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Office of Manufacturing and Energy Supply Chains and Office of Energy Efficiency And Renewable Energy Grant Opportunity (DE-FOA-0002678)

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DRAFT ENVIRONMENTAL ASSESSMENT

SILA NANOTECHNOLOGIES MOSES LAKE

AUTO-SCALE SILICON ANODE PLANT

National Environmental Policy Act (NEPA) Compliance Cover Sheet

Proposed Action:

Sila Nanotechnologies proposes to construct a silicon anode manufacturing facility in Moses Lake, WA to support up to 2,300 tons/yr (tpy). The Proposed Project would consist of facility construction and operation, including modifications to an existing 613,000 square foot industrial building, plus site improvements, new sheds/buildings, new equipment installation, and other infrastructure upgrades. All ground disturbances beyond the footprint of the existing 613,000 square foot building would cover approximately 26 acres of the 162 acres of land owned by Sila Nanotechnologies. The Proposed Project would consist of two phases: Phase 1 includes installation of facility infrastructure and equipment to support up to 300 tpy of production capacity, while Phase 2 includes installation of additional equipment to expand production capacity up to 2,300 tpy. Phase 1 is designed for a 10-year operational lifespan but could be operational for up to 20 years. Phase 2 is designed for a 20-year operational lifespan. After both are constructed, both phases will run concurrently. While the overall synthesis pathway for Sila materials is unique, the individual synthesis steps utilize processes very similar to those employed in different, but well-developed, industries for many decades.

The Proposed Project is anticipated to generate approximately \$25 million dollars in total net-positive economic impact during its 30-month construction period (for both phases). Then for the 20-year life expectation of the process equipment installed, Sila expects a \$40 million-dollar positive economic impact into the local economy per year. The Sila factory in Moses Lake would enable the sourcing of critical battery materials from within the U.S. and reduce the dependence on foreign material suppliers. The Proposed Project would create approximately 150-300 full-time equivalent (FTE) jobs that offer benefits such as healthcare and stock options. Sila also plans to offer community benefits such as workforce training and education initiatives to raise equity levels in the greater Moses Lake community. Together, these efforts would engage the local workforce and make a positive contribution to the local economy of Moses Lake for decades to come, while significantly strengthening the U.S. lithium-ion battery industry. DOE's proposed action is to provide \$100 million of the project's total award value of \$611 million in a cost-shared arrangement.

Type of Statement: Draft Environmental Assessment

Lead Agency: U.S. Department of Energy; National Energy Technology Laboratory

DOE Contacts:

Project Information:

Kristle Krichbaum
Project Officer
U.S. Department of Energy
Manufacturing and Energy Supply Chains
1000 Independence Ave., SW
Washington, DC 20585
240-474-3774
kristle.krichbaum@hq.doe.gov (e-mail)

NEPA Information:

Stephen Witmer
NEPA Compliance Officer
U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
Pittsburgh, PA 15236
412-386-7589
stephen.witmer@netl.doe.gov (e-mail)

Abstract:

Sila Moses Lake would be constructed on four parcels (Parcel Numbers: 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. Phase 1 would commence with site improvements and all Phase 1 construction completed within the first 15 - 18 months. During the construction period, equipment would be specified, procured, and installed, and production lines would be tested and commissioned for commercial operation. All ground disturbances beyond the footprint of the existing 613,000 square foot building, (including new sheds/buildings, new equipment installation and other infrastructure upgrades) would cover approximately 26 acres of the project site; approximately 16 percent of the Sila Nanotechnologies-owned plot.

The environmental analysis identified that the most notable changes resulting from the proposed action would occur in relation to power consumption, air emissions, wastewater generation, and generation of regulated wastes, along with net-positive impacts to local socioeconomic conditions and supporting the decarbonization of transportation.

Public Participation:

DOE encourages public participation in the NEPA process. This Draft Environmental Assessment (EA) is being released for public review and comment. The public is invited to provide oral, written, or e-mail comments on this Draft EA to DOE by the close of the comment period on *to be finalized after DOE concurrence*. Copies of the Draft EA are also being distributed to cognizant Federal and State agencies and Tribal Nations. Comments received by the close of the comment period will be considered in preparing a Final Environmental Assessment for the proposed Sila Moses Lake action. Comments received after the end of the comment period will be addressed to the extent practicable. Comments should be marked "Sila Nanotechnologies Draft EA Comments" and include your name, address, and organization (if applicable). Individual names and addresses (including email addresses) received as part of the public comment period normally are considered part of the public record. Persons wishing to withhold names, addresses, or other identifying information from the public record must state this request prominently at the beginning of their submitted comments. DOE will honor this request to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be included in the public record and open to public inspection in their entirety. The Draft EA will also be available on the National Energy Technology Laboratory (NETL) website at <https://netl.doe.gov/node/6939>.

Contents

1. Introduction & Purpose and Need	9
1.1 Introduction	9
1.2 Background	9
1.3 Purpose and Need for Department of Energy Action	10
1.4 National Environmental Policy Act and Related Procedures	11
1.5 Laws, Regulations, and Executive Orders	12
1.6 Agency Consultation	12
1.7 Consultation with Tribal Nations	13
2. Proposed Action and Alternatives	14
2.1 Department of Energy’s Proposed Action	14
2.2 Sila Nanotechnologies Proposed Project	14
2.3 General Description and Location	17
2.4 Categorical Exclusion Issued and Washington State Environmental Policy Act Compliance	18
2.5 Activities Completed for the Proposed Project	18
2.6 Proposed Activities at Other Locations	18
2.7 Alternatives	19
2.8 No Action Alternative	19
2.9 Alternatives Considered by Sila Nanotechnologies	19
2.10 Summary of Environmental Consequences	20
3. Affected Environment and Environmental Consequences	21
3.1 Resource Areas Dismissed from Further Consideration	21
3.2 Resource Areas Considered Further	24
3.2.1 Socioeconomics	24
3.2.2 Environmental Justice	27
3.2.3 Wetlands and Floodplains	30
3.2.4 Cultural Resources	32
3.2.5 Land Use	34
3.2.6 Air Quality	35
3.2.7 Greenhouse Gasses	39
3.2.8 Noise and Vibration	45
3.2.9 Geology, Topography and Soils	48
3.2.10 Surface Water and Groundwater	50
3.2.11 Vegetation and Wildlife	52
3.2.12 Regulated Waste (Solid and Hazardous Wastes)	55
3.2.13 Utilities and Energy Use	57
3.2.14 Transportation and Traffic	60
3.2.15 Public and Occupational Health and Safety	62

4. References	65
5. List of Preparers	68
6. Distribution List	70

Tables

Table 1. Areas of Interest under DE-FOA-0002678	10
Table 2. Summary of Environmental, Cultural, and Socioeconomic Impacts	20
Table 3. EPA National Ambient Air Quality Standards	36
Table 4. Estimated Annual CO ₂ e Emissions (Phases 1 and 2)	42
Table 5. Social Cost of Carbon – Sila Construction and Production	43
Table 6. Annual GHG Savings Associated with Replacing GVs with EVs	43
Table 7. Maximum Permissible Noise Limits	45
Table 8. Major Waste Stream Estimates for Operations	56
Table 9. Existing Utilities Summary	58

Figures

Figure 1. Vicinity Map.	14
Figure 2. Existing Site Conditions Map	15
Figure 3. Site Plan for Phase I	16
Figure 4. Rendering of Proposed Project	17
Figure 5. FEMA Flood Hazard Map Snippet	31

Appendices

Appendix 1 - Environmental Synopsis
Appendix 2 - Permits and Approvals
Appendix 3 - Consultation with Agencies and Tribal Nations
Appendix 4 - Relevant Project Plans and Technical Studies

Acronyms and Abbreviations

AJD	approved jurisdictional determination
AOI	area of interest
APE	Area of Potential Effect
BIL	Bipartisan Infrastructure Law
BMP	Best Management Practice
CAA	Clean Air Act
CE	Categorical Exclusion
CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGA	Compressed Gas Association
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
COF	Central Operations Facility
DOE	United States Department of Energy
EA	Environmental Assessment
EA/CM	Emergency Action/Crisis Management
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Environmental Site Assessment
EV	electric vehicle
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FOA	Funding Opportunity Announcement

FONSI	Finding of No Significant Impact
FTE	full-time equivalent
FY	fiscal year
GCPUD	Grant County Public Utility District
GHG	greenhouse gas
gpd	gallons per day
GPM	Gallons per Minute
HEV	hybrid-electric vehicle
kV	kilovolt
kWh/yr	kilowatt hours per year
WA SHPO	Washington State Historic Preservation Officer
LiB	lithium-ion batteries
LOS	Level of Service
MESC	Manufacturing and Energy Supply Chains (DOE)
mgd	million gallons per day
mtpy	metric tons per year
mVA	Megavolt Amperes
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NETL	National Energy Technology Laboratory
NFPA	National Fire Protection Agency
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NOX	nitrogen oxide
NRHP	National Register of Historic Places
O ₃	ozone

OMB	Office of Management and Budget (US)
OSHA	Occupational Safety and Health Administration
Pb	lead
PHA	Process Hazard Analysis
PM	particulate matter
PM ₁₀	particulate matter 10 microns or less
PM _{2.5}	particulate matter 2.5 microns or less
POTW	publicly owned treatment works
ppm	parts per million
PSM	Process Safety Management
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RMP	Risk Management Program
ROD	Record of Decision
SCFH	Standard Cubic Feet per Hour
SF ₆	sulfur hexafluoride
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
ug/kg	microgram per kilogram
ug/m ³	microgram per cubic meter
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WISSARD	Washington Information System for Architectural and Archaeological Records Data
WWTP	Wastewater Treatment Plant

1. Introduction & Purpose and Need

1.1 Introduction

This Draft Environmental Assessment (EA) was prepared by the United States Department of Energy (DOE) - National Energy Technology Laboratory (NETL) pursuant to the National Environmental Policy Act of 1969 (NEPA) (Title 42, Section 4321 et. Seq., United States Code) and DOE's NEPA implementing procedures (Chapter 10, Part 1021, Code of Federal Regulations (CFR)) to evaluate the potential environmental and social impacts of DOE's proposed action to provide funding to Sila Nanotechnologies, Sila Nanotechnologies' Proposed Project, and the No Action alternative. The purpose of this Draft EA is to provide the information needed to assess the potential environmental and social impacts associated with the proposed project to design, construct, and operate a 613,000 square foot automotive-scale silicon anode manufacturing plant in Moses Lake, Washington.

1.2 Background

The Office of Manufacturing and Energy Supply Chains, in collaboration with the Office of Energy Efficiency and Renewable Energy, has issued DE-FOA-0002678, under which FOA-2678 awarded projects will be funded, in whole or in part, with funds appropriated by the Infrastructure Investment and Jobs Act (USA 2021), also more commonly known as the Bipartisan Infrastructure Law (BIL).

DOE prepared an environmental synopsis to evaluate and compare potential environmental impacts for each proposal it deemed to be within the competitive range from proposals received in response to the FOA. The Department used the synopsis to evaluate appreciable differences in potential environmental impacts from those proposals. The synopsis included: (1) a brief description of background information for the Funding Opportunity area of interest, (2) a general description of the proposals DOE received in response to the Funding Opportunity Announcement and deemed to be within the competitive range, (3) a summary of the assessment approach DOE used in the initial environmental review to evaluate potential environmental impacts associated with the proposals, and (4) a summary of environmental impacts that focused on potential differences among the proposals. Appendix 1 contains a copy of the environmental synopsis developed for DE-FOA-0002678 proposal submissions.

DOE initially selected 21 projects under twelve topic areas of interest and provided cost-shared funding for project definition activities; all of the projects are subject to completion of project-specific NEPA reviews. DE-FOA-0002678 supports new, retrofitted, and expanded commercial-scale domestic facilities for battery materials production, materials processing, and battery recycling and manufacturing demonstrations. The applications reviewed under this FOA were selected for negotiations in October 2022. Twelve topic areas of interest (AOIs) were included in the FOA, and each AOI outlined project objectives that

were specific to that AOI. The twelve AOIs were separated according to BIL sections 40207(b)(3)(A) and 40207(c)(3)(A): AOIs 1–3 and 6–11 were directed to commercial level projects. AOIs 4, 5, and 12 were directed to demonstration level projects.

Table 1. Areas of Interest under DE-FOA-0002678

<u>Areas of Interest</u>	<u>Title</u>
Battery Material Processing Grants pursuant to Section 402(b)(3)(A)	
1	Commercial-scale Production Plants for Domestic Separation of Critical Cathode Battery Materials from Domestic Feedstocks
2	Commercial-scale Domestic Production of Battery-Grade Graphite from Synthetic and Natural Feedstocks
3	Commercial-scale Domestic Separation and Production of Battery-grade Precursor Materials (Open Topic)
4	Demonstrations of Domestic Separation and Production of Battery-grade Materials from Unconventional Domestic Sources
5	Demonstrations of Innovative Separation Processing of Matter Materials Open Topic
Battery Component Manufacturing and Recycling Grants pursuant to Section 402(c)(3)(A)	
6	Commercial-scale Domestic Battery Cell Manufacturing
7	Commercial-scale Domestic Battery Cathode Manufacturing
8	Commercial-scale Domestic Battery Separator Manufacturing
9	Commercial-scale Domestic Next Generation Silicon Anode Active Materials and Electrodes
10	Commercial-scale Domestic Battery Component Manufacturing Open Topic
11	Commercial-scale Domestic Battery Recycling and End-of-Life Infrastructure
12	Domestic Battery Cell and Component Manufacturing Demonstration Topic

DOE selected the project proposed by Sila Nanotechnologies under AOI 9 under DE-FOA-0002678 to support development of Sila Nanotechnologies’ proposed facility. DOE’s proposed action is to provide \$100 million of the project’s total award value of \$611 million in a cost-shared arrangement.

1.3 Purpose and Need for Department of Energy Action

The overall purpose and need for DOE action pursuant to Office of Manufacturing and Energy Supply Chains requirements in collaboration with the Office of Energy Efficiency and Renewable Energy program and the funding opportunity under the BIL is to accelerate the development of a resilient supply chain for high-capacity batteries by increasing investments in battery materials processing and battery manufacturing projects. BIL

investments in the battery supply chain will include five main steps including: (1) raw material production; (2) materials processing including material refinement and processing;(3) battery material/ component manufacturing and cell fabrication; (4) battery pack and end use product manufacturing; and (5) battery end-of-life and recycling. DOE considers Sila’s Proposed Project and location to be one that can meet the focus of BIL sections: a) creating and retaining good-paying jobs; b) supporting inclusive and supportive workforce development efforts to strengthen America’s competitive advantage; c) ensuring that the United States has a viable domestic battery materials processing industry to supply the North American battery supply chain; d) expanding the capabilities of the United States in advanced battery manufacturing; e) enhancing national security by reducing the reliance of the United States on foreign competitors for critical materials and technologies; f) enhancing the domestic processing capacity of minerals necessary for battery materials and advanced batteries; and g) ensuring that the United States has a viable domestic manufacturing and recycling capability to support and sustain a North American battery supply chain. The Project site was selected due to its proximity to supporting industries, availability of existing industrial facilities in the area, as well as the site’s access to reliable green energy (hydroelectric and wind power) for Sila’s energy-intensive operations. The site has room for future expansion, exceptional access to transportation infrastructure, public utilities, and has great potential to have a positive economic impact on the Moses Lake community.

DOE intends to further the above-described purpose and satisfy stated needs by providing financial assistance under cost-sharing arrangements to this and the other 20 projects selected under DE-FOA-0002678. This and the other selected projects are needed to maximize benefits of the clean energy transition as the nation works to curb the climate crisis. These projects would meet the objective of recruiting, training, and retaining a skilled workforce in communities that have lost jobs due to displacement of fossil fuel-based energy jobs, including jobs in the manufacture of internal combustion engine vehicles and components as well as workforce opportunities in low- and moderate-income local or rural communities. This project will also meaningfully assist in the nation’s economic recovery by creating manufacturing jobs in the United States in accordance with objectives of the BIL.

1.4 National Environmental Policy Act and Related Procedures

This EA is prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 U.S.C. 4321), the President’s Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and DOE’s implementing procedures for compliance with NEPA (10 CFR 1021). This statute and the implementing regulations require that DOE, as a federal agency:

- assess the environmental impacts of its proposed action;
- identify any adverse environmental effects that cannot be avoided, should the proposed action be implemented;
- propose mitigation measures for adverse environmental effects, if appropriate;

- evaluate alternatives to the proposed action, including a no action alternative; and
- describe the cumulative impacts of the Proposed Action together with other past, present, and reasonably foreseeable future actions.

These provisions must be addressed before a final decision is made to proceed with a proposed federal action, including providing federal funding to a project, that has the potential to cause impacts to the human environment. This EA is intended to meet DOE's regulatory requirements under NEPA and provide DOE with the information needed to make an informed decision when providing financial assistance. In accordance with the above regulations, this EA: allows for public input into the federal decision-making process; provides federal decision-makers with an understanding of potential environmental effects of their decisions before making these decisions; and documents the NEPA process.

1.5 Laws, Regulations, and Executive Orders

- Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Executive Order [EO] 13985)
- Bald and Golden Eagle Protection Act (BGEPA)
- Clean Air Act (CAA)
- Clean Water Act (CWA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Endangered Species Act (ESA)
- Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input (EO 13690)
- Executive Order on America's Supply Chains (EO 14017)
- Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations (EO 12898)
- Floodplain Management (EO 11988)
- Migratory Bird Treaty Act (MBTA)
- Pollution Prevention Act of 1990
- Protection of Wetlands (EO 11990)
- Resource Conservation and Recovery Act (RCRA)
- Revitalizing Our Nation's Commitment to Environmental Justice for All (EO 14097)
- Tackling the Climate Crisis at Home and Abroad (EO 14008)
- The Noise Control Act of 1972, as amended

1.6 Agency Consultation

DOE initiated consultations with the United States Fish and Wildlife Service (USFWS) under the Endangered Species Act, the U.S. Army Corps of Engineers, and the Washington State Department of Archeology and Historic Preservation Historic Preservation Office under

Section 106 of the National Historic Preservation Act (NHPA). Response letters are included in Appendix 3.

1.7 Consultation with Tribal Nations

DOE initiated consultations with the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Colville Reservation, Spokane Tribe of Indians, and Confederated Tribes of the Warm Springs Reservation of Oregon through each Tribal Nation's Tribal Historic Preservation Office. Response letters are included in Appendix 3.

2. Proposed Action and Alternatives

2.1 Department of Energy’s Proposed Action

DOE proposes, through a grant with Sila Nanotechnologies, to partially fund the design, construction, and operation of an automotive-scale silicon anode manufacturing plant, up to 2,300 tpy, in Moses Lake, Washington. Sila previously purchased this existing 613,000 square foot building on 162 acres, but modifications would be required to the existing facility’s interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground disturbing activities to grade previously disturbed areas (formerly agricultural land prior to industrial zoning). DOE’s proposed action is to provide \$100 million of the project’s \$611 million total costs. Sila Nanotechnologies’ private cost share would be \$511 million.

2.2 Sila Nanotechnologies’ Proposed Project

The Proposed Project would involve the construction of up to a 2,300 tpy silicon anode manufacturing facility in Moses Lake, WA (see Figure 1). Sila has already acquired a 162-acre site with an existing 613,000 sq. ft. building for this project (see Figure 2). The purpose of the Proposed Project is to scale Sila’s product output in order to enter the electric vehicle (EV) market in a timely and cost-efficient manner. The Project is needed to provide US-based manufacturing capacity for these and similar vital industrial components.



Figure 1 – Vicinity Map



Figure 2 – Existing Site Conditions Map

Sila proposes to construct a silicon anode manufacturing facility in Moses Lake, WA to support up to 2,300 ton/yr. The proposed project would consist of two phases: Phase 1 includes installation of facility infrastructure and equipment to support up to 300 tpy of production capacity while Phase 2 includes installation of additional equipment to expand production capacity (see Figure 3). While the overall synthesis pathway for Sila materials is unique, the individual synthesis steps utilize processes very similar to those employed in different, but well-developed, industries for many decades. Additionally, similar process steps are currently utilized at Sila’s Alameda, CA facility.

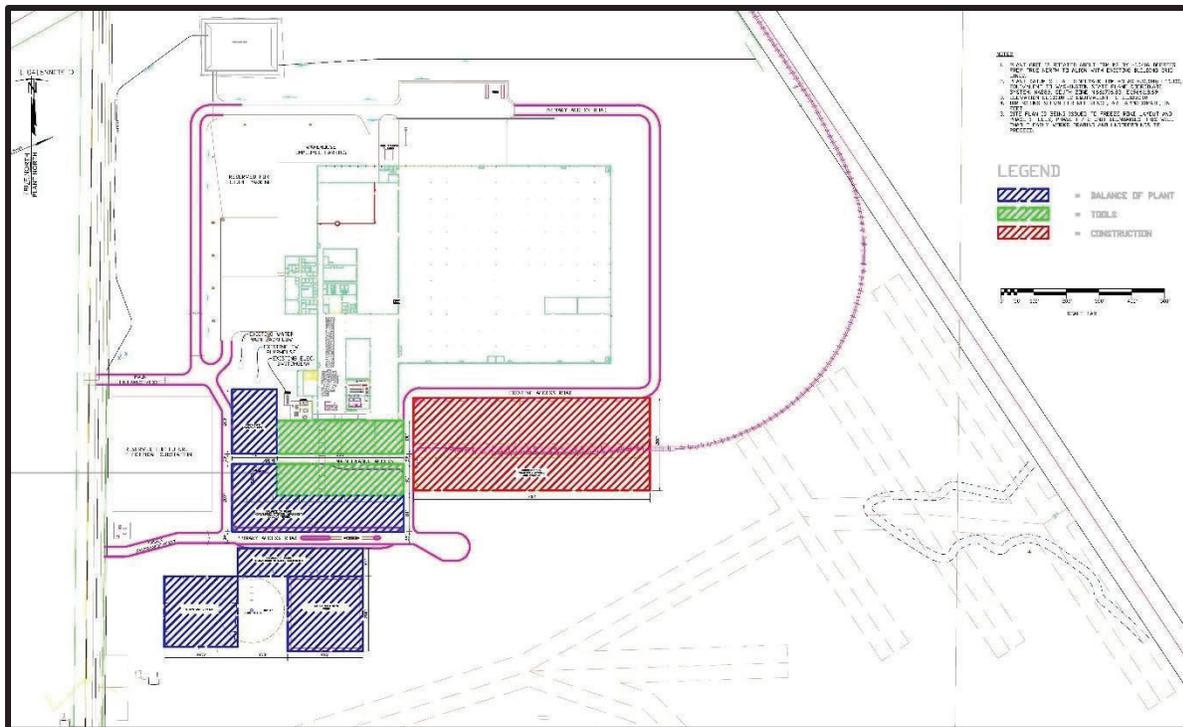


Figure 3 – Site Plan for Phase 1

The site would undergo site preparation and grading to achieve proper slopes for drainage and earthwork for construction of equipment and pipe rack foundations on the south side of the existing Sila building on site. Modifications would be required to the existing facility’s interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (e.g., currently agricultural land that has already been rezoned for heavy Industrial). These areas would be to the north, east, south, and west of the existing building and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project (see Figure 4).



Figure 4 – Rendering of Proposed Project Looking from the Northwest to the Southeast

The Proposed Project is anticipated to generate approximately \$25 million dollars in total net-positive economic impact during its 30-month construction period (for both phases). Then for the 20-year life expectancy of the process equipment installed, Sila expects a \$40 million dollar positive economic impact into the local economy per year. Sila would enable sourcing of critical battery materials from within the U.S. and reduce the dependence on foreign material suppliers. The Proposed Project would create more than approximately 150-300 full-time equivalent (FTE) jobs that offer benefits such as healthcare and stock options. Sila also plans to offer community benefits such as workforce training and education initiatives to raise equity levels in the greater Moses Lake community. Together, these efforts would engage the local workforce and make a positive contribution to the local economy of Moses Lake for decades to come, while significantly strengthening the U.S. lithium-ion battery industry.

2.3 General Description and Location

The Proposed Project would take place in Moses Lake, WA within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian (see Figure 1). The Project site consists of four parcels (Parcel Numbers: 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The Project site is bound by Road N NE to the west, an unnamed stream to the north, railroad tracks to the east and industrial-zoned land to the south (see Figure 2). The partially developed site contains a non-operational approximately 613,000 square-foot industrial building, two associated approximately 200 square-foot structures (housing backflow preventers and emergency fire pump), and a vacant single-family house. Prior to construction of

the currently non-operational industrial building and associated structures in 2007, use of the entire site was in farmland. Approximately 37 acres of the site is currently in use as farmland that will not be impacted by the Proposed Project. The site is bordered by a private rail line and agricultural land to the east, agricultural land to the south, Road N NE and a manufacturing facility to the west, and agricultural land to the north.

2.4 Categorical Exclusion Issued and Washington State Environmental Policy Act Compliance

Prior to the completion of this Draft EA, DOE issued a Categorical Exclusion (CX) determination to authorize activities limited to Budget Period One of the Proposed Project. The activities authorized under this CX include project management, planning, procurement activities, community outreach, site engineering (including site design and permitting activities), external lab-scale testing, equipment procurement and validation, and general interior refurbishment/safety enhancement activities within the existing Sila facility. These activities would not have the potential to cause significant impacts, affect the significance of the overall Proposed Project effects as analyzed in this Draft EA, nor would they limit the range of possible alternatives to the Proposed Project or DOE's proposed action. A copy of this CX, including the specific CX designations applied, is included in Appendix 2. Sila Nanotechnologies has also completed an environmental evaluation of their Proposed Project at the state level through the Washington State Environmental Policy Act (SEPA) process. A number of reports used to support Sila's SEPA application were also used to inform details of this Draft EA. Details of Sila's SEPA application can be found at this website:

<https://apps.ecology.wa.gov/separ/Main/SEPA/Record.aspx?SEPANumber=202303262>

2.5 Activities Completed for the Proposed Project

Sila Nanotechnologies has elected to initiate groundbreaking and earth-moving activities prior to the completion of DOE's NEPA process. Appropriate response notifications have been issued by DOE. These activities are in previously undisturbed areas and include the set-up of construction stormwater fences and security fencing, site grading for a new construction entrance and south yard (where process equipment will be installed), digging of a new stormwater retention pond on the southwest side of the property, non-building foundations, and initial installation of stormwater piping to connect building areas to the stormwater pond. Sila Nanotechnologies also indicated that installation of new fire rings for the south yard and installation of conduit feed into the new plant was planned. DOE's NEPA Division is working to analyze the scope and implementation timeline of these activities.

2.6 Proposed Activities at Other Locations

Sila Nanotechnologies has planned other activities in support of the Proposed Project at locations other than the Moses Lake facility analyzed in this Draft EA. These activities include battery testing, R&D, and design/testing of prototype equipment at Sila's headquarters in Alameda, CA, R&D at Argonne National Laboratory (Argonne, IL), Pacific Northwest National Laboratory (Richland, WA), Tuskegee University (Tuskegee, AL), and India, and teaching/outreach at Big Bend Community College and Columbia Basin Technical Skills Center (both in Moses Lake,

WA). The information and data presented within this Draft EA are limited to activities at the Moses Lake facility and do not include activities at these satellite locations. However, given the scope and nature of these additional support activities, these activities would not have the potential to cause significant effects, or amplify the significance of effects at the proposed Moses Lake facility analyzed in this Draft EA, and thus will not be discussed further in this Draft EA.

2.7 Alternatives

DOE's alternatives to this Project consist of the numerous technically acceptable applications received in response to FOA DE-FOA-0002678 encompassing all twelve AOIs. Because DOE's Proposed Action is limited to providing financial assistance in cost-sharing arrangements to projects submitted by applicants in response to a competitive funding opportunity, DOE's ultimate decision is limited to either accepting or rejecting a project as proposed by the proponent, including its proposed technology and selected sites. DOE's consideration of reasonable alternatives is therefore limited to the technically acceptable applications and a no-action alternative for each selected project. Appendix 1 includes DOE's Environmental Synopsis that further specifies all applicants that submitted proposals to FOA-2678. Sila Nanotechnologies was one of 21 applications having merit and selected for receiving Federal assistance.

2.8 No Action Alternative

Under the No Action Alternative, DOE would not provide funds to the Proposed Project. Without DOE funding, for the project to be completed as proposed, the applicant would need to identify, obtain, and use an alternative source of funds equal to the amount of funding that the applicant would have received from DOE under the above-listed funding opportunity. As a result, these projects would be de-scoped or delayed while the applicant seeks other funding sources and may be canceled if sufficient funding is not obtained. Furthermore, acceleration of the development of industrial scale U.S. production capacity of silicon anode materials would be delayed or perhaps not occur. DOE's ability to achieve its objectives under the Infrastructure Investment and Jobs Act would be reduced.

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If DOE's selected projects proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between the potential impacts of the project to be implemented and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance. DOE's ability to achieve its objectives under the Infrastructure Investment and Jobs Act would be reduced.

2.9 Alternatives Considered by Sila Nanotechnologies

Initially, Sila Nanotechnologies considered eight (8) alternative locations as potential sites for the construction of its auto scale silicon anode plant. The alternatives evaluated included both greenfield and brownfield sites in Michigan, Texas, Tennessee, and Nevada. Each site was

ranked in a matrix of factors including: land/building size; site zoning; labor access; market access; energy generation mix (carbon intensity); transportation; climate; taxes and incentives; and proximity to Sila’s headquarters. The Moses Lake site was chosen in part for its superior environmental scores compared to alternative sites in Michigan, Tennessee, Texas, and Nevada. Specifically, the Moses Lake site demonstrated the:

- lowest CO₂e footprint for electrical service due to the region’s hydroelectric power;
- lowest requirement for additional ground-disturbing activities (e.g., building new structures);
- lowest transport cost/CO₂e emissions for several critical input materials; and
- second-lowest CO₂e footprint for Sila personnel traveling from headquarters to the Project site.

In addition, a greenfield site alternative was considered instead of purchasing an existing building. This option was rejected not only because an existing facility results in a faster project timeline, but also because a brownfield site limits new environmental impacts to the region.

2.10 Summary of Environmental Consequences

Table 2 provides a summary of the environmental, cultural, and socioeconomic impacts of the No Action Alternative and the Proposed Project:

Table 2. Summary of Environmental, Cultural, and Socioeconomic Impacts

Impact Area	No Action Alternative		Proposed Project	
	Construction	Operations	Construction	Operations
Community Services	Negligible	Negligible	Negligible	Negligible
Parks and Recreation	Negligible	Negligible	Negligible	Negligible
Aesthetics and Visual Resources	Negligible	Negligible	Negligible	Negligible
Socioeconomics	Negligible	Negligible	Minor (beneficial)	Minor (beneficial)
Environmental Justice	Negligible	Negligible	Minor (beneficial)	Minor (beneficial)
Wetlands and Floodplains	Negligible	Negligible	Negligible	Negligible
Surface Water and Groundwater	Negligible	Negligible	Negligible	Negligible
Land Use	Negligible	Negligible	Negligible	Negligible
Air Quality	Negligible	Negligible	Minor	Minor
Greenhouse Gasses	Negligible	Negligible	Minor (beneficial)	Minor (beneficial)
Noise and Vibration	Negligible	Negligible	Minor	Minor
Geology, Soils and Topography	Negligible	Negligible	Minor	Minor
Cultural Resources	Negligible	Negligible	Negligible	Negligible
Vegetation and Wildlife	Negligible	Negligible	Negligible	Negligible
Regulated Wastes (Solid and Hazardous Wastes)	Negligible	Negligible	Minor	Minor
Utilities and Energy Use	Negligible	Negligible	Minor	Minor
Transportation and Traffic	Negligible	Negligible	Negligible	Negligible
Public and Occupational Health and Safety	Negligible	Negligible	Minor	Minor

3.0 Affected Environment and Environmental Consequences

Chapter 3 provides a description of the affected environment (existing conditions) at the Proposed Project site and a discussion of the environmental consequences of the No Action Alternative and the Proposed Project. Additionally, cumulative impacts and mitigation measures are discussed, where appropriate. The methodology used to identify existing conditions and to evaluate potential impacts on the physical and human environment involved the following: review of the State Environmental Policy Act (SEPA) Checklist prepared by Sila (PLN2023-0040) that was submitted to the City of Moses Lake to comply with WA State regulatory requirements (Sila SEPA Checklist, 2023); review of documentation provided by Sila; searches of various environmental databases; and agency consultation.

3.1 Resource Areas Dismissed from Further Consideration

DOE has determined that certain resources would either not be affected or would sustain negligible impacts from the Proposed Project and were dismissed from further evaluation. These dismissed resources include community services, parks and recreation, and aesthetics and visual resources. These resource areas are briefly discussed in this section of the EA; however, they will not be evaluated further.

Community Services: Community services pertinent to the Proposed Project include schools, police, fire, and emergency medical support, all of which are provided in Moses Lake. The nearest law enforcement headquarters is located within the city center, approximately 4.7 miles west of the Project site, and includes the Moses Lake Police Department. The closest Fire stations to the project site are the Moses Lake Fire Station located within the city center, roughly 4.8 miles west of the project site, and the Grant County Fire District #5, located approximately 4.8 miles to the southwest of the Proposed Project site. Current response time is roughly 6 minutes for the Moses Lake Fire Department, which is responsible for providing the initial response to an emergency at the project site. Grant County Fire District #5, which has an approximate 10-minute response time to the project site, serves as the backup/support response team to the Moses Lake Fire Department in case of an emergency. As well, Sila would have its own on-site Fire Brigade that would be trained to manage emergencies such as fires or spills on site in coordination with the Moses Lake and Grant County Fire Departments, if necessary.

The Moses Lake Fire Station, mentioned above, is also equipped for emergency medical services in the vicinity of the Proposed Project site. There are also several hospitals and medical clinics located within the central city area, including Samaritan Hospital, Samaritan Healthcare, Moses Lake Community Health, and Providence Medical Group, all of which are located approximately 5 miles to the west of the Proposed Project site. Sila would have an onsite medical facility for handling minor to moderate injuries associated with construction and industrial operations.

Moses Lake has eleven public elementary schools, three public middle schools, and four public high schools – Moses Lake High School, Vanguard Academy, Columbia Basin Technical Skills Center, and Digital Learning. The region also supports numerous private schools. The city also supports higher education opportunities at Central Washington University and Big Bend Community College. Both of these schools offer advanced degrees and are located near the

Grant County International Airport, which is approximately 10 miles to the northwest of the Proposed Project site.

Construction crews as well as permanent operational employees are anticipated to be drawn mostly from local and regional residents and not constitute a notable permanent migration of workers and their families to the region. The anticipated additional operational staff would not exert an undue burden on existing community services. In addition, road closures or other impacts that would restrict or impede the movement of emergency personnel or other traffic through the region are not anticipated as part of construction and operations activities associated with the Proposed Project (see Section 3.2.15 for a discussion of transportation and traffic related impacts).

The increased burden on existing police, fire, emergency medical, and other community services during construction and operations of the Proposed Project is expected to be **negligible**.

Parks and Recreation: The City of Moses Lake maintains 45 facilities that include 38 developed parks and six undeveloped areas that are maintained by the Parks Department, as well as some indoor facilities. In total, the parks system encompasses approximately 400 acres of park land and approximately 63 miles of paths and trails. Undeveloped park lands include Laguna Park, Longview Park, Municipal Tracts, Sun Terrace, Three Ponds Wetland Park, and Vehrs Wetland Property (City of Moses Lake Parks, Recreation & Open Space Plan, 2022). The closest facilities to the Proposed Project site (Crossroads Park being the closest) are all located near the central city area, which is roughly 4 miles to the west, and would be accessed via E Wheeler Road from the project site. Rural recreation, such as public hiking and camping are available in the Moses Lake area as well, and are mostly located to the south of the central city area. The closest private camping facility, Cougar Campers RV Park, is located directly to the southeast of the Project Site. The Cougar Campers RV Park is a campground that provides specialized accommodations for Recreational Vehicles and allows overnight stays by RV Campers and provides amenities like electrical hookups and water hookups for visitors.

Due to the zoning and existing land use, including commercial agricultural crop production, heavy industrial, and rail service, in proximity to the Proposed Project site, minimal impacts are anticipated. Current and anticipated parks and recreation opportunities for the citizens of Moses Lake are not expected to be impacted by construction and operations of the Proposed Project, as there are no publicly designated recreation areas or parks adjacent to the site and the nearest public facility is roughly 4 miles away via paved highway. Additionally, no impacts are anticipated for the RV park either, as all construction and operational activities would be mostly contained on-site.

The impact upon recreation and parks from the Proposed Project is anticipated to be **negligible**.

Aesthetics and Visual Resources: The partially developed project site contains an existing approximately 613,000 square-foot vacant industrial building, two associated approximately 200 square-foot structures (housing backflow preventers and emergency fire pump), and an uninhabitable single-family house (see figure below). The City of Moses Lake zoning for the Proposed Project site and area to the west and south is *Heavy-Industrial*, and is designated

Industrial by the City's Comprehensive Plan. The area to the immediate north and east of the site is designated as *Resource Land – Irrigated Agriculture* by Grant County. The topography of the Proposed Project site and surrounding properties is relatively flat with a slight downward slope to the south and west, and therefore the site does not offer notable vistas or views.



Although the new construction and operational activities would be visible from the immediately surrounding landscape, the scale and massing of the building would be consistent with other existing and planned buildings in the surrounding industrial area (see figure below).



The impact upon aesthetics and visual resources from the Proposed Project is anticipated to be **negligible**.

3.2 Resource Areas Considered Further

Environmental resource areas carried through for further consideration of the potential impact of Sila’s Proposed Project include: socioeconomics; environmental justice; wetlands and floodplains; cultural resources; land use; air quality, greenhouse gasses; noise and vibrations; geology, soils, and topography; surface water and groundwater; vegetation and wildlife; regulated wastes (solid and hazardous wastes); utilities and energy use; transportation and traffic; and public and occupational health and safety. The values are inclusive of maximum planned operational output through and including Phase 2.

3.2.1 Socioeconomics

3.2.1.1 Affected Environment

Moses Lake is a city in Grant County, WA, with a population of 24,764 residents.¹ Historically, the economy of Moses Lake was mainly supported by agricultural business. However, due to the

¹ American Community Survey (ACS), Demographic and Housing Estimates, 2021: 5-Year Estimates.

availability of affordable power and inexpensive land, manufacturing and technology have experienced considerable growth in this area in recent years.²

Grant County is currently (as of 2022) home to an estimated 101,800 residents, reflecting a 14.2% increase in population since the 2010 U.S. Census. The total county labor force is estimated at 44,343. Within this total labor force, the majority are employed within private businesses (73.8%), with the public sector (Federal, state, and local government) employing 21.1%, and with 4.9% self-employed. Grant County's estimated employed population (60.3%) is similar to that estimated for Washington as a whole (60.5%).³

Agriculture, forestry and fishing is the single largest industry in terms of employment (21.4%), followed by educational services and health care and social assistance (20.8%), manufacturing (13.4%), retail trade (7%), transportation and warehousing, and utilities (6.6%), professional, scientific, and management and administrative and waste management services (5.7%), arts, entertainment, and recreation, and accommodation and food services (5.6%), public administration (5.4%), construction (4.7%), finance and insurance and other (2.8%), wholesale trade (2.5%), and other occupations (3.1%). In terms of occupations, management, business, science and arts occupations make up the largest share (29.8%), followed by natural resources, construction and maintenance (23.5%), production, transportation and material moving (17%), service jobs (15.5%), and sales and office occupation (14.2%).⁴

3.2.1.2 Environmental Consequences

3.2.1.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance. In that case, existing socioeconomic conditions associated with the site and greater site vicinity of Moses Lake and Grant County would remain similar to existing conditions.

3.2.1.2.2 Proposed Project

3.2.1.2.2.1 Construction

Under the Proposed Project, taxes would continue to be paid on the property and no adverse impacts would be anticipated. Approximately 25 percent of the estimated 450 to 500 peak construction workers employed for the construction period could be hired from the local populations and may be currently unemployed or underemployed as well as residing and paying

² Grant County Economic Development Council. Community Information Moses Lake. <https://www.grantedc.com/site-selection/community-information/moses-lake/>. Accessed April 2023.

³ American Community Survey (ACS), Selected Economic Characteristics, 2021: 5-Year Estimates.

⁴ American Community Survey (ACS), Selected Economic Characteristics, 2021: 5-Year Estimates.

taxes in Grant County or the surrounding area. Increased sales transactions for the purchase of materials and supplies would generate additional tax revenues for local and state governments, which would have a beneficial impact. Secondary jobs related to the increased economic activity stimulated by the Proposed Project may be created. Additional retail services and business employment may result from the Proposed Project through a multiplier effect, yielding additional sales and income tax revenues for local and state governments, also generating a minor beneficial impact. The Proposed Project is anticipated to generate approximately 25 million dollars in total net-positive economic impact during its 30-month construction period (for both phases).

3.2.1.2.2 Operations

The Proposed Project would create approximately 150-300 new, FTE, permanent jobs and would look to increase the workforce as the site continues to grow throughout the 20-year equipment operational lifespan.⁵ Labor requirements are not expected to change drastically as most jobs would be in advanced manufacturing operations, which is already represented in this region. There may be some additional requirements for certain engineering disciplines that may not already be present; Sila has stated they expect to fill as many positions as possible from the local population and estimates approximately 50 percent of jobs could be filled by the local labor force. Sila is planning to work with local non-profit organizations and government agencies to target underrepresented populations for recruitment. Sila also intends to implement programs to train underrepresented individuals to increase the pool of qualified candidates. In addition, Sila's goal is to ensure that employees are reflective of the local population, at a minimum. Sila expects the population influx to be modest and not significantly impact housing demand or population.

3.2.1.3 Cumulative Impacts

There is currently a forecasted modest population influx to Moses Lake or Grant County from the Proposed Project. While hiring from existing facilities in the area is anticipated for many of the plant operational roles, approximately 15-30 employees could transfer to the Moses Lake area to support operational and technical managerial positions.

Additionally, another battery-related project is planned for the same general area, but it will be subject to the same regulations (e.g. EPA, state-level zoning and permitting, etc.) as the Sila project and thus would not be expected to contribute to significant cumulative impacts. Assuming a potential similar modest population influx could result from the other battery-related project (15-30 employees), this population combined with the Proposed Project would not be expected to result in significant cumulative impacts.

⁵ Sila, 2023.

Additionally, another battery-related project is planned for the same general area, but it will be subject to the same regulations (e.g. EPA, state-level zoning and permitting, etc) as the Sila project, and thus would not contribute to significant cumulative impacts.

3.2.1.4 Proposed Mitigation Measures

No mitigation measures would be required for socioeconomics.

3.2.2 Environmental Justice

President Biden established the Justice40 Initiative in Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*. Building on Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, the Justice40 Initiative established a goal that at least 40% of the benefits of certain Federal investments, including investments in clean energy, energy efficiency, and clean transit, flow communities, the White House Council on Environmental Quality (CEQ) developed the Climate and Economic Justice Screening Tool (CEJST) (CEQ 2022), which identifies census tracts as disadvantaged based on consideration of environmental and socioeconomic burdens.

Secretary Granholm published a letter to DOE Stakeholders on July 25, 2022, to inform them that “DOE intends to implement the Justice40 Initiative throughout all its BIL efforts, wherever authorized by law, and within well-established DOE programs that fall within the climate and clean energy investment categories covered by Justice40.” (US Department of Energy, 2022). In follow-up, DOE adopted eight policy priorities that govern the Department’s implementation of the Justice40 Initiative.

1. Decrease energy burden in disadvantaged communities (DACs).
2. Decrease environmental exposure and burdens for DACs.
3. Increase parity in clean energy technology (e.g., solar, storage) access and adoption in DACs.
4. Increase access to low-cost capital in DACs.
5. Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs.
6. Increase clean energy jobs, job pipeline, and job training for individuals from DACs.
7. Increase energy resiliency in DACs.
8. Increase energy democracy in DACs.

DOE concurrently published a list of the Department’s programs covered by the Justice40 Initiative because the programs include investments that can benefit disadvantaged communities (Office of Management and Budget [OMB] Memorandum 21-28 [M-21-28]). Within the Manufacturing and Energy Supply Chains Office, DOE identified the Battery Manufacturing and Recycling Grants and the Battery Material Processing Grants programs as Justice40 covered programs (Section IIAii *Clean Energy and Energy Efficiency* within OMB M-21-28).

Additionally, DOE developed a DAC Reporter to define and identify disadvantaged communities for the purposes of Department programs. The DAC Reporter identifies disadvantaged

communities based on the cumulative burden the community faces from 36 burden indicators. The top 20% of communities within a state are designated as disadvantaged and interested parties can use the DAC Reporter to generate community-specific reports that include the results for each of the 36 burden indicators. Nationwide, 13,581 communities have been identified as disadvantaged by the DAC Reporter.

Sila aspires to attract and maintain a diverse workforce that reflects the region of Moses Lake and Grant County. The goal is to target underrepresented populations in recruitment efforts to promote diversity and underrepresented populations in the labor workforce and ensure the employee population is reflective of the local population, at a minimum.

3.2.2.1 Affected Environment

The Proposed Project is not located within a census tract that was designated as disadvantaged in either the DAC Reporter or the CEJST. The DAC Reporter ranked the cumulative burden faced by the census tract as being in the top 63% of communities in the State of Washington, well below the 80% threshold required for a community to be designated as disadvantaged. There is one census tract in the vicinity, within Moses Lake North, that is designated as disadvantaged by the DAC Reporter.

The CEJST identified three adjacent census tracts in Grant County as disadvantaged because they meet one burden threshold, as well as the associated socioeconomic threshold (CEQ 2023). The burden thresholds that are currently met by one or more of the three tracts include those related to climate change (projected flood risk), legacy pollution (formerly used defense site), and workforce development (linguistic isolation and high school education). All three tracts also met low-income thresholds.⁶

3.2.2.2 Environmental Consequences

3.2.2.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance. In the event that the project does not proceed, existing environmental justice conditions on the site and in the larger site vicinity of Moses Lake and Grant County would remain the same as described under existing conditions.

⁶ Census Tracts 530250111000, 53025010700 and 53025011300.

3.2.2.2.2 Proposed Project

3.2.2.2.2.1 Construction and Operations

DOE's selection of the project proposed by Sila is consistent with the provisions of Executive Orders 12898 and 14008, aligns with DOE's eight policy priorities, and advances the Department's progress toward the goal established by the Justice40 Initiative that at least 40% of the benefits of certain types of Federal investment flow to disadvantaged communities.

The Proposed Project supports DOE's stated EJ policy priority to increase clean energy jobs, the job pipeline, and job training for individuals from disadvantaged communities. As discussed in Section 3.2.1.2.2 above, Sila expects to employ 450 to 500 individuals during the construction stage of the Proposed Project and create approximately 150-300 FTE jobs once operational. While the Proposed Project site is not within a disadvantaged community, Sila has committed to promoting benefits for communities in the greater Moses Lake/Grant County area including local hiring and purchase of supplies to the greatest extent possible. Sila anticipates that up to approximately 25 percent of construction jobs and up to 50 percent of operational jobs could be filled by the local population. To facilitate these goals, Sila will be partnering with two local schools (i.e., Big Bend Community College and Columbia Basin Technical Skills Center) to create a program to provide students with key skills and qualify them for operational positions at Sila's new manufacturing facility. Sila intends to expand these programs to other institutions as they grow. Sila also intends to create a paid apprenticeship program that would provide both classroom and hands-on training. Apprenticeships would be paid, with the goal of converting 80 to 90 percent of apprentices to full-time employees.

In total, Sila expects to invest up to \$3,000,000 over five years to support the goals of empowering students with key skills and qualifications for operational positions at the new facility via the partnership with local schools and the creation of a certification program and paid apprenticeship program. The Proposed Project is therefore anticipated to provide positive short and long-term benefits to communities in the vicinity.

3.2.2.3 Cumulative Impacts

No reasonably foreseeable development projects have been identified for the Proposed Project site vicinity. Development in the vicinity of the Proposed Project site consistent with existing zoning would not be expected to generate cumulative adverse environmental justice impacts.

3.2.2.4 Proposed Mitigation Measures

No mitigation measures would be required for environmental justice.

3.2.3 Wetlands and Floodplains

3.2.3.1 Affected Environment

The Proposed Project site contains approximately 162 acres of industrial development and farmland. GeoEngineers, Inc. performed a wetland reconnaissance and delineation of the Proposed Project site on February 15 and 16, 2022 to determine the presence of aquatic resources regulated under federal and state statutes. The wetland delineation was conducted in accordance with the *U.S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USAC 2010)*. A total of three wetlands (Wetland A, Wetland B, and Wetland D)⁷ and one stream (Stream 1) were identified on the site. Stream 1 is associated with Wetland A. Wetlands A and B are classified as type III wetlands with 25-foot-wide buffers in accordance with the Washington State Wetlands Rating System for Eastern Washington. Wetland D is considered a Type IV wetland with a 10-foot buffer width. As discussed further in Section 3.2.3.2.2.1, the Army Corps of Engineers determined that none of the drainages were “waters of the United States” under the Clean Water Act. Under this determination, no Section 404 permit or Nationwide Permit concurrence is required for the Proposed Project.

3.2.3.2 Environmental Consequences

3.2.3.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE’s financial assistance, the potential impacts would be essentially identical to those under DOE’s action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.3.2.2 Proposed Project

3.2.3.2.2.1 Construction and Operations

After considering the results of the GeoEngineers wetland delineation, the Seattle District of the Army Corps of Engineers issued an Approved Jurisdictional Determination (AJD) concluding the Proposed Project site “does not include navigable waters of the U.S” and is not subject to Section 10 of the Rivers and Harbors Act of 1899. The AJD further evaluated potential water resources under the Clean Water Act and determined that there were no jurisdictional water resources on the Proposed Project site. The Proposed Project does not include any construction of operations within or in immediate proximity to wetlands, wetland buffers, or streams. DOE requested consultation from the Seattle District of the USACE regarding this proposed project via letter on June 8, 2023. Copies of the correspondence from DOE to the USACE is in

⁷ Wetland C identified in an original 2006 delineation was not identified as wetland area during the 2022 field investigation.

Appendix 3, and this Draft EA has been provided to the Seattle District of the USACE for review and comment.

A review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Numbers 53025C1100C, effective October 2020, indicates the Proposed Project site lies in Zone X (unshaded), indicating the area has a minimal flood hazard, usually above the 500-year flood (see Figure 5 below for a snippet of the Flood Hazard Map for the project site – the original Flood Hazard Map is contained in Appendix 4).



Figure 5 – FEMA Flood Hazard Map

3.2.3.3 Cumulative Impacts

No reasonably foreseeable development has been identified for the Proposed Project site vicinity. Development in the vicinity of the Proposed Project consistent with existing zoning would not generate cumulative adverse impacts to wetlands and floodplains.

3.2.3.4 Proposed Mitigation Measures

No mitigation measures would be required for wetlands and floodplains.

3.2.4 Cultural Resources

3.2.4.1 Affected Environment

The Proposed Project site lies within the traditional territories of the Sinkayuse tribe, currently represented by the Confederated Tribes of the Colville Reservation and the Yakama tribe. According to the Washington State Department of Archaeology and Historic Preservation (DAHP), the Project Area is in an ‘area of interest’ for the Confederated Tribes of the Colville Reservation, the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), the Spokane Tribe of Indians, and the Warm Springs Tribe of Oregon.

A Cultural Resource Survey (Plateau CRM, 2023) was completed for this specific project site. Additionally, there have been seven previously conducted cultural resources surveys within one mile of the Project Area, none of which intersect with the project area, and none yielded newly recorded cultural resources within one mile of the site.

A total of five Historic Property Inventories (HPIs) have been inventoried or derived from the Grant County Assessor’s records within one mile of the Project Area. None of these structures have a determination regarding NRHP eligibility.

A pedestrian survey was conducted over the portions of the Project Area surrounding the existing structure on the site. A total of 88 subsurface probes were excavated. No Native American or historic-era cultural materials or features were observed during the pedestrian survey or excavations.

Plateau CRM inventoried one property on the project site, a single-story Ranch-style residence located at 3741 Road North NE. Actual build dates of the structure are unknown, however, the home is reminiscent of a mid-century style found predominantly in California Ranch homes in the 1960s. The home is vacant and appears to have been abandoned many years ago; the interior is in very poor condition and inhabited by wildlife. Due to a lack of structural integrity and not meeting any of the four NRHP criteria, the survey concluded that the property would not be eligible for listing on the NRHP.

EA Engineering, Science, and Technology Inc. also completed a review of previously recorded cultural resources and archaeological surveys through the Washington Information System for Architectural and Archeological Records Data (WISSARD) system on March 15, 2023. This database includes recorded archaeological resources, historic property inventories, properties and districts on the National Register of Historic Places and the Washington Heritage Register, identified cemeteries, and previously conducted cultural resource surveys found throughout the state. This review found no properties eligible for national historic designation within the Sila Nanotechnologies area of potential effect (APE). Results of this WISSARD review are included in Appendix 4.

3.2.4.2 Environmental Consequences

3.2.4.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance. In the event the project does not proceed, existing cultural resources conditions on the site would continue, and no unanticipated impacts to cultural resources would be expected.

3.2.4.2.2 Proposed Project

Construction and Operations

The Cultural Resources Survey previously completed for the project determined that the proposed undertaking would result in No Historic Properties Affected, and no further archaeological investigations are recommended prior to, or during, execution of the project. An Inadvertent Discovery Plan (IDP) has been prepared for use during all ground disturbing work on the project.

DOE initiated consultation with the DAHP via letter on May 11, 2023, and initiated tribal consultation with the Confederated Tribes of the Colville Reservation, the Confederated Tribes and Bands of the Yakama Nation, the Spokane Tribe of Indians, and the Warm Springs Tribe of Oregon by letters throughout May and June of 2023. To date, the Confederated Tribes of the Colville Reservation responded to DOE concurring with the findings, determination, and recommendations in the Cultural Resources Survey and requested that the project work proceeds with caution, that recommendations from the Cultural Resources Survey are adhered to, and that cultural resource concerns regarding the groundbreaking activities referenced in Section 2.5 were alleviated by Sila's site orientation training for contractors (including training on the IDP). The Spokane Tribe of Indians responded to DOE and concurred with a finding of "no historic properties affected" and that the project may proceed, but the Spokane Tribe of Indians should be notified immediately if any artifacts or human remains are found, if the scope of work changes, or if additional information becomes available. Consultation letters sent, along with responses from the DAHP and Tribal Nations, are included in Appendix 3. Based on the scope of the proposed project, previous studies of the APE (including findings from the Cultural Resource Survey), and results from Washington's WISAARD eAPE tool, DOE's Determination of Effect is that no historic properties will be affected by this proposed project. The four Tribal Nations and the DAHP have been provided copies of this Draft EA, and concurrence for DOE's Determination of Effect will be discussed in the Final EA based on comments received from these Tribal Nations and the DAHP.

3.2.4.3 Cumulative Impacts

No reasonably foreseeable development projects have been identified for the Proposed Project site vicinity. No reasonably foreseeable actions have been identified that would interact with the Proposed Project to generate cumulative adverse impacts to cultural resources.

3.2.4.4 Proposed Mitigation Measures / Inadvertent Discovery Plan

The Proposed Project would implement an Inadvertent Discovery Plan (IDP) that details a protocol to follow in the event of an unanticipated discovery of cultural materials during Project construction. The protocol is dependent on the type of feature or artifact discovered and outlines specific stop-work steps to take in the event human remains are uncovered. Appropriate contact information is provided for Emergency Dispatch in Grant County, Confederated Tribes of the Colville Reservation, Spokane Tribe of Indians, Confederated Tribes and Bands of the Yakama Nation, Warm Springs Tribe of Oregon, DAHP, and Plateau Archaeological Investigations. The IDP is attached in Appendix 4.

3.2.5 Land Use

3.2.5.1 Affected Environment

The Proposed Project site comprises approximately 162 acres of land fronting Road N NE, in the extreme eastern portion of the City of Moses Lake. The City of Moses Lake zoning for the site and area to the west and south is *Heavy-Industrial*, and is designated *Industrial* by the City Comprehensive Plan. The area to the immediate north and east of the site is administered by Grant County, and is designated as *Resource Land – Irrigated Agriculture* by Grant County.

The partially developed site contains an approximately 613,000 square-foot vacant industrial building, two associated approximately 200 square-foot structures (e.g., housing backflow preventers and emergency fire pump), and a vacant single-family house. Prior to construction of the currently vacant industrial building and associated structures in 2007, the site was in farmland. Approximately 37 acres of the site is currently in farmland that will not be impacted by the Proposed Project. The site is bordered by a private rail line and agricultural land to the east, agricultural land to the south, Road N NE and a manufacturing facility to the west, and agricultural land to the north.

3.2.5.2 Environmental Consequences

3.2.5.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for

purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.5.2.2 Proposed Project

3.2.5.2.2.1 Construction and Operations

Construction of the Proposed Project on the site would be consistent with the current Heavy – Industrial zoning cited above, which considers the site suitable for heavy industrial use with a Conditional Use Permit.

Moses Lake Municipal Code Title 18, Chapter 18.40 provides development standards and site requirements for uses in the industrial zones. The Proposed Project would be consistent with all applicable development standards, including development standards for building height, setbacks, and landscaping. The Proposed Project is consistent with applicable zoning standards, compatible with adjacent land uses, and no impacts to land use would occur.

3.2.5.3 Cumulative Impacts

The Proposed Project is consistent with the City of Moses Lake’s Comprehensive Plan and associated zoning changes to continue a trend of land use changes from agricultural to industrial in designated areas of the city, and the Proposed Project would thus add incrementally to cumulative land use impacts anticipated in land use plans and zoning priorities set by the City of Moses Lake. Future development in the area administered by Grant County would continue the current agricultural land use character.

3.2.5.4 Proposed Mitigation Measures

No mitigation measures would be required for land use.

3.2.6 Air Quality

The Proposed Project would be subject to the applicable requirements of the Clean Air Act (CAA). Two agencies have jurisdiction over the ambient air quality in the project area: the US Environmental Protection Agency (EPA), and the Washington State Department of Ecology’s (Ecology) Eastern Regional Office. These agencies have established regulations that govern the sources and ambient concentrations of pollutants. Although their regulations are similar in stringency, each agency has established its own ambient air quality standards. Unless the state or local jurisdiction has adopted more stringent standards, EPA standards apply. These standards have been set at levels that EPA and Ecology have determined are protective of human health with a margin of safety, including the health of sensitive individuals such as the elderly, the chronically ill, and the very young. As the Proposed Project would be subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP; 40 CFR 63 Subpart VVVVVV), the Facility is subject to Title V of the CAA. EPA has delegated authority for air quality regulatory enforcement to Ecology in this jurisdiction. Sila has submitted a Notice of Construction (NOC) application and Supporting Information Report to Ecology that

demonstrates the proposed project would comply with all state and federal air quality regulations and standards. Sila would not commence installation of permitted air sources or abatement equipment at the proposed facility until Ecology issues an Approval Order for the Project.

The CAA requires the United States Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The EPA has established NAAQS for six (6) principal pollutants, which are called “criteria pollutants”: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM), sulfur dioxide (SO₂), and lead (Pb) (Table 3).

Table 3. EPA National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 µg/m ³ ⁽¹⁾	Not to be exceeded
Nitrogen Dioxide (NO ₂)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb ⁽²⁾	Annual Mean
Ozone (O ₃)		primary and secondary	8 hours	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	Annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	Annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO ₂)		primary	1 hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

Notes:

- (1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.
- (2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
- (3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O₃ standards.
- (4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) would additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

3.2.6.1 Affected Environment

Moses Lake, Grant County, Washington is currently designated as an area that is considered in attainment for all monitored air pollutants. The surrounding area is primarily agricultural, with transportation and light industry to the west and south (see Section 3.2.5 *Land Use* and Section 3.2.11 *Vegetation and Wildlife*). The nearest population (sensitive receptor) are rural (farm) residences, the closest of which is roughly 1,200-1,350 feet north of the Proposed Project site. The nearest residential neighborhood to the Proposed Project site is part of the City of Moses Lake, located approximately 4.5 miles west of the Proposed Project's western boundary. Other sensitive receptors (e.g., schools, hospitals) are not located in close proximity to the Proposed Project site (see Section 3.1 Community Services).

3.2.6.2 Environmental Consequences

3.2.6.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.6.2.2 Proposed Project

3.2.6.2.2.1 Construction

Construction of the Proposed Project is expected to be conducted over 1,200,000 square feet of the total property area of 162 acres. Minor, temporary, intermittent air emissions are anticipated during project construction which could potentially have a short-term, minor adverse impact on air quality. Air emissions of CO, NO_x, SO₂, PM₁₀, PM_{2.5} and VOC associated with operation of construction equipment and vehicles are anticipated during site grading and leveling, installation of facility equipment, and delivery of construction materials and supplies both by road and by rail. As such, in addition to short-term tailpipe emissions, surface soil disturbances during excavation and grading could result in generation of fugitive dust. Fugitive dust could potentially affect both public health and the environment. The severity of its effects on health depends on the size and composition of the particulate matter. Typical effects are persistent coughs, respiratory distress, eye irritation, asthma etc. Sila's construction contractor would implement best management practices to minimize generation of dust during construction activities. These impacts are anticipated to be temporary, minor, and largely contained at and anticipated within short distances from the proposed project site. Sila would utilize the proposed mitigation measures outlined below to mitigate or eliminate any wind-carried construction-generated dust off of the property.

Construction-related air quality impacts, including the impact of operating construction-related equipment and vehicles, are expected to be small.

3.2.6.2.2.2 *Operations*

The Proposed Project's operational impacts to air quality are expected to be minor, direct, and long term, and would be subject to an NOC Approval Order issued by the Washington State Department of Ecology.

In general, the Proposed Project would include the following emission points:

- Thermal Oxidizers: Two thermal oxidizers would control criteria pollutant and toxic air pollutant (TAP) emissions from multiple process units with a destruction efficiency of at least 99.99%. In addition to the emissions from the process, the thermal oxidizers would produce emissions of criteria pollutants and TAPs associated with natural gas combustion.
- Caustic Scrubbers: Two caustic scrubbers would control emissions of silane from multiple tools. Sodium hydroxide (NaOH) would neutralize emissions, with a destruction removal efficiency of at least 99 percent. Sila is not expecting any regulated pollutants to be emitted from these scrubbers, but would continue to work with the Washington State Department of Ecology to understand the potential for regulated pollutant emissions and apply operational controls, if required.
- Tanks and equipment fugitive emissions: There would be fugitive emissions of volatile organic compounds (VOCs) from flanges, valves, and connectors associated with the hydrocarbon storage vessel, process vessels, and piping distribution system.
- Filters and Baghouses: PM emissions from tools would be controlled with cartridge filters and baghouses. Filters and baghouses are not expected to be a source of TAPs.
- Diesel Emergency Generator: The generator would produce emissions of CO, NO_x, SO₂, PM₁₀, PM_{2.5} and VOCs during routine maintenance testing and in the event of an unplanned utility outage at the Facility.
- Emergency Flare: In the unlikely event the thermal oxidizers have an emergency upset condition, process gasses would be temporarily routed to an open flare for combustion.

3.2.6.3 **Cumulative Impacts**

To demonstrate compliance with the National Ambient Air Quality Standards, Sila would evaluate cumulative impacts associated with criteria pollutant emissions from the proposed project and offsite sources per Ecology requirements.

Although additional development could occur in the area, the type and extent of impacts to air quality is not reasonably foreseeable due to the unknown nature of any use by existing or future property owners. No reasonably foreseeable actions have been identified that would interact with the Proposed Project to generate cumulative adverse impacts to air quality.

Another battery-related project is planned for the same general area, but it would be subject to the same regulations (e.g., EPA, state-level zoning and permitting, etc.) as the Sila project, and thus would not contribute to significant cumulative impacts.

Any future site upgrades would also be subject to similar regulatory requirements related to air quality. Sila would continue to find ways to reduce emissions through process improvements, substitution, and improved technologies.

3.2.6.4 Proposed Mitigation Measures

Numerous mitigation measures and standard procedures related to air quality would be employed during construction and operation of the Proposed Project. These are consistent with the Proposed Project's NOC Approval Order, which incorporates all applicable requirements of the Clean Air Act, including those related to operations and specific processes, installation of source control equipment, emissions testing requirements, and monitoring and reporting protocols.

During construction, dust generation would be reduced and controlled to comply with Washington State air quality regulations. Construction-industry best management practices would be incorporated into construction plans and contractor specifications, which could include, but not be limited to, the following: spraying exposed soil with water, covering exposed soil during grading and pre-seeding periods, adding silt fences and netting on fences surrounding construction zone, covering all truck beds transporting materials, wetting materials in trucks, and providing wheel washers for trucks traveling offsite.

To reduce carbon monoxide and particulate emissions from gasoline and diesel engines, construction equipment would have the best available emission control devices generally available to the contractor. Also, using well-maintained equipment and turning off construction equipment when not in use would reduce construction engine emissions.

Emissions from the Project operations would be controlled using the control devices listed above. The NOC application would include a review of available emission controls options and Sila would employ what Ecology determines to be the best available control technologies for the project. Facility operations would comply with all air permit conditions, which would ensure compliance with all state and federal regulations. Staging areas for deliveries are planned, which would minimize idling associated with delivery vehicles.

3.2.7 Greenhouse Gasses

Greenhouse gasses (GHGs) are of concern for climate change, and include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), and several hydro and per-chlorofluorocarbons. GHG emissions are often expressed in terms of carbon dioxide equivalent (CO₂e), which accounts for GHGs in addition to CO₂ by converting the GHG impact of other gasses to the equivalent amount of CO₂.

The CEQ issued interim guidance on January 9, 2023, relevant to the consideration of GHGs and climate change effects of proposed actions under NEPA (CEQ 2023). The guidance advises federal agencies to consider “(1) the potential effects of a proposed action on climate change, including by assessing both GHG emissions and reductions from the proposed action; and (2) the effects of climate change on a proposed action and its environmental impacts.”

3.2.7.1 Affected Environment

Rising global temperatures are associated with weather and climate shifts driving environmental and human impacts across a range of spatiotemporal scales and intensities (Intergovernmental Panel on Climate Change [IPCC] 2013). The IPCC, an international group of scientists from 130 governments, has concluded that it is "extremely likely" - a probability listed at more than 95 per cent - that human activities and fossil fuels explain most of the warming over the past 50 years."

The IPCC predicts that under current human GHG emission trends, the following results could be realized within the next 100 years:⁸

- Global temperature increases between 0.3 – 4.8 degrees Celsius;
- Potential sea level rise between 26 to 82 centimeters or 10 to 32 inches;
- Reduction in snow cover and sea ice;
- Potential for more intense and frequent heat waves, tropical cycles and heavy precipitation, and;
- Impacts to biodiversity, drinking water and food supplies.

The Climate Impacts Group (CIG), a Washington-state based interdisciplinary research group that collaborates with federal, state, local, tribal, and private agencies, organizations, and businesses, studies impacts of natural climate variability and global climate change on the Pacific Northwest. CIG research and modeling indicates the following possible impacts of human-based climate change in the Pacific Northwest:⁹

- Changes in water resources, such as decreased snowpack; earlier snowmelt; decreased water for irrigation, fish and summertime hydropower production; increased conflict over water; increased urban demand for water;
- Changes expected for many federally-listed endangered and threatened species, including salmon, trout, and steelhead;
- Changes in forest growth and species diversity and increases in forest fires; and
- Changes along shorelines, such as increased coastal erosion and beach loss due to rising sea levels, increased landslides due to increased winter rainfall, permanent inundation in some areas, and increased coastal flooding due to sea level rise and increased winter streamflow.

3.2.7.2 Environmental Consequences

3.2.7.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between

⁸ Intergovernmental Panel on Climate Change (IPCC). *Summary for Policymakers*. (2014).

⁹ Climate Impacts Group. Accessed 01/7/2022. *Climate Impacts in Brief*. <https://cig.uw.edu/learn/climate-impacts-in-brief/>.

potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.7.2.2 Proposed Project

3.2.7.2.2.1 Construction

Construction of the Proposed Project would result in temporary GHG emissions from sources including vehicle transportation of equipment and materials, use of construction machinery, and curing of concrete. Use of electricity during construction may indirectly increase GHG emissions depending on electric generation sources/methods employed by local utilities serving the site. Current online resources allow for very general estimates for order of magnitude of GHG emissions for construction projects, based on input of known project parameters. One of these resources, <http://buildcarbonneutral.org>, provides rough estimates using only basic input parameters: area of total site, area of disturbance planned within the site, region within the US, prior land use, and current vegetation type (or unvegetated). Estimates are provided as net embodied carbon from construction activities, where “embodied carbon” includes emissions from raw material extraction, transportation of materials, materials wasted, building operations and maintenance, and the emissions a building continues to produce after it is no longer in use. From Sila Moses Lake Plant project inputs, including construction of few small, single-story, metal-frame structures (less than 1000 square feet total), disturbance of approximately 26 site acres with sparse existing vegetation, and planting approximately 40,000 square feet with low-water trees and shrubs, this resource estimates net emissions of approximately 1,450 metric tons of embodied carbon from construction of the Proposed Project.

3.2.7.2.2.2 Operations

Facility operations would include natural gas-fired pilots for two thermal oxidizers, two emergency flares, and two diesel-fired emergency generators. Natural gas contains methane, a small amount of which can escape into the atmosphere as fugitive emissions. Combustion of natural gas produces CO₂ and other GHGs. Estimated annual CO₂e emissions from natural gas and diesel fuel are itemized in Table 4 (GHG Calculation Tables are contained in Appendix 4).

The Proposed Project plans to purchase up to 120,000,000 kilowatt hours per year (kWh/yr) of electricity for facility operations, which would indirectly contribute to the Proposed Project’s GHG emissions. The quantity of emissions that are associated with the purchased electricity would vary year-to-year based on electric generation sources and methods employed by local utilities serving the Proposed Project site. The EPA estimates an average of approximately 0.203 lb CO₂e emissions per kWh for Washington State (EPA 2021). Maximum CO₂e emissions from estimated electricity use per year for Proposed Project operations are outlined below in Table 4.

Table 4. Estimated Annual CO₂e Emissions (Phases 1 and 2)

Source	Metric Ton CO ₂ e
Natural Gas Use (flare, thermal oxidizer) ¹	4,800
Waste Gas Control (thermal oxidizer) ¹	85,811
Emergency Generators ¹	139
Total Direct CO₂e Emissions	90,750
Electricity Use (indirect CO ₂ e emissions)	11,100
Total	101,851

¹ Emission Factors: 40 CFR Part 98, Tables C-1 and C2

3.2.7.2.3 Social Cost of Carbon

DOE’s Social Cost Estimating Tool (SC-GHG) was used to estimate the social cost of CO₂, CH₄, and N₂O associated with the Proposed Project. The SC-GHG was designed to help agencies understand the social costs and benefits associated with various decisions. The SC-GHG assigns a monetary value to the net harm to society associated with adding small amounts of GHG to the atmosphere in a given year. The SC-GHG is intended to include “the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services.” (Interagency Working Group on Social Cost of Greenhouse Gases 2021).

Conservatively high emission estimates for CO₂, CH₄, and N₂O were calculated based on estimated electricity use, natural gas consumption, and operation of emergency generators and thermal oxidizers. Emission factor sources included 40 CFR Part 98, Tables C-1 and C2, EPA eGRID data (EPA 2021), and vendor-provided emission specifications for the thermal oxidizers.

Table 5 shows the calculated social cost of carbon for production during Phase 1 and Phase 2 of the proposed project. Table 5 also factors in 1,450 metric tons of CO₂ associated with construction of the Sila facility (see Section 3.2.7.2.2.1). Construction of Phase 1 and Phase 2 would last for approximately 15-18 months prior to each phase being initiated. Detailed breakdowns of the figures noted in Table 5 are included in Appendix 4.

Table 5: Social Cost of Carbon – Sila Construction and Production

Present Value (in Base Year) for all emissions (2020\$)				
	Discount Rate			
	5% Average	3% Average	2.5% Average	3% 95th Percentile
SC-CO₂				
Phase 1	\$6,813,807	\$25,784,802	\$38,968,787	\$78,430,318
Phase 2	\$17,864,818	\$68,976,663	\$104,683,499	\$210,315,162
Total	\$24,678,625	\$94,761,465	\$143,652,287	\$288,745,480
SC-CH₄				
Phase 1	\$33,410	\$83,836	\$112,517	\$223,515
Phase 2	\$132,981	\$342,452	\$462,068	\$913,931
Total	\$166,391	\$426,288	\$574,584	\$1,137,447
SC-N₂O				
Phase 1	\$21,286	\$74,188	\$111,292	\$197,095
Phase 2	\$58,347	\$207,979	\$313,550	\$553,241
Total	\$79,633	\$282,167	\$424,842	\$750,336
Grand Total	\$24,924,649	\$95,469,919	\$144,651,713	\$290,633,263

In terms of operational outputs, Sila estimates that production levels for the Proposed Project would be sufficient to produce lithium-ion batteries for approximately 27,200 EVs per year for Phase 1 of production, increasing to approximately 209,000 EVs per year within approximately two years (once Phase 2 becomes operational). The GHG reduction associated with driving EVs instead of gasoline fueled vehicles (GVs) was calculated using emission factors and fuel efficiency data from EPA (EPA), 40 CFR Part 98 Tables C-1 and C-2, average electric vehicle energy use per mile (DOE), and average miles per year per driver (FHWA) (Table 6). These savings would offset the GHG emissions from Sila’s facility construction and operation beginning when Phase 2 becomes operational. The GHG emission estimates used to calculate the reductions shown in Table 6 include miles driven and do not include GHG produced during the manufacture or maintenance of EVs or GV. Detailed breakdowns of the figures and assumptions noted in Table 6 are included in Appendix 4.

Table 6: Annual GHG Savings Associated with Replacing GV with EVs

GHG	EV Emissions (a)	GV Emissions (b)	Net Reduction in GHG Emissions
	(metric tons per year)		
Phase 1			
CO ₂	35,426	126,668	(91,242)
N ₂ O	0.4	1.08	(0.67)
CH ₄	2.95	5.41	(2.46)
Phase 2			
CO ₂	272,211	973,295	(701,084)
N ₂ O	3	8	(5.1)
CH ₄	22.7	41.6	(18.9)

3.2.7.3 Cumulative Impacts

In context of annual global GHG emissions, the Proposed Project would support a net-positive, long-term impact to reduce GHG emissions and global warming through its contributions to decarbonizing U.S. transportation, which would markedly outweigh Proposed Project GHG emissions. Within the first five years of operation, the Proposed Project is expected to contribute to the production of batteries for approximately 681,000 EVs.

In general, the potential benefits associated with reducing CO_{2e} emissions would support a reduction in GHG concentrations and reduce the associated climate change impacts (e.g., increases in atmospheric temperature, changes in precipitation, increases in the frequency and intensity of extreme weather events, rising sea levels, etc.).

3.2.7.4 Proposed Mitigation Measures

GHG emission reductions would be realized through the manufacturing of components within the United States rather than importing them from another country. These components would be used as precursors to the domestic manufacture of lithium-ion batteries to be used in EVs. Sila estimates that production levels at the Proposed Project site would be sufficient to produce lithium-ion batteries for approximately 27,200 EVs per year for Phase 1 of production, increasing to approximately 209,000 EVs per year within approximately two years (when Phase 2 would become operational). Sila estimates that use of Sila's product can increase energy density in lithium-ion batteries by 20 percent compared to batteries produced using the current technology (graphite), resulting longer EV range per charge, which is expected to encourage EV adoption.

The available power mix in Moses Lake, Washington, includes a greater percent of hydroelectric power, resulting in lower GHG emissions associated with Sila's product than similar materials produced elsewhere. The Northwest subregion has an average CO_{2e} emission rate per kWh that is 75 percent of the national average and 40 percent of the US subregion with the highest CO_{2e} emissions per kWh. Washington State is the state with the second lowest CO_{2e} emissions per kWh, at 24 percent of the national average and 10 percent of the state with the highest CO_{2e} emissions per kWh (EPA 2021). If the Proposed Project were located elsewhere in the US, the estimated indirect CO_{2e} production associated with electricity use would be, on average, 46,648 metric tons CO_{2e}; therefore, locating the facility in Washington State results in a reduction of 35,601 metric tons CO_{2e} per year over potential facilities located outside of Washington State.

Market displacement of gasoline and diesel-powered vehicles through battery production support at the Sila Moses Lake Plant for U.S. EV manufacture is expected to realize GHG emissions reductions greater than GHG emissions from plant operations. Therefore, the impact to GHG emissions from this project is a net reduction in GHGs, and no further mitigation measures are proposed.

3.2.8 Noise and Vibration

3.2.8.1 Affected Environment

Regulatory Context

Moses Lake Municipal Code (MLMC) Chapter 8.28 regulates noise within the city; however, the MLMC is complaint-driven and does not include quantitative noise limits. Sounds originating from construction sites in commercial and industrial zones are exempt from the noise code [MLMC Chapter 8.28.50(B)(4)].

Chapter 173-60 (Maximum Environmental Noise Levels) of the Washington Administrative Code (WAC), which regulates noise sources and associated impacts in Washington State, is applicable to the proposed project. The regulations specify maximum permissible noise levels that can be received in any 1-hour period at designated property classifications (classified by general property use), using the Environmental Designation for Noise Abatement (EDNA) classification system for receiving property type. The regulations also establish the maximum permissible noise levels that can be received (or conversely imposed) by one EDNA property use classification as a result of activities generating noise at another classified EDNA property use classification. Noise limits apply at the proposed project property line. The noise limits at residential (Class A EDNA), commercial (Class B EDNA), and industrial/agricultural (Class C EDNA) properties are shown in A-weighted decibels (dBA) in the following table:

Table 7. Maximum Permissible Noise Limits (dBA) at Property Line

	Class A	Class B	Class C
Class A (residential)	55	57	60
Class B (commercial)	57	60	65
Class C (industrial, agricultural)	60	65	70

EDNA of Noise Source, EDNA of Receiving Property, and Noise Limit (dBA)

Maximum permissible noise limits are reduced by 10 dBA during nighttime hours for Class A receiving properties. Maximum permissible noise levels may be exceeded for short periods less than an hour by a receiving property. These exceedances (during any 1-hour period) are 15 dBA for a total of 1.5 minutes, 10 dBA for a total of 5 minutes, and 5 dBA for a total of 15 minutes.

Motor vehicles are required to comply with US Environmental Protection Agency (EPA) and WAC noise generation limitations for individual vehicles. While motor vehicle noise on public roadways is exempt from the maximum noise level regulations, traffic noise generated within project site boundaries must comply with the WAC noise regulations when noise is received at Class A EDNA properties.

Existing Conditions

As noted above, the Proposed Project site contains an approximately 613,000 square-foot vacant industrial building, two associated approximately 200 square-foot structures (e.g., housing backflow preventers and emergency fire pump), and an uninhabitable single-family house. The project site is zoned for industrial use. Immediately adjacent properties are currently zoned for either industrial or agricultural use. Residences are located north and northwest of the project site, approximately 700 feet or farther from the truck delivery entrance/exit and employee parking areas in the northwest portion of the site. Existing noise and vibration sources within the Proposed Project site vicinity include rail traffic and activity, local transportation on primary and secondary roads, and certain industrial activities, located primarily west and south of the Proposed Project site.

The nearest sensitive receptors to the Proposed Project site are rural (farm) residences, the closest of which is roughly 1,200 feet to the north of the Proposed Project boundary. The nearest residential neighborhood to the Proposed Project site, Wheeler, is located roughly 0.75 miles southeast of the Proposed Project site boundary, adjacent to the railroad right of way and the intersection of E Wheeler Road and Front Street NE. Other sensitive receptors (e.g., schools, parks) do not occur within close proximity (e.g., less than 0.5 miles) to the Proposed Project site (see Section 3.1).

Based on the WAC, the applicable noise limits at the property lines of adjacent and nearby properties are as follows: 70 dBA at industrial or agricultural receiving properties, 60 dBA (daytime) or 50 dBA (nighttime) at residential receiving properties.

3.2.8.2 Environmental Consequences

3.2.8.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.8.2.2 Proposed Project

3.2.8.2.2.1 Construction

Short-term but measurable adverse minor impacts to noise levels may occur during the construction phase of the Proposed Project, associated with site grading, installation of Facility equipment, and use of heavy machinery during construction. Construction noise and vibration would primarily be limited to the immediate vicinity of the Proposed Project site and would be short-term and intermittent. The location is at a sufficient distance from the nearest sensitive receptors such that noise and vibration impacts are anticipated to remain minor, though it is

possible that intermittent noise may be detectable by the nearest residents. Each construction period (for Phase 1 then Phase 2) is expected to last for approximately 15 - 18 months.

3.2.8.2.2.2 Operations

Long-term operational noise associated with the Proposed Project would be similar in noise level and character to noise produced by existing, adjacent facilities. Noise sources associated with long-term operations at the property include truck traffic and employee vehicle traffic; and exhaust fans on the roof of the main building; heating, ventilation, and air conditioning (HVAC) units; baghouses; blowers on thermal oxidizers and flare; caustic scrubber pump, vacuum pumps, compressor, backup generator, and fire water pumps.

The facility is expected to operate 24 hours per day, 7 days per week for the 20-year operation lifespan of the processing equipment installed. The generator and fire water pumps would be operated only during emergencies and for occasional scheduled maintenance.

Noise producing equipment is planned to be located primarily on the south side of the facility, approximately 1000 feet from the nearest residences which are located north northwest of the facility. The current basis of equipment design specifies equipment sound levels to be no more than 85 dBA at 3 feet, with a maximum of 115 dBA only during emergency and upset operating conditions. Point sources sound levels decrease by approximately 6 dBA for every doubling of distance from the source (not taking into account intervening buildings and topography, which further attenuate noise). Typical equipment sound is expected to attenuate to below 50 dBA (nighttime noise limit) within 200 feet from the equipment.

Noise associated with emergency equipment is exempt from both the Moses Lake and Washington noise regulations; however, sound levels associated with emergency operations would attenuate to below 60 dBA within approximately 2000 feet.

3.2.8.3 Cumulative Impacts

Based on the location of the facility and the current and future land use and zoning of the project site and adjacent properties, operational noise associated with the Project would comply with all relevant noise regulations and is not expected to conflict with current uses of adjacent or nearby properties. The Proposed Project, along with any future development in the area administered by the City of Moses Lake would continue a land use change trend from agricultural to industrial, and the Proposed Project would add incrementally to cumulative ambient noise levels in and around the area. Any increase in ambient noise levels resulting from operations of the Proposed Project would be minor, with maximum decibel levels of the Proposed Project anticipated to remain below that of existing rail traffic. The facility would be subject to and would comply with the noise limits described above. No reasonably foreseeable actions have been identified that would interact with the Proposed Project to generate cumulative adverse noise and vibration impacts.

Additionally, another battery-related project is planned for the same general area, but it would be subject to the same regulations (e.g. EPA, state-level zoning and permitting, etc) as the Sila project, and thus would not contribute to significant cumulative impacts.

3.2.8.4 Proposed Mitigation Measures

Construction-industry best management practices would be incorporated into construction plans and contractor specifications, which could include the following:

- where possible, construction equipment engines would be fitted with mufflers, intake silencers, or engine enclosures;
- construction equipment would be turned off during prolonged periods of non-use; and
- stationary equipment would be located as far as possible from sensitive receptors.

3.2.9 Geology, Topography and Soils

3.2.9.1 Affected Environment

A geotechnical report (GeoEngineers, 2023) of the site reports the following stable conditions: general surficial geology in the vicinity of the Proposed Project area is described as a mixture of fine to coarse sand and silt, overlying basalt rock. The Washington Division of Geology and Earth Resources “Geologic Map of the Moses Lake 1:100,000 Quadrangle,” indicates the site is underlain by Quaternary Age sand and silt consisting of “horizontally bedded or laminated lacustrine fine sand and silt, which contain lenses of basaltic sand and gravel and ice-rafted erratic boulders...deposited in low-energy slackwater environments created by temporary ponding of glacial outburst floodwaters.”

Test bores performed by GeoEngineers for the 2023 report included 10 drilling borings throughout the site, ranging from depths between approximately 20 to 35.5 feet below-ground surface (bgs). Approximately two to six inches of topsoil was encountered at the boring locations with the exception of borings B-1, B-2, B-4 and B-5. In borings B-1, B-2 and B-4, which were in the alfalfa field, approximately 12 inches of topsoil was encountered which could be due to cultivation of the field which mixed the upper 12 inches of the soil profile with organic matter. Boring B-5 was drilled on the edge of a road and encountered approximately six inches of crushed rock at the ground surface. The topsoil was generally comprised of silty fine sand, silty fine to coarse sand, and silty fine to coarse sand with gravel, all with organic matter (roots). The subsurface profile was generally consistent between the borings and with the above-referenced geologic map and soil descriptions. For the purposes of this analysis, the subsurface materials are characterized into five general units including: 1) fill; 2) silty sand; 3) silt with sand; 4) caliche; and 5) decomposed basalt.

There are no steep slopes, landslide hazard areas, or localized flood zones on the site and the site is not considered a seismic hazard area. The site was characterized as a “Class D” classification, which is a moderate seismic class. Given the gently sloping topography and ground cover by grasses, the site’s susceptibility to erosion is expected to be low.

The Proposed Project site was previously zoned agricultural and was used for agriculture prior to being developed for industrial uses in 2010. Environmental due diligence conducted at the Proposed Project site found no evidence of the use or presence of hazardous substances or

petroleum products and no recognized environmental conditions or areas of impacted soil were observed (Maul Foster Alongi, 2022).

3.2.9.2 Environmental Consequences

3.2.9.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.9.2.2 Proposed Project

3.2.9.2.2.1 Construction and Operations

Proposed Project impacts to geology, soils, and topography are anticipated to be direct, long term, and minor. The site would undergo site preparation and grading to achieve proper slopes for drainage and earthwork for construction of equipment and pipe rack foundations on the south side of the existing Sila building on site. Total limit of the work area is 1,200,000 square feet. The total excavation material quantity is anticipated to be 100,000 cubic yards, of which roughly 60,000 cubic yards of material is estimated to be certified for re-use as general backfill and for grading the site. The general import backfill quantity is approximately 35,000 cubic yards with an additional roughly 5,000 cubic yards of engineered structural fill to be used beneath foundations. Based on the results of the 2023 Geotechnical Report, site explorations, laboratory testing and engineering analysis indicate that site conditions are favorable for the design and construction of the proposed improvements provide recommendations are incorporated into the design and implemented during construction.

Based on the past use of the property and the results of previous site investigations, there is no indication that constituents of concern are present in the soil at the Proposed Project site and, therefore, no risk that planned activities during construction and operations (e.g., site grading, equipment foundation construction, and facility operations) would inadvertently accelerate the migration of such constituents across the Proposed Project site. Planned grading activities would redistribute soils to accommodate planned development of the Proposed Project site.

3.2.9.3 Cumulative Impacts

No reasonably foreseeable development has been identified for the Proposed Project site vicinity. Development in the vicinity of the Proposed Project consistent with existing zoning would not generate cumulative adverse impacts to geology, topography, or soils.

3.2.9.4 Proposed Mitigation Measures

Potential for future impacts to soils and underlying geology would be mitigated throughout the life of the Proposed Project through the implementation of spill prevention and emergency response procedures, and a facility monitoring and inspection program. The Proposed Project would include a spill prevention and response plan implemented by an onsite Emergency Response Team intended to prevent constituents that may be spilled from infiltrating the soil and reaching underlying geology and groundwater.

Any and all erosion control measures required by the City of Moses Lake and the State of Washington would be implemented and followed throughout the construction phase and during plant operation, as well as recommendations identified in the 2023 Geotechnical Report. These measures would include but are not limited to use of a water truck to control dust, installation of fabric fences or similar measures to prevent off site release as well as protect the wetlands during construction, and revegetation of stockpiles or areas of disturbed soil. Rip Rap, gravel, or similar material would be used at the entrance to Road N to reduce or eliminate vehicle track-out onto the public roadway by construction vehicles.

3.2.10 Surface Water and Groundwater

3.2.10.1 Affected Environment

3.2.10.1.1 Surface Water

The Proposed Project is located in the Crab Creek Watershed, which extends from Ritzville, Washington to Beverly, Washington (along the Columbia River). The site contains three wetlands (Wetland A, Wetland, and Wetland D) and one stream (Stream 1). The East Low Canal (a conduit of the Columbia Basin Irrigation Project) is located approximately 0.5 mile east of the Proposed Project site, with Moses Lake located approximately 5 miles to the west. Sources of inputs to surface water to the Proposed Project site currently include direct precipitation, with surface water runoff from impervious surfaces associated with the existing industrial facility. An existing stormwater retention and infiltration pond is located in the northwest portion of the Proposed Project site.

3.2.10.1.2 Ground Water

The Proposed Project site is underlain by Quaternary Age sand and silt and contains a shallow aquifer with a level maintained by the U.S. Bureau of Reclamation. The U.S. Department of Agricultural SCS mapping classifies soils at the Proposed Project site as Type B hydraulic soils, which are characterized by infiltration rates in the range of 0.15 to 0.30 inches per hour.

3.2.10.2 Environmental Consequences

3.2.10.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If

the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.10.2.2 Proposed Project

3.2.10.2.3 Surface Water

3.2.10.2.3.1 Construction

Construction of the Proposed Project would have minor temporary indirect impacts from runoff to surface waters. Sila has obtained a Construction General Stormwater Permit (WAR312862) from the Ecology for this project. These impacts would be minimized through implementation of BMPs required by Sila's stormwater permit, including installation of silt curtains and hay bales to slow and filter water runoff, reducing the time excavations are open to erosion, stabilized construction entrances and other measures.

The Proposed Project includes a stormwater system including use of the existing stormwater retention and infiltration pond in the northwest portion of the site (which would continue to collect stormwater from the existing building roof), as well as a new stormwater retention and infiltration pond in the southwest portion of the site to control the remaining stormwater runoff generated on the site. The new pond would be sized to contain water from a 24-hour 100-year storm. Sila would undertake all operations and maintenance of this pond once constructed. Other methods for controlling stormwater include maintenance of stormwater conveyance systems, and general parking area sweeping and cleaning.

3.2.10.2.3.2 Operations

Operation of the Proposed Project would include the production of certain wastewater streams (See Table 6). Specifically, waste materials present on the property would include 25-percent sodium hydroxide (NaOH), which would feed into a caustic scrubber and be buffered with sodium carbonate and neutralized with sulfuric acid (H₂SO₄) and ran through a clarifier, Reverse Osmosis (RO) membrane and centrifuge to remove Total Suspended Solids (TSS), Total Dissolved Solids (TDS) before being discharged to the Moses Lake Sand Dunes wastewater treatment plant (WWTP) or on-site lined evaporation ponds minus the clarifier, RO membrane and centrifuge. Additionally, the Proposed Project includes the potential to neutralize the waste stream and remove a majority of the solids through the use of a clarifier and centrifuge before discharging into an onsite Class 5 non-hazardous wastewater well. The Class 5 well would be permitted and approved by the Washington Department of Ecology. The well would be installed to a depth below drinking water aquifers and into a non-potable aquifer. It would also be designed to handle the proposed plant flow rate (Phase 1 & 2) of approximately 40 gallons per minute. The wastewater disposal decision would be driven after completing an All Known, Available and Reasonable methods of prevention, control and Treatment (AKART) evaluation, which would be approved by the Department of Ecology. All tanks would be located in an area

with secondary containment (berms) to prevent release to the environment. All liquid tanker truck loading/unloading areas would be designed to collect all potential leaks from the transfer process. Periodic cooling tower blow-down would contain water treatment chemicals, which would be properly contained and treated to acceptable thresholds prior to being discharged to the Moses Lake Sand Dunes WWTP; all wastewater discharges directed to the Sand Dunes WWTP would be subject to, and in compliance, with any necessary Clean Water Act permits or authorizations. All other process chemicals are gasses that do not have a risk of entering groundwater or surface waters. Process materials consist of carbon and silicon, which are not considered hazardous based on aquatic toxicity testing.

3.2.10.2.4 Groundwater

3.2.10.2.4.1 Construction

The potential impact of Proposed Project construction on groundwater would be negligible. No discharges to land are anticipated during construction, and stormwater discharges would comply with the City of Moses Lake, State of Washington, and other requirements. The Proposed Project would include a spill prevention and response plan implemented by an onsite Emergency Response Team intended to prevent constituents that may be spilled from infiltrating the soil and reaching groundwater.

3.2.10.2.4.2 Operation

Water utilized for the Proposed Project would be provided by the City of Moses Lake and there would be no use of groundwater. The spill prevention and response plan implemented by an onsite Emergency Response Team would prevent constituents that may be spilled from infiltrating the soil and reaching groundwater. If a Class 5 well is installed for disposal of wastewater it would be done to prevent the impact to existing underground sources of drinking water (USDW).

3.2.10.3 Cumulative Impacts

No reasonably foreseeable development has been identified for the Proposed Project site vicinity. Development in the vicinity of the Proposed Project consistent with existing zoning would not generate cumulative adverse impacts to surface water or groundwater.

3.2.10.4 Proposed Mitigation Measures

No mitigation measures would be required for surface water or groundwater.

3.2.11 Vegetation and Wildlife

3.2.11.1 Affected Environment

Ecosystems North West conducted a Shrub Steppe analysis for the project to determine the presence/absence of Priority Habitats on the site in compliance with the Moses Lake Critical Areas Ordinance (CAO) chapter 19.03 (see Appendix 4). Shrub Steppe habitat is identified as

priority habitat by Washington State and defined as Fish and Wildlife Habitat Conservation Area. For listed species, desktop analysis including U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) data identified habitat potential for Yellow-billed Cuckoo and Monarch Butterfly on the site (see Appendix 4).

3.2.11.1.1 Vegetation

The Proposed Project site was historically farmed and is presently either farmed or has been mowed repeatedly over the past several years. The south, east and north borders of the site are large acreage irrigated agriculture. The site has no shrub component, and the existing grasses/herbaceous layer of vegetation is dominated by weedy, nonnative species. The plant vegetative cover of the site is dominated by crested wheatgrass (*Agropyron cristatum*), bulbous bluegrass (*Poa bulbosa*) and cheatgrass (*Bromus*), with a cover ranging between 70 to 90 percent. Tumble weed is also present at 10 to 20 percent cover. Less than 1 percent native bunch grass is present; this appears to be Sherman bunch grass (*Poa secunda*). Immediately west of the existing building is four to five acres of very low-quality shrub steppe.

3.2.11.1.2 Wildlife

Species observed on the site during the habitat survey included: raven, black-billed magpie, western meadowlark, European starling, American robin, pheasant, red-winged blackbird, and mourning dove. Moderate fossorial activity was observed throughout the site. None of the two listed species identified in the IPaC desktop analysis were observed. No critical habitat for the listed species was observed during the field survey on the Project site. Except for an approximately four-to-five-acre portion of the site located along the west and northwest side of the existing building, the site would not be considered priority habitat. The four to five acres that could be considered priority habitat is very low quality, is small and isolated and its proximity to the existing building renders it of minimal value to wildlife species associated with shrub steppe habitat.

3.2.11.2 Environmental Consequences

3.2.11.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance. In the event that the project does not proceed, existing vegetation and wildlife conditions on the site would likely remain unchanged.

3.2.11.2.2 Proposed Project

3.2.11.2.3 Vegetation

3.2.11.2.3.1 Construction

Impacts to vegetation from construction of the Proposed Project are anticipated to be minor, affecting primarily weedy, nonnative vegetation and four to five acres of low-quality priority habitat (shrub steppe). The site would undergo preparation and grading to achieve proper slopes for drainage and earthwork for construction of equipment and pipe rack foundations on the south side of the existing building. Total limit of the work area is estimated at approximately 1,200,000 square feet. The total excavation quantity is 100,000 cubic yards.

3.2.11.2.3.2 Operations

Operation of the Proposed Project is not anticipated to create any additional impacts to vegetation.

3.2.11.2.4 Wildlife

3.2.11.2.4.1 Construction

Impacts to listed endangered or threatened species or designated critical habitat from the Proposed Project are not anticipated. No listed endangered or threatened species have been observed or documented on the site. As noted previously, the four to five acres of the site that could be considered priority habitat has been determined to be of very low quality, is small and isolated and its proximity to the existing building renders it of minimal value to wildlife species associated with shrub steppe habitat.

While the desktop analysis and report generated from query of the USFWS IPaC tool (Appendix 4) identified theoretical potential for as many as two listed species to exist within or in proximity to the Proposed Project site, a 2023 field survey of the site did not identify these species or their critical habitat. As a result, DOE has determined that there would be no effect on listed species in the project area in relation to the proposed project. DOE also initiated consultation with the Washington Office of the USFWS via letter on May 31, 2023 (Appendix 3) and provided a copy of this Draft EA to their office for review and comment.

3.2.11.2.4.2 Operations

Operations of the Proposed Project are not anticipated to create any impacts to wildlife.

3.2.11.3 Cumulative Impacts

No reasonably foreseeable development projects have been identified for the Proposed Project site vicinity. Development in the vicinity of the Proposed Project consistent with existing zoning would not be expected to interact with the Proposed Project to generate cumulative adverse impacts to vegetation and wildlife.

3.2.11.4 Proposed Mitigation Measures

No mitigation measures for vegetation and wildlife are proposed at this time.

3.2.12 Regulated Waste (Solid and Hazardous Wastes)

3.2.12.1 Affected Environment

The Proposed Project is located on an approximately 162-acre site at 3741 Road N NE in Moses Lake, Washington. A Phase I Environmental Site Assessment (ESA) was conducted for the site in 2022. The Phase I ESA did not identify any current, historic, or controlled Recognized Environmental Conditions (RECs) on the property. The property was used for agriculture prior to being developed for industrial uses in 2010, and agricultural uses can often be associated with herbicides and pesticides. The Phase I ESA included surface soil sampling from agricultural areas, stormwater basins and soil stockpiles. Based on the analytical results, surface soil and fill material at the site are not impacted by hazardous substances (Maul Foster Alongi, 2022).

Based on the age of the current industrial facility (constructed in 2010), lead and asbestos are not anticipated to be present in that structure. The existing residence on site (1950s), was surveyed and no lead-based paint and asbestos-containing materials is present. Building materials would be sampled prior to any future demolition or disturbance of the residence and any hazardous materials would be disposed of in accordance with applicable regulations. In addition, no heating oil tank was discovered.

3.2.12.2 Environmental Consequences

3.2.12.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.12.2.2 Proposed Project

3.2.12.2.2.1 Construction

Construction of the Proposed Project is expected to generate negligible to minor, direct, temporary impacts from regulated waste. Solid waste and sanitary waste generated during construction activities would be limited to common construction-related waste streams. It is estimated that we would generate less than 300-400 cubic yards of miscellaneous construction and demolition debris. In-state or out-of-state landfills or recycling facilities would have the capability and capacity to accept these wastes, and therefore, there would be no impact associated with the disposal of these materials. In addition, the Facility would implement BMPs

to minimize the quantity of non-hazardous solid waste generated, as appropriate, during construction and to ensure proper handling of materials.

3.2.12.2.2.2 Operations

Operations are expected to incur minor, direct, long-term impacts from regulated wastes. There would be certain non-hazardous waste streams generated during facility operations including municipal solid waste, which would include out of spec solid raw materials, process intermediates and final product associated with Sila’s anode processes. Sila’s in-process materials consist of carbon and silicon, which are not considered hazardous based on aquatic toxicity testing. It is anticipated that approximately 25 - 35 gallons per minute (gpm) of process wastewater would intermittently be generated from the caustic scrubber unit associated with silane operation. Currently, Sila is looking at four options for the disposal of this wastewater: ship off site as hazardous waste either directly caustic scrubber or neutralize onsite and ship of as non-hazardous waste, neutralize onsite, remove the Sodium silicate/Silicon Dioxide solids discharged to the local publicly owned treatment works (POTW) within effluent guidelines; neutralize onsite, remove the Sodium silicate/Silicon Dioxide solids discharged onsite to a Class 5 nonhazardous well; or neutralize and send to an onsite evaporation pond and dredge out the settled solids. Sila’s processes, except for the caustic scrubber, cooling tower and hot oil system, do not utilize any hazardous liquids or solids. Major waste stream estimates that are anticipated with operation of the facility are shown in Table 8.

Table 8. Major Waste Stream Estimates for Operations

Production Area	Description	Classification	Estimated Annual Production Rate (tons/year)	Estimated 20-year Production Amount (tons)
Manufacturing	Out of Spec process solids	Non Haz Waste	100	2000
Wastewater	Sodium Silicate/SiO ₂	Non Haz Waste	5,000	100,000
Maintenance Shop	Paints, grease, oil, degreasers	Waste (hazardous)	0.1	2
Laboratory	Onsite QC lab Waste	Waste (hazardous)	0.5	10
Battery Test Lab	Lithium-Ion Batteries + Components	Hazardous	0.5	10

No underground storage tanks are included in the Proposed Project design. Materials would be stored in containers appropriately designed for spill containment in accordance with best management practices and any applicable regulatory requirements.

It is anticipated that the on-site quality control (QC) laboratory may produce some amount of hazardous waste. The quantity of hazardous waste generated at the facility would determine the facility’s generator status and which Federal and State regulations related to waste generation, management, and disposal would be applicable. Sila also plans to add as part of Phase 2 a battery testing facility onsite where we build test cells to evaluate the performance of the anode material produced at the site.

Sila's goal of continuous waste minimization efforts through the lifetime of the plant would continue to reduce the volumes of annual waste generated during the 20-year process operational life expectancy. Sila intends to recycle or reuse co-products and non-hazardous waste to the extent possible, minimizing the amount of waste that would be disposed of offsite.

3.2.12.3 Cumulative Impacts

Although additional development could occur in the area, the type and extent of impacts from regulated wastes are not reasonably foreseeable due to the unknown nature of any use by existing or future property owners. No reasonably foreseeable actions have been identified that would interact with the Proposed Project to generate cumulative adverse impacts to regulated waste.

Additionally, another battery-related project is planned for the same general area, but it would be subject to the same regulations (e.g., EPA, state-level zoning and permitting, etc.) as the Sila project, and thus would not contribute to significant cumulative impacts.

Any future site upgrades would also be subject to similar regulatory requirements related to waste generation and disposal. Sila would continue to find ways to reduce waste generation through process improvements, substitution, and improved technologies.

3.2.12.4 Proposed Mitigation Measures

During construction, standard BMPs and preventative measures, such as maintaining fencing around construction areas, establishing designated materials containment and storage areas, and controlling the flow of construction equipment and personnel through the Proposed Project site, would minimize the potential for a release to occur. If a release occurs, immediate action would be taken to contain, remediate, and dispose of any contaminated materials in accordance with Federal, State, and local regulations and site-specific spill plans.

3.2.13 Utilities and Energy Use

3.2.13.1 Affected Environment

The Proposed Project is located within the service area of the City of Moses Lake municipal water system and municipal sewer/wastewater treatment system. Natural gas for the site is supplied by Cascade Natural Gas. Electricity for the site is provided by Grant County Public Utility District (GCPUD). Lakeside Disposal and Recycling is under contract with the City of Moses Lake and provides garbage/refuse service for the site; Consolidated Disposal Services also operates a refuse transfer station approximately seven miles from the site. Fiber optic services have also been extended to the site by Vyve Broadband to provide high-speed internet service. Table 9 summarizes the existing utilities at the site.

Table 9. Existing Utilities Summary

Utility	Provider	Existing Infrastructure
Electricity	Grant County Public Utility District	Two 13.2 kilovolt (kV) feeders
Natural gas	Cascade Natural Gas	One 4” steel pipe
Potable water	City of Moses Lake	One 12” PVC pipe
Sanitary sewer	City of Moses Lake	One 4” forced main
Internet	Vyve Broadband	Fiber optic cable

GCPUD provides electrical service to the site through two 13.2 kV feeders. One feeder is currently in service and provides 10 megavolt amperes (MVA) capacity to the site. The second feeder is in place and GUPUD would install switchgear by mid-2023 that would energize the second feeder and bring the site capacity to 20 MVA.

Natural gas is provided by Cascade Natural Gas as described above in Table 9. The existing 4” steel pipe runs to metering facilities that connect to the southwest side of the existing building. The capacity of the existing system is approximately 90,000 standard cubic feet per hour (SCFH).

The Moses Lake Public Works Water Division is responsible for the operation, maintenance, and repair of the City’s water system, which is monitored and tested on a regular basis to maintain high quality and purity. The City’s water system includes 9 reservoirs, 19 deep wells, 160 miles of water mainline, 1,200 fire hydrants, 1,600 water main valves, and 7,500 water services.

The City of Moses Lake's sanitary sewer system provides wastewater collection, treatment, and disposal for areas within the City Limits and the UGA boundary. The City's wastewater system consists of two wastewater treatment plants, a network of tributaries, a collection of Lift Stations and pressurized mains, and a Central Operations Facility (COF). The two Wastewater Treatment Plants (WWTP) are owned and operated by the City of Moses Lake. The Dunes WWTP is a 4.4 million gallon per day Biolac Activated Sludge Plant which presently serves a population of approximately 22,720. The Larson WWTP is a 0.75 million gallon per day Biolac Activated Sludge Plant which serves an estimated population of 3,000.

3.2.13.2 Environmental Consequences

3.2.13.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE’s financial assistance, the potential impacts would be essentially identical to those under DOE’s action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for

purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.13.2.2 Proposed Project

3.2.13.2.2.1 Construction

Construction of the Proposed Project would have short-term, negligible adverse impacts on utilities, including electricity, water, gas, and sewer. Electrical service used during construction would be provided by tie-ins to the existing electrical facilities at the site. The existing potable water supply at the site would be utilized during construction. Temporary water storage tanks may be placed on site for use during construction. Temporary, portable restroom facilities would be used at the site during construction in addition to the existing restroom facilities.

The Cascade Natural Gas metering facilities installed at the site have never been placed into service. There would be no impact to this system as natural gas is not required during construction. Use of natural gas at the site would commence as construction is completed and new facilities are being commissioned.

3.2.13.2.2.2 Operations

Proposed Project operations would have minor direct impacts on local utilities and energy use, as the industrial processes involved would increase the demand for electricity, water, and gas at the Proposed Project site, and increase the amount of wastewater generated on the site. However, the estimated maximum utility demands for the project are all anticipated to be less than the capacities that are currently provided by the existing infrastructure.

The estimated maximum electrical demand for the Proposed Project when the plant is fully operational would be approximately 18 MVA. The two existing 13.2 kV feeders that are provided by Grant County PUD and serve the site have a capacity of approximately 20 MVA.

The proposed abatement systems for the site (flare, thermal oxidizers) utilize natural gas and have a maximum estimated demand of 100,000 SCFH. The existing Cascade Natural Gas metering facilities installed at the site have a capacity of approximately 90,000 SCFH. Minor modifications by Cascade Natural Gas could be required to the metering facilities (e.g., replace the existing regulator and meter) to provide the 100,000 SCFH capacity required for operations.

The Proposed Project is anticipated to require a maximum potable water usage of approximately 75,000 GPD, which would be provided by the existing 12" potable water line supplied by the City of Moses Lake. The Proposed Project would upgrade the site firewater system to provide approximately 4,000 gpm that would be available during a fire event, if necessary. Firewater storage facilities would also be installed so the incoming water supply is not relied upon during the first two hours of a fire event.

The existing building restrooms, showers, floor drains, and sinks are discharged through a single 4" main connected to the wastewater system operated by the City of Moses Lake. While the Proposed Project layout is not finalized, it is expected to increase demand placed on the domestic wastewater system from approximately 140 plumbing fixture units currently to over 400

plumbing fixture units in total. Installation of an additional 6" main may be required to meet future demands on the domestic wastewater system.

3.2.13.3 Cumulative Impacts

The Proposed Project is anticipated to contribute incrementally to cumulative impacts affecting utility infrastructure and services. Consistent with Section 3.2.10.3 (Surface Water and Groundwater), the Proposed Project, in combination with potential future development in the area, would increase demand for electricity, the production of wastewater and the demand for treated water. However, any potential future development projects would need to analyze capacity and potential demand, and coordinate with respective utility purveyors.

Additionally, another battery-related project is planned for the same general area, but it would be subject to the same regulations (e.g., EPA, state-level zoning and permitting, etc.) as the Sila project, and thus would not contribute to significant cumulative impacts.

3.2.13.4 Proposed Mitigation Measures

No mitigation measures are currently planned for utilities or energy use.

3.2.14 Transportation and Traffic

3.2.14.1 Affected Environment

The Proposed Project site is located at 3741 Road N NE in Moses Lake, Washington. The primary access to the site is from Road N NE along the western boundary of the site. Road N NE connects with Road 4 NE and E Wheeler Road, which ultimately connects with State Highway 17 to the west. Interstate 90 is located approximately three miles to the south of the site and can be accessed from State Highway 17. An approximately 613,000-square foot manufacturing building is currently located on the site, but has remained vacant for several years and therefore has not generated any existing vehicle traffic.

3.2.14.2 Environmental Consequences

3.2.14.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.14.2.2 Proposed Project

3.2.14.2.2.1 Construction

Short-term, but measurable minor adverse impacts to traffic and transportation are expected during the construction phase of the Proposed Project. Construction of the Facility is anticipated to occur in two phases with the first phase lasting for up to 15 - 18 months. The first phase would include improvements to the existing building, installation of equipment and storage vessels, and the addition of new access roads and other equipment and facilities that would be necessary for the manufacturing process. During the construction period, approximately 450-500 jobs would be generated, where construction vehicles and construction workers' vehicles would add to existing local traffic. For Phase 2 of the project, it is anticipated that construction would also take approximately 15 - 18 months to complete, and 800-900 temporary construction jobs being created. The roads most impacted would include Road N NE, E Wheeler Road, Road 4 NE, Road O NE, Road L NE, and State Highway 17.

3.2.14.2.2.2 Operations

A Traffic Analysis was prepared for the project by Western Pacific Engineering and Survey (Western Pacific Engineering and Survey, 2023). Once operational, the Proposed Project would generate a minor long-term increase to traffic and transportation from anticipated daily truck and personal-vehicle traffic into and out of the site. Sila intends to operate the facility with two, twelve-hour shifts per day with approximately 125 employees on each shift (total daily shift count of 250 employees). Anticipated shift change times would be 6:00 AM and 6:00 PM. In addition, approximately 10 truck trips to and from the site per day would be anticipated for the delivery of new materials and the shipment of finished goods.

Operation of the proposed Sila facility is anticipated to generate approximately 572 daily vehicle trips, including 258 trips during the AM Peak Hour and 258 trips during the PM Peak Hour. Traffic operations with these associated vehicle trips were analyzed as part of the Traffic Analysis. Five intersections in the vicinity of the project site were analyzed to determine any potential level of service (LOS) impacts that could occur with operation of the proposed project, including:

- Wheeler Road and State Highway 17
- Wheeler Road and Road L NE
- Wheeler Road and Road N NE
- Road N NE and Road 4
- Wheeler Road and Road O NE

The City of Moses Lake identifies the minimum LOS for the City as LOS D; the Washington State Department of Transportation lists their minimum LOS for rural highways at LOS C and LOS D for urban highway segments. Based on the Traffic Analysis, operation of the proposed project is not anticipated to result in a LOS that would be below their minimum requirement. All intersections are anticipated to operate at or better than the City of Moses Lake's standard of LOS D. As a result, significant transportation impacts would not be anticipated.

While Sila does not plan to utilize rail at this time, it is possible that they might utilize rail in the future. This usage would be relatively minor and would be offset by decreased truck traffic on roadways in the site vicinity.

3.2.14.3 Cumulative Impacts

Construction and operations of the Proposed Project, combined with future development in the area (including potential future industrial/manufacturing development), would result in a cumulative increase in localized traffic volumes in the site vicinity, including Road N NE, Wheeler Road, Road L NE, and State Highway 17. To the extent that future development occurs in the area, it would be required to meet the traffic and transportation standards of the City of Moses Lake.

Additionally, another battery-related project is planned for the same general area, but it would be subject to the same regulations (e.g., EPA, state-level zoning and permitting, etc.) as the Sila project, and thus would not contribute to significant cumulative impacts.

3.2.14.4 Proposed Mitigation Measures

No mitigation measures would be required for transportation and traffic.

3.2.15 Public and Occupational Health and Safety

3.2.15.1 Affected Environment

The Proposed Project site contains a recently constructed industrial facility (constructed in 2010) and hazardous materials, such as lead and asbestos, are not anticipated to be present in the building. Based on the date of construction of the existing residence on the site (1950s), lead-based paint and/or asbestos could be present in that building. A Phase I Environmental Site Assessment (ESA) was also completed for the site and did not identify any current, historic, or controlled recognized environmental conditions on the property. The property was used for agriculture prior to being developed for industrial uses in 2010. Agricultural uses can often be associated with herbicides and pesticides. The Phase I ESA included surface soil sampling from agricultural areas, stormwater basins and soil stockpiles. Based on the analytical results, surface soil and fill material at the site are not impacted by hazardous substances (Maul Foster Alongi, 2022). No other risks to public and occupational health and safety from the existing site have been identified.

3.2.15.2 Environmental Consequences

3.2.15.2.1 No Action Alternative

Sila has indicated that it is their intent to proceed in the absence of DOE funding. DOE recognizes that this project might continue if DOE decides not to provide financial assistance. If the Proposed Project proceeds without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative. To allow a comparison between potential impacts of the Proposed Project and the impacts of not proceeding with the project, for

purposes of this environmental analysis, DOE assumes that the Proposed Project would likely not proceed without DOE assistance.

3.2.15.2.2 Proposed Project

3.2.15.2.2.1 Construction and Operations

Risks to public and occupational health and safety from Proposed Project construction and operations are expected to be minor, direct and indirect, and long-term. Numerous regulatory permitting requirements (Building, Fire, Hazmat, Occupancy, OSHA, Department of Ecology (Air & Water)) and planned mitigations governing construction of the Proposed Project and operations address factors relevant to public and occupational health and safety. These include land use (Section 3.2.5), air quality (Section 3.2.6), greenhouse gasses (Section 3.2.7), water quality (Section 3.2.10), regulated waste streams (Section 3.2.12), and transportation and traffic (Section 3.2.14). Existing corporate policies of Sila, or future updates thereof, further address relevant health and safety risk factors and would be followed throughout construction and operations. These mitigation measures are summarized below under Section 3.2.15.4.

Proposed Project operations would process certain hazardous materials on a regular basis including sodium hydroxide, sulfuric acid, silane and hydrocarbon gasses, nitrogen, oxygen and other cryogenic gasses. To reduce safety and logistic risk, these materials would be received by tankers within the facility area allowing for strictly controlled and consistent management. Prior to startup, Sila would prepare an Emergency Action/Crisis Management (EA/CM) Plan that would address unanticipated events (e.g., natural disaster, terrorism, accidents, spills) and Sila would build on EA/CM Plans from their other facilities with similar operations. Onsite storage vessels of process gasses would be located in a secured fenced area, which would also contain caustic and acid storage tanks in containment basins with a berm area for unloading.

Sila would require all employees to participate in the Company's established health, safety, and security training, which includes specialized training for individuals handling hazardous materials and waste. Sila would implement their own Emergency Response team capable of responding to any type of emergency. In addition, their site fire protection system would be designed to mitigate the spread of fire and properly extinguish the fire. Additionally, Sila would have close coordination with local first responders (e.g., fire department and law enforcement), as necessary, and would maintain compliance with local, state, and federal regulatory requirements including the Emergency Planning and Community Right-to-Know Act (EPCRA), Occupational Safety and Health Administration (OSHA), Process Safety Management (PSM), Environmental Protection Agency (EPA), Risk Management Program (RMP), and Resource Conservation and Recovery Act (RCRA).

3.2.15.2.2.2 Accidents and Intentional Destructive Acts

Prior to the start of operations, Sila would initiate security procedures to protect the site's personnel, environment, property, and infrastructure from reasonably foreseeable accidental and intentional destructive acts, which may be possible, but are considered very unlikely to occur. Procedures would focus on both prevention and emergency response, and would be based on

environmental, health, safety, and security protocols established in their other manufacturing facility. Procedures and protocols would also include those discussed in Sections 3.2.6, 3.2.12, and 3.2.13 as part of operations and regulatory compliance. The Proposed Project site would be surrounded by a perimeter security fence and monitored by a dedicated 24-hour security staff and trained facility first responders. In addition, the facility would have closed-circuit cameras in each building with focus on critical ingress and egress routes. Security badges would regulate access to facility buildings through dedicated entrance and exit portals. Facility management would work in full and immediate cooperation with emergency responders and managers from outside the facility as appropriate.

3.2.15.3 Cumulative Impacts

Although additional industrial development could occur in the vicinity of the Proposed Project, no reasonably foreseeable actions have been identified that would interact with the Proposed Project to generate cumulative adverse public and occupational health and safety impacts. For example, another battery-related project is planned for the same general area, but it would be subject to the same regulations (e.g., EPA, state-level zoning and permitting, etc.) as the Sila project, and thus would not contribute to significant cumulative impacts.

Any changes to Sila's processes, chemical types/quantities or addition of new operations would require a review and potential changes to our operational plans and permits. As the site continues to expand, the site's Emergency Response program and security plan would be updated to ensure the safety of plant personnel, as well as the surrounding community.

3.2.15.4 Proposed Mitigation Measures

Risk mitigation for handling hazardous materials would be established through engineering controls and design features that were incorporated as a result of design Process Hazard Analysis (PHA) as well as compliance with regulations and recognized and generally accepted engineering practices and safety standards like National Fire Protection Association (NFPA) and Compressed Gas Association (CGA) standards pertinent to Sila's operations. Defined operational procedures (e.g., Emergency Response, Start-up/Shut Down) would also be used including, maintenance and operation of equipment in compliance with federal, state, and local occupational health and safety requirements, environmental regulations, and manufacturer recommendations. Robust workplace safety procedures would be developed to ensure potentially hazardous activities (e.g., confined space entry, work at heights, hot work) are conducted by trained and competent individuals. Gas Life Safety Systems installed in building areas, on equipment and in storage locations would provide early warning of unsafe conditions and initiate system shutdowns and/or evacuations. Spill containment would be installed for storage tanks and loading/offloading locations. Further Proposed Project mitigations covered under Sila's corporate guidance include, but are not limited to, chemical handling procedures; waste management and handling procedures; and mechanical integrity maintenance programs.

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5. List of Preparers

Department of Energy		
Mr. Fred Pozzuto	Director, NEPA Division	
Mr. Stephen Witmer	NEPA Compliance Officer/NEPA Document Manager	
Mr. Jesse Garcia	NEPA Compliance Officer	
Mr. Harry Taylor	NEPA Compliance Officer	
Sila Moses Lake		
Mr. Scott Fife	EHS&S Director	
Mr. Jim Dobrzynski	EHS&S Risk Manager	
Mr. Mark Patterson	Capital Projects Manager	
NEPA Contractor: EA Engineering, Science, and Technology, Inc., PBC		
Analyst	Responsibilities	Degrees and Experience
Rich Schipanski.	QA/QC, Wetlands and Floodplains, Surface and Groundwater, and Land Use sections	M.C.P./City Planning B.A./Landscape Architecture 31 years' experience, 20 years NEPA experience
Michele Sarlitto	Project Manager, senior reviewer, Noise and Vibration, Greenhouse Gas Emissions, Air Quality, Geology, Topography, and Soils sections	M.S., Physical Geography B.S., Physical Geography 32 years' experience, 20 years NEPA experience
Jeff Ding	Regulated Waste (Solid and Hazardous Waste), Utilities and Energy Use, Transportation and Traffic, and Public and Occupational Health and Safety sections	B.A./Geography 22 years' experience, 10 years NEPA experience
Kristy Hollinger	Socioeconomics, Environmental Justice, Vegetation and Wildlife, and Cultural Resources sections	M.A./Political Science: Environmental Politics and Policy B.A./Anthropology 18 years' experience, 18 years NEPA experience
NEPA Contractor: Landau Associates		
Mark Brunner	Air Quality and GHG/Social Cost of Carbon Technical Analyses	B.A., Community, Environment, and Planning 16 years of experience, 16 years NEPA experience
Amy Maule	Noise, GHG/Social Cost of Carbon Technical Analyses	BS, Biology MS, Library and Information Management 20 years of experience, 7 years NEPA experience
Eri Ottersburg	GHG Technical Analysis	Bachelor of Science in Biomedical Engineering 22 years of experience, 15 years NEPA experience
NEPA Contractor: Plateau CRM		
Justin Fitzpatrick	Cultural Resources Technical Analysis	M.S., Cultural and Environmental Resource Management B.S., Anthropology 7 years of experience, 6 years NEPA experience

NEPA Contractor: Ecosystems North West		
Dennis Beich	Critical Habitat Technical Analysis	B.S. Forest Resources 40 years of experience, 29 years NEPA experience
NEPA Contractor: Western Pacific Engineering & Survey (WPE)		
Nathan Nofziger	Transportation Technical Analysis	Bachelor of Science in Civil Engineering 29 years of experience, 15 years NEPA experience
NEPA Contractor: GeoEngineers		
David Lauder	Geotechnical Analysis	M.S. Civil Engineering 20 Years of experience

6. Distribution List

DOE coordinated with the following agencies, tribal nations, and stakeholders through consultation letters and/or notification of the availability of this EA.

State and Local Offices

Office of the Governor – The Honorable Jay Inslee
Post Office Box 40002
Olympia, WA 98504-0002
360-902-4111

Don Myers
Mayor – Moses Lake, WA
Post Office Box 1579
Moses Lake, WA 98837
509-764-3766
dmyers@cityofml.com

Moses Lake Public Library
418 East 5th Avenue
Moses Lake, WA 98837
509-765-3489
moseslake@ncwlibraries.org

Fran Sant
SEPA Unit
Washington Department of Ecology
Post Office Box 47703
Olympia, WA 98504-7703
360-407-6922
separegister@ecy.wa.gov

Dr. Robert Whitlam and the Washington Department of Archaeology and Historic Preservation
Post Office Box 48343
Olympia, WA 98504-8343
360-890-2615
Rob.Whitlam@dahp.wa.gov
106@dahp.va.gov

Federal Offices

Brad Thompson
State Supervisor
Washington Fish and Wildlife Office
U.S. Fish and Wildlife Service
510 Desmond Drive Southeast
Suite 102
Lacey, WA 98503-1263

Jess Jordan
Project Manager
U.S. Army Corps of Engineers – Regulatory Branch
4735 E. Marginal Way
S. Building 1202
Seattle, WA 98134-2388
206-316-3976
dale.j.jordan@usace.army.mil

Dave Moore
U.S. Army Corps of Engineers – Regulatory Branch
4735 E. Marginal Way
S. Building 1202
Seattle, WA 98134-2388
206-316-3166
david.j.moore@usace.army.mil

Rebecca Chu
Manager, Policy and Environmental Review Branch
Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101
206-553-1774
chu.rebecca@epa.gov

Tribal Nations and Contacts

Confederated Tribes of the Colville Reservation

Chairman Jared-Michael Erickson
Chairman of the Colville Business Council
21 Colville Street
Nespelem, WA 99155-0150
509-634-2200
jarred.erickson.abc@colvilletribes.com

Guy Moura
Tribal Historic Preservation Officer
Post Office Box 150
Nespelem, WA 99155-0150
506-634-2695
guy.moura@colvilletribes.com

Robert Sloma
21 Colville Street
Nespelem, WA 99155-0150
robert.sloma@colvilletribes.com

Spokane Tribe of Indians

Randy Abrahamson
Tribal Historic Preservation Officer
Post Office Box 100
Wellpinit, WA 99040
509-258-4222
Randy@spokanetribe.com

Confederated Tribes and Bands of the Yakama Nation

Kate Valdez
Tribal Historic Preservation Officer
Post Office Box 151
Toppenish, WA 98948
509-865-5121, Ext. 4041
kate_valdez@yakama.com

Jessica Lally
Yakama Nation Archaeologist
Post Office Box 151
Toppenish, WA 98948
Jessica_lally@yakama.com

Confederated Tribes of the Warm Springs Reservation of Oregon

Chairman Jonathan Smith
Tribal Council Chairperson
1233 Veterans Street
Post Office Box C
Warm Springs, OR 97761
541-553-1161
jonathanwsmith@wstribe.org

Robert Brunoe
1233 Veterans Street
Post Office Box C
Warm Springs, OR 97761
541-553-1161
Robert.Brunoe@ctwsbnr.org

Mars Galloway
Cultural Resource Manager
1233 Veterans Street
Post Office Box C
Warm Springs, OR 97761
mars.galloway@ctwsbnr.org

Appendices

Appendix 1

Environmental Synopsis

ENVIRONMENTAL SYNOPSIS
Bipartisan Infrastructure Law Battery (BIL) Materials
Processing and Battery Manufacturing
DE-FOA-0002678

April 2023

National Energy Technology Laboratory
U.S. Department of Energy
Pittsburgh, PA
Morgantown, WV
Albany, OR

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CONTENTS

INTRODUCTION	1
BACKGROUND	2
PURPOSE AND NEED	4
ALTERNATIVES	5
ENVIRONMENTAL REVIEW	6
CONCLUSION	10

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INTRODUCTION

The United States Department of Energy (DOE or the Department) prepared this Environmental Synopsis pursuant to the Department's responsibilities under Section 216 of the DOE's National Environmental Policy Act (NEPA) Implementing Procedures set forth in 10 CFR Part 1021. This synopsis summarizes the consideration given to environmental factors and records that the relevant environmental consequences of reasonable alternatives were evaluated in the process of selecting awardees seeking financial assistance under The Office of Manufacturing and Energy Supply Chains and the Office of Energy Efficiency and Renewable Energy, which jointly issued the Funding Opportunity Announcement (FOA) DE-FOA-0002678 Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing. Projects awarded under FOA-0002678 to be funded, in whole or in part, with funds appropriated by the Infrastructure Investment and Jobs Act¹, also more commonly known as the BIL. The BIL is a once-in-a-generation investment in infrastructure, which will grow a more sustainable, resilient, and equitable economy through enhancing U.S. competitiveness in the world, creating good jobs, and ensuring stronger access to these economic benefits for disadvantaged communities (DACs). The BIL appropriates more than \$62 billion to the DOE² to deliver a more equitable clean energy future for the American people by investing in American manufacturing and workers; expanding access to energy efficiency and clean energy for families, communities, and businesses; delivering reliable, clean, and affordable power to more Americans; and building the technologies of tomorrow through clean energy demonstrations.

The BIL will invest more than \$7 billion in the batteries supply chain over the five-year period encompassing fiscal years (FYs) 2022 through 2026. This includes sustainable sourcing of critical minerals from secondary and unconventional sources, reducing the need for new extraction and mining; sustainable processing of critical minerals; and end-of-life battery collection and recycling. The activities to be funded under this FOA support BIL Sections 40207 (b) & (c) and the broader government-wide approach to upgrading and modernizing infrastructure, including by strengthening critical domestic manufacturing and supply chains to maximize the benefits of the clean energy transition as the nation works to curb the climate crisis and advance environmental justice. These BIL Sections are focused on:

- Creating and retaining good-paying jobs, where workers are properly classified as employees, free from discrimination and harassment, with a free and fair choice to join, form, or assist a union;
- Supporting inclusive and supportive workforce development efforts to strengthen America's competitive advantage based on innovation, efficiency, and a skilled and diverse workforce up and down the supply chain;
- Ensuring that the U.S. has a viable battery materials processing industry to supply the North American battery supply chain;

1. Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021).

2. U.S. Department of Energy. November 2021. "DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver For American Workers, Families and Usher in the Clean Energy Future." <https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0>

- Expanding the capabilities of the U.S. in advanced battery manufacturing;
- Enhancing national security by reducing the reliance of the U.S. on foreign competitors for critical materials and technologies;
- Enhancing the domestic processing capacity of minerals necessary for battery materials and advanced batteries; and
- Ensuring that the U.S. has a viable domestic manufacturing and recycling capability to support and sustain a North American battery supply chain.

The DOE initially selected 21 projects under twelve topic areas of interest (AOIs) and provided cost-shared funding for project definition activities; all of the projects are subject to the completion of project-specific NEPA reviews. FOA-0002678 supports new, retrofitted, and expanded commercial-scale domestic facilities to produce battery materials, processing, and battery recycling and manufacturing demonstrations. As required by section 216, this synopsis does not contain business sensitive, confidential, trade secret or other information that statutes or regulations would prohibit the DOE from disclosing. It also does not contain data or other information that may reveal the identity of the offerors.

BACKGROUND

The projects that will result from this FOA are cost-shared collaborations between the government and industry to increase investment in battery materials processing and battery manufacturing projects. In contrast to other federally funded activities, these projects are not federal projects; instead, they are private projects seeking federal financial assistance. Under the FOA, industry proposes projects that meet their needs and those of their customers while furthering the national goals and objectives of DOE. The successful development of battery materials processing and battery manufacturing projects is a key objective of the nation's effort to help mitigate the effects of climate change, gain energy independence, and bolster the domestic supply chain.

Awardees under this FOA would receive assistance using funds appropriated by the Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021) also known as the Bipartisan Infrastructure Law (BIL). The activities to be funded under this FOA support BIL Sections 40207(b) & (c) and the broader government-wide approach to upgrading and modernizing infrastructure, including by strengthening critical domestic manufacturing and supply chains to maximize the benefits of the clean energy transition as the nation works to curb the climate crisis and advance environmental justice.

The applications reviewed under this FOA were selected for negotiations in October 2022. Twelve topic areas of interest (AOIs) were included in the FOA and each AOI outlined project objectives that were specific to that AOI. The twelve AOIs were separated according to the BIL sections 40207(b)(3)(A) and 40207(c)(3)(A):

<u>Areas of Interest</u>	<u>Title</u>
Battery Material Processing Grants pursuant to Section 40207(b)(3)(A)	
1	Commercial-scale Production Plants for Domestic Separation of Critical Cathode Battery Materials from Domestic Feedstocks
2	Commercial-scale Domestic Production of Battery-Grade Graphite from Synthetic and Natural Feedstocks
3	Commercial-scale Domestic Separation and Production of Battery-grade Precursor Materials (Open Topic)
4	Demonstrations of Domestic Separation and Production of Battery-grade Materials from Unconventional Domestic Sources
5	Demonstrations of Innovative Separation Processing of Battery Materials Open Topic
Battery Component Manufacturing and Recycling Grants pursuant to Section 40207(c)(3)(A)	
6	Commercial-scale Domestic Battery Cell Manufacturing
7	Commercial-scale Domestic Battery Cathode Manufacturing
8	Commercial-scale Domestic Battery Separator Manufacturing
9	Commercial-scale Domestic Next Generation Silicon Anode Active Materials and Electrodes
10	Commercial-scale Domestic Battery Component Manufacturing Open Topic
11	Commercial-scale Domestic Battery Recycling and End-of Life Infrastructure
12	Domestic Battery Cell and Component Manufacturing Demonstration Topic

AOIs 1–3 and 6–11 were directed to commercial level projects. AOIs 4, 5, and 12 were directed to demonstration level projects. Each level had different evaluation criteria and each application was evaluated against the criteria as outlined below:

A. Technical Review Criteria AOIs 1–3, 6–11 (commercial)

Criterion 1: Technical Merit, Project Management, and Impact (30%)

Criterion 2: Commercialization and Market Acceptance (30%)

Criterion 3: Cost Share (10%)

Criterion 4: Qualifications and Resources (10%)

Criterion 5: Equity Plan: Quality Jobs & Community Benefits (20%)

B. Technical Review Criteria AOIs 4, 5, and 12 (demonstration)

Criterion 1: Technical Merit, Project Management, and Impact (40%)

Criterion 2: Commercialization and Market Acceptance (20%)

Criterion 3: Cost Share (10%)

Criterion 4: Qualifications and Resources (10%)

Criterion 5: Equity Plan: Quality Jobs & Community Benefits (20%)

These criteria represented the total evaluation scoring. However, the selection official also considered program policy factors, in making final selections.

As a federal agency, DOE must comply with NEPA (42 U.S.C. §§ 4321 *et seq.*) by considering potential environmental issues associated with its actions prior to deciding whether to undertake these actions. The environmental review of applications received in response to FOA-0002678 was conducted pursuant to Council on Environmental Quality Regulations (40 Code of Federal Regulations (CFR) Parts 1500–1508) and DOE’s NEPA Implementing Procedures (10 CFR Part 1021), which provide directions specific to NEPA in the context of procurement and financial assistance actions.

PURPOSE AND NEED

The overall purpose and need for DOE action pursuant to the Office of Manufacturing and Energy Supply Chains in collaboration with the Office of Energy Efficiency and Renewable Energy program and the funding opportunity under the BIL is to accelerate the development of a resilient supply chain for high-capacity batteries by increasing investments in battery materials processing and battery manufacturing projects. The BIL investments in the battery supply chain will include five main steps including: (1) raw material production, (2) materials processing including material refinement and processing, (3) battery material /component manufacturing and cell fabrication, (4) battery pack and end use product manufacturing, and (5) battery end-of-life and recycling. Projects selected are needed to meet the focus of the BIL sections: a) creating and retaining good-paying jobs; b) supporting inclusive and supportive workforce development efforts to strengthen America’s competitive advantage; c) ensuring that the United States has a viable battery materials processing industry to supply the North American battery supply chain; d) expanding the capabilities of the United States in advanced battery manufacturing; e) enhancing national security by reducing the reliance of the United States on foreign competitors for critical materials and technologies; f) enhancing the domestic processing capacity of minerals necessary for battery materials and advanced batteries; and g) ensuring that the United States has a viable domestic manufacturing and recycling capability to support and sustain a North American battery supply chain.

DOE intends to further this purpose and satisfy this need by providing financial assistance under cost-sharing arrangements to this project and the other 20 projects selected under this FOA. This project and the other selected projects are needed to maximize the benefits of the clean energy transition as the nation works to curb the climate crisis. These projects would meet the objective.

ALTERNATIVES

The DOE received numerous eligible applications in twelve AOIs. AOIs 1 through 5 are under Battery Material Processing Grants pursuant to Section 40207(b)(3)(A); AOIs 6 through 12 are under Battery Component Manufacturing and Recycling Grants pursuant to Section 40207(c)(3)(A).

Detailed requirements for each AOI are listed in the FOA. Applications were accepted, reviewed, and initial selections were made; all of the projects are subject to the completion of project specific NEPA reviews. AOIs and number of initial selections are listed in the table below:

AOI	AOI Title	Number of Initial Selections
1	Commercial-scale Production Plants for Domestic Separation of Critical Cathode Battery Materials from Domestic Feedstocks	4
2	Commercial-scale Domestic Production of Battery-Grade Graphite from Synthetic and Natural Feedstocks	3
3	Commercial-scale Domestic Separation and Production of Battery-grade Precursor Materials (Open Topic)	2
4	Demonstrations of Domestic Separation and Production of Battery-grade Materials from Unconventional Domestic Sources	1
5	Demonstrations of Innovative Separation Processing of Battery Materials Open Topic	1
6	Commercial-scale Domestic Battery Cell Manufacturing	0
7	Commercial-scale Domestic Battery Cathode Manufacturing	2
8	Commercial-scale Domestic Battery Separator Manufacturing	2
9	Commercial-scale Domestic Next Generation Silicon Anode Active Materials and Electrodes	2
10	Commercial-scale Domestic Battery Component Manufacturing Open Topic	1
11	Commercial-scale Domestic Battery Recycling and End-of Life Infrastructure	1
12	Domestic Battery Cell and Component Manufacturing Demonstration Topic	2

ENVIRONMENTAL REVIEW

DOE assembled environmental review teams to assess all applications that met the mandatory requirements. The review teams considered 20 resource areas that could potentially be impacted by the technologies and sites proposed for each project that was selected for negotiations. These resource areas consisted of:

- Aesthetics
- Air Quality
- Biological Resources
- Climate
- Community Services
- Cultural Resources
- Environmental Justice
- Floodplains
- Geology
- Ground Water
- Human Health and Safety
- Land Use
- Noise
- Socioeconomics
- Soils
- Surface Water
- Transportation and Traffic
- Utilities
- Wastes and Materials
- Wetlands

The review teams were composed of environmental professionals having expertise in the resource areas considered by the DOE and with experience evaluating the impacts of industrial facilities and energy-related projects. The review teams considered the information provided as part of each application, which included narrative text, worksheets, and the environmental information volumes for the sites proposed by the applicant. Reviewers conducted preliminary analyses to identify the potential range of impacts that would be associated with each application. In addition, reviewers identified both direct and indirect potential impacts to the resource areas mentioned above, as well as short-term impacts that might occur during construction and start-up, and long-term impacts that might occur over the expected operational life of the proposed project and beyond. The reviewers also considered any mitigation measures proposed by the applicant, and any reasonably available mitigation measures that may not have been proposed.

Reviewers assessed the potential for environmental issues and impacts using the following characterizations:

- **Beneficial** – Expected to have a net beneficial effect on the resource in comparison to baseline conditions.
- **None (negligible)** – Immeasurable or negligible in consequence (not expected to change baseline conditions).
- **Low** – Measurable or noticeable but of minimal consequence (barely discernable change in baseline conditions).
- **Moderate** – Adverse and considerable in consequence but moderate and not expected to reach a level of significance (discernable, but not drastic, alteration of baseline conditions).
- **High** – Adverse and potentially significant in severity (anticipated substantial changes or effects on baseline conditions that might not be mitigable).

For cases in which an application failed to provide sufficient information to support a determination among the above characterizations, the reviewers assigned one of the following characterizations:

- **Limited Concern** – The potential for substantial adverse impacts would be negligible to low based on background information about the resource area with respect to the geographic location of the project.
- **Elevated Concern** – The potential for substantial adverse impacts would be moderate to high based on background information about the resource area with respect to the geographic location of the project.

Applications in Response to the FOA

Based on the technologies and sites proposed, the applications for the FOA were preliminarily evaluated and reviewed by the NEPA compliance team. There were several applications that were deemed to not have sufficient information for assessment, and also site selections for some projects have not been finalized. Therefore, the summary in the below section is based on the information that was available. The following impacts by resource area were considered in the selection of candidates for award:

Aesthetics – Low to moderate impact would be expected as construction would primarily be conducted on existing industrial sites. Five projects were assessed to have a visual resource impact. Visual viewpoint changes are expected to occur at the sites as a result of project implementation and construction of the facilities. One project has overhead transmission lines.

Air Quality – Moderate impact would be expected as many facilities would have air controls and permitting in place, and new facilities will be putting controls in place as required by any obtained air permits. Fifteen projects had impacts, with several pollutants listed including: greenhouse gases (GHGs), particulate matter (PM), hazardous air pollutants (HAPs), volatile organic compounds (VOCs), nitrogen oxides (NO_x), cadmium, nickel, lead, and combustion products. One project mentioned that BACT (best available control technology) would be installed, and one project mentioned MACT (maximum achievable control technology) to be installed (an iron-pellet gas purification and polishing system). One project stated that a Synthetic Minor Construction and Operations Air Permit would be required. Other impacts may be expected from transportation-related emissions or fugitive dust from construction activities.

Biological Resources – Low to moderate impact would be expected for three projects, with one project being located on the eastern edge of Great Salt Lake, and two projects being sited on greenfield sites. An additional three projects mention sites that were previously used for agriculture or grazing lands. The project located on one of the greenfield sites mentions that the site is pastureland, strands of forest, and wetlands/streams. The other greenfield site is located on farmland. Projects will be assessed for agricultural or natural habitat concerns, if any are identified.

Climate – Beneficial impacts would occur for all projects as batteries are critical to decarbonizing the economy through grid storage, resilience for powering homes and businesses, and electrification of the transportation sector, as noted in the FOA. GHG emissions from the projects would be minimal compared to these decarbonization efforts.

Community Services – Low impacts would be expected for the projects, though no impacts were specified in the review. Generally, projects anticipating a larger temporary workforce during construction would be expected to place a higher demand on community services – particularly in smaller, more rural communities where currently existing community services are more limited.

Cultural Resources – Moderate impacts would be expected for five projects, with several being sited next to railways or on greenfield sites. One project noted that Tribal Nations, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers consultations will all be needed. It is expected that Section 106 regulations will be followed on all projects. Bureau of Land Management (BLM) and Department of Defense (DOD) cooperating agencies will be needed for one other project. One project is in proximity to an airport, and another project is located near a major railyard. BLM permitting is expected for two projects.

Environmental Justice (EJ) – The EJ impacts should be beneficial for the projects. Through the Administration’s Justice40 Initiative, 40 percent of the overall benefits of this FOA should flow to DACs, as listed in the Justice40 guidance document and the FOA³. EJ impacts were expected for four of the projects, yet EJ benefits will be considered for all projects under the Justice40 initiative. Under Justice40 the benefits include (but are not limited to) measurable direct or indirect investments or positive project outcomes that achieve or contribute to the following in DACs: (1) a decrease in energy burden; (2) a decrease in environmental exposure and burdens; (3) an increase in access to low-cost capital; (4) an increase in job creation, the clean energy job pipeline, and job training for individuals; (5) increases in clean energy enterprise creation and contracting (e.g., minority-owned or diverse business enterprises); (6) increases in energy democracy, including community ownership; (7) increased parity in clean energy technology access and adoption; and (8) an increase in energy resilience. Environmental and human health of the DACs will be considered under Executive Order 12898 — Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, as required for projects.

Floodplains – Floodplains impact for the projects are low. There are four projects with Floodplains concerns, with one of the projects below the 500 Year Flood Plain (0.2-percent-annual-chance).

Geology – Geology impacts would be low to moderate for the projects. The possibility of extraction of economic minerals for battery manufacturer should be considered for relevant projects. One project has backfilled coal mine pits and spoil piles. One project is located on an old mine site. If geology is undisturbed, no additional impacts would be expected.

Ground Water – Ground Water impacts for the projects would be low. One project has a groundwater concern. Ground water impact from metals/chemicals or wastes could be of note for the projects, though containment measures would be in place as required for permitting. It is unknown if projects own any groundwater supply wells. Stormwater runoff will be managed in accordance with all relevant requirements, if required by projects.

Human Health and Safety – Impacts will be moderate. Five projects cited a concern. One project has a sensitive receptor (daycare) 2,500 feet from the corner of the lot. One project is upgrading its fire safety equipment, and fire safety and coordination with local fire departments is likely to be considered for all projects. Low to moderate impacts may also be considered during both construction and operations of the facilities. The level of risk is generally related to the size and

³ The Justice40 initiative, created by E.O. 14008, establishes a goal that 40percent of the overall benefits of certain federal investments flow to (DACs). The Justice40 Interim Guidance provides a broad definition of DACs (Page 2): <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>. The DOE, Office of Management and Budget (OMB), and/or the Federal Council for Environmental Quality (CEQ) may issue additional and subsequent guidance regarding the designation of DACs and recognized benefits under the Justice40 Initiative.

complexity of the planned construction. Of note would be any concerns for handling of chemicals and metals, including minimizing exposure and prevention of spills. Safe operating practices will be implemented for all projects, and compliance with federal, state, and local regulations and standards as well.

Land Use – Low to moderate impacts would be expected for all projects due to construction within existing facilities or on a compatible nearby site. Two sites are greenfield sites, but many are already existing industrial sites. Three sites have not yet been selected. BLM permits are needed for two projects (three sites), with one BLM site also consulting with the DOD. One project is consulting with Tribal Nations, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers. Clearance of land, stormwater runoff best management practices, utility line installations, and rail lines will be considered as needed.

Noise – Noise impacts would be low to moderate. One project specifically cited noise impact. During the project construction phases, noise levels will increase, but would be temporary and ending after construction. All project facilities conducting manufacturing and/or recycling activities may have noise, but much will occur within closed buildings. Any projects located near neighboring buildings may have noise impacts to consider for those near the site if outdoor noise continues past construction phases.

Socioeconomics – Beneficial impacts would be expected for all projects. Seven projects cited socioeconomic and/or EJ concerns. All projects would provide some additional employment during construction and operations, with most opportunities occurring within the local area DACs. Tax revenue generation and direct and indirect spending in the local economy is expected for the projects.

Soils – Low impacts would be expected for projects requiring land disturbance, including two greenfield sites. Five projects have sites that are adjacent to agricultural activity, with one converting existing pastureland, and one possibly converting farmland. Construction activities could result in a potential for soil erosion, but appropriate mitigation would be implemented as necessary, such as run-off control, silt fences, and stormwater detention facilities.

Surface Water – Impacts would be low to moderate. Battery Manufacturing and recycling facilities would potentially have water influent and wastewater effluent requirements to minimize the impacts with municipalities treating water. One project noted an effluent line along an existing roadway with a connect to the Mississippi River levee and River. Stormwater controls could be used during construction and operation. Controls could be used on hazardous liquids, if any, to minimize impacts.

Transportation and Traffic – Moderate impacts are expected with eight projects citing impacts. Five projects noted that they are cited near railways, railway right of way, or may need to recommission/use railway. Transportation of construction workforce to the site would be temporary. Construction access roads may be considered for projects. Transportation of operations workforce would be considered. Recycling and manufacturing facilities would also require trucking or railcar transport of materials and wastes in and out of the facility.

Utilities – Moderate impacts would be expected for greenfield sited projects resulting from the need for new energy infrastructure for manufacturing and recycling. Recycling and manufacturing facilities may have need for water, electricity, steam, wastewater, industrial gases and/or natural

gas, or other for the processes and facilities. Availability and capacity of utilities and anticipated infrastructure needs will be evaluated for projects.

Wastes and Materials – Impacts would be moderate to high. Sixteen projects have waste streams impact and hazardous material storage and use impacts. Three projects have a Resource Conservation and Recovery Act (RCRA) designation, and several others have hazardous chemicals. One project is a large quantity generator (LQG). The nature of the manufacturing and/or recycling for Batteries Materials and Processing Manufacturing and Recycling will require diligence in hazardous/non-hazardous waste management practices and applicable permitting. Transportation of waste to landfills to be considered, if applicable, to projects.

Wetlands – Wetlands impacts would be low to moderate. Four projects noted wetlands concerns, which could be avoided, or controls used to minimize impacts resulting from project construction. The extent and the conditions of the wetlands on each site will be addressed during construction and/or operations as required. One project noted that wetlands will be avoided. One project has wetlands and streams on site. Appropriate wetland mitigation measures will be implemented for unavoidable impacts.

CONCLUSION

The alternatives available to DOE from applications received in response to the FOA provided reasonable alternatives for accomplishing the Department's purpose and need to satisfy the responsibility imposed on the Department to carry out a program to bolster the nation's battery material production and battery production.

An environmental review was part of the evaluation process of these applications. DOE prepared a critique containing information from this environmental review. That critique, summarized here, contained summary as well as project-specific environmental information. The critique was made available to, and considered by, the selection official before selections for financial assistance were made.

DOE determined that selecting twenty-one applications in response to the FOA would meet the Department's purpose and need. DOE selected twenty-one projects for awards of financial assistance:

- Project Recipient (City, State) project located in City, State. Construct a new, commercial-scale U.S.-based lithium materials processing plant, sited next to existing facility, that uses sustainably extracted spodumene minerals from the site's lithium mine to produce battery grade lithium hydroxide for domestic manufacturing of lithium-ion batteries for 750,000 vehicles in the U.S. market. The DOE has determined that an environmental assessment (EA) is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Construct a battery minerals processing facility to process nickel ore in concentrate (nickel/iron and copper) from economically viable sources in support of a new domestic cathode supply chain. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;

- Project Recipient (City, State) project located in City, State. Plan, design, and construct a cathode active materials (CAM) plant including a manufacturing building and the processing equipment necessary to convert precursor materials into CAM, the highest value component in a lithium-ion battery. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Design a sustainable lithium hydroxide facility to produce 30,000 metric tons per year of lithium hydroxide for the domestic battery and electric vehicle (EV) market, doubling the lithium hydroxide production capacity currently available in the U.S. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Design, construct and commission a graphite anode powder plant over a five-year period. Testing of a pilot manufacturing plant will occur site I in City, State, and graphitization at site II City, State, during the first 3 years of the project. Approximately 35,000 tons per annum of new synthetic graphite anode material capacity for lithium-ion batteries will be used in electric vehicles and critical energy storage applications. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Expand the production capacity of the integrated milling, purification, coating, and surface treatment operation producing on-specification active anode material (AAM), using natural graphite from an overseas graphite operation. Construction of a new 11,250 metric tons per annum (tpa) AAM facility is underway to serve as the only vertically integrated and large-scale natural graphite AAM producer outside China and the first large-scale natural graphite AAM producer in the U.S. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Building its first mass production site in the U.S., which will produce 10,000 metric tons per year of battery grade synthetic graphite. The project will build a new plant near City to produce 30,000 metric tons per year of graphite targeted at the EV industry. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Will build a new battery-grade polyvinylidene fluoride (PVDF) facility in City, State, to supply the needs of the North American EV and stationary energy storage market. Potential to provide enough PVDF to supply more than 5 million EV batteries per year at full capacity. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to build the first U.S. manufacturing plant for lithium hexafluorophosphate (LiPF₆) on the grounds of the company's existing fluorochemical production site and produce up to 10,000 metric tonnes (MT) of LiPF₆ per year, which is sufficient to support domestic production of more than a million full EVs. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to build and operate a commercial-scale facility to implement its novel process for manufacturing battery

cathode grade lithium hydroxide (LiOH) (5,000 MT (metric tonnes) LiOH/year, with capacity for 30,000 MT LiOH/year) commercial processing plant from unconventional Nevada-based lithium-bearing sedimentary resources (10,000 acres). The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;

- Project Recipient (City, State) project located in City, State. Proposes to demonstrate production of lithium at commercially relevant scales using a proprietary technology (using ion-exchange beads) for lithium extraction from domestic brine resources at commercially relevant scales. The project would include 4 pilot units in State and State. Each site would require 5–7 acres for demonstrations lasting 10 months to 3 years before demobilization. Additional work would be manufacturing ceramic beads at 2 existing facilities, one of which will require modification and equipment to support the new production. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to establish industrial scale U.S. production capacity of sustainable, low-cost precursor cathode materials by integrating the separation of critical cathode materials from spent lithium-ion batteries (LIBs) with the production of both precursor cathode active materials (pCAM) and metal salts to support domestic production of cathode active material (CAM). CAM can then be used in new LIBs for EVs and energy storage systems (ESS). It will produce enough material to supply over 250,000 EVs annually. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to build a plant to produce high quality lithium iron phosphate (LFP) cathode powder for the global lithium battery industry using primarily a domestic supply chain. Using its own process technology and by acquiring licenses for certain other commercially proven processes, the plant will have two production lines built in dual phases, with each line capable of producing 15,000 tonnes per year of LFP powder. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project
- Project Recipient (City, State) project located in City, State. Proposes to build a separator facility capable of supplying 19 gigawatt-hour (GWh) of electrovoltaic batteries, including their existing 2 GWh battery plant. The project would construct new buildings, tanks, and associated equipment. The area is a greenfield site that was previously used for agriculture and is currently being developed as an industrial park. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. The proposed project would construct new separator plants with capacity of 1-1.8 billion m² per year, enough material for ~1.4 million EVs. The separator plants would include the installation of high-capacity battery separator lines. Finalized site selection is still underway. The DOE has not determined the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Build-out of a 600,000-square-foot factory that will produce breakthrough lithium-ion anode materials. The project is expected to begin production of Recipient's proprietary silicon anode material in

2025, with full production of 20 GWh equivalent of material at the project's conclusion in 2026. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;

- Project Recipient (City, State) project located in City, State. Proposes to design and construct two 2,000 tonnes/year silicon-carbon anode material factories, also known as “modules.” The proposed project plans to construct these modules as part of an expansion of a previously planned project. The proposed project will involve design and construction of two modules. The proposed project will also involve the construction of support facilities for all modules. These two modules and support facilities will be constructed on a planned, but undeveloped portion of the proposed project site. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to set up an advanced prelithiation and lithium anode manufacturing facility to accelerate the transition to next-generation lithium-ion (Li-ion) batteries and enable the development of a robust U.S. battery component supply chain. The proposed facility will support industrial-scale production of advanced lithiated anodes for multiple battery cell makers and automobile manufacturers. Finalized site selection is still underway. The DOE has not determined the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to expand and upgrade recipient's existing lithium-ion recycling facility. Collect, disassemble, shred, and upgrade the critical minerals present from tens-of-thousands of tons of lithium-ion batteries for reuse in new lithium-ion batteries. The project requires the physical modification of existing buildings, new construction, and ground-disturbing activities on a portion of the project site. The DOE has determined that an EA is the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to demonstrate the manufacturing of silicon nanowire anode technology at the component and cell level on multi-megawatt-hour-scale manufacturing lines that are comparable to those used in multi-GWh factories. Plans are to construct a new facility of about 120,000 square feet. Finalized site selection is still underway. The DOE has not determined the appropriate level of environmental review for the proposed project;
- Project Recipient (City, State) project located in City, State. Proposes to demonstrate the ability to domestically produce multiple battery chemistries namely NMC811 and LFP in a plant with the capacity of 3,000 tpa ready for production in 2025 scaling to 10,000 tpa in 2026. The demonstration plant will produce NMC811 generating zero waste and 70 percent less GHGs by using only 10 percent of the water and 30 percent of the energy versus traditional battery material production methods. The proposed new facility will be approximately 120,000 square feet in a zoned industrial park. Finalized site selection is still underway. The DOE has not determined the appropriate level of environmental review for the proposed project.

Appendix 2

Permits and Approvals

PMC-ND
(1.08.09.13)

**U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION**



RECIPIENT: Sila Nanotechnologies, Inc.

STATE: WA

PROJECT TITLE : Sila Nanotechnologies Auto Scale Silicon Anode Plant

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002678	DE-MS0000017	001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B2.1 Workplace enhancements	Modifications within or contiguous to an existing structure, in a previously disturbed or developed area, to enhance workplace habitability (including, but not limited to, installation or improvements to lighting, radiation shielding, or heating/ventilating/air conditioning and its instrumentation, and noise reduction).
B2.2 Building and equipment instrumentation	Installation of, or improvements to, building and equipment instrumentation (including, but not limited to, remote control panels, remote monitoring capability, alarm and surveillance systems, control systems to provide automatic shutdown, fire detection and protection systems, water consumption monitors and flow control systems, announcement and emergency warning systems, criticality and radiation monitors and alarms, and safeguards and security equipment).
B2.3 Personnel safety and health equipment	Installation of, or improvements to, equipment for personnel safety and health (including, but not limited to, eye washes, safety showers, radiation monitoring devices, fumehoods, and associated collection and exhaust systems), provided that the covered actions would not have the potential to cause a significant increase in emissions.
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Task 0.0 (Project Management and Planning), Task 0.1 (Kick-Off Meeting), Budget Period 1 (Engineering and Base Build)

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Budget Periods 2, 3, and 4 are not covered under this NEPA determination.

Include the following condition in the financial assistance agreement:

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

Notes:

CX for Budget Period One was originally issued in August 2023. This CX is being re-issued in light of changes to the project scope and SOPO as of October 2023. This new CX is still limited to the tasks noted above.

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

DOE has determined that work to be carried out outside of the United States, its territories and possessions is exempt from further review pursuant to Section 5.1.1 of the DOE Final Guidelines for Implementation of Executive Order 12114; "Environmental Effects Abroad of Major Federal Actions."

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Stephen Witzmer Date: 10/30/2023
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
- Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager

Appendix 3

Consultation with Agencies and Tribal Nations

May 31, 2023

Mr. Brad Thompson
State Supervisor
U.S. Fish and Wildlife Service
Washington Fish and Wildlife Office
510 Desmond Drive SE
Suite 102
Lacey, WA 98503-1263

Subject: Section 7 Consultation for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Mr. Thompson,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila Nanotechnologies) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake, Washington. Sila Nanotechnologies had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila Nanotechnologies' product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. The site would undergo preparation and grading to achieve proper slopes for drainage and earthwork for construction of equipment and pipe rack foundations on the south side of the existing building. The total limit of the work area is estimated at approximately 1,200,000 square feet. The total excavation quantity is 100,000 cubic yards. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project would take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

The proposed project site was historically farmed and is presently either farmed or has been mowed repeatedly over the past several years. The south, east, and north borders of the site are large acreage irrigated agriculture. The site has no shrub component, and the existing grasses/herbaceous layer of vegetation is dominated by weedy, non-native species. The plant vegetative cover of the site is dominated by crested wheat grass (*Agropyron cristatum*), bulbous blue grass (*Poa bulbosa*) and cheat grass (*Bromus*), with a cover ranging between 70 to 90 percent. Tumble weed is also present at ten to 20 percent cover. Less than one percent native bunch grass is present which appears to be Sherman bunch grass (*Poa secunda*). Immediately west of the existing building is four to five acres of very low-quality shrub steppe, which is considered low-quality priority habitat. Species observed on the site during a prior habitat survey included raven, magpie, meadow lark, starling, robin pheasant, red wing blackbird, and mourning dove. Moderate fossorial activity was observed throughout the site. Wetland habitat with the proposed project site exists along the north property line and in the southeast corner of the property and consists of emergent wetland vegetation dominated by cattail, common reed grass, and various and invasive grasses. However, the proposed project would not disturb any of these wetlands. Impacts to vegetation from construction of the proposed project are anticipated to be minor, affecting primarily weedy, nonnative vegetation and four to five acres of low-quality priority shrub steppe habitat. This habitat is small, isolated, and its proximity to the existing building renders it of minimal value to wildlife species associated with shrub steppe habitat.

The U.S. Fish & Wildlife Service's Information for Planning and Consultation website identified one threatened species (the Yellow-billed Cuckoo) and one candidate species (the Monarch Butterfly) that could be impacted by a project located at the proposed project site. The proposed project site contains no critical habitat.

As part of DOE's coordination and consultation responsibilities and to comply with both Section 7 of the Endangered Species Act of 1973, as amended, and provisions of the Fish & Wildlife Coordination Act, we would appreciate receiving any additional information you have on important wildlife resources, including endangered and threatened species or critical habitat in the project area. I have included additional project details, including the official IPaC species list, site plan, and shrub steppe habitat and wetlands delineation reports previously completed for the proposed project area. If your initial review of the proposed project details concludes that no endangered or threatened species (or their habitat) are present in the project area and that neither protected species nor their habitat would be affected by the proposed action, a written acknowledgment of that conclusion would be appreciated.

Based on the scope of the proposed Sila Nanotechnologies project, DOE plans to prepare an Environmental Assessment (EA) (DOE/EA-2214D) in accordance with requirements

of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental and cultural consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, the Washington Fish and Wildlife Office will be sent an electronic and hard copy where you may provide additional comments.

If you have any questions concerning this proposed project, please contact me at the following address, phone or email below:

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with you.

Sincerely,



Stephen Witmer
NEPA Compliance Officer

Attachments:

1. IPaC Official Species List – IPaC Official Species List – Washington FWS Office
2. Sila Nanotechnologies Project – Site Map and Plan
3. Sila Nanotechnologies Project – Shrub Steppe Habitat Report
4. Sila Nanotechnologies Project – Wetlands Delineation Report



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To:

May 25, 2023

Project Code: 2023-0086084

Project Name: Sila Nanotechnologies Moses Lake Facility (DOE/EA-2214D)

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

To Whom It May Concern:

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

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

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

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

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

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

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

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

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

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Washington Fish And Wildlife Office

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

(360) 753-9440

PROJECT SUMMARY

Project Code: 2023-0086084
Project Name: Sila Nanotechnologies Moses Lake Facility (DOE/EA-2214D)
Project Type: Federal Grant / Loan Related
Project Description: The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake, Washington. Sila had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila's product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project will take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@47.14176625,-119.187840607839,14z>



Counties: Grant County, Washington

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

BIRDS

NAME	STATUS
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

INSECTS

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

CRITICAL HABITATS

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

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

IPAC USER CONTACT INFORMATION

Agency: Department of Energy
Name: Stephen Witmer
Address: 626 Cochran Mill Road
Address Line 2: Mailstop 921-227
City: Pittsburgh
State: PA
Zip: 15236
Email: stephen.witmer@netl.doe.gov
Phone: 4123867589

June 8, 2023

Jess Jordan
Project Manager
U.S. Army Corps of Engineers
Regulatory Branch
4735 E. Marginal Way
S. Bldg. 1202
Seattle, WA 98134-2388

Subject: Consultation for the Sila Nanotechnologies Moses Lake Facility Project
(DOE/EA-2214D)

Dear Jess Jordan,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila Nanotechnologies) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake (Grant County), Washington. Sila Nanotechnologies had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila Nanotechnologies' product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. The site would undergo preparation and grading to achieve proper slopes for drainage and earthwork for construction of equipment and pipe rack foundations on the south side of the existing building. The total limit of the work area is estimated at approximately 1,200,000 square feet. The total excavation quantity is 100,000 cubic yards. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project would take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

Wetland habitat within the proposed project site exists along the north property line and in the southeast corner of the property and consists of emergent wetland vegetation dominated by cattail, common reed grass, and various native and invasive grasses. The proposed project would not disturb any of these wetlands, but I was interested in making you aware of this proposed project and to see if the Seattle District of the U.S. Army Corps of Engineers has any opinions or additional information for DOE to consider regarding the proposed project. I have provided the project site plan and map (including the area of potential effect), and a wetlands and stream delineation report previously completed within the Sila Nanotechnologies property for your review and comment. If your review of the proposed project details concludes that wetlands and streams on the Sila Nanotechnologies property will not be impacted by the proposed project, a written acknowledgment of that conclusion would be appreciated.

Based on the scope of the proposed Sila Nanotechnologies project, DOE plans to prepare an Environmental Assessment (EA) (DOE/EA-2214D) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental and cultural consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, the Seattle District of the U.S. Army Corps of Engineers will be sent an electronic and hard copy where you may provide additional comments.

If you have any questions concerning this proposed project, please contact me at the following address, phone or email below:

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with you.

Sincerely,



Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Wetlands Delineation Report

cc:

Dave Moore, Project Manager, U.S. Army Corps of Engineers

May 11, 2023

Dr. Allyson Brooks, Ph.D
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
Post Office Box 48343
Olympia, WA 98504-8343

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Ms. Brooks,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake, Washington. Sila had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila's product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project will take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an

unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

I have provided attachments that contain additional details regarding the proposed project, including the project site plan, area of potential effect, and a cultural resource survey report encompassing the proposed project area for review by the Washington Department of Archeology and Historic Preservation. If your review concludes that no historic or cultural properties are present in the project area and that neither historic nor cultural properties would be affected by the proposed project, a written acknowledgment of that conclusion would be appreciated.

DOE is also consulting with Native American tribal nations with possible interests in the project area. DOE is consulting with the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Colville Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, and the Spokane Tribe of Indians regarding this proposed project. DOE has provided details of this proposed project to tribal representatives and Tribal Historic Preservation Officers of these tribes for review and consultation, and all will receive copies of the Draft Environmental Assessment (EA) being prepared for this project for their review and comment, when completed. DOE will also be consulting with the U.S. Fish and Wildlife Service and U.S. Army Corps of Engineers regarding the proposed project. These agencies will receive project details and the Draft EA for review and consultation.

Based on the scope of the proposed Sila project, DOE plans to prepare an EA (DOE/EA-2214D) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental and cultural consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, the Washington Department of Archaeology and Historic Preservation will be sent an electronic and hard copy where you may provide additional comments.

If you have any questions concerning the project, please contact me at the following address, phone, or email below:

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephen Witmer", written in a cursive style.

Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report

Sila Moses Lake NEPA EA

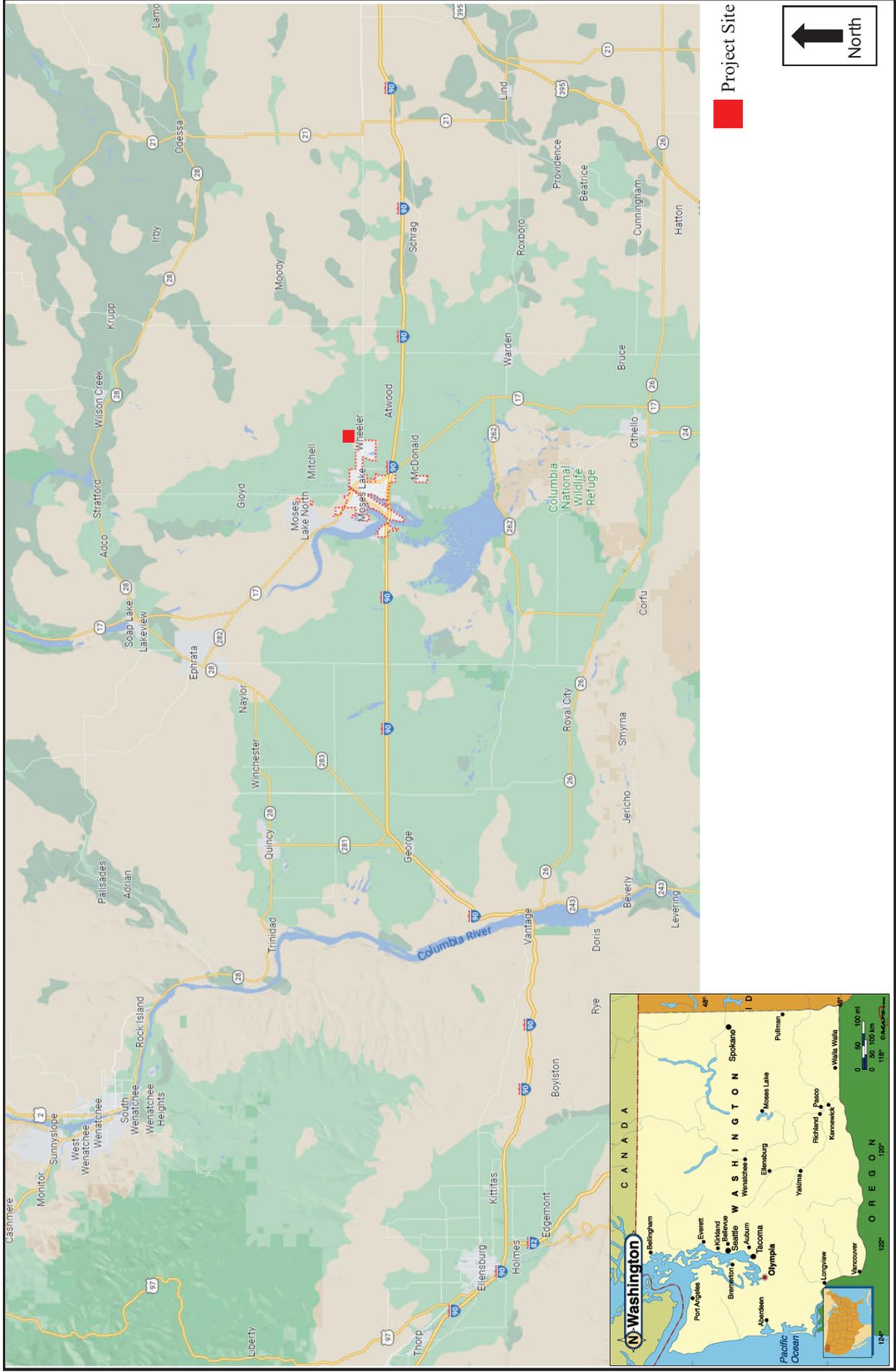


Figure 1
Vicinity Map

Source: EA, Google Earth, 2023; netstate.com
 EA Engineering, Science, and Technology, Inc.

Figure 2 - Site Plan



LEGEND
 [Green Box] = PHASE 1
 [Blue Box] = PHASE 2
 [Red Dashed Line] = APE

1:0416'
 TRUE NORTH
 PLANT NORTH

LOCATION: C:\USERS\COLIN.LLENDRUM\WORK\IN-PROGRESS - PIPING - DESIGN\PIPING DESIGN\CAD FILES\BORDER FILES\WORLEY_D.DWG

USER NAME: colin.lleन्द्रум
 DATE & TIME: 11/17/2023 3:34:28 PM

REV	DATE	DESCRIPTION	DRAWN	BRATT CLK	DESIGNED	ENG CLK	APPROVED	CUSTOMER	REF DRAWING NO	REFERENCE DRAWING TITLE
A	12/02/23	ISSUED FOR INFORMATION								
B SHEET SCALE: NTS WORKLEY PROJECT No. 318001-00007 ENGINEERING AND PERMIT STAMPS (As Required) CUSTOMER: Sila Nanotechnologies, Inc. PROPRIETARY & CONFIDENTIAL © 2023 Sila Nanotechnologies, Inc. *This information is intended for the use of the recipient and is the property of Sila Nanotechnologies, Inc. Any disclosure to other parties without the express written consent of Sila Nanotechnologies, Inc. is strictly prohibited. The recipient shall maintain the confidentiality of this information and shall not disseminate, distribute, or otherwise use this information for any purpose other than that intended by Sila Nanotechnologies, Inc. without the express written consent of Sila Nanotechnologies, Inc.										
DRG TITLE: SILA NANOTECHNOLOGIES INC MOSES LAKE, WA PLANT 2 PERMIT PLAN OVERLAY DRG No: 200-000-DSK-1003 REV: A										



Allyson Brooks Ph.D., Director
State Historic Preservation Officer

May 11, 2023

Stephen M. Witmer
NEPA Compliance Officer
National Energy Technology Laboratory
Department of Energy
626 Cochran Mill Road
Pittsburgh, PA 15236

RE: Sila Nanotechnologies Moses Lake Facility Project
DOE/EA-2214D
Log No: 2023-04-02558-DOE

Dear Stephen M. Witmer;

Thank you for contacting our department. We have reviewed the materials you provided for the proposed *Sila Nanotechnologies Moses Lake Facility Project* in Moses Lake, Grant County, Washington.

We concur with your determination of the Area of Potential Effect (APE) as described and presented in your figures and text. We look forward to receiving the results of the finalized professional cultural resources survey, consultations with concerned tribes, and your finalized Determination of Effect.

We would also appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and the implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment and we look forward to receiving the results of your consultation efforts, and further consultations.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', with a long horizontal line extending to the right.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov



May 9, 2023

Chairman Jarred-Michael Erickson
Chairman of the Colville Business Council
Confederated Tribes of the Colville Reservation
21 Colville Street
Nespelem, WA 99155-0150

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Chairman Erickson,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake, Washington. Sila had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila's product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project will take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an

unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

I have provided attachments that contain additional details pertaining to the proposed project, including the project site plan and a cultural resource survey report encompassing the proposed project area. DOE is also consulting with the Washington Department of Archaeology and Historical Preservation regarding this proposed project.

Based on the scope of the proposed Sila project, DOE plans to prepare an Environmental Assessment (EA) (DOE/EA-2214D) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental and cultural consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, the Confederated Tribes of the Colville Reservation will be sent the website containing the Draft EA where you may provide additional comments.

If you have any questions or concerns regarding this project, please contact me at the following address, phone, or email below:

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with your Tribal Nation.

Sincerely,



Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report

cc:

Mr. Guy Moura
Mr. Robert Sloma

From: [Robert Sloma](#)
To: [Witmer, Stephen M.](#)
Cc: [Hanson, Sydney \(DAHP\)](#); [Guy Moura \(HSY\)](#)
Subject: [EXTERNAL] Re: Section 106 consultation request for proposed DOE-funded project - Sila Nanotechnologies - Moses Lake, WA
Date: Wednesday, May 17, 2023 3:15:07 PM
Attachments: [image001.png](#)

Dear Mr. Witmer,

The Confederated Tribes of the Colville Reservation (aka, Confederated Colville Tribes, CCT) concur that the proposed Sila Nanotechnologies project is an undertaking under Section 106.

Furthermore, the CCT considers the entire parcel as the Area of Potential Effect. The level of effort to address cultural resources is considered adequate, and the CCT concurs with the findings, determination, and recommendations presented in the accompanying cultural resource survey report (Esen et al 2023).

Please be sure that the proposed work proceeds with caution and that the recommendations are adhered to. Thank you.

On Tue, May 9, 2023 at 7:20 AM Witmer, Stephen M.
<Stephen.Witmer@netl.doe.gov> wrote:

Good morning, Chairman Erickson. My name is Stephen Witmer, and I am a NEPA Compliance Officer for the Department of Energy – National Energy Technology Laboratory. The Department of Energy is proposing to provide federal funding for a project (“Sila Nanotechnologies Moses Lake Facility”) in Moses Lake, WA. My colleague, Jesse Garcia, has previously contacted the Confederated Tribes of the Colville Reservation by phone regarding this project, and DOE would like to officially initiate a Section 106 consultation request with the Confederated Tribes of the Colville Reservation as part of our development of an Environmental Assessment for this proposed project.

I have attached the following:

1. Letter describing the project
2. Two attachments containing the project site plan, location, area of potential effect (APE), and a prior cultural resource survey completed in the APE.

Jesse and I look forward to working with the Confederated Tribes of the Colville Reservation regarding this project, and please feel free to contact us if you have questions, or would like additional project details. Thank you!

Stephen M. Witmer

NEPA Compliance Officer

Department of Energy – National Energy Technology Laboratory

626 Cochrans Mill Road, Pittsburgh, PA 15236

M/S 921-227

stephen.witmer@netl.doe.gov

Office: 412-386-7589

Office days: Tuesday, Wednesday



--

Robert A. Sloma

Archaeologist

History/Archaeology Program

Confederated Tribes of the Colville Reservation

PO Box 150

Nespelem, WA 99155

Tel: (509) 634-2692

Cell: (509) 557-2273

robert.sloma@colvilletribes.com



This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

May 9, 2023

Mr. Randy Abrahamson
Tribal Historic Preservation Officer
Spokane Tribe of Indians
Post Office Box 100
Wellpinit, WA 99040

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Mr. Abrahamson,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake, Washington. Sila had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila's product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project will take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an

unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

I have provided attachments that contain additional details pertaining to the proposed project, including the project site plan and a cultural resource survey report encompassing the proposed project area. DOE is also consulting with the Washington Department of Archaeology and Historic Preservation regarding this proposed project.

Based on the scope of the proposed Sila project, DOE plans to prepare an Environmental Assessment (EA) (DOE/EA-2214D) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental and cultural consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, the Spokane Tribe of Indians will be sent a hard copy where you may provide additional comments.

If you have any questions or concerns regarding this project, please contact me at the following address, phone, or email below:

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with your Tribal Nation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Stephen Witmer', with a stylized flourish at the end.

Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report



Spokane Tribe of Indians
Tribal Historic Preservation Officer
P.O. Box 100 Wellpinit WA 99040

May 22, 2023

To: Stephen Witmer

Re: Sila Nanotechnologies project, Moses Lake

Mr. Witmer,

Thank you for contacting the Tribe 's Historic Preservation Office. We appreciate the opportunity to provide a cultural consult for your project, the intent of this process is to preserve and protect all cultural resources whenever protection is feasible.

Pursuant to compliance with the 54 U.S.C. 306108 we are hereby in consultation for this project.

After archive research and cultural survey completed, the Spokane Tribe will concur with "*no historic properties affected*".

RE: An Inadvertent discovery plan implemented in the Scope of work.

With this letter this project may proceed with the respect of cultural resources.

However, if any artifacts or human remains are found upon inadvertent discovery, this office should be notified immediately and the work in the area cease. Should additional information become available, or scope of work change our assessment may be revised.

And consider this a positive action that will assist us in protecting our shared heritage.

Sincerely,

Randy Abrahamson
Tribal Historic Preservation Officer.
509-258-4222



**Spokane Tribe of Indians
Tribal Historic Preservation Officer**

PO Box 100 Wellpinit WA 99040

January 31, 2024

To: Stephen Witmer, NEPA Compliance Officer

RE: Sila Nanotechnologies Environmental Assessment update

Mr. Witmer,

Thank you for contacting the Spokane Tribe's Historic Preservation Office. We appreciate the opportunity to provide a cultural consult for your project.

Pursuant to compliance with 54 U.S.C. we are hereby in consultation for this project.

This project has been determined to be in the Colville Tribe area, therefore I will defer this project to Colville Tribe, and have no further concerns on the project.

Again, thank you for the opportunity to comment, if questions arise contact me at 509-258-4222.

Sincerely,

Randy Abrahamson
THPO for the Spokane Tribe

May 9, 2023

Mr. Robert Brunoe
Tribal Historic Preservation Officer
Confederated Tribes of the Warm Springs Reservation of Oregon
Post Office Box C
Warm Springs, OR 97761

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Mr. Brunoe,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

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Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

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unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

I have provided attachments that contain additional details pertaining to the proposed project, including the project site plan and a cultural resource survey report encompassing the proposed project area. DOE is also consulting with the Washington Department of Archaeology and Historic Preservation regarding this proposed project.

Based on the scope of the proposed Sila project, DOE plans to prepare an Environmental Assessment (EA) (DOE/EA-2214D) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental and cultural consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, the Confederated Tribes of the Warm Springs Reservation of Oregon will be sent an electronic and hard copy where you may provide additional comments.

If you have any questions or concerns regarding this project, please contact me at the following address, phone, or email below:

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with your Tribal Nation.

Sincerely,



Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report

May 31, 2023

Mr. Jonathan Smith, Sr.
Tribal Council Chairperson
Confederated Tribes of the Warm Springs Reservation of Oregon
1233 Veterans Street
Post Office Box C
Warm Springs, OR 97761

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Chairperson Smith,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

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U.S. Department of Energy
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Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with your Tribal Nation.

Sincerely,



Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report

E-mail cc:

Robert Brunoe, Tribal Historic Preservation Officer
Mars Galloway, Cultural Resource Manager

May 9, 2023

Ms. Jessica Lally
Yakama Nation Archaeologist
Confederated Tribes and Bands of the Yakama Nation
Post Office Box 151
Toppenish, WA 98948

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Ms. Lally,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

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U.S. Department of Energy
National Energy Technology Laboratory
626 Cochran Mill Road
M/S 921-227
Pittsburgh, PA 15236
Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

Thank you for your attention to this request, and I look forward to working with your Tribal Nation.

Sincerely,



Stephen Witmer
NEPA Compliance Officer

Attachments:

1. Sila Nanotechnologies Project – Site Map and Plan
2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report

May 9, 2023

Ms. Kate Valdez
Tribal Historic Preservation Officer
Confederated Tribes and Bands of the Yakama Nation
Post Office Box 151
Toppenish, WA 98948

Subject: Tribal consultation and Section 106 compliance for the Sila Nanotechnologies Moses Lake Facility Project (DOE/EA-2214D)

Dear Ms. Valdez,

The U.S. Department of Energy (DOE) is proposing to provide a financial assistance grant (DOE's Proposed Action) to Sila Nanotechnologies, Inc. (Sila) as part of the funding opportunity announcement titled "Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing," with funds appropriated by the Infrastructure Investment and Jobs Act, also more commonly known as the Bipartisan Infrastructure Law.

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Telephone: 412-386-7589
Email: stephen.witmer@netl.doe.gov

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Sincerely,



Stephen Witmer
NEPA Compliance Officer

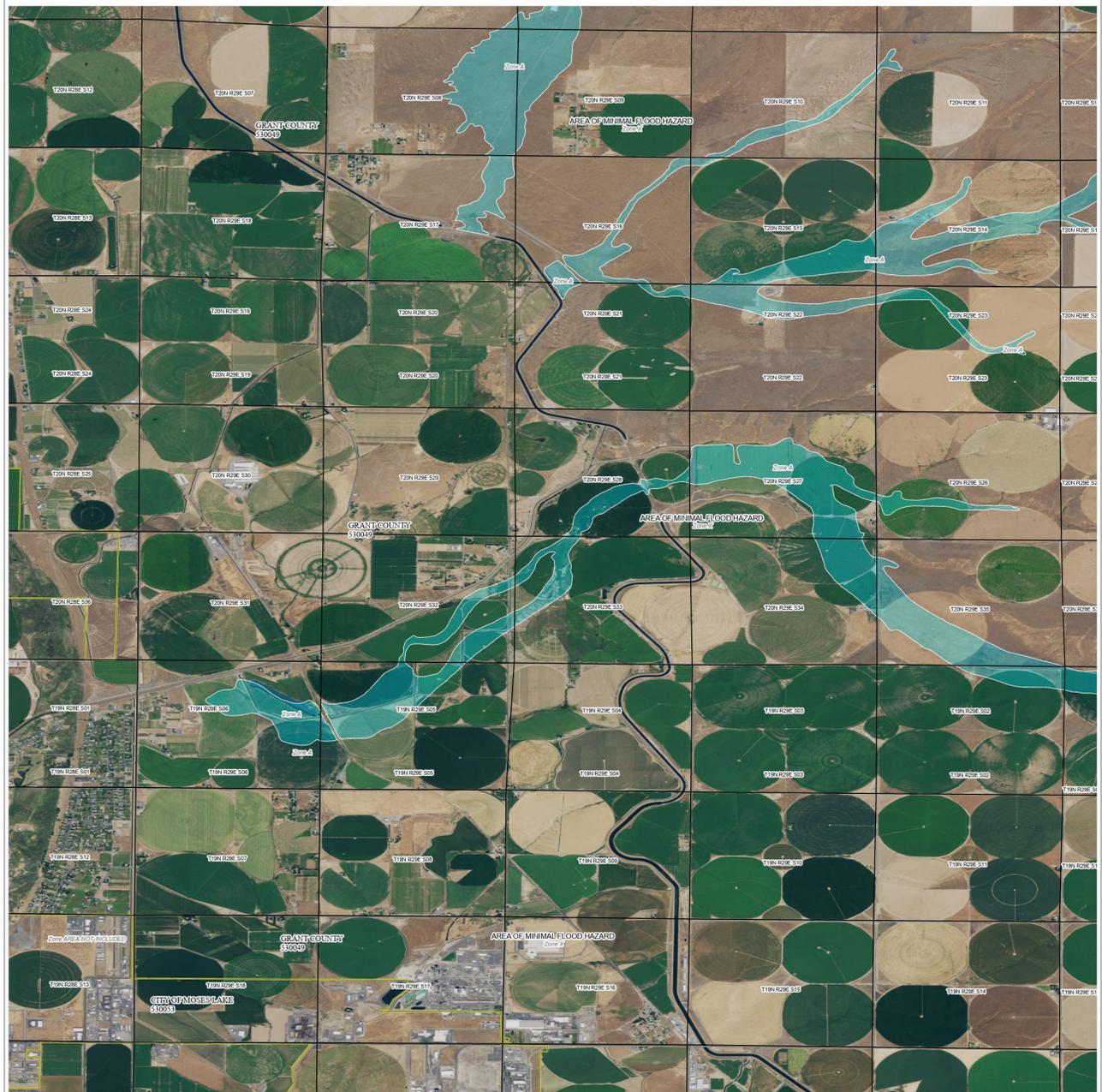
Attachments:

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2. Sila Nanotechnologies Project – Moses Lake Cultural Resource Survey Report

Appendix 4

Relevant Technical Studies

FEMA Flood Hazard Map - FIRM



FLOOD HAZARD INFORMATION
SEE HIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT



NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information Hot Line at 1-877-FEMA-MAP (1-877-336-2672) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities appearing on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM files. These may be copied directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

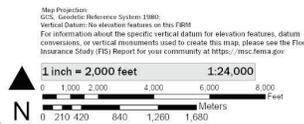
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6622.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The base map shown is the USGS National Map Collection, last released October, 2005.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 02/20/09 1:48 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please use the Flood Hazard Mapping Updates Overview Fact Sheet at <http://www.fema.gov/pubs/ohm/updates/ohm111818>.

This map complies with FEMA's standards for the use of digital flood maps. It is not valid as described below. The base map shown complies with FEMA's base map accuracy standards. This map image is void if used in any way that does not comply with FEMA's base map accuracy standards. This map image is void if used in any way that does not comply with FEMA's base map accuracy standards. This map image is void if used in any way that does not comply with FEMA's base map accuracy standards. This map image is void if used in any way that does not comply with FEMA's base map accuracy standards.

SCALE



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL 1100 OF 1925



Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF MOSES LAKE	630063	1100
GRANT COUNTY (OLD ID SEEP)	630049	1100
WILDLIFE AREA	9301	1100

MAP NUMBER
53025C1100C
EFFECTIVE DATE
February 18, 2009

WISSARD Database Search Results

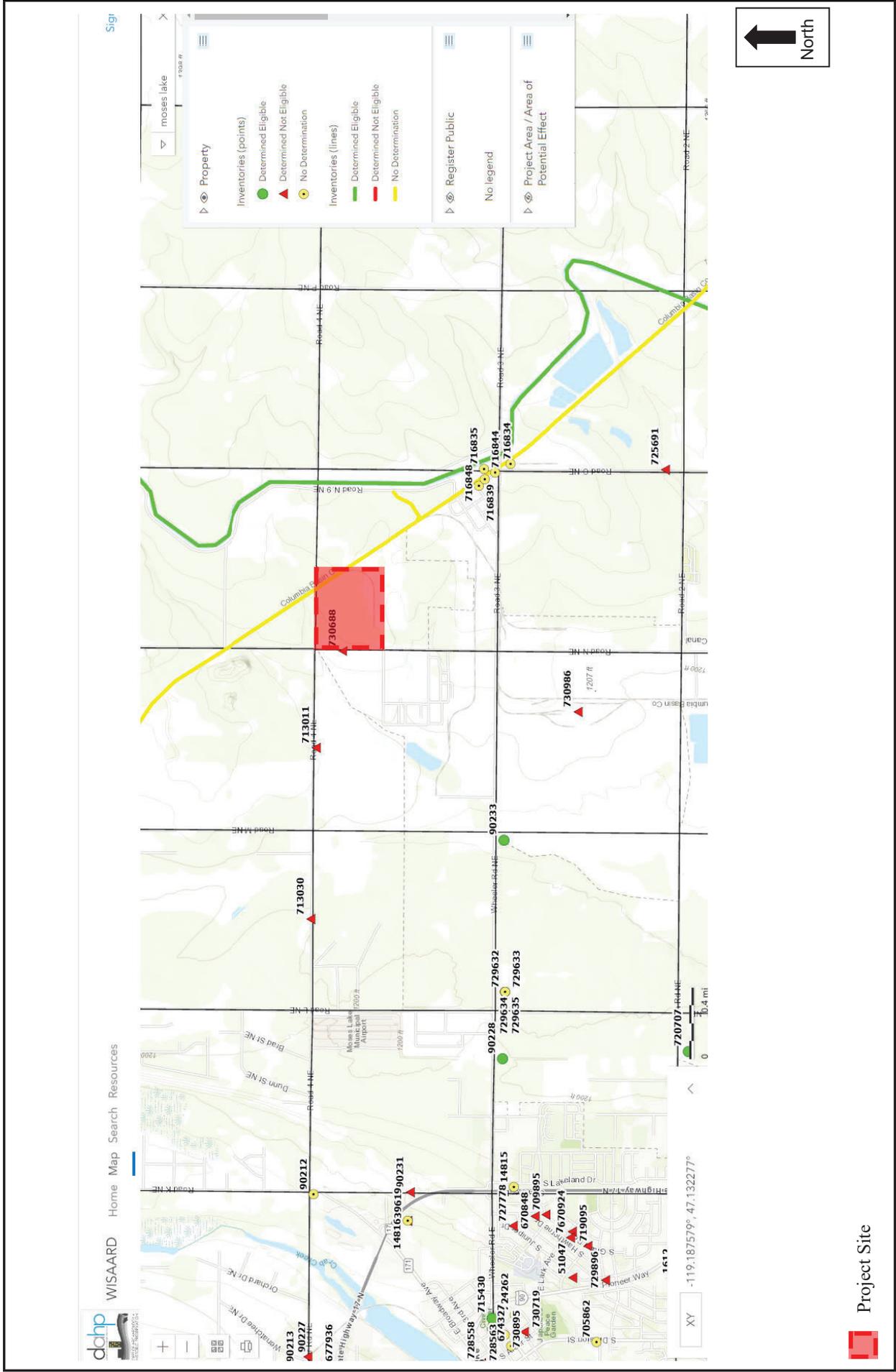


Figure 1
 DAHP WISAARD – Property Inventories in Site Vicinity



Inadvertent Discovery Plan

Road North NE Project, Grant County, Washington

Inadvertent Discovery Plan Treatment of Archaeological Materials Discovered During Project Implementation

By:

Justin Fitzpatrick



April 2023

Road North NE Project, Grant County, Washington Inadvertent Discovery Plan and Treatment of Archaeological Materials

Western Pacific Engineering & Survey is assisting a client with plans and permitting to develop three parcels along Road North NE. The parcels are identified as 12-0175-300, 11-0069-400, and 11-0077-090. While a portion of the three parcels have been developed, the remaining accessible areas will be investigated with pedestrian survey and subsurface probing. The probes will be placed in a manner to investigate the anticipated impacts of future development.

Western Pacific Engineering & Survey retained Plateau Archaeological Investigations, LLC (Plateau) to complete the cultural resource survey and identify potential impacts to cultural and historical resources. The area of potential effect, referred to as the Project Area, covers approximately 156 acres and lies in Section 16 of Township 19 North, Range 29 East, Willamette Meridian (Figure 2). The survey was subsequently reported in *Cultural Resource Survey for the Road North NE Project, Grant County, Washington* (Espen et al. 2023), and recorded with the Washington State Department of Archaeology and Historic Preservation (DAHP) under Project Number 2023-04-02558.

Pre-field research consisted of a file review completed through the Washington Information System for Architectural and Archaeological Records Data (WISAARD) on March 15, 2023. The review covered Sections 08, 08, 10, 15, 16, 17, 20, 21, and 22 in Township 19 North, Range 29 East. This review revealed no cultural resources and seven previously conducted cultural resource surveys within 1.0 mile (mi) (1.6 kilometer [km]) of the Project Area. This database includes recorded archaeological resources, historic property inventories (HPIs), National Register of Historic Properties (NRHP) and Washington Heritage Register (WHR) properties, identified cemeteries, and previously conducted cultural resource surveys found throughout the state of Washington. Additionally, a review of Bureau of Land Management (BLM) records, both General Land Office (GLO) online records and land patent information, was completed. Topographic maps and aerial photos were reviewed to identify additional indicators of past land use.

Plateau CRM archaeologists conducted a pedestrian survey and excavated 88 subsurface probes. The pedestrian survey covered the portion of the area of potential impact not covered by the intersecting industrial building and subsurface probes were dispersed throughout. No Native American or historic-era cultural materials or features were observed during the pedestrian survey or excavations. A Plateau CRM architectural historian inventoried one property (Property ID: 730688). Plateau CRM recommends that the proposed undertaking will result in **No Historic Properties Affected** and no further archaeological investigations are recommended prior to, or during, execution of this project.

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

Laws and Regulations Regarding Archaeological and Cultural Resources

Several laws and regulations, set forth on both federal and state levels, address concerns for burials, rock cairns, archaeological sites, historic structures, and other cultural resources. Those pertinent to this project are The State Environmental Policy Act and several chapters of the Revised Code of Washington.

The State Environmental Policy Act (SEPA) requires state agencies to consider the effects of undertakings on historic properties and consult with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) as appropriate to help identify the area of potential effect (APE) and the level of effort necessary to comply. This is intended to be done prior to the expenditure of funds or issuance of a license or permit, although it is recognized that some properties may not be identified, recognized, or discovered until the project begins.

Chapter 27.44 of the Revised Code of Washington offers protection for Indian burials, cairns, glyptic markings, and historic graves on private and public property. This regulation provides civil and criminal penalties for the intentional disturbance or removal of these types of properties.

Chapter 27.53 of the Revised Code of Washington requires that a permit be acquired through the Washington State Department of Archaeology and Historic Preservation (DAHP) prior to the intentional disturbance, excavation, removal, or alteration of any known historic or archaeological resource through any means.

Chapter 68.50 of the Revised Code of Washington describes the investigations, treatment, scientific study, and final disposition of human remains. This chapter includes very little information that pertains to the inadvertent discovery of archaeological materials.

Chapter 68.60 of the Revised Code of Washington outlines protections for cemeteries, historic graves, and other human remains. This chapter further outlines procedures pertaining to the inadvertent discovery of human remains.

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

Inadvertent Discovery Plan

Proper application and management of this IDP requires that a professional archaeologist be contacted if ground-disturbing activities reveal potential Native American or historic-era cultural materials or features (Figure 3, Figure 4, and Figure 5). The archaeologist shall meet the Secretary of the Interior's standards for a professional archaeologist as defined at 36CFR61 Appendix A. Construction within 200 ft (60 m) of the discovery will stop, and the area will be secured to protect the find from additional damage. The archaeologist will document the find, prepare a brief written statement, and take photographs of the find for submission to the lead agency and the SHPO at the DAHP. The find will also be reported to the THPO of the Confederated Tribes of the Colville Reservation, the Cultural Resource Program Manager of the Confederated Tribes and Bands of the Yakama Nation the THPO of the Spokane tribe of Indians, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Department of Energy. It is the responsibility of the lead agency, City of Moses Lake Community Development Department, to contact the affected Tribes. This consultation process will take place even if the pre-contact or historic-era cultural materials appear to have lost their depositional integrity. Work within 200 ft (60 m) of the find will not resume until a plan for management or preservation of the materials has been approved. Following the project, the archaeologist will provide a report detailing the procedures and results of the investigation.

During the investigation, the archaeologist will observe rules of safety and will comply with any safety requirements of the excavation contractor and project engineers. Entry into any excavation will only be done under the direct supervision and approval of the construction foreman (or his or her agent) and verification that entry and exit is safe.

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

Discovery of Human Remains

If ground-disturbing activities encounter human skeletal remains during the course of construction, then all activity *will* cease that may cause further disturbance to those remains. The area of the find will be secured and protected from further disturbance to those remains. The area of the find will be secured and protected from further disturbance until the State provides notice to proceed. The finding of human skeletal remains *will* be reported to the county medical examiner/coroner *and* local law enforcement in the most expeditious manner possible. The remains will not be touched, moved, or further disturbed. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the county medical examiner/coroner determines the remains are non-forensic, then they will report that finding to the Department of Archaeology and Historic Preservation (DAHP) who will then take jurisdiction over the remains. The DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will make a determination of whether the remains are Indian or Non-Indian and report that finding to any appropriate cemeteries and affected tribes. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

Protocol to Follow When No Archaeologist is Present

If an archaeologist is not on-site when cultural materials (e.g., pre-contact artifacts and/or features, historic-era artifacts and/or features) are uncovered, the following steps shall be followed:

Suspend work within 200 ft (60 m) of the find.

Take a photo of the artifact(s) or feature(s). Include a common object such as a quarter, a tape measure, a person, or a pickup as a scale to show the size of the find.

Take photos of the location of the find from several angles and distances.

Record a GPS point if possible.

Contact Plateau by telephone to notify us of the find.

Provide an email with photos and any additional information you are able to gather.

Precontact Artifacts Precontact artifacts can include stone, wood, or bone tools. Stone tools are the most common artifact encountered since they do not deteriorate over time.

Precontact Features Precontact features can include fire pits, hearths, burn deposits, ash, rock alignments, rock mounds, and midden deposits.

Historic-Era Artifacts Historic-era artifacts may include various items manufactured from metal, glass, or wood. If an individual identifiable historic artifact is encountered, the above protocol should be followed. "Historic-era artifacts" does not include "recent" items such as chip bags, styrofoam, modern beverage cans and bottles, or other typical roadside debris.

Historic-Era Features Any identifiable remains of buildings, foundations, rock alignments, or rock mounds might be historic-era features.

Human Remains Human remains, suspected human remains, burials, funerary objects, sacred objects, or items of cultural patrimony are to be treated in the manner outlined above. **Additionally, Plateau is to be notified by phone immediately.**

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

Emergency Dispatch in Grant County

Emergency Dispatch	911
Moses Lake Police Department	509-764-3887
Sheriff, non-emergency	509-762-1160
Grant County Coroner	509-765-7601
	509-766-8318 (fax)

Confederated Tribes of the Colville Reservation

Guy Moura, Tribal Historic Preservation Officer	509-634-2695 509-634-2694 (fax) guy.moura@colvilletribes.com P.O. Box 150, Nespelem, Washington 99155
Chairman Jared-Michael Erickson	509-634-2200
Chairman of the Colville Business Council	jarred.erickson.cbc@colvilletribes.com 21 Colville Street, Nespelem, WA 99155-0150
Robert Sloma	robert.sloma@colvilletribes.com 21 Colville Street, Nespelem, WA 99155-0150

Confederated Tribes and Bands of the Yakama Nation

Casey Barney, Cultural Resource Program Manager	509-865-5121, ext. 4378 casey@yakama.com
Jessica Lally, Yakama Nation Archaeologist, Cultural Resources Program	509-865-5121, ext. 4766 Jessica_Lally@Yakama.com P.O. Box 151, Toppenish, Washington 98948

Department of Archaeology and Historic Preservation

DAHP Reception	360-586-3065
DAHP fax	360-586-3067
Guy Tasa, State Physical Anthropologist	360-586-3534 Guy.Tasa@dahp.wa.gov
Rob Whitlam, State Archaeologist	360-586-3080 Rob.Whitlam@dahp.wa.gov P.O. Box 48343, Olympia, Washington 98504

Plateau Archaeological Investigations

Main Office/Fax	509-332-3830
David Harder, Archaeologist	509-336-1525 (cell) dharder@plateau-crm.com P.O. Box 714, Pullman, Washington, 99163

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

Spokane Tribe of Indians

Randy Abrahamson, THPO

509-258-4315
509-258-6965 (fax)
randya@spokanetribe.com

P.O. Box 100, Wellpinit, Washington 99040

Confederated Tribes of Warm Springs Reservation of Oregon

Mars Galloway

mars.galloway@ctwsbnr.org
1233 Veterans Street, P.O.
Box C, Warm Springs,
Oregon 97761

Robert Brunoe

541-553-1161
Robert.Brunoe@ctwsbnr.org
1233 Veterans Street, P.O.
Box C, Warm Springs,
Oregon 97761

Department of Energy – National Energy Technology Laboratory

Stephen Witmer, NEPA Compliance Officer

Stephen.witmer@netl.doe.gov

626 Cochran Mill Road, M/S 921-227, Pittsburgh,
Pennsylvania 15236

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

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Department of Archaeology and Historic Preservation

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Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

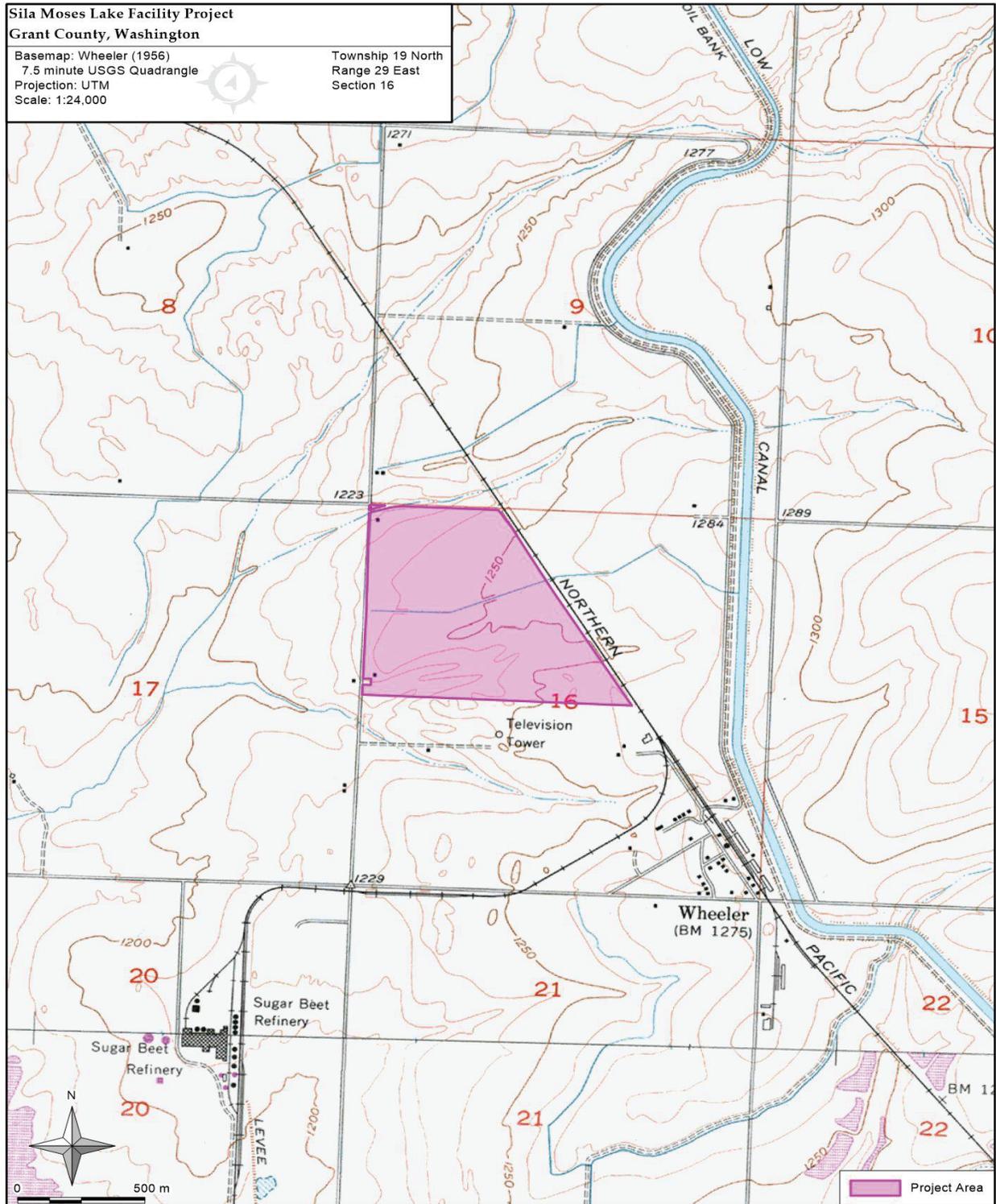


Figure 1. The Project Area on a portion of the Wheeler USGS topographic map.

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

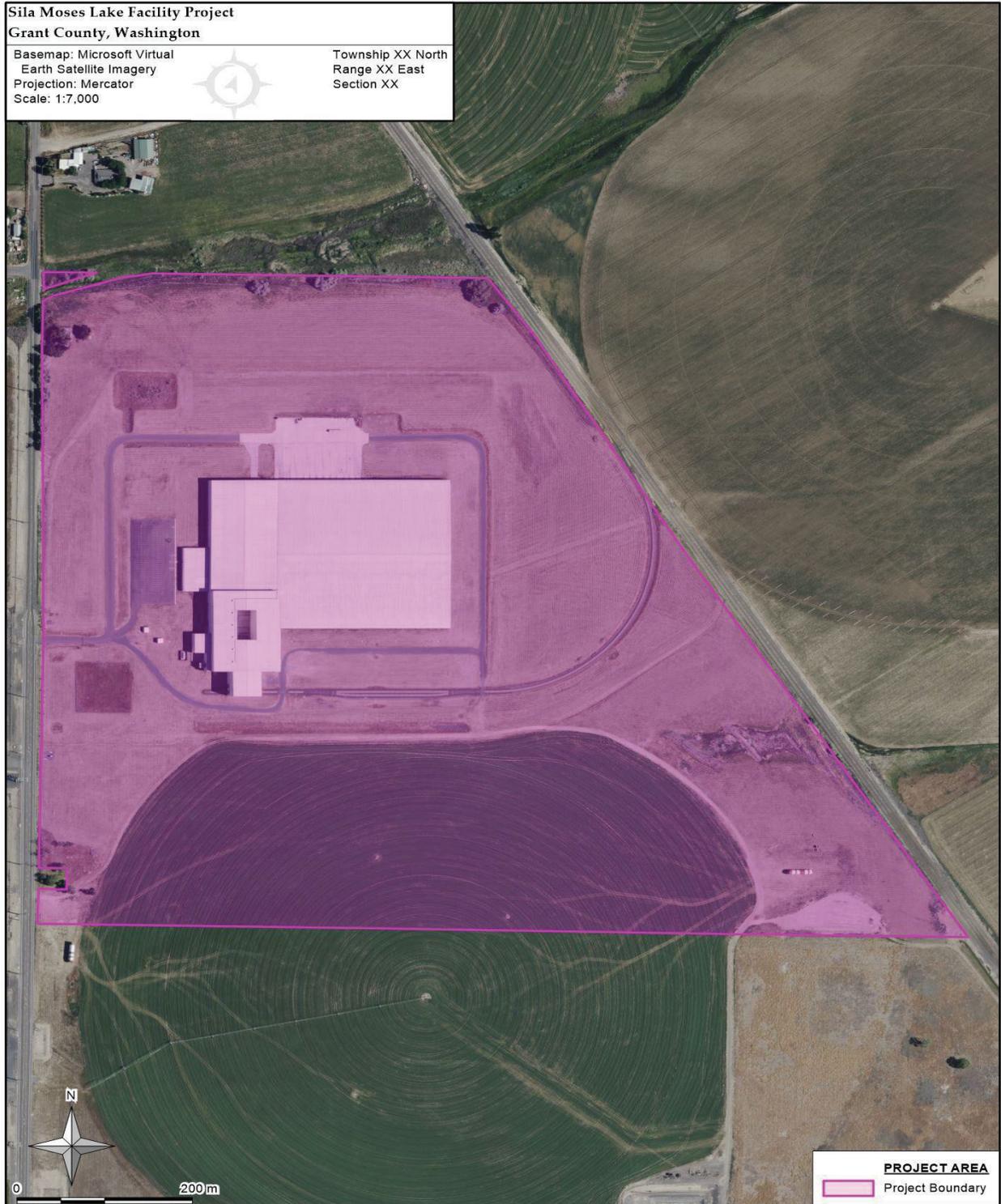


Figure 2. The Project Area on an aerial photograph.

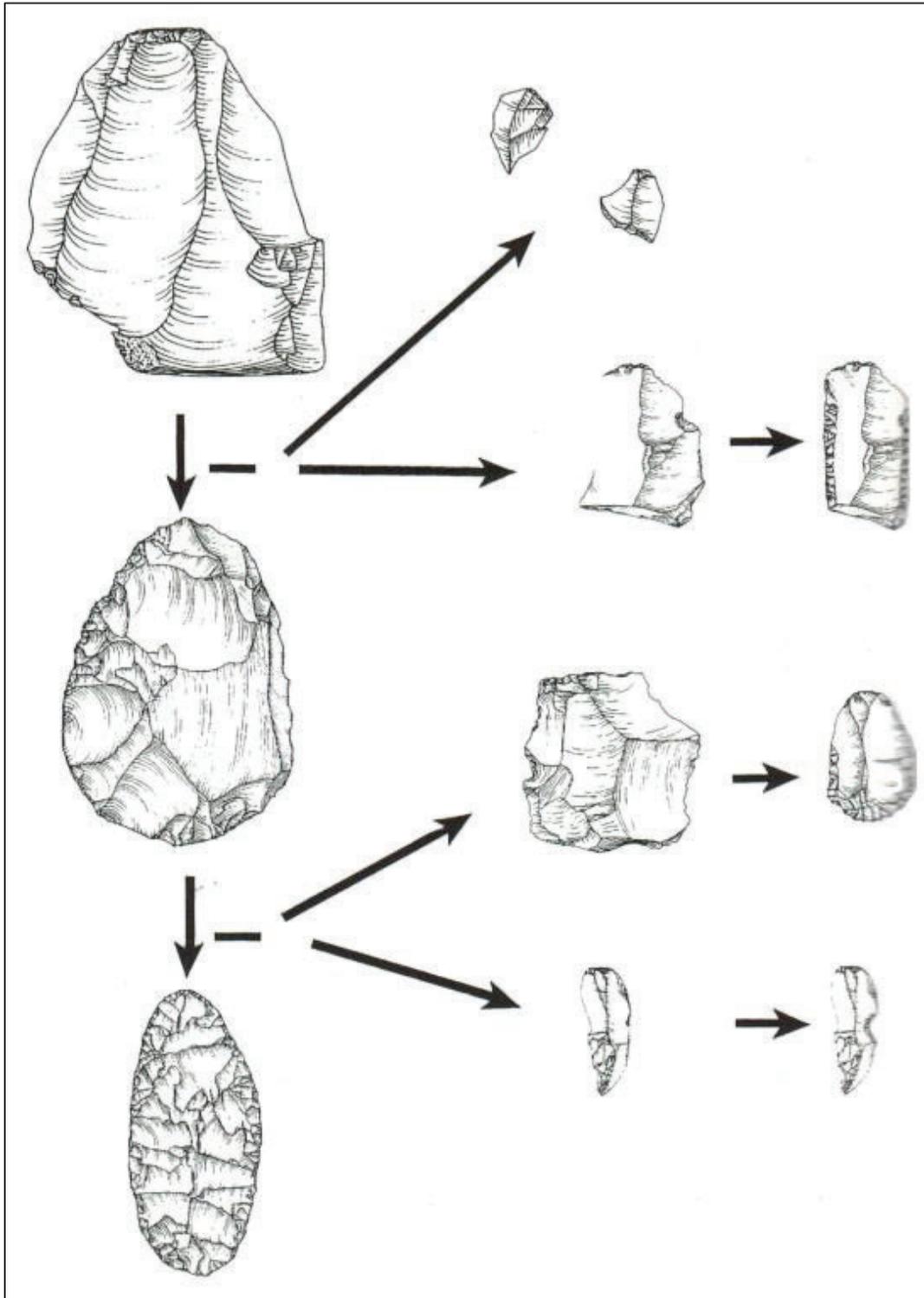


Figure 3. Reduction of a lithic blank to a tool (Andrefsky 1998:158).

Road North NE Project, Grant County, Washington
Inadvertent Discovery Plan and Treatment of Archaeological Materials

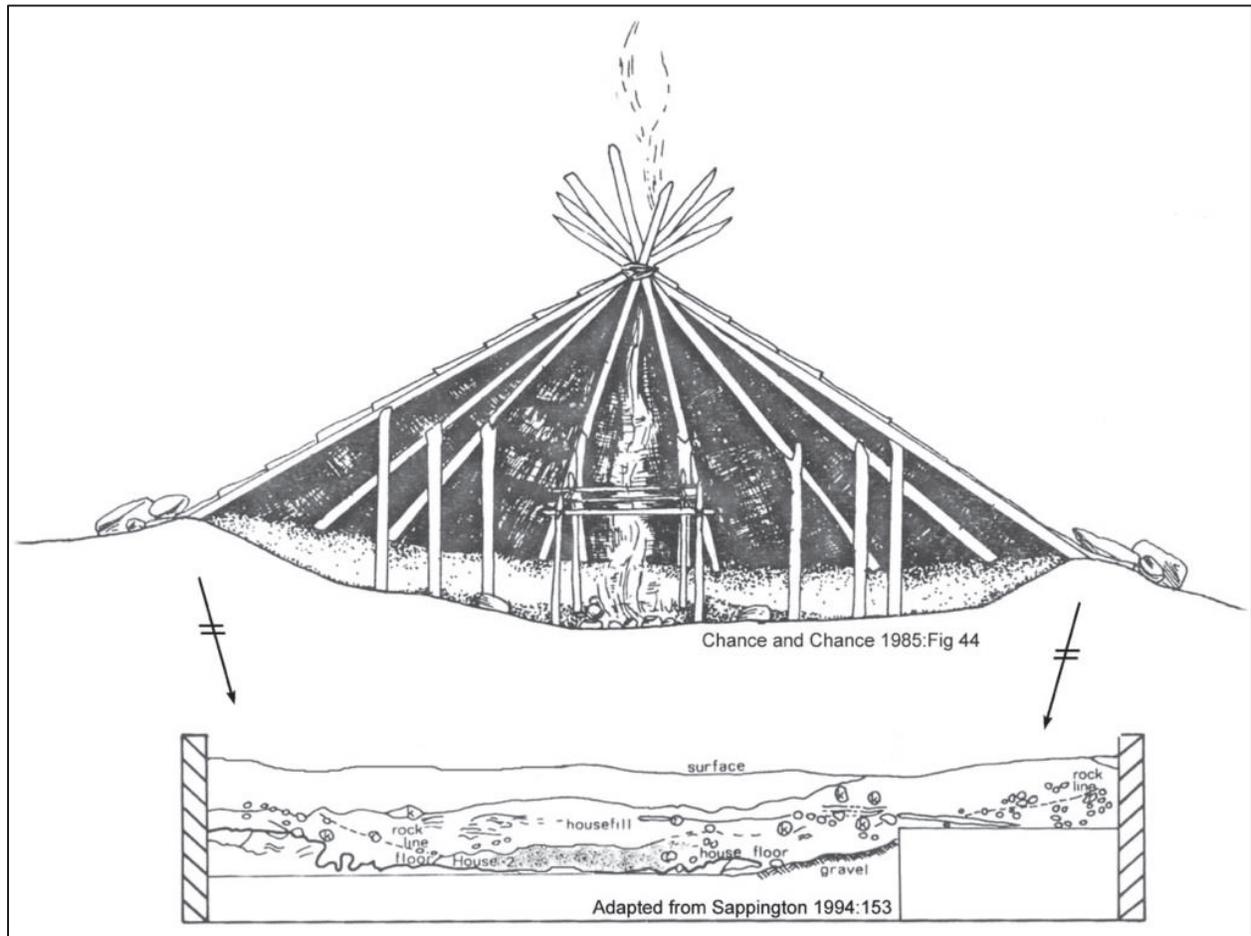


Figure 4. An illustration of a house pit and the resulting archaeological feature (Sappington 1994:153).

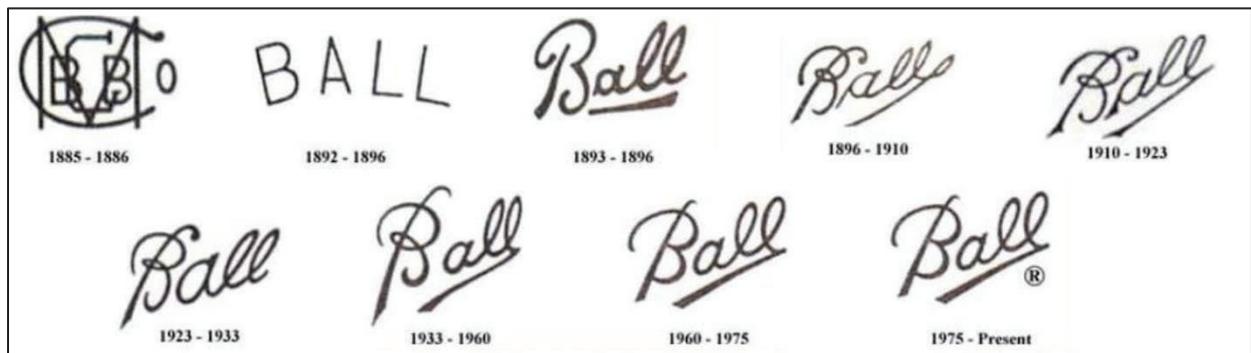


Figure 5. An example of logo changes over time, which can aid in determining the date of historic artifacts.

GHG and Social Cost of Carbon Calculation Tables

Electricity

120,000,000 kWh/yr Process
0.202954 lb CO2e/kWh
24,354,480 lb CO2e/yr
11,047 metric tons CO2e/yr

Natural Gas

87,600 MMBtu/yr TO assist
200 scf/hr flare pilot
503 kg/hr assist gas <- emergency operation only, normal operation would only include nat. gas combustion in the pilots.
1,026 Btu/scf
1,798 MMBtu/yr flare pilot
117.1 lb CO2e/MMBtu
4,748 metric tonnes/yr

Generators

2 Gens
30 hours
136 gal/hr
138,000 Btu/hr
163.6 lb CO2e/MMBtu
84 metric tonnes/yr

Conversion Factors

2,205 lbs/metric ton
1.61 km/mi
0.00220 lb/g
1,000,000 Btu/MMBtu

Annual CO2e Emissions

Source	Metric Tonnes CO2e
Electricity Use	11,100
Natural Gas Use (flare, thermal oxidizer)	4,800
Waste Gas Control (thermal oxidizer)	29,600
Emergency Generators	84
Direct CO2e Emissions	34,484
Total	45,584

at WA rate.

Electricity @ national average

120,000,000 kWh/yr
0.857019 lb CO2e/kWh
102,842,280 lb CO2e/yr
46,648 metric tons CO2e/yr

35,601 difference between WA and avg

Embodied Carbon (buildcarbonneutral.com)

1000 sq ft new buildings	
1 story above ground, 0 below	
Steel construction	
Ecoregion: NW forested mountains	
Existing vegetation: short grass or lawn	
Installed vegetation: Forest	(only option with trees)
Landscape disturbed: 26 acres	1,154,525 sq ft
Landscape installed: 20 ft x 2000 ft	40000
Embodied CO2	1450 metric tons

Stream	CAS	Heating Value (Btu/ft3)	Heating Value (Btu/lb)	Heating Value (Btu/kg)	Table C-1 Category	Default CO2 Emission Factor (kg CO2/mmBtu)	Default CH4 emission factor (kg CH4/mmBtu)	Default N2O emission factor (kg N2O/mmBtu)	Chemical Formula	Carbon Content	MW (g/mol)
Waste Gas Heat Release (MMBtu/hr)					Petroleum Products (All fuel types in Table C-1)			6.00E-04			
Waste Gas Component											
Hydrogen											
Nitrogen	7727-37-9								N2		28.014
Ammonia	7664-41-7	382.8 kJ/mol (gas)							H3N		17.031
H2O											
HCN (Hydrogen cyanide)	74-90-8	642 kJ/mol							HCN	1	27.025
CO			323	4368	9629.841928				CO	1	28.01
CO2									CO2	1	44.009
Oxygen											
Silane											
H2S											
COS (Carbonyl sulfide)	463-58-1								COS	1	60.08
SO2											
CS2 (Carbon disulfide)	75-15-0								CS2	1	76.15
2-propanethiol	75-33-2								C3H8S	3	76.16
propanethiol	107-03-9	-15,990 Btu/lb= -8,890 cal		15,990	35252.09991				C3H8S	3	76.16
2-Methyl-2-propanethiol	75-66-1								C4H10S	4	90.19
Methane		-890.8 kJ/r	1011	23811	52494.54353	Natural Gas	53.06	1.00E-03			
Ethylene			1631	21884	48246.21354	Ethylene	65.96	3.00E-03			
Ethane			1783	22198	48938.46866	Ethane	59.6	3.00E-03			
Acetylene	74-86-2		1498	21569	47551.75379				C2H2	2	26.04
Propene			2332	20990	46275.27062	Propylene	67.77	3.00E-03			
Propane			2572	21564	47540.73062	Propane Gas	61.46	3.00E-03			
i-Butane			3225	21640	47708.28281	isoButane	64.94	3.00E-03			
1-Butene			3077	20780	45812.29745	Butylene	68.72	3.00E-03			
13-Butadiene (1,3-Butadiene)	106-99-0	-2541.5 kJ/mol (gas)									
n-Butane			3225	21640	47708.28281	Butane	64.77	3.00E-03	C4H6	4	54.09
i-Pentane			3981	20908	46094.49062	Pentanes Plus	70.02	3.00E-03			
n-Pentane			3981	20908	46094.49062	Pentanes Plus	70.02	3.00E-03			
n-Hexane			4667	20526	45252.32038	Pentanes Plus	70.02	3.00E-03			
Benzene	71-43-2		3741	18150	40014.10966				C6H6	6	78.11
Toluene	108-88-3	3910.3 KJ/	4408	18291	40324.96307				C7H8	7	92.14
E-Benzene (Ethylbenzene)	100-41-4	-17,780 BTU/lb = -9877 cal		17780	39198.39503				C8H10	8	106.16
m-Xylene	108-38-3	-17,554 Bt	5155	18410	40587.31454				C8H10	8	106.16
Styrene	100-42-5	4,395.63 kJ/mol at 25 °C							C8H8	8	104.15
DTRM-HT											
Total (kg/ hr)											
Supplemental Natural Gas Heat Release (MMBtu/hr)							53.06	1.00E-03	1.00E-04		
					AP42 Table 1.4-2 Natural Gas Combustion						
					lb/MMscf		2.3	0.64			
					lb/MMBtu		2.25E-03	6.27E-04			
					kg/MMBtu		1.02E-03	2.85E-04			
					AP42 Table 1.5 Industrial Butane and Propane						
					lb/Mgal		2.00E-01	0.9			
					lb/MMBtu		1.96E-03	8.82E-03			
					kg/MMBtu		8.89E-04	4.00E-03			

Use Part 98 combustion EFs for petroleum related components (CO2 and CH4 only). Use mass-balance based on carbon count for all other components assuming all C is oxidized to CO2 (in accordance with Part 98 methods for calculated CO2 emissions from waste gas streams in other industries). Assume the N2O emission factor for "All Petroleum Products" is applicable to the entire waste gas stream on a Btu basis. There is nitrogen present in the waste gas (N2, NH3, and HCN) and combustion readily forms N2O even when fuel-bound N is not present. Furthermore, most of the waste gas is composed of heavier hydrocarbons (therefore, the natural gas N2O factor is less appropriate).

Minimum 1	% of				
	Total	CO2 (kg/t	CH4 (kg/hr)	N2O (kg/l	CO2e (kg,
170					
0.008					
0.3					
7.91					
26.9					
0.007			4.20E-06	0.00125	

0.0429	0.01%				0
7.2462	1.18%				0
0	0.00%				0
	0.00%				0
0.0138	0.00%	0.02247			0.02247
0.1569	0.03%	0.24652			0.24652
	0.00%	0			0
0.4442	0.07%				0
	0.00%				0
0.0002	0.00%				0
0	0.00%	0			0
0	0.00%				0
0	0.00%	0			0
	0.00%	0			0
	0.00%	0			0
	0.00%	0	0.00E+00		0
	0.00%	0	0.00E+00		0
	0.00%	0	0.00E+00		0
	0.00%	0			0
	0.00%	0	0.00E+00		0
0.0024	0.00%	0.00701	3.42E-07		0.00702
	0.00%	0	0.00E+00		0
	0.00%	0	0.00E+00		0
	0.00%	0			0
	0.00%	0	0.00E+00		0
	0.00%	0	0.00E+00		0
	0.00%	0	0.00E+00		0
	0.00%	0	0.00E+00		0
	0.00%	0			0
	0.00%	0			0
	0.00%	0			0
	0.00%	0			0
	0.00%	0			0
7.91	1.29%				

13		689.78	1.30E-02	1.30E-03	690.492
		0.276	3.423E-07	4.2E-06	0.27726

Minimum 3	% of			
	Total	CO2 (kg/l	CH4 (kg/hr)	N2O (kg/l CO2e (kg,
500				
0.19				
6.46				
170.56				
334.7				
1.809			1.09E-03	0.32345

1.6793	0.27%			0
131.6945	21.42%			0
	0.00%			0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
	0.00%			0
	0.00%			0
	0.00%	0		0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
0.8709	0.14%	2.42577	4.57E-05	2.42691
0.9279	0.15%	2.95287	1.34E-04	2.95623
0.1766	0.03%	0.5151	2.59E-05	0.51574
	0.00%	0		0
34.7276	5.65%	108.908	4.82E-03	109.029
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.145	0.02%	0.45649	1.99E-05	0.45699
0.0688	0.01%	0.05598		0.05598
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.2538	0.04%	0.143		0.143
0.0196	0.00%	0.00936		0.00936
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
170.56	27.74%			

11		583.66	1.10E-02	1.10E-03	584.263
		115.467	0.00504696	0.00109	115.917
					1,119
					1,015

Minimum 4	% of			
	Total	CO2 (kg/l	CH4 (kg/hr)	N2O (kg/l CO2e (kg,
350				
0.19				
1.52				
41.18				
350.5				
0.446			2.68E-04	0.07974

0.3338	0.05%			0
31.4644	5.12%			0
	0.00%			0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
	0.00%			0
	0.00%			0
	0.00%	0		0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
0.1731	0.03%	0.48215	9.09E-06	0.48237
0.1844	0.03%	0.58682	2.67E-05	0.58749
0.0351	0.01%	0.10238	5.15E-06	0.10251
	0.00%	0		0
8.8884	1.45%	27.8747	1.23E-03	27.9055
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.0288	0.00%	0.09067	3.96E-06	0.09077
0.0136	0.00%	0.01107		0.01107
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.0505	0.01%	0.02845		0.02845
0.0039	0.00%	0.00186		0.00186
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
41.18	6.70%			

12.5		663.25	1.25E-02	1.25E-03	663.935
------	--	--------	----------	----------	---------

29.1781 0.0012788 0.00027 29.2898
283
257

DESIGN				
CASE 1	% of			
MINIMUM	Total	CO2 (kg/t	CH4 (kg/hr)	N2O (kg/l
170		CO2e (kg/		
0.013				
6.5				
179.82				
7.9				
0.043			2.6E-05	0.00769

0.2097	0.12%			0
174.7954	97.21%			0
0.0002	0.00%			0
	0.00%			0
0.5621	0.31%	0.91535		0.91535
0.6554	0.36%	1.02976		1.02976
0.02	0.01%	0.02		0.02
3.5359	1.97%			0
	0.00%			0
0.0042	0.00%			0
	0.00%	0		0
0.0012	0.00%			0
0.002	0.00%	0.00116		0.00116
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
0.0001	0.00%	0.00028	5.25E-09	0.00028
0.0002	0.00%	0.00064	2.89E-08	0.00064
	0.00%	0	0.00E+00	0
0.0005	0.00%	0.00085		0.00085
	0.00%	0	0.00E+00	0
0.0373	0.02%	0.10899	5.32E-06	0.10912
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0		0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
179.82	100.00%			

13	689.78	0.013	0.0013	690.492
----	--------	-------	--------	---------

2.07701 5.354E-06 2.6E-05 2.08484

20

18

DESIGN CASE 3	% of			
MAX	Total	CO2 (kg/t	CH4 (kg/hr)	N2O (kg/l CO2e (kg/
175				
0.19				
90.71				
1045.46				
286.9				
21.776			1.31E-02	3.89355

118.5034	65.90%			0
691.2811	384.43%			0
	0.00%			0
45.065	25.06%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
0.0296	0.02%			0
	0.00%			0
	0.00%	0		0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
4.4625	2.48%	12.4297	2.34E-04	12.4355
4.7548	2.64%	15.1313	6.88E-04	15.1485
0.9049	0.50%	2.63935	1.33E-04	2.64267
	0.00%	0		0
177.9586	98.96%	558.092	2.47E-02	558.709
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.7438	0.41%	2.34165	1.02E-04	2.3442
0.3528	0.20%	0.28705		0.28705
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
1.3007	0.72%	0.73284		0.73284
0.1014	0.06%	0.04843		0.04843
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
1045.46	581.39%			

3	159.18	3.00E-03	3.00E-04	159.344
	591.702	0.025862786	0.01307	596.242
				5,757
				5,223

DESIGN CASE	% of			
3 MINIMUM	Total	CO2 (kg/t	CH4 (kg/hr)	N2O (kg/l CO2e (kg/
350				
0.19				
1.26				
33.74				
256.8				
0.271			1.63E-04	0.04845

0.2513	0.14%			0
27.9225	15.53%			0
	0.00%			0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
	0.00%			0
	0.00%			0
	0.00%	0		0
	0.00%			0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
0.1303	0.07%	0.36293	6.84E-06	0.3631
0.1389	0.08%	0.44202	2.01E-05	0.44253
0.0264	0.01%	0.077	3.88E-06	0.0771
	0.00%	0		0
5.1975	2.89%	16.2998	7.22E-04	16.3178
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.0217	0.01%	0.06832	2.98E-06	0.06839
0.0103	0.01%	0.00838		0.00838
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
	0.00%	0	0.00E+00	0
0.038	0.02%	0.02141		0.02141
0.003	0.00%	0.00143		0.00143
	0.00%	0		0
	0.00%	0		0
	0.00%	0		0
	0.00%			0
33.74	18.76%			

13	689.78	1.30E-02	1.30E-03	690.492
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17.2812 0.00075535 0.00016 17.3486

168

152

Design Case	CO ₂ e	
	(kg/hr)	(T/yr)
Phase I		
Max Flow High Btu	2,915	25,537
Max Flow Low Btu	1	5
Minimum 1	0	2
Minimum 2	91	795
Minimum 3	116	1,015
Minimum 4	29	257
Alternate 1	0	0
Alternate 2	1	7
Phase I Worst-Case (80% Max)	2,355	20,633
Phase II		
Design Case 1 Max	1,190	10,420
Design Case 1 Minimum	2	18
Design Case 1 Alternate 1	0	0
Design Case 1 Alternate 2	352	3,087
Design Case 2 Max	596	5,217
Design Case 2 Minimum	2	18
Design Case 2 Alternate 1	294	2,572
Design Case 2 Alternate 2	352	3,084
Design Case 2 Alternate 3	1	13
Design Case 3 Max	596	5,223
Design Case 3 Minimum	17	152
Design Case 3 Alternate 1	0	0
Design Case 3 Alternate 2	1	13
Phase II Worst-Case (80% Max)	1,022	8,954
Total Worst-Case (80% Max)	3,377	29,586

Max Nat Gas from TO supplement:

87,600 MMBtu/yr

SOCIAL COST OF CARBON DIOXIDE (CO₂) ESTIMATING TOOL

Base Year: 2023 (Enter the base year on the instructions tab, step 2.)

Year of Emissions	Enter CO ₂ emissions (metric tons) (Use negative numbers for emission reductions)			Phase 1 Present Value (in Base Year) of Estimated SC-CO ₂ by emissions year (2020\$) ¹				of Es
	Phase 1	Phase 2	Phase 3	5%	3%	2.5%	3%	
				Average	Average	Average	95th Percentile	
2020				N/A	N/A	N/A	N/A	N/A
2021				N/A	N/A	N/A	N/A	N/A
2022				N/A	N/A	N/A	N/A	N/A
2023	100			\$1,594	\$5,429	\$8,034	\$16,214	\$0
2024	650			\$10,172	\$34,933	\$51,775	\$104,536	\$0
2025	27,060	200		\$415,264	\$1,439,161	\$2,136,494	\$4,314,704	\$3,069
2026	27,060	500		\$406,920	\$1,423,692	\$2,117,201	\$4,275,954	\$7,519
2027	27,060	74,340		\$398,429	\$1,407,926	\$2,097,579	\$4,235,825	\$1,094,575
2028	27,060	74,340		\$389,824	\$1,391,848	\$2,077,654	\$4,194,382	\$1,070,936
2029	27,060	74,340		\$381,115	\$1,375,512	\$2,057,454	\$4,151,760	\$1,047,010
2030	27,060	74,340		\$372,371	\$1,358,947	\$2,037,003	\$4,108,085	\$1,022,987
2031	27,060	74,340		\$365,335	\$1,343,804	\$2,017,591	\$4,070,097	\$1,003,658
2032	27,060	74,340		\$358,107	\$1,328,390	\$1,997,914	\$4,030,857	\$983,802
2033	27,060	74,340		\$350,756	\$1,312,733	\$1,977,998	\$3,990,451	\$963,607
2034	27,060	74,340		\$343,277	\$1,296,862	\$1,957,884	\$3,948,959	\$943,061
2035	27,060	74,340		\$335,731	\$1,280,802	\$1,937,556	\$3,906,517	\$922,329
2036	27,060	74,340		\$328,110	\$1,264,577	\$1,917,054	\$3,863,199	\$901,392
2037	27,060	74,340		\$320,467	\$1,248,210	\$1,896,399	\$3,819,071	\$880,396
2038	27,060	74,340		\$312,795	\$1,231,725	\$1,875,631	\$3,774,254	\$859,320
2039	27,060	74,340		\$305,140	\$1,215,140	\$1,854,729	\$3,728,791	\$838,289
2040	27,060	74,340		\$297,504	\$1,198,477	\$1,833,730	\$3,682,791	\$817,312
2041	27,060	74,340		\$290,601	\$1,181,786	\$1,812,185	\$3,631,158	\$798,347
2042	27,060	74,340		\$283,680	\$1,165,050	\$1,790,599	\$3,579,392	\$779,335
2043	27,060	74,340		\$276,760	\$1,148,286	\$1,768,972	\$3,527,577	\$760,323
2044	27,060	74,340		\$269,856	\$1,131,511	\$1,747,351	\$3,475,743	\$741,355
2045		74,340		\$0	\$0	\$0	\$0	\$722,470
2046		74,340		\$0	\$0	\$0	\$0	\$703,726
2047				\$0	\$0	\$0	\$0	\$0
2048				\$0	\$0	\$0	\$0	\$0
2049				\$0	\$0	\$0	\$0	\$0
2050				\$0	\$0	\$0	\$0	\$0
2051				\$0	\$0	\$0	\$0	\$0
2052				\$0	\$0	\$0	\$0	\$0
2053				\$0	\$0	\$0	\$0	\$0
2054				\$0	\$0	\$0	\$0	\$0
2055				\$0	\$0	\$0	\$0	\$0
2056				\$0	\$0	\$0	\$0	\$0
2057				\$0	\$0	\$0	\$0	\$0
2058				\$0	\$0	\$0	\$0	\$0
2059				\$0	\$0	\$0	\$0	\$0
2060				\$0	\$0	\$0	\$0	\$0
2061				\$0	\$0	\$0	\$0	\$0
2062				\$0	\$0	\$0	\$0	\$0
2063				\$0	\$0	\$0	\$0	\$0
2064				\$0	\$0	\$0	\$0	\$0
2065				\$0	\$0	\$0	\$0	\$0
2066				\$0	\$0	\$0	\$0	\$0
2067				\$0	\$0	\$0	\$0	\$0
2068				\$0	\$0	\$0	\$0	\$0
2069				\$0	\$0	\$0	\$0	\$0
2070				\$0	\$0	\$0	\$0	\$0
TOTALS:	541,950	1,487,500	0	\$6,813,807	\$25,784,802	\$38,968,787	\$78,430,318	\$17,864,818

Present Value (in Base Year) of Estimated SC-CO₂ for all CO₂ emissions (2020\$)

	5% Average	3% Average	2.5% Average	3% 95th Percentile
Phase 1	\$6,813,807	\$25,784,802	\$38,968,787	\$78,430,318
Phase 2	\$17,864,818	\$68,976,663	\$104,683,499	\$210,315,162
Phase 3	\$0	\$0	\$0	\$0
Total	\$24,678,625	\$94,761,465	\$143,652,287	\$288,745,480

¹ The social cost estimates from the IWG represent the present value of damages from that year's emissions discounted back to the year of emissions. These columns discount values from 2020–2050 are from *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under E.O. 13990*. Interagency Working Group on Social Cost of Carbon, Methane, and Nitrous Oxide. 2019. <https://www.epa.gov/energy-social-cost-carbon-methane-nitrous-oxide>.
³ Values from 2051–2070 are from *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Consumer Fur*

Phase 2 Present Value (in Base Year)			Phase 3 Present Value (in Base Year)				Per t	
Estimated SC-CO ₂ by emissions year (2020\$) ¹			of Estimated SC-CO ₂ by emissions year (2020\$) ¹					
3% Average	2.5% Average	3% 95th Percentile	5% Average	3% Average	2.5% Average	3% 95th Percentile	5% Average	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	16
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	16
\$10,637	\$15,791	\$31,890	\$0	\$0	\$0	\$0	\$0	17
\$26,306	\$39,121	\$79,009	\$0	\$0	\$0	\$0	\$0	17
\$3,867,895	\$5,762,529	\$11,636,777	\$0	\$0	\$0	\$0	\$0	18
\$3,823,725	\$5,707,791	\$11,522,926	\$0	\$0	\$0	\$0	\$0	18
\$3,778,847	\$5,652,295	\$11,405,834	\$0	\$0	\$0	\$0	\$0	19
\$3,733,339	\$5,596,111	\$11,285,848	\$0	\$0	\$0	\$0	\$0	19
\$3,691,736	\$5,542,783	\$11,181,486	\$0	\$0	\$0	\$0	\$0	20
\$3,649,390	\$5,488,727	\$11,073,686	\$0	\$0	\$0	\$0	\$0	21
\$3,606,378	\$5,434,011	\$10,962,679	\$0	\$0	\$0	\$0	\$0	21
\$3,562,776	\$5,378,756	\$10,848,691	\$0	\$0	\$0	\$0	\$0	22
\$3,518,655	\$5,322,908	\$10,732,096	\$0	\$0	\$0	\$0	\$0	22
\$3,474,081	\$5,266,584	\$10,613,089	\$0	\$0	\$0	\$0	\$0	23
\$3,429,119	\$5,209,842	\$10,491,860	\$0	\$0	\$0	\$0	\$0	23
\$3,383,829	\$5,152,785	\$10,368,738	\$0	\$0	\$0	\$0	\$0	24
\$3,338,268	\$5,095,363	\$10,243,841	\$0	\$0	\$0	\$0	\$0	25
\$3,292,491	\$5,037,676	\$10,117,469	\$0	\$0	\$0	\$0	\$0	25
\$3,246,635	\$4,978,486	\$9,975,619	\$0	\$0	\$0	\$0	\$0	26
\$3,200,658	\$4,919,186	\$9,833,408	\$0	\$0	\$0	\$0	\$0	26
\$3,154,604	\$4,859,771	\$9,691,059	\$0	\$0	\$0	\$0	\$0	27
\$3,108,518	\$4,800,373	\$9,548,660	\$0	\$0	\$0	\$0	\$0	28
\$3,062,402	\$4,740,981	\$9,406,335	\$0	\$0	\$0	\$0	\$0	28
\$3,016,373	\$4,681,631	\$9,264,162	\$0	\$0	\$0	\$0	\$0	29
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	30
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	30
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	31
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	32
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	32
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	33
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	34
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	34
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	35
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	35
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	36
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	37
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	37
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	38
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	39
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	40
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	41
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	42
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	44
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	45
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	46
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	47
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	48
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	49
\$68,976,663	\$104,683,499	\$210,315,162	\$0	\$0	\$0	\$0	\$0	

1. Adjust that value to the base year in order to calculate the total net present value of the project. Source: Social Cost of Carbon, United States Government. February 2021. *Resources*, Appendix 14A. U.S. Department of Energy. June 2022.

Carbon SC-CO₂ Value (2020\$/metric ton CO₂)^{2,3}

3%	2.5%	3%
Average	Average	95th Percentile
51	76	152
52	78	155
53	79	159
54	80	162
55	82	166
56	83	169
57	84	173
59	86	176
60	87	180
61	88	183
62	89	187
63	91	191
64	92	194
65	94	198
66	95	202
67	96	206
69	98	210
70	99	213
71	100	217
72	102	221
73	103	225
74	104	228
75	106	232
77	107	235
78	108	239
79	110	242
80	111	246
81	112	249
82	114	253
84	115	256
85	116	260
85	118	260
86	119	261
87	120	262
88	121	263
89	122	265
90	123	267
91	124	269
92	125	271
92	127	273
93	128	275
95	129	280
96	131	285
98	132	290
99	134	295
100	135	300
102	137	305
103	138	311
105	140	316
106	141	321
108	143	326

SOCIAL COST OF METHANE (CH₄) ESTIMATING TOOL

Base Year: 2023 (Enter the base year on the instructions tab, step 2.)

Year of Emissions	Enter CH ₄ emissions (metric tons) (Use negative numbers for emission reductions)			Phase 1 Present Value (in Base Year) of Estimated SC-CH ₄ by emissions year (2020\$) ¹				of Es
	Phase 1	Phase 2	Phase 3	5% Average	3% Average	2.5% Average	3% 95th Percentile	
	2020				N/A	N/A	N/A	
2021				N/A	N/A	N/A	N/A	N/A
2022				N/A	N/A	N/A	N/A	N/A
2023				\$0	\$0	\$0	\$0	\$0
2024				\$0	\$0	\$0	\$0	\$0
2025	3			\$1,956	\$4,361	\$5,711	\$11,533	\$0
2026	3			\$1,927	\$4,349	\$5,710	\$11,513	\$0
2027	3	11		\$1,895	\$4,335	\$5,706	\$11,485	\$7,827
2028	3	11		\$1,862	\$4,317	\$5,698	\$11,448	\$7,691
2029	3	11		\$1,828	\$4,297	\$5,688	\$11,404	\$7,551
2030	3	11		\$1,793	\$4,275	\$5,675	\$11,353	\$7,406
2031	3	11		\$1,770	\$4,268	\$5,677	\$11,349	\$7,312
2032	3	11		\$1,746	\$4,258	\$5,677	\$11,335	\$7,210
2033	3	11		\$1,719	\$4,245	\$5,672	\$11,313	\$7,101
2034	3	11		\$1,692	\$4,229	\$5,665	\$11,282	\$6,986
2035	3	11		\$1,662	\$4,210	\$5,655	\$11,244	\$6,866
2036	3	11		\$1,632	\$4,189	\$5,641	\$11,198	\$6,742
2037	3	11		\$1,601	\$4,165	\$5,625	\$11,145	\$6,614
2038	3	11		\$1,570	\$4,139	\$5,607	\$11,086	\$6,482
2039	3	11		\$1,537	\$4,112	\$5,586	\$11,021	\$6,349
2040	3	11		\$1,504	\$4,082	\$5,563	\$10,950	\$6,213
2041	3	11		\$1,475	\$4,052	\$5,536	\$10,860	\$6,090
2042	3	11		\$1,444	\$4,019	\$5,507	\$10,766	\$5,965
2043	3	11		\$1,414	\$3,985	\$5,476	\$10,667	\$5,838
2044	3	11		\$1,382	\$3,950	\$5,443	\$10,566	\$5,710
2045		11		\$0	\$0	\$0	\$0	\$5,580
2046		11		\$0	\$0	\$0	\$0	\$5,450
2047				\$0	\$0	\$0	\$0	\$0
2048				\$0	\$0	\$0	\$0	\$0
2049				\$0	\$0	\$0	\$0	\$0
2050				\$0	\$0	\$0	\$0	\$0
2051				\$0	\$0	\$0	\$0	\$0
2052				\$0	\$0	\$0	\$0	\$0
2053				\$0	\$0	\$0	\$0	\$0
2054				\$0	\$0	\$0	\$0	\$0
2055				\$0	\$0	\$0	\$0	\$0
2056				\$0	\$0	\$0	\$0	\$0
2057				\$0	\$0	\$0	\$0	\$0
2058				\$0	\$0	\$0	\$0	\$0
2059				\$0	\$0	\$0	\$0	\$0
2060				\$0	\$0	\$0	\$0	\$0
2061				\$0	\$0	\$0	\$0	\$0
2062				\$0	\$0	\$0	\$0	\$0
2063				\$0	\$0	\$0	\$0	\$0
2064				\$0	\$0	\$0	\$0	\$0
2065				\$0	\$0	\$0	\$0	\$0
2066				\$0	\$0	\$0	\$0	\$0
2067				\$0	\$0	\$0	\$0	\$0
2068				\$0	\$0	\$0	\$0	\$0
2069				\$0	\$0	\$0	\$0	\$0
2070				\$0	\$0	\$0	\$0	\$0
TOTALS:	54	222	0	\$33,410	\$83,836	\$112,517	\$223,515	\$132,981

Present Value (in Base Year) of Estimated SC-CH₄ for all CH₄ emissions (2020\$)

	5% Average	3% Average	2.5% Average	3% 95th Percentile
Phase 1	\$33,410	\$83,836	\$112,517	\$223,515
Phase 2	\$132,981	\$342,452	\$462,068	\$913,931
Phase 3	\$0	\$0	\$0	\$0
Total	\$166,391	\$426,288	\$574,584	\$1,137,447

¹ The social cost estimates from the IWG represent the present value of damages from that year's emissions discounted back to the year of emissions. These columns discou

² Values from 2020–2050 are from *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under E.O. 13990*. Interagency Worki

³ Values from 2051–2070 are from *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Consumer Fur*

Phase 2 Present Value (in Base Year) Estimated SC-CH ₄ by emissions year (2020\$) ¹			Phase 3 Present Value (in Base Year) of Estimated SC-CH ₄ by emissions year (2020\$) ¹				Per t
3% Average	2.5% Average	3% 95th Percentile	5% Average	3% Average	2.5% Average	3% 95th Percentile	5% Average
N/A	N/A	N/A	N/A	N/A	N/A	N/A	666
N/A	N/A	N/A	N/A	N/A	N/A	N/A	693
N/A	N/A	N/A	N/A	N/A	N/A	N/A	720
\$0	\$0	\$0	\$0	\$0	\$0	\$0	747
\$0	\$0	\$0	\$0	\$0	\$0	\$0	775
\$0	\$0	\$0	\$0	\$0	\$0	\$0	802
\$0	\$0	\$0	\$0	\$0	\$0	\$0	829
\$17,903	\$23,565	\$47,433	\$0	\$0	\$0	\$0	856
\$17,831	\$23,535	\$47,282	\$0	\$0	\$0	\$0	884
\$17,748	\$23,492	\$47,100	\$0	\$0	\$0	\$0	911
\$17,655	\$23,437	\$46,888	\$0	\$0	\$0	\$0	938
\$17,627	\$23,448	\$46,871	\$0	\$0	\$0	\$0	972
\$17,585	\$23,445	\$46,815	\$0	\$0	\$0	\$0	1,007
\$17,531	\$23,428	\$46,723	\$0	\$0	\$0	\$0	1,041
\$17,464	\$23,397	\$46,596	\$0	\$0	\$0	\$0	1,075
\$17,387	\$23,354	\$46,437	\$0	\$0	\$0	\$0	1,110
\$17,300	\$23,300	\$46,248	\$0	\$0	\$0	\$0	1,144
\$17,203	\$23,234	\$46,030	\$0	\$0	\$0	\$0	1,179
\$17,096	\$23,157	\$45,786	\$0	\$0	\$0	\$0	1,213
\$16,982	\$23,071	\$45,517	\$0	\$0	\$0	\$0	1,247
\$16,859	\$22,974	\$45,225	\$0	\$0	\$0	\$0	1,282
\$16,733	\$22,863	\$44,852	\$0	\$0	\$0	\$0	1,319
\$16,600	\$22,743	\$44,463	\$0	\$0	\$0	\$0	1,357
\$16,461	\$22,615	\$44,058	\$0	\$0	\$0	\$0	1,394
\$16,315	\$22,480	\$43,639	\$0	\$0	\$0	\$0	1,432
\$16,164	\$22,338	\$43,207	\$0	\$0	\$0	\$0	1,469
\$16,008	\$22,190	\$42,763	\$0	\$0	\$0	\$0	1,507
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,544
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,582
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,619
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,657
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,680
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,703
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,726
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,749
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,772
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,797
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,823
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,848
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,873
\$0	\$0	\$0	\$0	\$0	\$0	\$0	1,899
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,021
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,143
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,264
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,386
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,508
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,632
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,757
\$0	\$0	\$0	\$0	\$0	\$0	\$0	2,881
\$0	\$0	\$0	\$0	\$0	\$0	\$0	3,006
\$0	\$0	\$0	\$0	\$0	\$0	\$0	3,130
\$342,452	\$462,068	\$913,931	\$0	\$0	\$0	\$0	

1. Adjusted that value to the base year in order to calculate the total net present value of the project. Source: Social Cost of Carbon, United States Government. February 2021. *Energy Economics*, Appendix 14A. U.S. Department of Energy. June 2022.

on SC-CH₄ Value (2020\$/metric ton CH₄)^{2,3}

3%	2.5%	3%
Average	Average	95th Percentile
1,485	1,953	3,906
1,532	2,009	4,035
1,579	2,064	4,163
1,626	2,120	4,292
1,673	2,175	4,420
1,720	2,230	4,548
1,767	2,286	4,677
1,814	2,341	4,805
1,861	2,397	4,934
1,908	2,452	5,062
1,954	2,508	5,190
2,010	2,572	5,344
2,065	2,635	5,498
2,121	2,699	5,652
2,176	2,763	5,806
2,231	2,827	5,959
2,287	2,891	6,113
2,342	2,955	6,267
2,397	3,019	6,421
2,453	3,083	6,574
2,508	3,147	6,728
2,564	3,210	6,873
2,620	3,273	7,018
2,676	3,336	7,162
2,732	3,399	7,307
2,788	3,462	7,452
2,844	3,524	7,596
2,900	3,587	7,741
2,955	3,650	7,886
3,011	3,713	8,031
3,067	3,776	8,175
3,096	3,807	8,193
3,128	3,841	8,228
3,159	3,874	8,263
3,190	3,908	8,297
3,221	3,942	8,332
3,256	3,979	8,373
3,291	4,017	8,415
3,326	4,055	8,456
3,360	4,092	8,497
3,395	4,130	8,539
3,548	4,296	9,067
3,702	4,462	9,594
3,856	4,628	10,122
4,009	4,794	10,650
4,163	4,960	11,177
4,325	5,141	11,758
4,488	5,323	12,338
4,651	5,504	12,919
4,814	5,686	13,499
4,976	5,867	14,079

SOCIAL COST OF NITROUS OXIDE (N₂O) ESTIMATING TOOL

Base Year: 2023 (Enter the base year on the instructions tab, step 2.)

Year of Emissions	Enter N ₂ O emissions (metric tons) (Use negative numbers for emission reductions)			Phase 1 Present Value (in Base Year) of Estimated SC-N ₂ O by emissions year (2020\$) ¹				of Es 5%
	Phase 1	Phase 2	Phase 3	5%	3%	2.5%	3%	
				Average	Average	Average	95th Percentile	
2020				N/A	N/A	N/A	N/A	N/A
2021				N/A	N/A	N/A	N/A	N/A
2022				N/A	N/A	N/A	N/A	N/A
2023				\$0	\$0	\$0	\$0	\$0
2024				\$0	\$0	\$0	\$0	\$0
2025	0			\$1,287	\$4,056	\$5,951	\$10,696	\$0
2026	0			\$1,262	\$4,022	\$5,914	\$10,616	\$0
2027	0	1		\$1,237	\$3,986	\$5,875	\$10,531	\$3,539
2028	0	1	1	\$1,211	\$3,949	\$5,834	\$10,442	\$3,465
2029	0	1	1	\$1,185	\$3,910	\$5,793	\$10,349	\$3,390
2030	0	1	1	\$1,158	\$3,870	\$5,749	\$10,253	\$3,315
2031	0	1	1	\$1,138	\$3,839	\$5,714	\$10,178	\$3,257
2032	0	1	1	\$1,117	\$3,806	\$5,677	\$10,100	\$3,197
2033	0	1	1	\$1,096	\$3,772	\$5,638	\$10,017	\$3,136
2034	0	1	1	\$1,074	\$3,736	\$5,598	\$9,930	\$3,073
2035	0	1	1	\$1,052	\$3,699	\$5,556	\$9,840	\$3,009
2036	0	1	1	\$1,029	\$3,662	\$5,514	\$9,747	\$2,945
2037	0	1	1	\$1,006	\$3,623	\$5,470	\$9,651	\$2,879
2038	0	1	1	\$983	\$3,583	\$5,424	\$9,552	\$2,813
2039	0	1	1	\$960	\$3,543	\$5,378	\$9,451	\$2,747
2040	0	1	1	\$937	\$3,502	\$5,331	\$9,348	\$2,681
2041	0	1	1	\$918	\$3,465	\$5,287	\$9,250	\$2,626
2042	0	1	1	\$898	\$3,427	\$5,243	\$9,151	\$2,569
2043	0	1	1	\$878	\$3,389	\$5,197	\$9,049	\$2,512
2044	0	1	1	\$858	\$3,349	\$5,150	\$8,945	\$2,455
2045		1		\$0	\$0	\$0	\$0	\$2,397
2046		1		\$0	\$0	\$0	\$0	\$2,340
2047				\$0	\$0	\$0	\$0	\$0
2048				\$0	\$0	\$0	\$0	\$0
2049				\$0	\$0	\$0	\$0	\$0
2050				\$0	\$0	\$0	\$0	\$0
2051				\$0	\$0	\$0	\$0	\$0
2052				\$0	\$0	\$0	\$0	\$0
2053				\$0	\$0	\$0	\$0	\$0
2054				\$0	\$0	\$0	\$0	\$0
2055				\$0	\$0	\$0	\$0	\$0
2056				\$0	\$0	\$0	\$0	\$0
2057				\$0	\$0	\$0	\$0	\$0
2058				\$0	\$0	\$0	\$0	\$0
2059				\$0	\$0	\$0	\$0	\$0
2060				\$0	\$0	\$0	\$0	\$0
2061				\$0	\$0	\$0	\$0	\$0
2062				\$0	\$0	\$0	\$0	\$0
2063				\$0	\$0	\$0	\$0	\$0
2064				\$0	\$0	\$0	\$0	\$0
2065				\$0	\$0	\$0	\$0	\$0
2066				\$0	\$0	\$0	\$0	\$0
2067				\$0	\$0	\$0	\$0	\$0
2068				\$0	\$0	\$0	\$0	\$0
2069				\$0	\$0	\$0	\$0	\$0
2070				\$0	\$0	\$0	\$0	\$0
TOTALS:	4	12	0	\$21,286	\$74,188	\$111,292	\$197,095	\$58,347

Present Value (in Base Year) of Estimated SC-N₂O for all N₂O emissions (2020\$)

	5% Average	3% Average	2.5% Average	3% 95th Percentile
Phase 1	\$21,286	\$74,188	\$111,292	\$197,095
Phase 2	\$58,347	\$207,979	\$313,550	\$553,241
Phase 3	\$0	\$0	\$0	\$0
Total	\$79,633	\$282,167	\$424,842	\$750,336

¹ The social cost estimates from the IWG represent the present value of damages from that year's emissions discounted back to the year of emissions. These columns discount values from 2020–2050 are from *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under E.O. 13990*. Interagency Working Group on Social Cost of Greenhouse Gases. 2010. <https://www.epa.gov/sites/default/files/2015-05/documents/sc-gg-2010.pdf>.
² Values from 2051–2070 are from *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Consumer Fur*

Phase 2 Present Value (in Base Year)			Phase 3 Present Value (in Base Year)				Per 5% Average
Estimated SC-N ₂ O by emissions year (2020\$) ¹			of Estimated SC-N ₂ O by emissions year (2020\$) ¹				
3% Average	2.5% Average	3% 95th Percentile	5% Average	3% Average	2.5% Average	3% 95th Percentile	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,779
N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,981
N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,183
\$0	\$0	\$0	\$0	\$0	\$0	\$0	6,385
\$0	\$0	\$0	\$0	\$0	\$0	\$0	6,587
\$0	\$0	\$0	\$0	\$0	\$0	\$0	6,789
\$0	\$0	\$0	\$0	\$0	\$0	\$0	6,991
\$11,405	\$16,810	\$30,131	\$0	\$0	\$0	\$0	7,193
\$11,298	\$16,694	\$29,876	\$0	\$0	\$0	\$0	7,395
\$11,188	\$16,574	\$29,611	\$0	\$0	\$0	\$0	7,597
\$11,074	\$16,450	\$29,336	\$0	\$0	\$0	\$0	7,799
\$10,984	\$16,348	\$29,123	\$0	\$0	\$0	\$0	8,047
\$10,890	\$16,243	\$28,898	\$0	\$0	\$0	\$0	8,295
\$10,791	\$16,132	\$28,661	\$0	\$0	\$0	\$0	8,542
\$10,689	\$16,017	\$28,413	\$0	\$0	\$0	\$0	8,790
\$10,584	\$15,898	\$28,155	\$0	\$0	\$0	\$0	9,038
\$10,476	\$15,776	\$27,889	\$0	\$0	\$0	\$0	9,285
\$10,366	\$15,650	\$27,614	\$0	\$0	\$0	\$0	9,533
\$10,253	\$15,521	\$27,331	\$0	\$0	\$0	\$0	9,781
\$10,137	\$15,388	\$27,042	\$0	\$0	\$0	\$0	10,029
\$10,020	\$15,253	\$26,746	\$0	\$0	\$0	\$0	10,276
\$9,914	\$15,128	\$26,467	\$0	\$0	\$0	\$0	10,567
\$9,806	\$15,000	\$26,182	\$0	\$0	\$0	\$0	10,857
\$9,696	\$14,869	\$25,891	\$0	\$0	\$0	\$0	11,147
\$9,583	\$14,736	\$25,595	\$0	\$0	\$0	\$0	11,437
\$9,470	\$14,600	\$25,294	\$0	\$0	\$0	\$0	11,727
\$9,354	\$14,463	\$24,988	\$0	\$0	\$0	\$0	12,018
\$0	\$0	\$0	\$0	\$0	\$0	\$0	12,308
\$0	\$0	\$0	\$0	\$0	\$0	\$0	12,598
\$0	\$0	\$0	\$0	\$0	\$0	\$0	12,888
\$0	\$0	\$0	\$0	\$0	\$0	\$0	13,179
\$0	\$0	\$0	\$0	\$0	\$0	\$0	13,479
\$0	\$0	\$0	\$0	\$0	\$0	\$0	13,798
\$0	\$0	\$0	\$0	\$0	\$0	\$0	14,118
\$0	\$0	\$0	\$0	\$0	\$0	\$0	14,438
\$0	\$0	\$0	\$0	\$0	\$0	\$0	14,758
\$0	\$0	\$0	\$0	\$0	\$0	\$0	15,091
\$0	\$0	\$0	\$0	\$0	\$0	\$0	15,425
\$0	\$0	\$0	\$0	\$0	\$0	\$0	15,758
\$0	\$0	\$0	\$0	\$0	\$0	\$0	16,091
\$0	\$0	\$0	\$0	\$0	\$0	\$0	16,424
\$0	\$0	\$0	\$0	\$0	\$0	\$0	17,077
\$0	\$0	\$0	\$0	\$0	\$0	\$0	17,730
\$0	\$0	\$0	\$0	\$0	\$0	\$0	18,382
\$0	\$0	\$0	\$0	\$0	\$0	\$0	19,035
\$0	\$0	\$0	\$0	\$0	\$0	\$0	19,687
\$0	\$0	\$0	\$0	\$0	\$0	\$0	20,354
\$0	\$0	\$0	\$0	\$0	\$0	\$0	21,020
\$0	\$0	\$0	\$0	\$0	\$0	\$0	21,686
\$0	\$0	\$0	\$0	\$0	\$0	\$0	22,352
\$0	\$0	\$0	\$0	\$0	\$0	\$0	23,018
\$207,979	\$313,550	\$553,241	\$0	\$0	\$0	\$0	

1. Adjusted that value to the base year in order to calculate the total net present value of the project. Source: Social Cost of Carbon, United States Government. February 2021. *Energy Economics*, Appendix 14A. U.S. Department of Energy. June 2022.

ton SC-N₂O Value (2020\$/metric ton N₂O)²

3%	2.5%	3%
Average	Average	95th Percentile
18,405	27,131	48,256
18,842	27,688	49,464
19,279	28,244	50,671
19,717	28,801	51,879
20,154	29,358	53,087
20,591	29,914	54,295
21,028	30,471	55,502
21,465	31,028	56,710
21,902	31,585	57,918
22,339	32,141	59,125
22,776	32,698	60,333
23,268	33,309	61,692
23,760	33,921	63,051
24,252	34,532	64,410
24,744	35,144	65,770
25,236	35,755	67,129
25,728	36,366	68,488
26,219	36,978	69,847
26,711	37,589	71,206
27,203	38,201	72,565
27,695	38,812	73,924
28,225	39,456	75,349
28,754	40,100	76,773
29,283	40,745	78,197
29,813	41,389	79,621
30,342	42,033	81,045
30,872	42,677	82,470
31,401	43,321	83,894
31,930	43,965	85,318
32,460	44,610	86,742
32,989	45,254	88,166
33,426	45,727	88,606
33,954	46,354	89,984
34,483	46,981	91,362
35,011	47,609	92,739
35,539	48,236	94,117
36,092	48,890	95,463
36,644	49,544	96,808
37,196	50,199	98,154
37,748	50,853	99,499
38,300	51,507	100,845
39,165	52,485	103,794
40,030	53,463	106,743
40,895	54,441	109,692
41,760	55,419	112,641
42,625	56,397	115,590
43,515	57,403	118,657
44,404	58,409	121,725
45,293	59,416	124,793
46,183	60,422	127,860
47,072	61,428	130,928

Electric Vehicles	
Phase I	
Electricity use per car	27,200 per year
	3,369 kWh/yr
Total	91,637 MWh/yr
CO2	78,102,045 lb/yr
N2O	916 lb/yr
CH4	6,506 lb/yr
Phase II	
EVs	209,000 per year
Electricity use per car	3,369 kWh/yr
Total	704,121 MWh/yr
CO2	600,122,328 lb/yr
N2O	7,041 lb/yr
CH4	49,993 lb/yr

Gas Vehicles	
Phase I	
Gas vehicles	27,200 per year
Fuel use per car	531 gal/yr
Total	14,430,992 gal/yr
CO2	126,668,033 kg/yr
N2O	1,082 kg/yr
CH4	5,412 kg/yr
Phase II	
Gas vehicles	209,000 per year
Fuel use per car	531 gal/yr
Total	110,885,197 gal/yr
CO2	973,294,815 kg/yr
N2O	8,316 kg/yr
CH4	41,582 kg/yr

eGRID 2021 for

State
USA

Fuel Economy
<https://www.ei>
 25.4

Miles per year |
<https://www.fl>
 13,476

In Metric Tons	
Phase I	
CO2	35,426 tpy
N2O	0.4 tpy
CH4	2.95 tpy
Phase II	
CO2	272,211 tpy
N2O	3 tpy
CH4	22.7 tpy
Phase I	
CO2	126,668 tpy
N2O	1.08 tpy
CH4	5.41 tpy
Phase II	
CO2	973,295 tpy
N2O	8 tpy
CH4	41.6 tpy

EV electricity u:
<https://www.ei>
 4

1.25E-01

Motor Gasoline
 70.22
 6.00E-04
 3.00E-03

EV Savings	
Phase I	
CO2	91,242 tpy
N2O	0.67 tpy
CH4	2.46 tpy
Phase II	
CO2	701,084 tpy
N2O	5.1 tpy
CH4	18.9 tpy

4.54E-04
 1.00E-03

US. <https://www.epa.gov/egrid/summary-data>

Total output emission rates			
(lb/MWh)			
CO ₂	852.3	CH ₄	0.071
		N ₂ O	0.010
		CO ₂ e	857.0

[pa.gov/newsreleases/epa-report-us-cars-achieve-record-high-fuel-economy-and-low-emission-levels-companies](https://www.epa.gov/newsreleases/epa-report-us-cars-achieve-record-high-fuel-economy-and-low-emission-levels-companies)
miles per gallon (model year 2020)

per driver - average US, all ages and genders
[hwa.dot.gov/ohim/ohh00/bar8.htm](https://www.fhwa.dot.gov/ohim/ohh00/bar8.htm)
miles per year

se

[nergy.gov/energysaver/cost-charge-electric-vehicle-explained](https://www.energy.gov/energysaver/cost-charge-electric-vehicle-explained)

miles per kwh
Used high end of the range because Sila's product increases vehicle range

mmBtu/gallon

Automotive gasoline (<https://www.bts.gov/content/energy-consumption-mode-transportation>)

emission factors

<https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98/subpart-C/>

kg CO₂/mmBtu

Table C-1

kg N₂O/mmBtu

Table C-2

kg CH₄/mmBtu

Table C-2

lb to metric tons

kg to metric tons

Critical Habitat Report

ECOSYSTEMS NORTH WEST

Phone (509) 670-9918
Rriver2b@hotmail.com

03/28/2023

To: WPE (Rd. N) critical habitat report

RE: Parcel's 12-0175300, 11-0069400, 11-0077090, Grant County

INTRODUCTION

Ecosystems North West conducted a Shrub Steppe analysis on the above referenced parcels located in within the city of Moses Lake, WA. The purpose of the survey was to determine the presence/absence of Priority Habitats on the site in compliance with the Moses Lake Critical Area Ordinance (CAO) chapter 19.03.

Shrub Steppe habitat is an identified priority habitat by Washington State and identified in the Moses Lake Critical Area Ordinance (CAO) chapter 19.03 and defined as Fish and Wildlife Habitat Conservation Areas (HCAs) as "Areas within which State and Federal endangered and threatened species exist, or state sensitive, candidate and monitor species have a primary association Both Priority Species and Shrub Steppe Habitat have restrictions associated with any impacts resulting from any proposed development. This report addresses the findings of the survey that was conducted on March 20 and 27, 2023. The survey covered the area contained in the parcels listed above (figure 1 and 2).

Background

The area surveyed is approximately 160 acres within Section 16 of Township 19 North, Range 29 East Grant County Washington. The Southern, Eastern and Northern borders of the property are large acreage irrigated agriculture. The Western border is County Road NE and west of that is commercial industry. The site is relatively flat with a southwest aspect. The property has historically been farmed and currently either farmed or mowed repeatedly over the past several years. The site has no shrub component, and the grasses/herbaceous layer of vegetation is dominated by weedy nonnative species. Except for an approximately 4-to-5-acre portion of the property located along the west and northwest side of the existing building this site would not be considered priority

habitat. The 4 to 5 acres that could be considered priority habitat is very low quality, is small and isolated and its proximity to the building renders it of minimal value to wildlife species associated with shrub steppe habitat.

There are several structures on site including the large manufacturing building, paved parking area and railroad spur (figure 1 and 2).

The proposal for this site is the expansion of the existing manufacturing facility.

The WDFW PHS data base shows shrub steppe and emergent freshwater wetlands as the two Priority Habitat types for this parcel (figure 3). The PHS data base does not call out any specific species associated with this site however during the onsite survey those species typically associated with shrub steppe habitat were looked for. This assessment only addresses the shrub steppe priority habitat.

The Shrub Steppe analysis is based on criteria found in the attached Table 2 and where appropriate recommendations found in “Management recommendations for Washington’s priority habitats: managing shrubsteppe in developing landscapes”.

Discussion

Shrub Steppe Habitat analysis

The shrub steppe analysis was conducted using aerial photos (Google and Grant County Web) and onsite informal transects across the landscape to verify photos and plant composition. The on site assessment was conducted on March 20, 2023 between 9:30 and 11:30 AM and March 27, 2023 by Dennis Beich. During the course of the survey there were 4 burrows located along the south facing slope of a ditch 100 yds south of the existing building, (see figure 2). One of the burrows appeared to be actively used by a badger. Fossorial activity over the entire site was moderate and there was no biological crust observed on the site. The soils on the site are classified as Royal very sandy loam by the USDA soil survey (see figure 4 USDA Soils map).

Species observed during the survey were:

Raven (*Corvus c.*)

Magpie (*Pica h.*)

Meadow lark (*Sturnella neglecta*)

Starlings

Robin

Pheasant

Red wing blackbird

Morning dove (*Zenaida Macroura*)

The only area that comes close to being priority habitat on this site is located immediately west of the existing building and is only 4 to 5 acres it is very low quality shrub steppe. The remainder of the site is dominated by nonnative vegetation having less than 1% native bunch grass (appeared to be Sherman bunch grass (*Poa secunda*)) and would not be considered priority habitat. The site has been farmed in the recent past and mowed repeatedly after that.

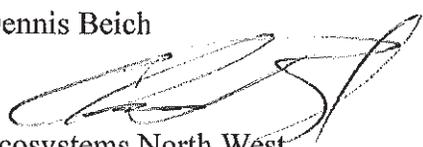
The plant vegetative cover of the site was dominated by crested wheat grass (*Agropyron cristatum*), bulbous blue grass (*Poa bulbosa*) and cheat grass (*Bromus*) with a cover ranging between 70 to 90%. Also of note was tumble weed (*Salsola kali*) at 10 to 20% cover.

There was moderate fossorial activity throughout the site and due to recent farming activity, no biological crust.

Conclusion and Habitat Management Plan Recommendations

This site has been disturbed in the past through both farming activity as well as the presence of a manufacturing facility. The site has a small, isolated area that is 4 to 5 acres of shrub steppe but is in close proximity to the existing building and parking lot and thus provides limited wildlife benefit. Due to the disturbed nature of the site, its location within the City of Moses Lake and its isolation from other habitat connection opportunities my recommendation is no mitigation for shrub steppe habitat impacts is necessary for this development proposal.

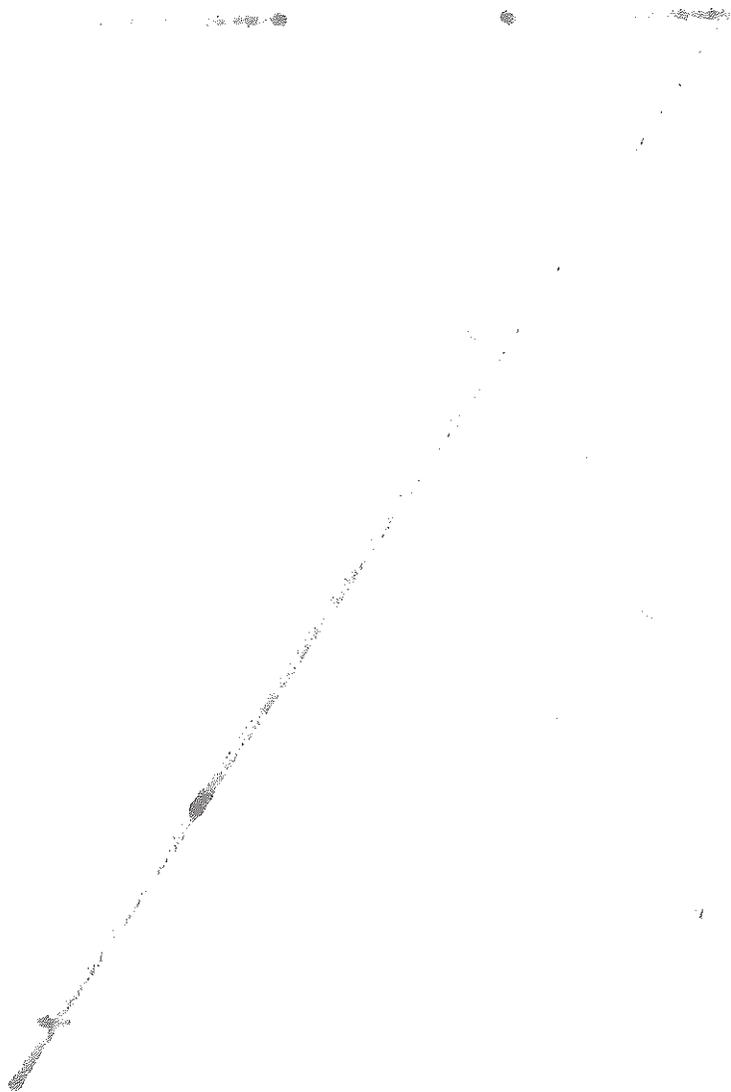
Dennis Beich


Ecosystems North West



115069400
1201753
110077000
T19R29S16
T19R29S17

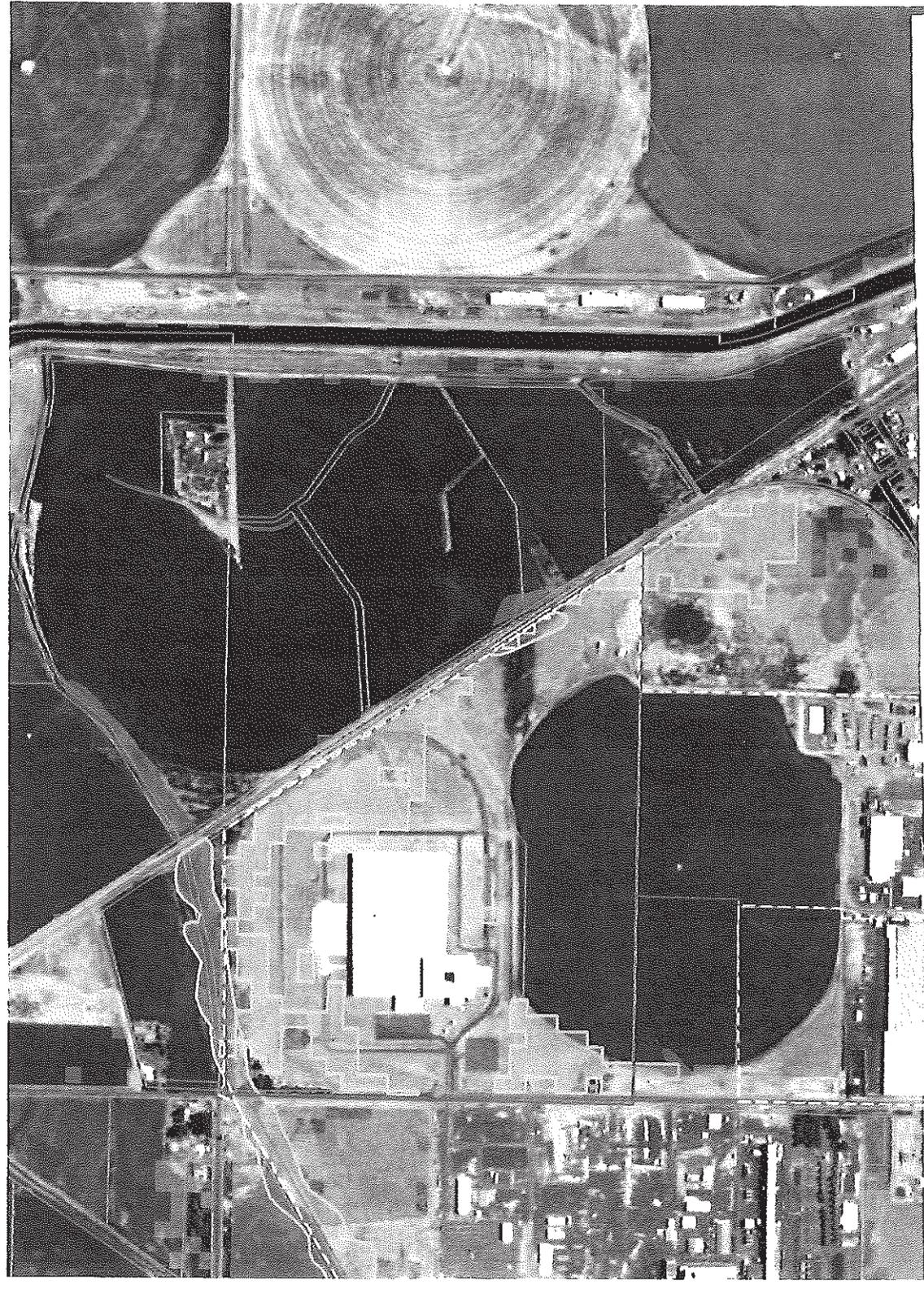
Vertical text on the left edge, possibly a page number or margin note.





Priority Habitats and Species on the Web

FD



PHS Species/Habitats Overview:

Occurrence Name	Federal Status	State Status	Sensitive Location
Freshwater Emergent Wetland	N/A	N/A	No
Shrubsteppe	N/A	N/A	No

Search

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
86	Outlook very fine sandy loam	15.7	7.7%
98	Quincy loamy fine sand, 0 to 15 percent slopes	5.7	2.8%
113	Royal loamy fine sand, 0 to 10 percent slopes	123.4	60.3%
116	Royal very fine sandy loam, 2 to 5 percent slopes	58.1	28.4%
117	Royal very fine sandy loam, 5 to 10 percent slopes	0.2	0.1%
122	Sagehill very fine sandy	1.7	0.8%



Soil Map

Scale (not to scale)

Warning: Soil Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Map design of map units and the level of detail shown in the resulting soil map are dependent on that map design. Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of map units shown at a more detailed scale.

2006 FS
Write a description for your map.

Legend



Google Earth

Image: USDA/IFFA/GEO

2020

F16

Write a description for your map.

15

Legend



300 ft

Google Earth

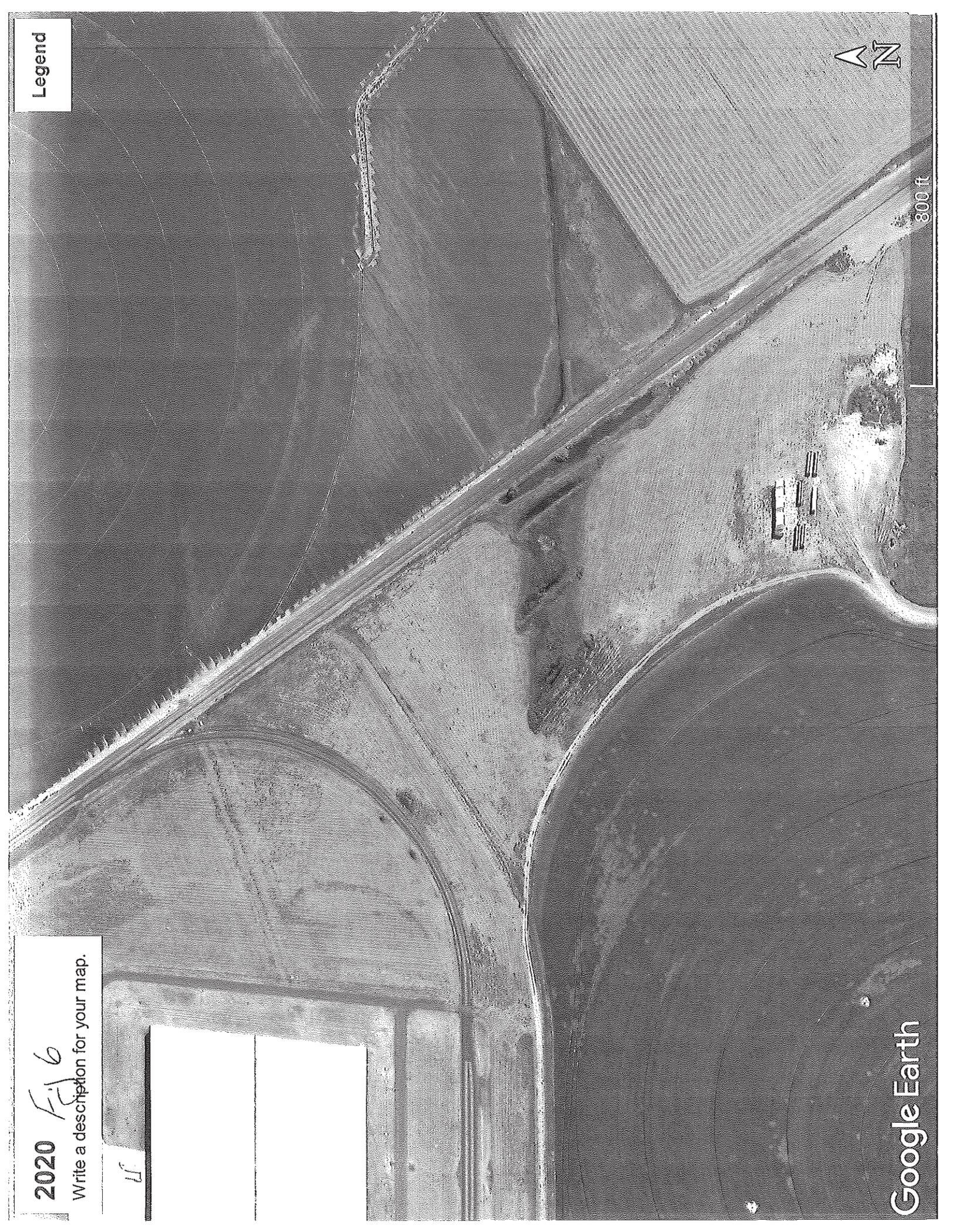


Table A4. Ecological integrity index measures to be evaluated for ranking the ecological quality of Shrublands habitat. All found within a parcel.

Metric	Indicators	Rank		
		A (5pts)	B (3pts)	C (2pts)
RANK FACTOR: LANDSCAPE CONTEXT				
Key Ecological Attribute: Buffer				
Buffer Length		Buffer is > 20-100% of occurrence perimeter.	Buffer is > 50-100% of occurrence perimeter.	Buffer is < 20% of occurrence perimeter.
Buffer Width	The buffer can be measured to back and double edges of the tree.	Average buffer width is 100-175m (100-200m).	Average buffer width is 50-99m (100-200m).	Average buffer width is < 50m (100m), after adjusting for slope.
Buffer Condition		Abundant (20-40%) cover of native vegetation, with no patches of non-native plants or trees of 100m or more.	Moderate (10-20%) cover of native plants, moderate or moderate to high density of non-native plants or trees.	Dominant (>20%) cover of non-native plants, moderate to high density of non-native plants or trees, or moderate to high density of non-native plants or trees.
Key Ecological Attribute: Landscape Structure				
Connectivity	There must have a continuous corridor of native vegetation between each of the areas.	Linear (fractured) to 9-10% of total habitat connectivity is covered to be high.	Vegetation dominated by 50-70% native or semi-native plants, with high density of native vegetation in habitat modification.	Vegetation dominated by non-native plants, with moderate to high density of native vegetation in habitat modification.
Landscape Condition Model Index (LCMI) (see bottom of Page 7)	The density and type of land cover in the landscape can determine the ecological integrity.	LCMI > 0.3	LCMI 0.15 - 0.29 (for Columbia, Pecos Low Slope, Sycamore only)	LCMI < 0.15 (for Columbia, Pecos Low Slope, Sycamore only)
RANK FACTOR: CONDITION				
Key Ecological Attribute: Vegetation Composition				
Native Plant Species	Native species number the 10% with known impacts.	Relative cover of native plants > 50-100%.	Relative cover of native plants > 20-50%.	Relative cover of native plants < 20%.
Native Dominance	Native plants are dominant in cover or relative to other species.	Relative cover of potential herbivores > 50% or more (at least one herbivore system).	Relative cover of potential herbivores > 20% or more (at least one herbivore system).	Relative cover of potential herbivores < 20% or more (at least one herbivore system).
Cover of Native Herbivores	Herbivores (insects) in all systems except Columbia (Sycamore).	Relative cover of potential herbivores > 50% or more (at least one herbivore system).	Relative cover of potential herbivores > 20% or more (at least one herbivore system).	Relative cover of potential herbivores < 20% or more (at least one herbivore system).
Leafy Species Cover	Leafy species cover is a wide range of ecological niches. Early detection is critical.	Native cover of potential herbivores > 50% or more (at least one herbivore system).	Relative cover of potential herbivores > 20% or more (at least one herbivore system).	Relative cover of potential herbivores < 20% or more (at least one herbivore system).
Key Ecological Attribute: Vegetation Structure				
Biological Soil Crust	Crust cover and diversity is greater when not impacted by grazing, other soil organisms, or other factors. 2001: Remnant and 2002: Remnant and 2003: Remnant (2001-2003).	Large, linear biological soil crusts that nearly make the site capability when viewed at 100m scale.	Biological soil crust is evident throughout the site but is more continuous (2001-2003).	Biological soil crust is present in patches and with a fragmented cover.
Pre-sensitive Shrubs	Shrubs are part of the habitat (Columbia, Pecos Low Slope, Sycamore).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).
Pre-sensitive Shrubs (Columbia system)	Fire, naturally or, eliminates or reduces <i>Artemisia rigida</i> or <i>Artemisia tridentata</i> cover.	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).
Pre-sensitive Shrubs (Pecos Low Slope system)	Normal fire regime. Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).
Pre-sensitive Shrubs (Sycamore system)	Normal fire regime. Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).	Pre-sensitive shrubs means that recovered from past fire (within 2001-2003).
RANK FACTOR: CONDITION				
Key Ecological Attribute: Vegetation Composition				
Soil Species Condition	Soil species condition is critical to the health of the system. The amount of the species is a measure of the system's health.	Soil species are limited to naturally occurring species and are not impacted by human activities.	Soil species are limited to naturally occurring species and are not impacted by human activities.	Soil species are limited to naturally occurring species and are not impacted by human activities.

USFWS IPaC Data Report



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To:

May 25, 2023

Project Code: 2023-0086084

Project Name: Sila Nanotechnologies Moses Lake Facility (DOE/EA-2214D)

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

To Whom It May Concern:

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

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

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

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

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

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

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

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

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

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Washington Fish And Wildlife Office

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

(360) 753-9440

PROJECT SUMMARY

Project Code: 2023-0086084
Project Name: Sila Nanotechnologies Moses Lake Facility (DOE/EA-2214D)
Project Type: Federal Grant / Loan Related
Project Description: The proposed project would involve the construction of a 4,000 ton/yr (20 GWh/yr equivalent) silicon anode manufacturing facility in Moses Lake, Washington. Sila had previously acquired a 162-acre site with an existing 613,000 sq. ft. building for this project. The purpose of the proposed project is to scale Sila's product output in order to enter the electric vehicle market in a timely and cost-efficient manner. The project would provide U.S.-based manufacturing capacity for these and similar vital industrial components.

Modifications would be required to the existing facility's interior walls, floors, ceilings, and other architectural features to accommodate new equipment and refresh the existing office space. Installation of equipment and storage vessels outdoors would require ground movement activities to grade previously disturbed areas (currently agricultural land that has already been rezoned for heavy industrial). These areas would be to the north, east, south and west of the existing building, and activities would include new access roads, installation of concrete slab service yards or pads for gas storage vessels, abatement unit systems, cooling water systems, wastewater treatment, and other equipment. Additional land or disturbance of natural resources beyond the existing site is not required for the project.

The project will take place in Moses Lake, Washington within Section 16 of Township 19 north and Range 29 east of the Willamette Meridian. The project site consists of four parcels (parcel numbers 110069400, 120175300, 120175300 and 110077090) comprising approximately 162 acres. The project site is bound by Road N NE to the west, an unnamed stream to the north, railroad tracks to the east and industrially zoned land to the south.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@47.14176625,-119.187840607839,14z>



Counties: Grant County, Washington

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

BIRDS

NAME	STATUS
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

INSECTS

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

CRITICAL HABITATS

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

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

IPAC USER CONTACT INFORMATION

Agency: Department of Energy
Name: Stephen Witmer
Address: 626 Cochran Mill Road
Address Line 2: Mailstop 921-227
City: Pittsburgh
State: PA
Zip: 15236
Email: stephen.witmer@netl.doe.gov
Phone: 4123867589
