							
Renewable Energy	MW	Hours of Sunlight	MWh	NO_x	SO₂	CO₂	CH₄	N₂O	CO₂e
McGuire	27	4	39,420	29.8	22.9	20,872.9	0.540	0.336	20,988
Dix	5	4	7,300	5.5	4.2	3,865.4	0.100	0.062	3,887
Lakehurst	4	4	5,840	4.4	3.4	3,092.3	0.080	0.050	3,109
Total Savings	36	4	52,560	39.7	30.6	27,830.5	0.720	0.448	27,984

Source: USEPA 2012 (eGRID2012 Version 1.0 Year 2007 Summary Tables [created April 2012]).

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Appendix C
Notice of Availability

PUBLIC NOTICE

**NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT AND
PROPOSED FINDING OF NO SIGNIFICANT IMPACT
FOR ENERGY SAVINGS PERFORMANCE AT
JOINT BASE MCGUIRE-DIX-LAKEHURST, NEW JERSEY**

An Environmental Assessment (EA) has been prepared to analyze the impacts associated with the implementation of energy conservation measures for electrical power and energy savings at Joint Base McGuire-Dix-Lakehurst (JB MDL). The purpose of this project is to increase JB MDL’s energy security, resiliency, and conservation. The Proposed Action is needed to comply with federal agency directives such as the Energy Policy Act of 2005; Executive Order 13834, *Efficient Federal Operations*; and Department of Defense Instruction 4170.11, *Installation Energy Management*.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the alternative actions on the environment including the No-action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

The Draft EA and proposed FONSI, dated February 2021, are available for review at the following locations:

Manchester Library Branch Ocean County 21 S. Colonial Dr. Manchester, NJ 08759	Pemberton Branch Library Burlington County 16 Broadway Browns Mills, NJ 08015	Burlington County Library Main Branch 5 Pioneer Boulevard Westampton, NJ 08060
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Electronic copies of the documents can also be found on the JB MDL website under the heading *Environmental Publications* at <https://www.jbmdl.jb.mil/About-Us/About-Us/Environmental-Publications/>.

You are encouraged to submit comments through March 29, 2021. Comments should be provided to Carl Champion, 787th CES/CEIE, Civil Engineering Squadron, Environmental Office, 2404 Vandenberg Avenue, Joint Base MDL, NJ 08641.

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PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during the final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

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